Mātai
Te Mata Mātai Hura
Mātai Medical Research Institute
TAIRĀWHITI GISBORNE | NEW ZEALAND

INTERN REPORT

25/26

2025-2026 Mātai Internship
Programme Funders

Intern Programme Cornerstone Funder

Hugh Green FOUNDATION

2025-2026 Mātai Summer Intern Sponsors

CENTRE FOR BRAIN RESEARCH
THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau

FREEMASONS FOUNDATION

Lions Clubs International
Gisborne Host Lions Club | Gisborne Wainui Lions Club

Trust Tairāwhiti
Regional Wellbeing
He Tohu Ora

Kānoa
Regional Economic Development
& Investment Unit

pultron COMPOSITES

hrc nz Health Research Council of New Zealand
Te Kaunihera Rangahau Hauora o Aotearoa

JN & HB Williams Foundation
est. 2021

HAWKE'S BAY BRANCH
ROYAL SOCIETY TE APĀRANGI

The Tindall Foundation

Woolf Fisher Trust

UC UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Waipapa Taumata Rau University of Auckland

Te Hauora o Tūranganui-a-Kiwa Ltd
Tūranga Health

Mangatawa Beale Williams Memorial Trust

QUEST Enterprise Trust

Rapanui Trust

Annual Internship Programme
How to Apply

The Mātai Summer Internship Programme is an incredible opportunity for undergraduate students to gain hands-on experience in cutting-edge research, working alongside expert scientists, clinicians, and iwi health providers.

Who can apply

Internships are open to undergraduate students from Year 1 to Year 4, with priority given to students with links to Tairāwhiti. Selected interns are typically enrolled in health science, computer science, medical, or engineering programmes at a New Zealand university and have strong ties to the region.

Duration

10 weeks (summer programme).

Stipend

$7,000 stipend for the programme duration.

Focus area

Research projects tailored to students' skill sets and interests.

Workshops & training

Includes sessions on research design, medical imaging, bioengineering tools, ethics, mātauranga Māori, community engagement, data management, and more.

Professional development

Interns receive leadership training, science communication coaching, and media engagement opportunities to build their confidence as future leaders.

Applications open over the months of June/July each year. The best way to stay informed is by following Mātai on social media for updates. For more information on the Mātai Summer Internship Programme visit **www.Mātai.org.nz/education/summer-internship**

Mātairesearch MātaiResearch Mātai

Key Participating Organisations

The success of the Mātai Internship Programme is made possible through strong partnerships across research, healthcare, education, and community organisations.

Academic organisation

Mātai Medical Research Institute
Universities & research institutions
University of Auckland
University of Otago
University of Canterbury
University of Waikato
University of Calgary
Stanford University
Robarts Research Institute
Centre for Brain Research
Auckland Bioengineering Institute

Health & community organisations

Tūranga Health
Gisborne Hospital, Health NZ – Tairāwhiti
Ngāti Porou Oranga
Alberta Children's Hospital
Well By Design

Iwi / Hapū

Rongowhakaata
Ngāti Porou
Te Aitanga-a-Māhaki
Māori, Pacific & community groups
Te Wānanga o Aotearoa
Tūranga FM
Waiata Group, Gisborne Hospital

Schools & Education Partners

Te Rito Maioha Early Childhood New Zealand
Tōnui Collab

Industry, innovation & other partners

GE HealthCare
Aroha AI
Momentum
Urbanism Plus
Genomics Aotearoa
Rata Forests
Futurity Bio-Ventures
Gisborne District Council

Table of Contents

TRIBUTE

TRIBUTE

E kore e ngaro, he kākano i ruia mai i Rangiātea.

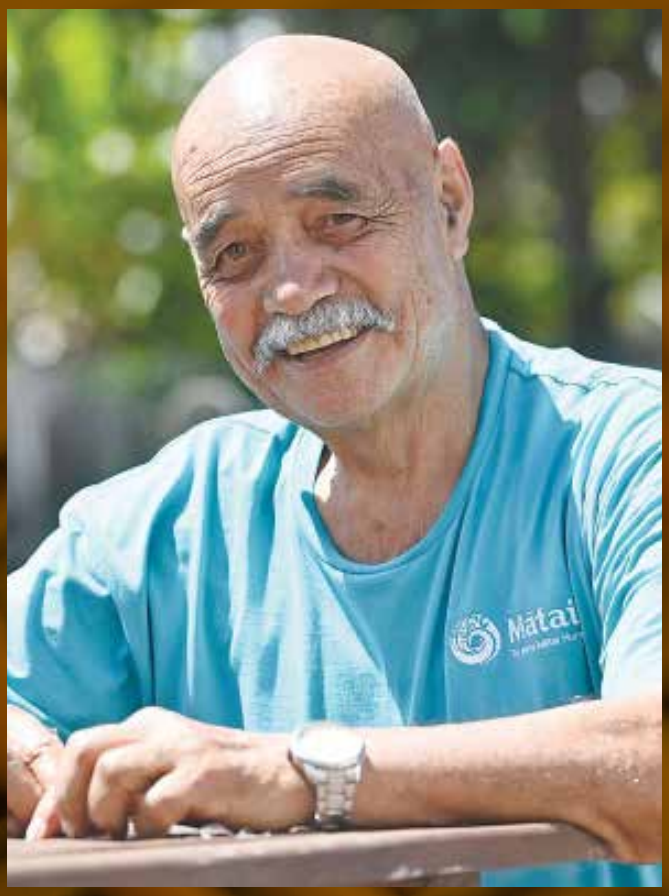
We acknowledge with deep aroha the passing of two esteemed kaumātua, Pāpā Taina Ngarimu and Matua Owen Lloyd, who were cherished members of our wider Mātai whānau and held a special place in the lives of our interns, both past and present.

Both men were rangatira – embodying wisdom, generosity, and quiet leadership. They gave freely of their time, their stories, and their guidance, nurturing and uplifting those around them. Their presence brought warmth, strength, and a deep sense of belonging to our kaupapa.

Our interns were especially privileged to learn from and be supported by them. Their encouragement, humour, waiata, and mana left a lasting impression that will continue to shape our interns' journeys.

We honour their legacy and the enduring impact they have had on our people, culture, and our work.

Moe mai rā e ngā rangatira. Haere, haere, haere atu rā.



Pāpā Taina Ngarimu (top right)
Matua Owen Lloyd (right)

Introduction

The Mātai Summer Internship Programme is a 10-week immersive summer programme that gives undergraduate students hands-on experience in health and medical research while supporting their growth as emerging professionals and future leaders. Based at Mātai Medical Research Institute in Tairāwhiti Gisborne, the programme combines real-world research projects with a wider learning experience designed to connect science, community, culture, and career development.

The goal of the programme is to create meaningful pathways for rangatahi into research, health, innovation, and related areas by building their confidence, skills, and sense of purpose, while strengthening connections to community and encouraging many to one day return home and contribute to hauora in Te Tairāwhiti.

Alongside their individual research projects, interns took part in sessions covering MRI, research methods, statistics, medical image processing, ethics, leadership, mātauranga Māori, community engagement, entrepreneurship, and career pathways. The programme also included hands-on activities, guest speakers, presentations, and opportunities to engage directly with local organisations and communities.

We were thrilled to see the energy, enthusiasm, and excitement our rangatahi brought to Mātai throughout the programme. We wish all of them the very best for their future studies and careers, and we thank the funders, supporters, supervisors, guest speakers, community groups, and everyone who helped make the programme possible.

Dr Maryam Tayebi
Intern Programme Lead, Hugh and Moira Green Senior Research Fellow

Imogen Amor-Bendall
Intern Programme Junior Project Coordinator

Imogen Amor-Bendall (left) and Dr Maryam Tayebi (right)

Cornerstone Partner

Hugh Green Foundation

The Mātai Internship Programme has grown through the generous and ongoing support of the Hugh Green Foundation (HGF) as our cornerstone funder. Their commitment has been instrumental in shaping the programme, enabling our interns to undertake meaningful research, grow their skills, and contribute to the Mātai kaupapa in ways that are already making an impact. Their wider support of Mātai research and the development of our whare has also strengthened the environment our interns learn within, amplifying the impact of the programme.

We also acknowledge the special contribution of HGF CEO Lorraine Mentz, whose visits to Tairāwhiti Gisborne have been incredibly valued. Through her mentorship of members of the Mātai whānau, the genuine time she takes with our interns, and her thoughtful input into the ongoing development, feedback, and quality of the programme, Lorraine has helped build confidence, leadership, and a real sense of possibility within our region.

Alongside the support of our wider network of partners and funders, acknowledged later in this report, this partnership continues to strengthen pathways for our rangatahi to thrive – both here in Te Tairāwhiti and wherever their journeys take them.

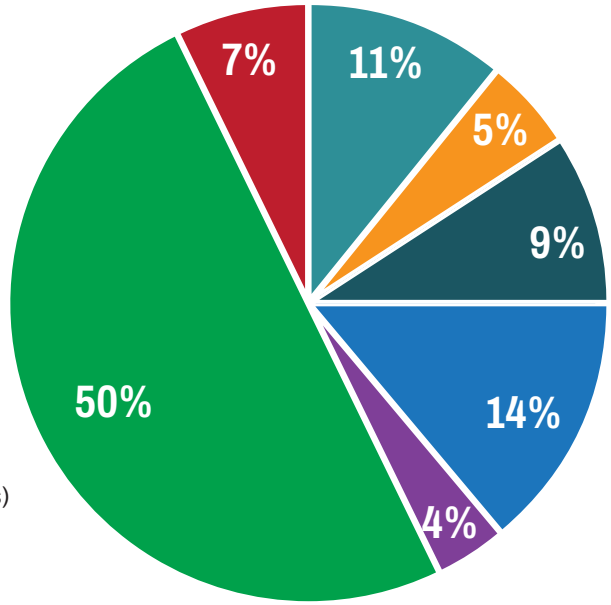
> "The Hugh Green Foundation is thrilled to be involved in developing this most important pipeline of early research scientists. Our young people are our future, and we have found their internship projects and experience with Mātai inspirational." – **Lorraine Mentz**

Hugh Green Foundation CEO Lorraine Mentz (far right) with the Mātai interns and some of the Mātai staff and guests. Left to Right: Back row: Emeritus Professor Graeme Bydder, Kerry Bydder, Dr Mark Bydder, Miah Somerton, Keeley Cairns, Nicholas Cane, Noah Mason, Ned Clarke, Ky Bartlett. Middle row: Tui Cave, Naiya Powley, Frankie Muir, Mathew Sung, Leigh Potter, Lorraine Mentz. Front row: Peter Holdsworth, A/Prof Samantha Holdsworth, Paris Maxwell, Ella Arthur, Imogen Amor-Bendall.

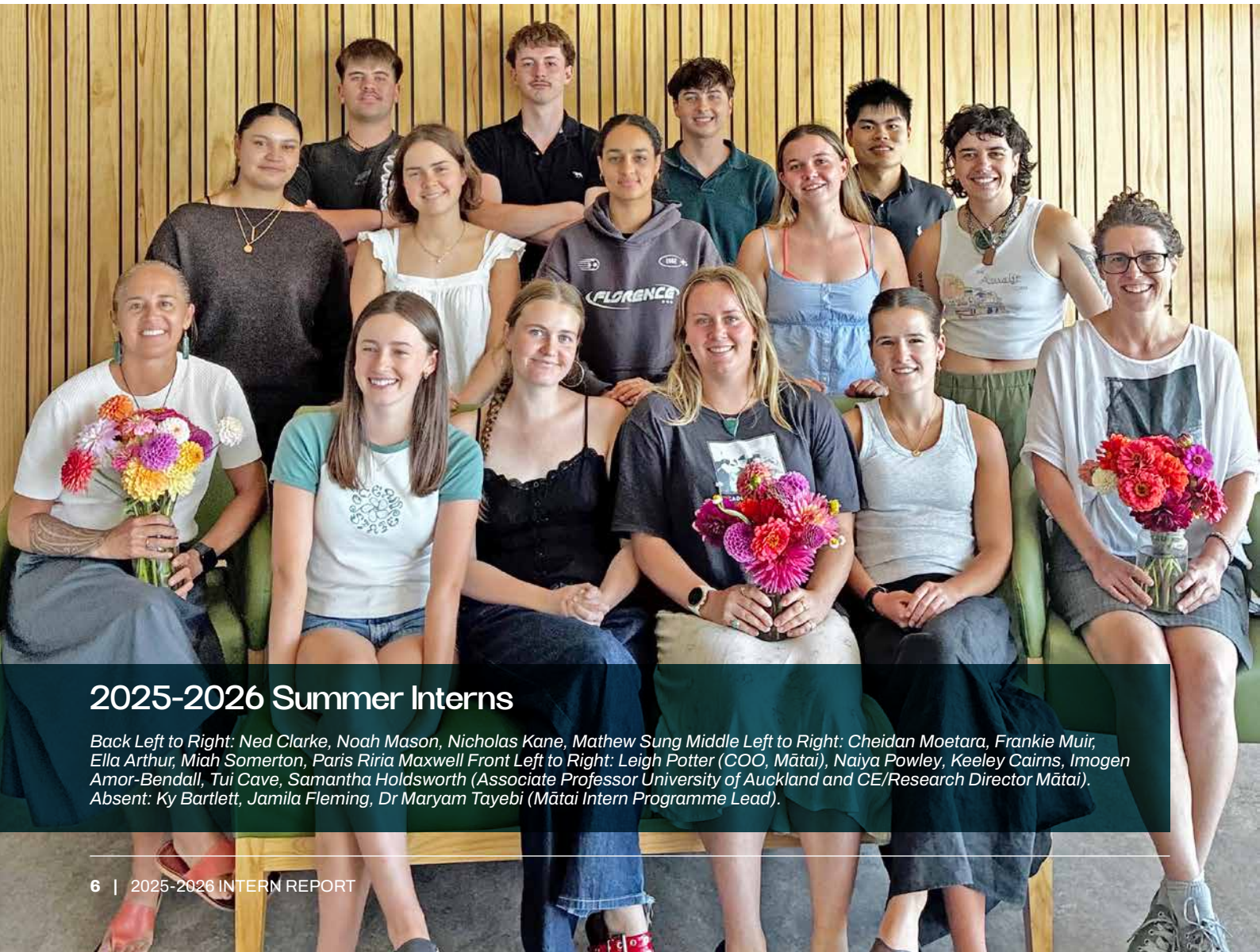
About the Programme

Students take part in a variety of sessions, and each intern undertakes a research project with real-world implications. Most of the programme is dedicated to research projects, with a substantial portion of time also spent in structured sessions that build understanding of the research environment while supporting community engagement, whanaungatanga, and professional and leadership development.

Total hours spent during the programme



- Scientific & Research Foundations (31hrs)
- Advanced Topics & Guest Lecturers (15hrs)
- Community Engagement & Real-World Connections (28hrs)
- Leadership & Personal Development (42hrs)
- Māturanga Māori & Pacific Perspectives (12hrs)
- Research Projects (151hrs)
- Events (22hrs)



2025-2026 Summer Interns

Back Left to Right: Ned Clarke, Noah Mason, Nicholas Kane, Mathew Sung Middle Left to Right: Cheidan Moetara, Frankie Muir, Ella Arthur, Miah Somerton, Paris Riria Maxwell Front Left to Right: Leigh Potter (COO, Mātai), Naiya Powley, Keeley Cairns, Imogen Amor-Bendall, Tui Cave, Samantha Holdsworth (Associate Professor University of Auckland and CE/Research Director Mātai). Absent: Ky Bartlett, Jamila Fleming, Dr Maryam Tayebi (Mātai Intern Programme Lead).

Meet the Interns

Imogen Amor-Bendall

Campion College

3rd year | Neuroscience | Otago

Mātai–UoA Internship

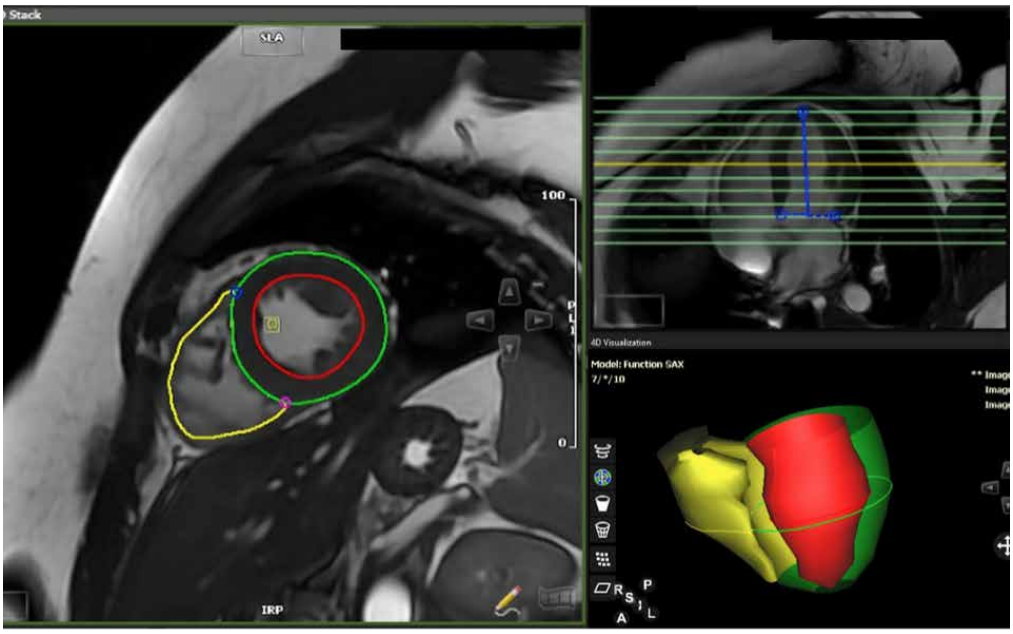
Sponsor: University of Auckland

Early Cardiac Changes in Methamphetamine Use Disorder

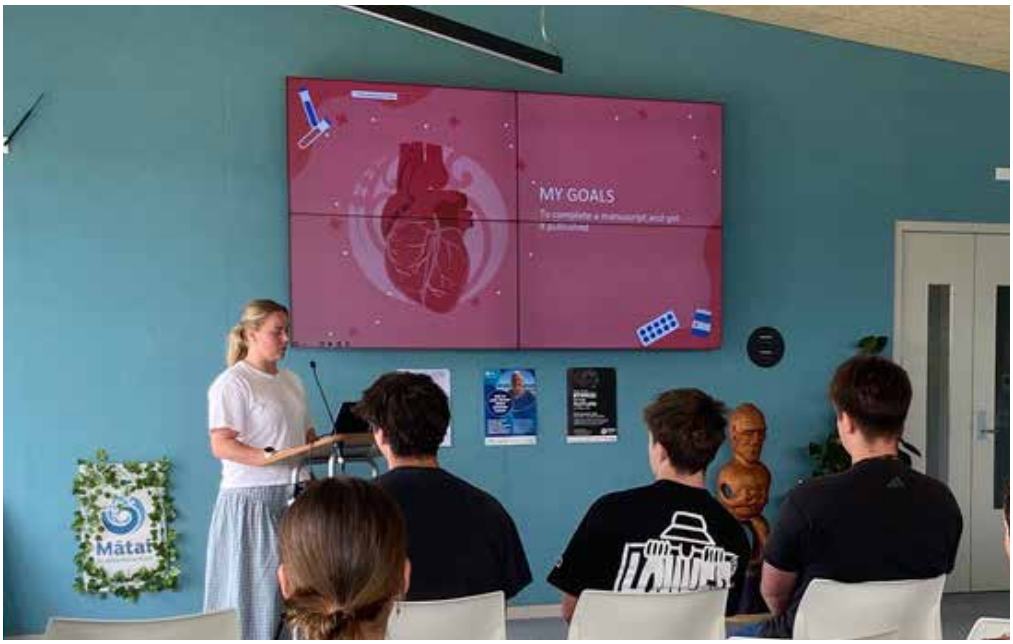
Supervisors: Associate Professor Miriam Scadeng, Dr Maryam Tayebi

Imogen worked on the Methamphetamine Recovery Study at Mātai, with a focus on heart health measures. She is supporting the preparation of a scientific paper with the goal of publishing the findings, allowing the results to be shared with the wider scientific community and ultimately used to benefit people in Tairāwhiti.

Imogen also took on the role of Intern Junior Project Coordinator, supporting coordination across the cohort, helping to keep activities on track, and ensuring responsibilities were met. As a returning intern for her third placement, she reflects one of the most valued aspects of the programme – seeing interns come back and continue to grow within the Mātai whānau.



The heart data showed that among people who used methamphetamine, those who had used it for a longer time tended to have larger heart chambers and more blood left in the heart after it pumped. They also showed signs of slightly weaker heart pumping. Overall, this suggests that the longer someone uses methamphetamine, the more it can gradually stretch and weaken the heart.



> "The programme allows me to engage directly with our community and respond to real health needs through research."

Ella Arthur

Ngāi Te Rangi
Woodford House | Campion College

2nd year | Dentistry | Otago
Mātai–HRC Internship
Sponsor: Health Research Council

Non-traumatic dental presentations to the emergency department presentations in Tairāwhiti Hospital in 2024

Supervisor: Dr Joanna Ngo and Leigh Potter

As a returning intern, Ella continued to build on her commitment to community-focused research. Her project explored non-traumatic dental presentations to Tairāwhiti Hospital's Emergency Department, examining who is seeking urgent dental care and why. The work has progressed to a manuscript submission to the New Zealand Medical Journal, with revisions currently underway following positive reviewer feedback.

Highlights for Ella included community engagement that strengthened her understanding of service and connection.

> "I want to better understand the barriers people face in accessing dental care. If we can identify where inequities exist, we can start to improve pathways so people receive timely, appropriate care, rather than ending up in emergency departments."
>
> "These sessions allowed us to positively interact with the wider community, build whakawhanaungatanga through pepeha and waiata, and share our roles and projects as interns, giving the community greater insight into the work we do and the values that underpin it."

Jamila Kate Miriama Fleming

Ngāti Porou, Ngāti Kahungunu
Wellington Girls' High School

3rd year | Psychology | Canterbury
Mātai–UoC Internship
Sponsor: University of Canterbury

Cerebral perfusion, arterial transit time, and cognitive impairment in Parkinson's disease

Supervisors: Associate Professor Tracy Melzer, Dr Will Aye

Jamila worked on research related to Parkinson's disease, examining how blood flows through different areas of the brain. Using advanced MRI techniques, Jamila investigated whether changes in blood supply and how evenly it is distributed could help improve understanding of how Parkinson's affects brain function.

She found clear changes in brain blood flow and a strong link between age and thinking ability. People with Parkinson's disease had lower blood flow in the brain, especially in the frontal areas, with further decreases in the top and back parts of the brain. Overall, blood flow was also more uneven in people with Parkinson's disease, with the greatest unevenness seen in the back of the brain.

> "My studies in neuroimaging are a foundation for my future pathway as a child and family psychologist. I want to work alongside Māori whānau, ensuring mental health services are culturally safe and responsive. For me, this research is not just academic - it is about doing this mahi for my whānau and for all Māori navigating the mental health system, so that care reflects both science and te ao Māori. This experience also strengthened my passion for psychology. I want to continue in this field because our Māori communities deserve people who understand them, who listen, and who can support their wellbeing in ways that honour our culture. Psychology gives me the chance to help break cycles, uplift our people, and create spaces where Māori voices and experiences are truly seen and valued."

Ky Bartlett

Ngāti Porou
Gisborne Boys' High School
1st year | Biomedical Science | Auckland
Mātai–CBR Internship
Sponsor: Centre for Brain Research

Influence of heart-rate variation on measures of brain motion and cerebrovascular flow

Supervisors: Dr Josh McGeown, Dr Sergio Dempsey

Ky started out on a project which explored how changes in heart rate affect brain motion and blood flow using an MRI method developed at Mātai, amplified MRI (aMRI) to examine whether measurements of brain motion and blood flow remain consistent when heart rate varies in a controlled way. This research offers an exciting opportunity to better understand how physical activity can benefit not only physical wellbeing, but cognitive health as well. He was unable to complete the work due to external limitations, and accordingly, he also helped Naiya with her project on respiratory gas analysis. He supported volunteer recruitment, participant interaction with familiarization and MRI sessions, and reported on heart rate and blood pressure measures.

> "One of us interns gets the fun job of sitting inside the MRI room and manually turning on the oxygen halfway through the scan. This lets us compare brain images taken while the participant is breathing normal air versus pure oxygen, which is essentially what our study is looking at."

Paris Maxwell

Ngāti Rangiwewehi, Ngāti Tūwharetoa, Te Aitanga-a-Mahaki.
Turakina Māori Girls' College | Hukarere Māori Girls' College | Gisborne Girls' High School
1st year | Applied IT | Toi Ohomai
Mātai–Woolf Fisher Internship
Sponsor: Woolf Fisher Trust

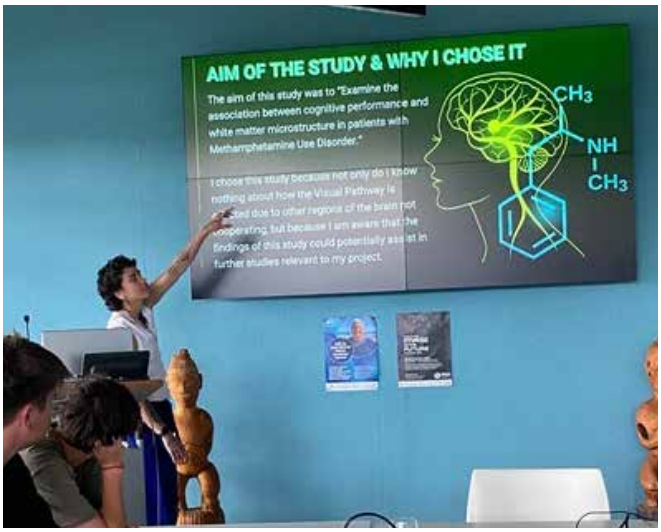
Are individuals with a history of drug abuse more likely to have vision difficulties later in life?

Supervisors: Dr William Schierding, Dr Maryam Tayebi, Wendy Mohi

Paris' project focused on the impact of methamphetamine use on the occipital lobe, the area at the back of the brain responsible for processing vision, and the white matter tracts, which act like communication pathways connecting different parts of the brain. Paris aimed to understand whether long-term methamphetamine use may damage or alter these pathways, potentially affecting how visual information is processed. By identifying these changes, Paris hopes their research can help lay the groundwork for future studies into how drug use impacts brain health, and how those effects might be detected, understood, or addressed earlier.

Paris' presentation explained the impact of methamphetamine on our communities, and why this work is important.

> "About $1.5 billion every year across Aotearoa, and almost $80 million in Gisborne alone. There's also around 2 kilograms of meth circulating locally each week, which is a huge amount for a small region. These aren't just statistics – they represent real people, real whānau, and real harm happening in our community. By better understanding how meth affects the brain and the visual system, we can help support prevention efforts, create better interventions, and hopefully contribute to reducing some of the harm shown here."



Mathew Sung

Gisborne Boys' High School

2nd year | Medicine and Surgery | Otago

Mātai–Woolf Fisher Internship

Sponsor: Woolf Fisher Trust

Are individuals with a history of traumatic brain injury more likely to have vision difficulties later in life?

Supervisors: Dr William Schierding, Dr Eryn Kwon

Mathew investigated whether individuals who have experienced a traumatic brain injury (TBI) are at greater risk of developing visual difficulties later in life using data from the UK Biobank. This research is important because TBIs are common following car accidents, falls, assaults, and sports-related injuries, yet their long-term effects on vision remain poorly understood. Given that vision depends not only on the eyes but also on complex neural pathways within the brain, TBI may result in persistent or delayed visual problems that are not immediately recognised. By using a large population-based dataset, this work aimed to clarify the relationship between TBI and later-life visual impairment, contributing to a better understanding of the broader long-term impacts of brain injury on health, quality of life, and functional independence.

> "This research project investigated whether individuals who have experienced a Traumatic Brain Injury (TBI) may be more likely to develop visual difficulties later in life. Using data from the UK Biobank, I ran many statistical models to explore outcomes such as visual dysfunction, reduced visual acuity, and eye-related diseases."

Matthew's work involved significant statistical interpretations. He analysed 22 statistical models and hopes to continue with further analysis and publish a paper.

Nicholas Kane

Saint Kentigern College

4th year | Biomedical Science | Auckland

Mātai–Rapanui Internship

Sponsor: Rapanui Trust

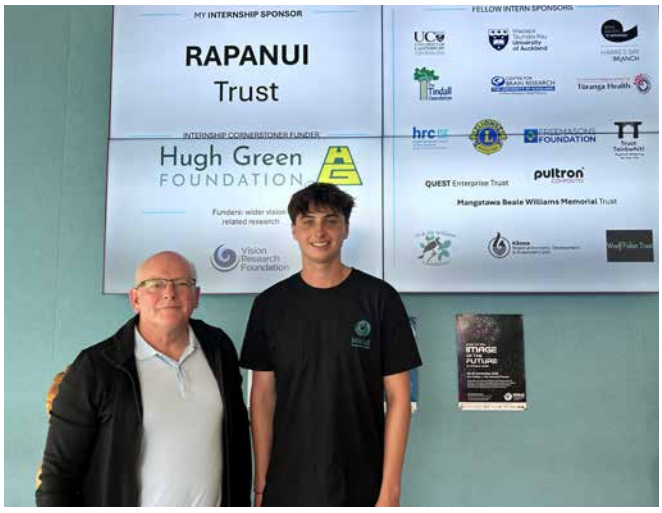
How do we study history of drug abuse in prospective cohorts, when drug abuse wasn't the primary research topic?

Supervisors: Dr William Schierding, Dr Maryam Tayebi

Nicholas investigated links between addiction-related behaviours – including alcohol use, smoking, illicit substance use, gambling – and visual dysfunction. Nicholas distilled thousands of lines of code into a few hundred, studied brain MRI scans, and found signs of inflammation in a brain pathway linked to visual memory and recognising objects. He also identified changes in pathways that carry visual information to the visual cortex, helping improve understanding of differences between healthy individuals, abstinent patients, and those with ongoing addictions.

Given the high prevalence of addiction in Tairāwhiti, this research may help uncover overlooked health impacts and improve understanding of differences between healthy individuals, abstinent patients, and those with ongoing addictions.

> "Mātai has given me the opportunity to reconnect with family I don't get to see often over the summer while having the opportunity to do a research internship... There have also been numerous opportunities to present in front of crowds, which has helped me grow in confidence in public speaking which is a key skill in any path that I choose to pursue."



Nicholas with Ian Chatfield from Rapanui Trust, whose longstanding support of Mātai, alongside the late Neil Weatherhead, has helped create opportunities for young people through the internship programme.

Frankie Muir

Tauranga Girls' College

2nd year | Medicine and Surgery | Otago

Mātai–Freemasons Foundation Internship

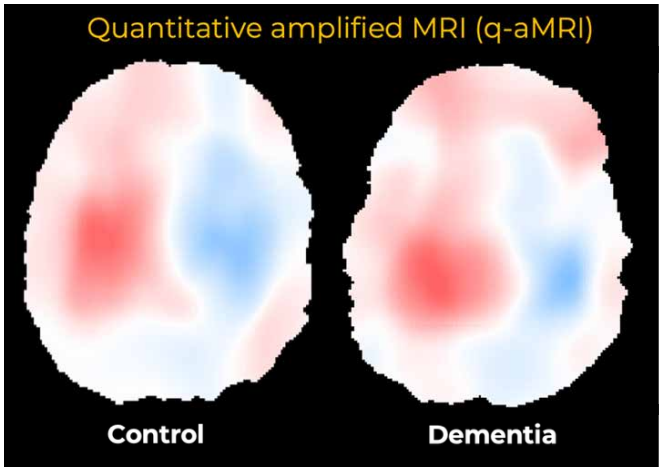
Sponsor: Freemasons Foundation

From reader study to publication: Characterising abnormal brain motion in amplified MRI

Supervisors: Associate Professor Samantha Holdworth, Dr Itamar Terem, Jet Wright

Frankie's project was based around using novel aMRI technology to analyse brain motion patterns. aMRI makes tiny brain movements easier to see, and Frankie's study explored how some people's brains moved in unusual ways compared with what is normally expected.

> "Amplified MRI is a method that amplifies brain motion, revealing the hidden dynamics of the brain. I attempted to identify and explain the physiology behind the abnormalities I'd found [in the brain]. I had to analyse the brain motion of the subject to determine whether the motion was impacted by the abnormality."



MRI method used by Frankie to classify brain movement patterns as normal or abnormal and investigate links to ageing and disease.
Below: Frankie with her grandparents Michael and Anne Muir.

Naiya Powley

Gisborne Girls' High School

1st year | Health Science / Physiotherapy | AUT

Mātai–QUEST Internship

Sponsor: QUEST Enterprise Trust

Developing a Respiratory Gas Analysis Pipeline for Reactivity Studies

Supervisors: Dr Sergio Dempsey, Dr Josh McGeown

Naiya's project focused on developing a system that links real-time oxygen and carbon dioxide measurements with MRI scans. This work supports studies investigating how the brain responds to changes in blood gases, helping to improve understanding of vascular function in both healthy individuals and people living with conditions such as stroke or sleep apnoea.

> "My project was a big highlight for me. I was lucky enough to have a very hands on project where I got to actually run a study and scan participants in the MRI - I've really enjoyed having that hands on research experience. It has also been awesome being able to return home and still learn so much in my summer break and all of these skills and knowledge I can take back with me to university".

Naiya with the help of interns Matthew Sung (lying down), Ky Bartlett, and Noah Mason. Naiya reviewing the data from the study in real time with Mātai technologist Taylor Emsden.

Miah Somerton

Te Atiawa, Ngati One One
Campion College
1st year | Physiotherapy | AUT
Mātai–Tindall Internship
Sponsor: Tindall Foundation

Māori Data awareness in Mātai Research Projects

Supervisor: Dr Oka Sanerivi, Leigh Potter

Miah explored Māori perspectives on research data use, contributing to the strengthening of Māori data sovereignty at Mātai. Findings aim to inform Mātai's research processes and policies, ensuring alignment with Māori Data Sovereignty and that Māori data is managed in line with Māori values, rights, and expectations. The project also explored how Māori participants understand the use of their data and how future research engagement can better support informed, respectful, and culturally appropriate participation.

> "Being part of a programme so deeply connected to the Tairāwhiti community has been incredibly grounding. It's shown me how research can be done in a way that respects people, culture, and data as taonga. This experience has reinforced my interest in healthcare and research that is grounded in people, relationships, and community. It has also highlighted how interconnected healthcare is, and the importance of working collaboratively within a multidisciplinary team to deliver effective care".

Cheidan Moetara

Rongowhakaata, Ngāti Porou
Manutuke Kura a Iwi
1st year | Health Science | Auckland
Mātai–Tūranga Internship
Sponsor: Tūranga Health

Tairāwhiti Child Well-being Study

Supervisor: Leigh Potter, Zara Potter

Cheidan contributed to the Tairāwhiti Child Wellbeing Study, which aims to better understand what "normal" health looks like for tamariki and rangatahi in a rural Tairāwhiti context. Through this project, Cheidan gained hands-on experience in health research and learned how tools such as medical imaging can help detect early signs of health issues in children. She hopes this mahi will support earlier intervention and more effective, community-led approaches to improving child wellbeing in the region.

> " I was able to include some children from local kura kaupapa Māori in my project, and the feedback was very positive coming from the parents, saying it was really good for their tamariki to see someone like them, in a flash space like this. And that I was showing them that kura kids, can belong in these places too. I also enjoyed sharing my whānau with everyone".

Cheidan with Susan Pineaha from Tūranga Health. Tūranga Health is a major partner of Mātai and has collaborated on a wide range of initiatives, including undergraduate and intern scholarships, community outreach programmes, whānau days, and research projects aimed at improving health and workforce outcomes in Tairāwhiti.

Keeley Cairns

Gisborne Girls' High School

3rd year | Biomedical Science / Genetics | Victoria

Mātai–Pultron Internship

Sponsor: Pultron Composites

Outcome measure assessment protocol pilot trial – for the DECODE (Diabetes Education and CGM Or Diabetes Education Alone) RCT

Supervisor: Dr Tim Salmond

As a returning intern, Keeley contributed to early feasibility work for a clinical research project focused on improving outcomes for people living with Type 2 diabetes or pre-diabetes. She assisted with assessment preparation, participant clinics, metabolic testing, and sample handling, while gaining valuable clinical research experience.

Through a literature review, Keeley explored metabolic flexibility – the body's ability to switch between carbohydrates and fats for energy – which is often reduced in Type 2 diabetes. Encouragingly, research suggests this can be improved through exercise, lifestyle changes, and targeted treatments.

> "Coming home to Tairāwhiti for this internship means a lot to me. It's a chance to apply what I've learned, support a project that directly benefits our community, and grow the skills I'll need for a future in clinical research and healthcare. That need to serve communities, and eventually come home to serve my own here in Tairāwhiti, became very clear through this experience. Because of that, I'll be continuing my study this year through a Master of Nursing Practice, with the hope of one day specialising in an area where I see there is real need, or progressing towards becoming a Nurse Practitioner."

Keeley with her grandfather, David Scott, former Chair of Te Whatu Ora Tairāwhiti (left) and a longstanding supporter of Mātai, and her internship sponsor, Dr Peter Holdsworth (right).

Noah Mason

Gisborne Boys' High School

1st year | Biomedical Science | Auckland

Mātai–Royal Society Internship

Sponsor: Royal Society Hawke's Bay Branch

Implementing Strain Analysis: Does Strain or Displacement Better Stratify Group Differences in Brain Motion?

Supervisors: Dr Sergio Dempsey, Jet Wright

Noah worked across a number of projects. One explored whether measuring how brain tissue deforms (known as strain) can better detect differences in brain health using Mātai amplified MRI (aMRI) technology. The aim of the project was to determine whether strain-based measures could more clearly distinguish between different groups, such as people living with dementia and healthy control participants.

> "Coming to Mātai never felt like a typical job; each day was something I genuinely looked forward to, and the supportive, well-structured programme made learning both enjoyable and meaningful. Highlights such as waiata, leadership sessions, and working alongside organisations like Tūranga Health strengthened my sense of connection to both the team and the wider community. The internship helped me develop skills both practical and transferable, while also giving me clarity around my future career path, showing me both what I am drawn to, and what does not work for me which I think is equally valuable. From here I aim to finish my degree in bioscience and finance and eventually navigate back into research."

Trying out a gas mask to allowing comparison of brain images collected while breathing normal air and pure oxygen, with Naiya Powley.

Tui Cave

Rongowhakaata
Iona College

1st year | Engineering | Canterbury

Mātai–Woolf Fisher Internship

Sponsor: Woolf Fisher Trust

"The main objective of this study was to improve the consistency and objectivity of UHC-MRI brain scan interpretation. We worked together to develop a pipeline that could accurately isolate the brain, identify consistent regions across scans, and extract signal values suitable for comparison with radiologist assessments." - Tui Cave

Ned Clarke

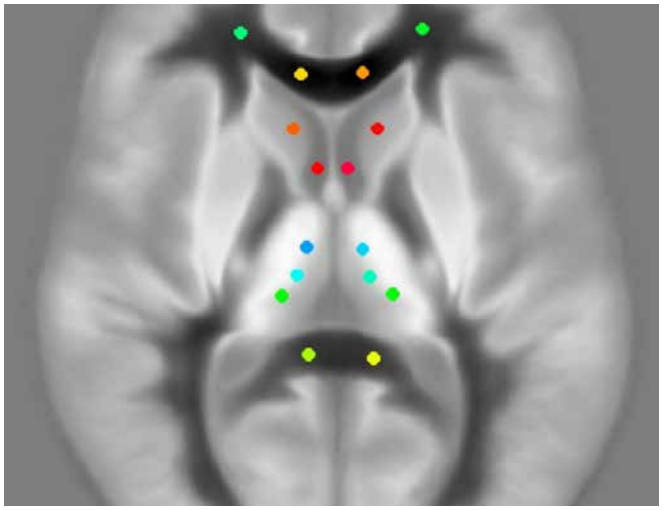
Ngāti Porou, Ngāpuhi, Rongowhakaata
Gisborne Boys' High School

1st year | Biomedical Science | Auckland

Mātai–Lions Internship

Sponsor: Gisborne Host Lions Club / Gisborne Wainui Lions Club

One of the highlights was learning the fundamentals of medical imaging processing - gaining hands-on experience in coding, brain segmentation, and turning raw scan data into meaningful images. This included understanding how images are refined behind the scenes, from reducing noise to improving accuracy, and showed me how imaging can produce clear, reliable data for both research and clinical use." - Ned Clarke



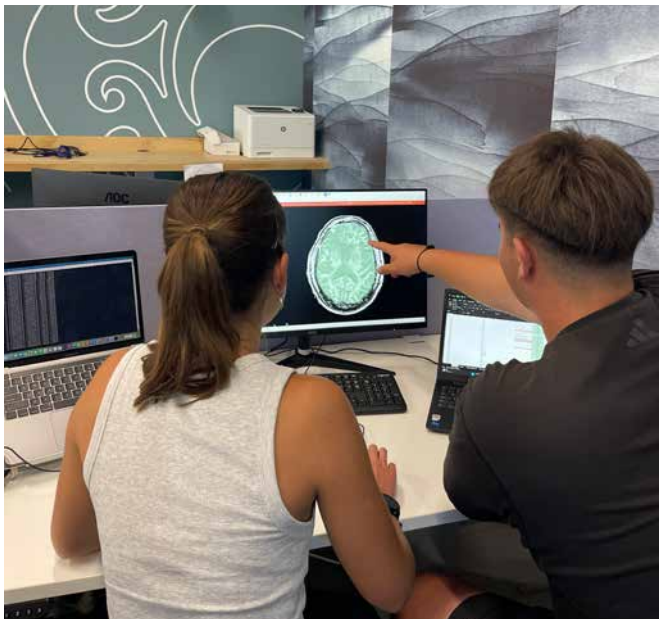
Brain template generated from more than 100 brain scans. The Coloured dots indicate the regions of interest used for further analysis.

Creating Quantitative Mapping of Different Regions on the Brain Using UHC Sequence

Supervisors: Dr Maryam Tayebi, Christian Saladur, Dr Eryn Kwon

Ned Clarke and Tui Cave collaborated on a project developing quantitative methods to analyse ultra-high contrast MRI (UHC-MRI) brain scans. UHC-MRI is an emerging imaging technique being advanced at Mātai, with potential to enable earlier and more reliable detection of neurological conditions such as multiple sclerosis, Alzheimer's disease, stroke, and brain tumours.

Their work focused on improving the consistency and objectivity of UHC-MRI interpretation by shifting from purely visual assessment to quantitative analysis. They contributed to the development of a processing pipeline that isolates the brain, identifies consistent anatomical regions across scans, and extracts comparable signal measurements. This work supports the validation and clinical translation of UHC-MRI as a robust tool for brain imaging

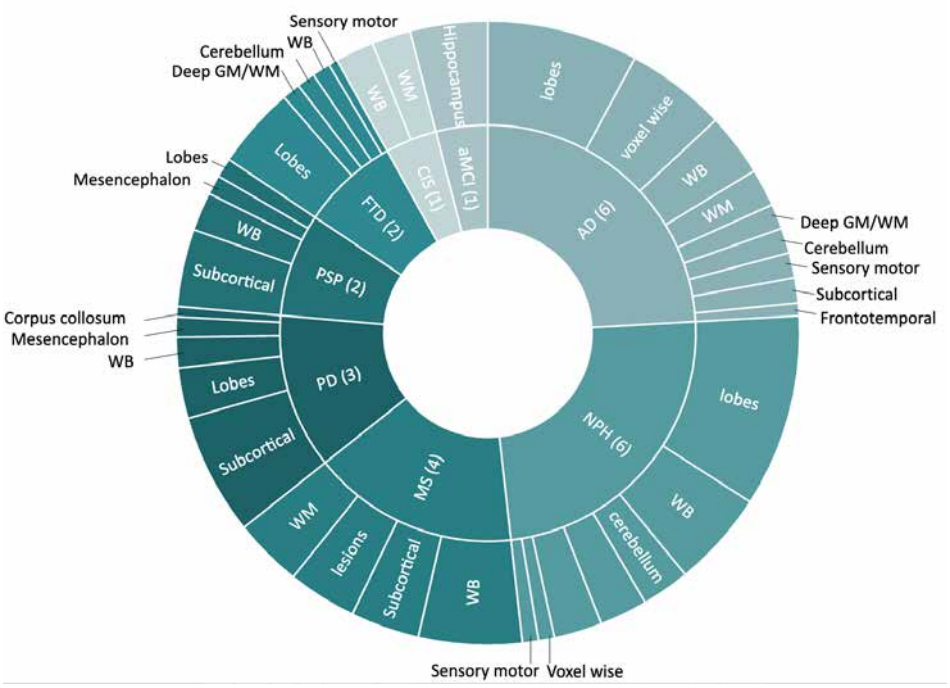


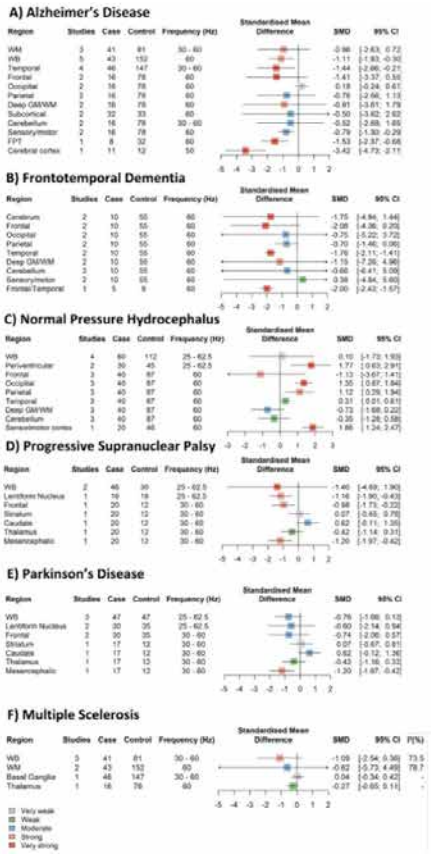
Tui Cave and Ned Clarke worked together on developing quantitative approaches to a new MRI method that could help with better detection of brain disorders.

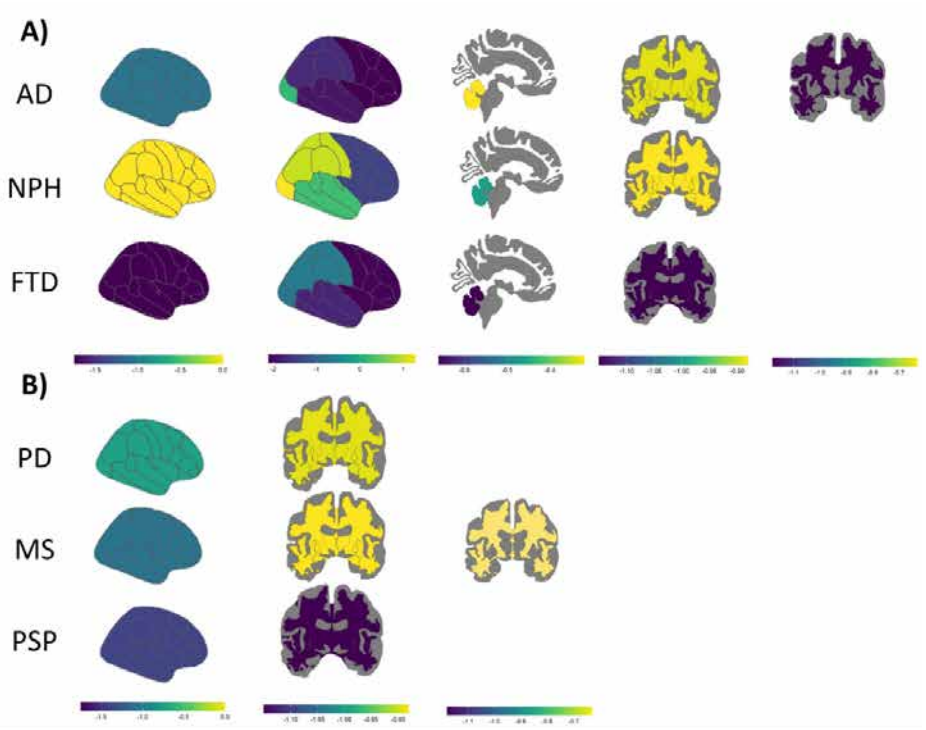
Scientific & Research Foundations

Data, Ethics & Evidence in Research

In the Data Management, Ethics, and AI session, Dr Kwon explained the data and ethical requirements underpinning research, including Indigenous research. The session covered topics such as statistical controls, data storage, safety, privacy, data management and analysis, and the various forms that data can take.





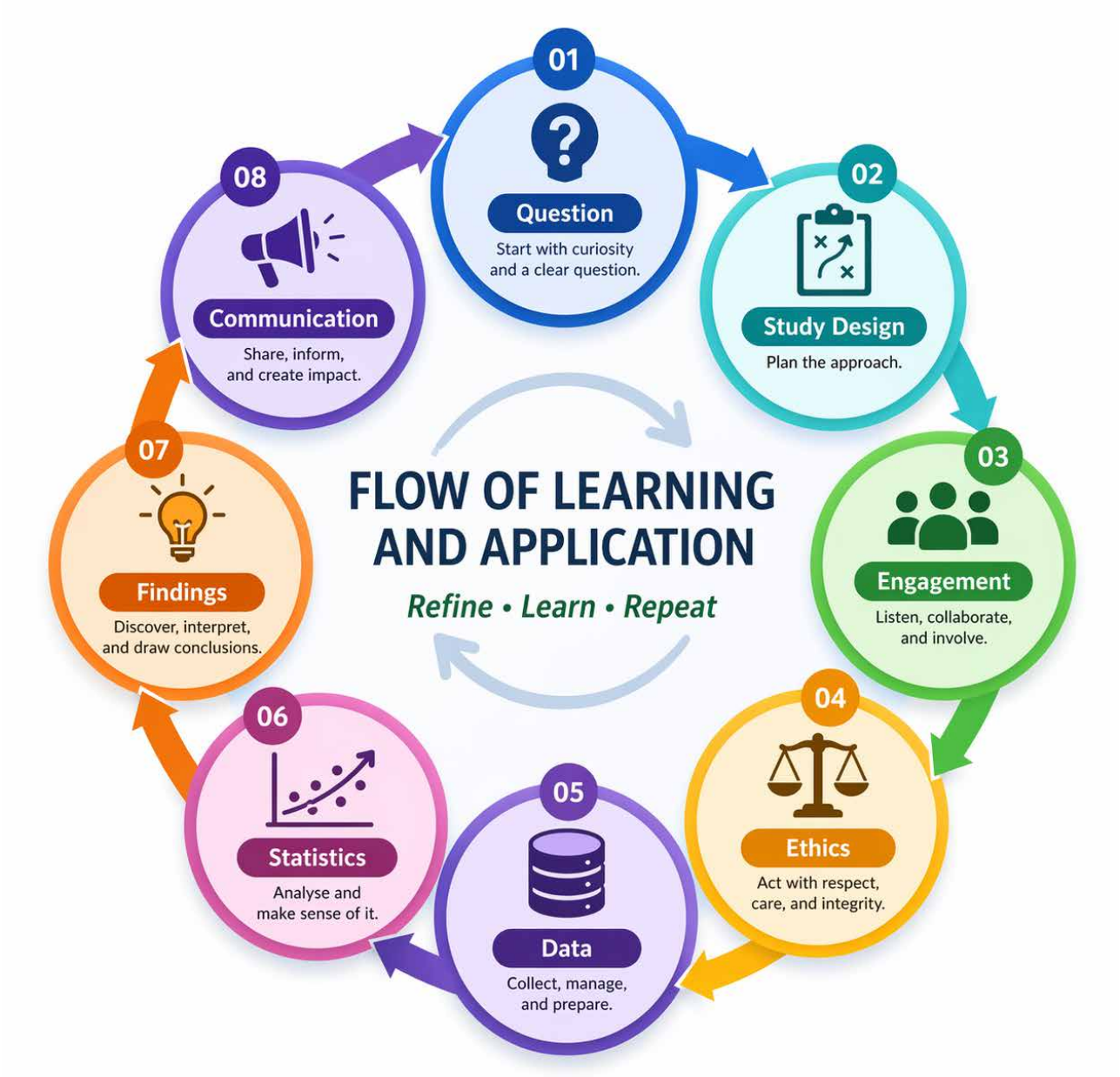


In a literature review session, Dr Eryn Kwon showed the students a systematic overview of using examples from the MR Elastography review her group is undertaking (PhD student: Jacob Mathew), showing (1) a high-level map of how the literature is distributed across conditions and brain regions and (2) regional effect sizes across diseases.

Research Methods

Weekly research methods sessions, led by Dr Josh McGeown, provided a comprehensive and practical introduction to the research process – from developing research questions through to study design, ethics, statistics, and science communication. Early in the programme, students were encouraged to formulate multiple research questions and carry selected ideas through subsequent sessions, helping them see how each stage of research builds on the last.

The sessions were highly interactive and engaging, with students actively developing and refining their own ideas. Dr McGeown frequently drew on real-world examples and personal experiences, helping to contextualise complex concepts and demonstrate how research principles are applied in practice. This hands-on approach built both confidence and enthusiasm for research, while strengthening understanding of the full research cycle.



> "Dr McGeown's teaching style was highly engaging and interactive, with sessions structured to require active participation. He frequently drew on personal experiences and real-world research examples, which helped contextualise complex concepts. This interactive approach not only strengthened our understanding of research theory but also emphasised how these principles are applied in practice." – **Keeley Cairns**

How MRI Works

Emeritus Professor Terry Peters introduced the students to how MRI works. MRI scanners use powerful magnets and radio waves to create detailed images of the inside of the body. Because much of the body is made of water, the scanner can detect signals from hydrogen atoms within these molecules. When placed in a strong magnetic field, these atoms briefly change alignment and emit signals as they return to their original position. Computers convert these signals into detailed images, allowing researchers and doctors to study the brain and other organs safely and without radiation.

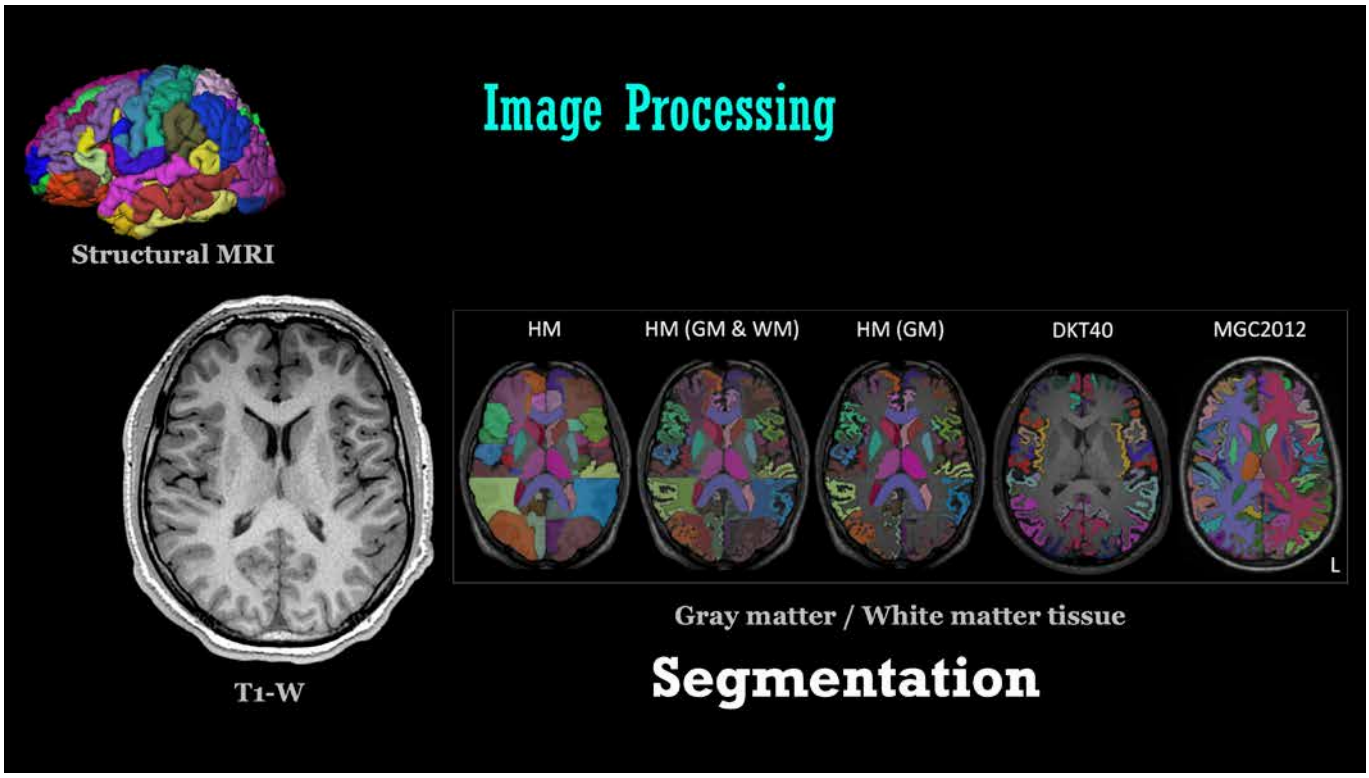
Mātai Charge MRI technologist Taylor Emsden gave two lectures on Basics of MRI and MRI safety. She spent significant time with the interns at the MRI scanner interface, teaching the practicalities of scanning and introducing the basics of MRI in a hands-on setting.

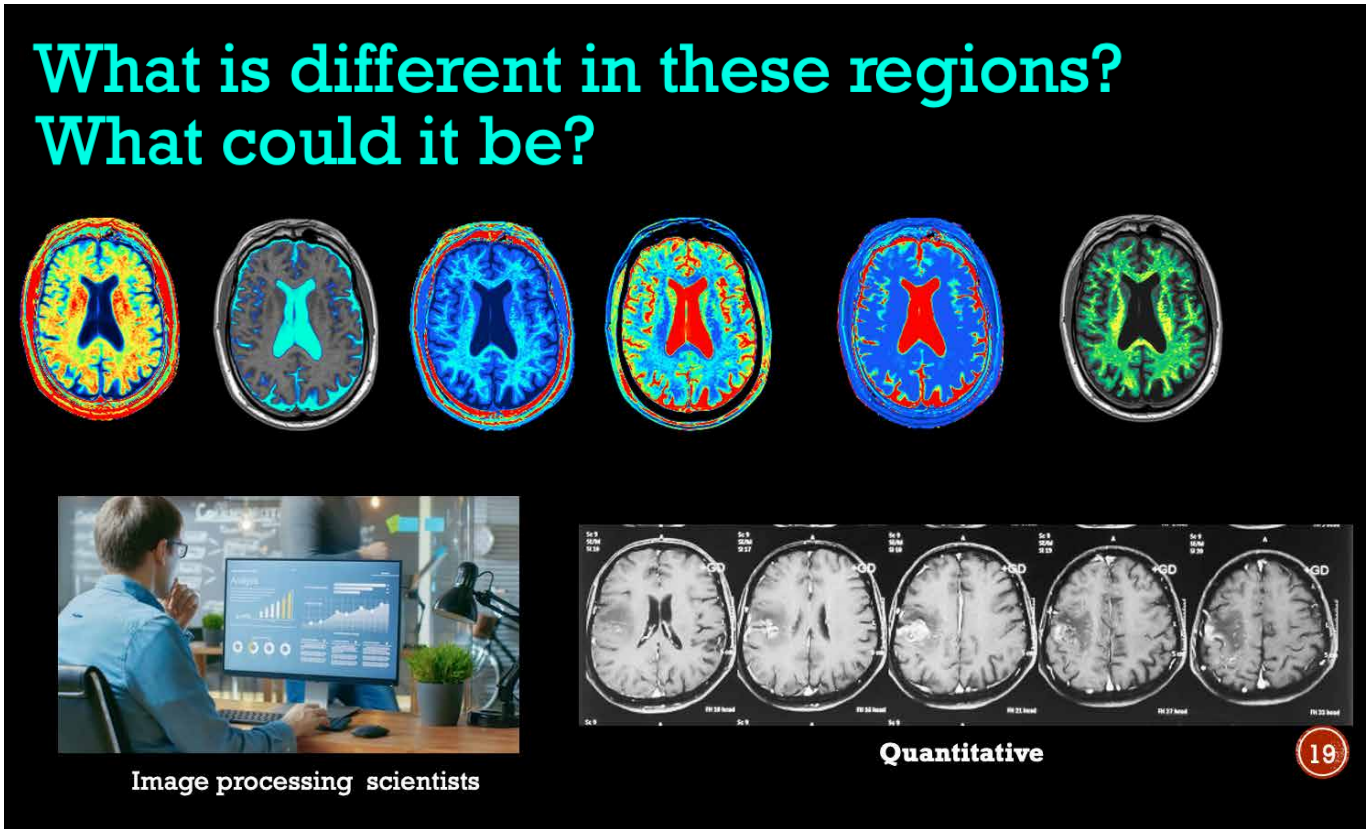
"Through a one-week series of lectures, Emeritus Professor Terry Peters from the Robarts Research Institute explained the complicated physics and maths behind MRI. His love for science, combined with his sense of humour, helped create a relaxed and welcoming environment where even the hardest ideas felt manageable. He encouraged questions and discussion, which made learning more engaging and less intimidating." – **Ella Arthur**

Emeritus Professor Terry Peters and Jackie Williams joined Mātai for two weeks, generously sharing their time, knowledge, and mentorship. Terry led sessions within the MRI course, while together they supported and inspired our interns, becoming a valued part of the Mātai whānau.

Medical Image Processing

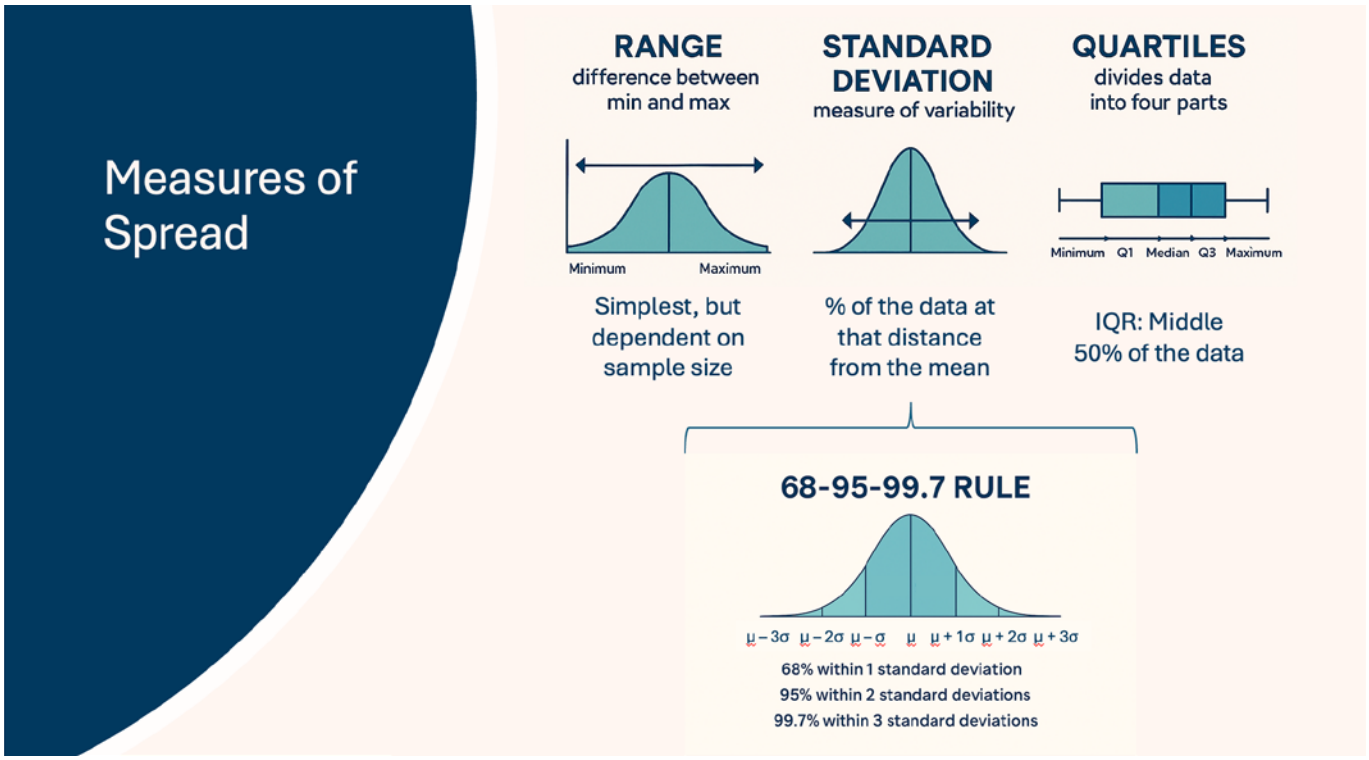
Students learned the basics of medical image processing, and had the chance to learn coding, brain segmentation, and worked through how you turn raw scan data into clear images that can actually be used for research. They got to see “behind the scenes” before an image is ready for analysis, and they were able to look at ways to improve image quality, reduce noise (static), and make segmentation more accurate, so the final images give cleaner and more reliable information for research and clinical use.





Introduction to Statistics

Dr William Schierding taught the fundamentals of statistics and emphasised their essential role in research. He covered key concepts such as probability, odds, sensitivity, specificity, measures of data spread, as well as the different types of data particularly the distinction between categorical and numerical variables. He also discussed some common statistical misconceptions, including the Base Rate fallacy, the Monte Hall problem, and the Doomsday hypothesis.



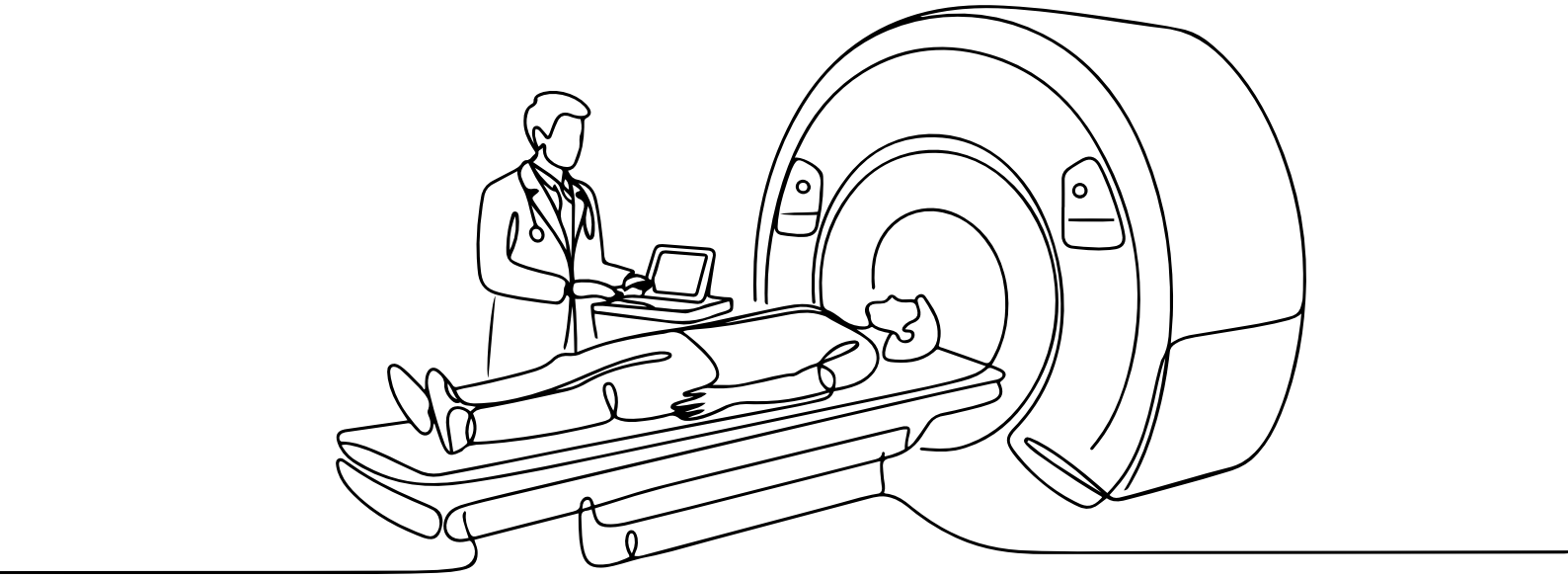
Kaupapa Māori Biomedical Research

Dr Jordon Lima described Kaupapa Māori biomedical research as a holistic, Māori-led approach grounded in mātauranga Māori, tikanga, and relationships. Her PhD focused on developing Tairāwhiti-specific ctDNA clinical protocols in partnership with local communities.

She also led a genetics session, sharing how she integrated Māori principles into her research in genetics and molecular biology, and introduced Pītau Error, her game that teaches genetics and biochemistry through storytelling and te ao Māori.

Dr Jordon Lima at her PhD defence (2nd Feb 2026) attended by the interns.

Ella and Imogen playing Jordon's Pītau Error game.



Journal Club

The Mātai journal club sessions were a key part of the internship, giving students the opportunity to read, interpret, and discuss scientific journal articles in a supportive group setting. Choosing their own articles and presenting the key ideas encouraged students to think critically about the research and how best to communicate it to the audience. These sessions helped build confidence in presenting scientific information clearly, while also improving our ability to search for reliable sources and evaluate the quality of research.

> "The programme has allowed me to apply my academic learning in a real-world. I have developed practical research and communication skills, gained confidence working in professional environments' — **2025/2026 Mātai Intern**

Jamila Fleming (top right) and Imogen Amor-Bendall (right) presenting and discussing a journal article in a journal club session with the 2025/26 summer intern cohort.

Advanced Topics & Guest Lecturers

Entrepreneurship

Mary Spring and Jardin Green from Momentum presented a session on entrepreneurship where students learned about the process of developing innovative solutions to real-world problems and effectively pitching ideas. Working in groups, they identified an everyday problem and collaboratively designed a practical solution. They then engaged with other Mātai researchers to seek feedback, refine ideas, and strengthen the approach before pitching to the wider group. This session highlighted the importance of creativity, collaboration, and communication in entrepreneurship, as well as the value of incorporating diverse perspectives to improve and validate ideas. It was special for the students to hear from Gisborne local Mary Spring, who is also undertaking postdoctoral research in Obstetrics and Gynaecology at the University of Auckland, demonstrating the exciting pathways available from regional New Zealand into world-class research and innovation.

Jardin Green (front) and Gisborne local Mary Spring (thumbs up at the back) with the interns.

Inclusive Research for Neurodevelopmental Needs

Dr Sarah MacEachern shared insights from her work in pediatric and developmental medicine, emphasising a holistic approach that integrates clinical care, research, and personal development. She highlighted the importance of understanding the whole child, considering biological, social, and developmental factors, rather than focusing on isolated symptoms. Drawing on her experience in Canada, she showed how mentorship, early research exposure, and career guidance help young clinicians and researchers build confidence and purpose.

AI for Medical Images: From Science to Application

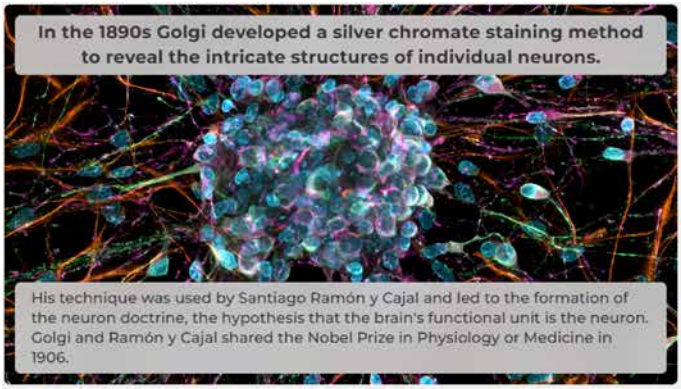
"We thoroughly enjoyed connecting with Sarah and Nils and left inspired by their visit." — **Ned Clarke**

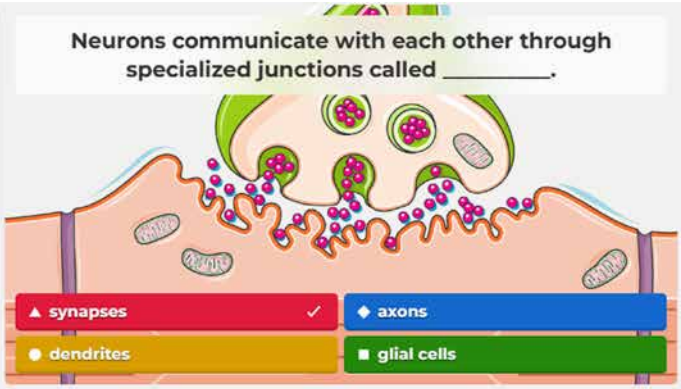
Professor Nils Forkert delivered an insightful and engaging overview of his team's work at the intersection of artificial intelligence and medical imaging, highlighting how advanced computational methods can meaningfully support clinical and pre-clinical research. His research focuses on developing machine learning tools that extract clinically relevant biomarkers and enable more precise, patient-specific prediction models. A key element of his work involves pioneering learning systems that allow AI models to be trained across multiple clinical sites without requiring patient data to be centrally pooled. This approach preserves privacy while still enabling robust, multi-institutional model development.

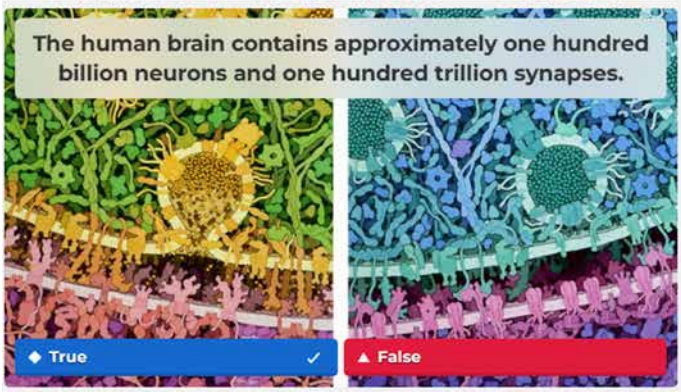
Introduction to Neuroscience

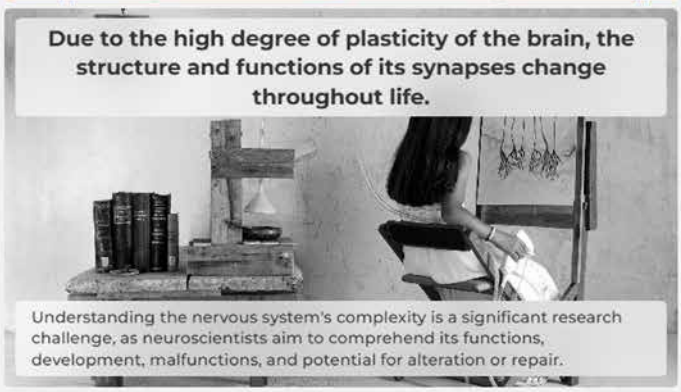
Mātai PhD students and former interns Ben Bristow, Katie Blackburne, and Jet Wright presented an introduction to neuroscience. The session covered the basics of how the brain works, from its smallest building blocks to the larger systems that shape behaviour. The aim was to make neuroscience approachable and easy to understand, giving interns a simple foundation to build on as they begin exploring the field, and gave the students a solid, easy-to-grasp foundation for understanding how the brain shapes behaviour, stress, and learning in the communities we work with.

"The session connected the science to real life experiences of rangatahi and whānau in a way that felt practical and relevant. It was genuinely enjoyable, engaging, light, and surprisingly fun for a topic that can get technical fast. It set us up well for the rest of the internship, giving us shared language and insight to carry into our mahi." – **Jamila Fleming**









AI in Research

Simeon Alford demonstrated how AI-driven advancements can be meaningfully integrated into a research session by combining practical applications with critical discussion. AI is transforming research by accelerating data analysis, improving diagnostic accuracy, uncovering patterns in complex datasets, and supporting more personalised approaches to patient care. These sessions emphasised the need for responsible implementation, interdisciplinary collaboration, and the importance of human oversight.

The Future Embraced

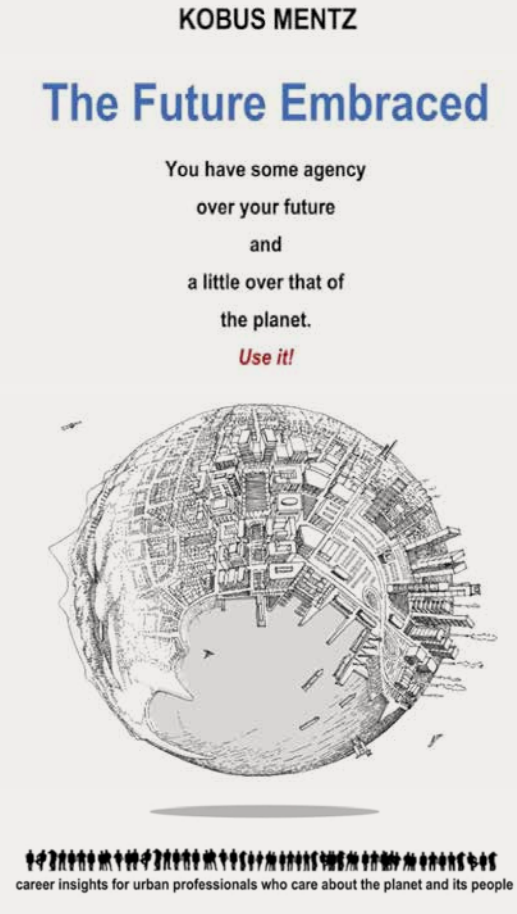
Kobus Mentz's workshop, based on The Future Embraced, encouraged Mātai interns to see themselves as active shapers of the future. Each intern received a copy of the book, reinforcing the idea that navigating the future is a skill that can be developed. He emphasised adaptability, curiosity, and purpose-driven work in a rapidly changing world, while highlighting the growing importance of human skills such as empathy, communication, and cultural understanding. Interns were challenged to embrace uncertainty, think creatively about their pathways, and consider how their work could contribute to improving health outcomes and equity in Aotearoa.

Friday Seminar Series

Held weekly, the Mātai Friday lunchtime seminar series created a relaxed and welcoming space where interns, staff, and visitors could come together to share ideas, hear about new research, and connect across different areas of the institute.

Some seminars featured invited speakers from New Zealand and overseas presenting on topics such as MRI, brain health, and artificial intelligence, and others were more informal. These sessions often provided an opportunity for Mātai researchers and staff to share early-stage ideas, test new concepts, or practice upcoming presentations in a supportive environment.

For interns, this was a window into the real-world research environment – where ideas are still evolving, collaboration is ongoing, and learning happens through open discussion. It also helped them to engage with experienced researchers and see how scientific thinking develops over time.



Community Engagement & Real-World Connection

Hospital Waiata

Many of our interns describe the weekly waiata as one of the most meaningful highlights of the programme.

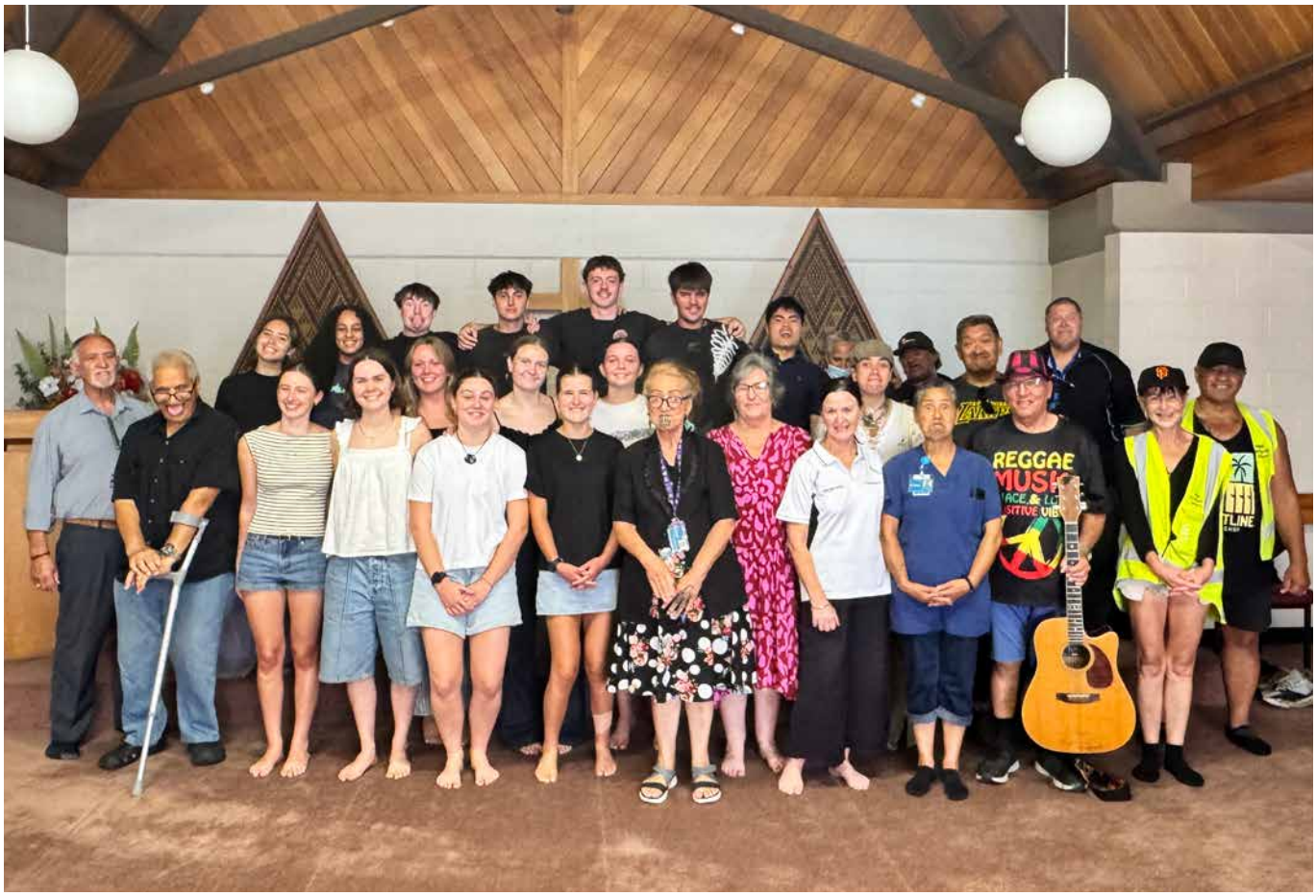
Each Thursday morning, interns joined hospital staff, patients, and kaumātua for waiata – a shared space grounded in reflection, wairua, and kotahitanga. Led by Mātua Owen Lloyd (see tribute page 3), these sessions were more than just song; they were a living expression of tikanga Māori, strengthening connection, uplifting wellbeing, and anchoring our interns in a deep sense of belonging.

Mātua Owen brought warmth, humour, and quiet leadership to each gathering. He had a special way of drawing people in, and it was clear how much he cherished the presence of rangatahi. The interns, in turn, brought energy and joy, and together, those moments filled the room, and the spirit, in a way that words can't quite capture.

Through waiata such as Tōku Reo Tōku Ohooho, Wairua Tapu, and Hareruia, our interns experienced the unifying and restorative power of collective voice – something that many say will stay with them long beyond the programme.

> "Waiata was a highlight of my week that I would look forward to every Thursday morning, it felt amazing to be able to be a part of something so positive and uplifting." **— Naiya Powley**

> "At Mātai, we hold space for our interns, particularly Māori, to be proud of who they are, grounded in where they come from, and confident in where they're going. Through manaakitanga, kotahitanga, and kia māia, our internship programme builds capability, strengthens connection, and creates pathways into health and research. We hope they leave inspired to return home and help uplift the health and wellbeing of our people for generations to come" **— Leigh Potter (COO Mātai)**



The Tūranga Health kaumātua day at Mātai welcomed nearly 300 attendees. The event was supported by the intern rōpū, who prepared kai and embodied manaakitanga throughout.

Tūranga Health Kaumātua Programme

The interns hosted nearly 300 kaumātua from Tūranga Health who were eager to learn more about the work taking place at Mātai. They formally introduced themselves through their pepeha, creating a powerful foundation for whakawhanaungatanga. Through shared connections to whenua, whakapapa, and whānau, conversations quickly moved beyond introductions into meaningful relationships – with many discovering common ties and shared histories.

The kaumātua warmly acknowledged the interns for the way they connected through their identity, their backgrounds, and for how they spoke about their studies and research at Mātai and the potential it holds for the future. What stood out was their ability to translate their work into real-life impact, helping kaumātua see how this next generation is contributing to the wellbeing of our people.

The visit concluded with a tour of Mātai, where interns showcased the advanced technology and tools they use – bringing to life the intersection of mātauranga, innovation, and community.

> "My experience at Mātai has been connecting my communities, alongside all the development opportunities. I connected with lots of people I knew as part of this journey. From my little cousins and old kura who did the pohiri at the symposium to my grandparents and great-grandmother who were here with us on the kaumatua open day. My big nan loved showing me off to all her kaumatua friends" **— Cheidan Moetara**

Manawaru Café & the Elgin Hub

Manawarū Café, run by Tūranga Health within the wider Elgin Hub in Tairāwhiti, is a community-led space designed to support whānau wellbeing in a holistic, accessible, and culturally grounded way. Operating on a koha model for kawhe and kai, the café removes financial barriers and creates a welcoming environment where whānau can come together, connect, and feel supported. It is a space for kōrero, relationship building, and simply being — helping to reduce isolation and strengthen belonging.

Alongside the café, the hub includes spaces such as Kia Maia – Wellness Studio, supporting tinana and hinengaro through movement, learning, and community-led initiatives. Together, these spaces reflect a kaupapa Māori approach to hauora, creating safe and relational environments where trust is built over time and whānau voice is valued.

> "The Manawaru Café sessions were a really valuable first-hand experience that showed how health organisations operate and how they actively work to reduce health disparities. I particularly enjoyed volunteering at the Elgin Back to School Day, as it allowed me to see clearly the positive impact Tūranga Health was having on the local community and gave us insight into the process of how community projects are planned and implemented." **— Nicholas Kane**

Tūranga FM

Our interns spent time with Rahia Tumutumu and Mātai Smith from Tūranga FM to kōrero about the mahi they are doing at Mātai, their internship projects, and their study at university. Tūranga FM has been a valued supporter of Mātai, consistently providing a platform to share our kaupapa with the wider community and uplift the voices of our rangatahi.

This has given our interns the opportunity to build confidence, strengthen their communication skills, and connect with whānau across Te Tairāwhiti. We are grateful for the ongoing support and generosity of the Tūranga FM team in championing our work and our people.

Jamila Fleming, Ky Bartlett, and Ned Clarke in the studio, getting ready for their interview.

> "I am much more motivated to return home and give back to my community. I am also a lot more confident in myself and comfortable to present in front of a room full of people I don't know."

> "This internship has helped grow my confidence in my abilities and in sharing my ideas in a professional setting. It also gave me hands-on experience and a better understanding of working in a research and health environment, supporting my overall professional development."

Mātauranga Māori & Pacific Perspectives

Mātauranga Māori Sessions

Poipoia te kākano kia puawai
(nurture the seed so it may blossom)

Led by Mātai COO Leigh Potter, these sessions combined in-house learning and out-in-community experiences with experts in mātauranga Māori, grounding interns in te ao Māori through kōrero, lived experience, and connection – brought to life through activities such as toi Māori with Johnny Moetara; pūrākau shared by Ra Keelan; and kōrero with Nick Tupara – whose work forms part of the Tupapa heritage trail. The sessions also highlighted how, when Māori and community providers work together, stronger and more connected pathways can be created to uplift health outcomes for hapori Māori.

The programme included Friday waiata alongside Mātai staff, led by Kaiārahi Tikanga (Cultural Advisor) Davidson Taylor. Interns also learned and practised the Mātai waiata – a taonga gifted by Kaumātua Dave Para – strengthening connection through shared kaupapa.

Leigh Potter (Mātai COO) and Davidson Taylor (Mātai Kaiārahi Tikanga | Cultural Advisor) who facilitated the mātauranga Māori sessions.

Kava Ceremony & Pacific Talanoa

Pasifika culture is intimately linked with te ao Māori through shared Polynesian genealogy, linguistics and historical narratives via te Moana Nui a Kiwa, the great Pacific Ocean. The kava ceremony is an important cultural tradition in many Pacific Island societies, where people gather to prepare and drink kava together as a way to show respect, strengthen community bonds, and mark important social or ceremonial occasions. Gathering around kava provides a warm and welcoming environment for opening talanoa, relational dialogic spaces.

Dr Oka Sanerivi led a talanoa (narrative dialogue) with the interns focused on Pacific peoples, cultures, health and wellbeing. The talanoa session enriched the student's understanding of Pasifika cultures, communities and Pacific ways of knowing and being.

Te Puhi Kai Iti - Part of the Tupapa Heritage Trail

The students were privileged to take part in a guided tour through Te Puhi Kai Iti, part of the Tupapa Heritage Trail, led by Nick Tupara, designer of the Te Maro artwork at the Ruatanuika lookout on Kaiti Hill. Through storytelling and artistry, Nick shared the histories embedded within the whenua, including the significance of Te Maro, the arrival of waka, and the landing of James Cook at Tūranganui-a-Kiwa. He highlighted how Māori and European histories intersect within the landscape while centring enduring iwi narratives and connections to place. The carvings and designs reflected inquiry, exploration, and connection to the environment, weaving together history, identity, and mātauranga Māori. The experience gave interns a deeper connection to place and showed how art, culture, research, and storytelling are intrinsically linked. It strengthened their understanding of Te Maro as both a significant tūpuna and a symbol of innovation and knowledge that continues to inspire research and discovery today.

Toi Māori

Through Johnny Moetara's toi Māori class at Te Wānanga o Aotearoa, interns explored traditional patterns such as pūhoro and mangōpare, which symbolise speed, strength, and resilience. The session offered more than artistic learning – it provided insight into the stories, values, and meaning carried within these designs, deepening interns' connection to te ao Māori and the importance of cultural expression.

Pūrākau and Māori Worldviews

Ra Keelan's kōrero wove together pūrākau and Māori mythology, creating a rich and engaging way of understanding the world. Through storytelling, he brought ancestral knowledge to life, highlighting the connections between people, place, and identity. He also spoke about the history of tā moko and tattooing, explaining how different patterns and forms carry links to specific iwi, islands, and the natural environments they come from. These markings reflect deep relationships with whenua, moana, and ancestral landscapes, showing how identity is shaped by both whakapapa and place. The session encouraged interns to think more deeply about the stories that shape us, and the importance of carrying these narratives forward.

Navigating Pathways as a Minority

Here, Leigh Potter shared her journey of working within a profession where she was often in the minority, reflecting on the challenges of navigating spaces where Māori perspectives were not always visible. She spoke to the resilience required to remain grounded in identity and whakapapa while progressing in a highly technical field. A deep passion to uplift hauora for whānau has guided her path, transforming challenges into purpose. Leigh acknowledged the importance of champions who supported her along the way, with a special tribute to Papa Taina, whose belief and guidance were instrumental – particularly in the establishment of Mātai. She also highlighted the importance of visibility, ensuring the next generation can see themselves in these spaces and feel safe, empowered, and confident to step forward. The session provided interns with a candid and inspiring insight into what it means to walk in two worlds, and the strength it takes to not only succeed, but to create space for others to follow.

> "My time at Mātai, along with [Leigh's] mentorship and meaningful kōrero has given me real confidence and optimism about my future goals." – **Jamila Fleming**.

Leigh Potter, Dr Samantha Holdsworth (Mātai CE/Research Director, AP University of Auckland), and Kaumatua Taina Ngarimu.

Events

He Kākano Aotearoa

At the beginning of the Internship, the students had the opportunity to attend the 2025 He Kākano - Aotearoa Variome launch. He Kākano is the first Indigenous-led genomic reference resource of its kind in the world, reflecting the diverse whakapapa of Māori and addressing gaps in existing genetic databases. Led by Genomics Aotearoa at the University of Otago, alongside Māori researchers and health providers including Ngāti Porou Oranga, the project aims to ensure genetic testing and healthcare are safer and more accurate for Māori.

Huti Puketapu-Watson (Ngati Porou, Tainui) presenting at the Aotearoa Variome launch.

> "We heard from key members of the team who discussed their collaborative mahi with over 1,000 Māori from across the motu. This allowed them to create a genome database for the benefit of future generations. A highlight of the event was hearing stories about how this data has influenced medical diagnosis and decisions which led to life saving outcomes." **— Ned Clarke**

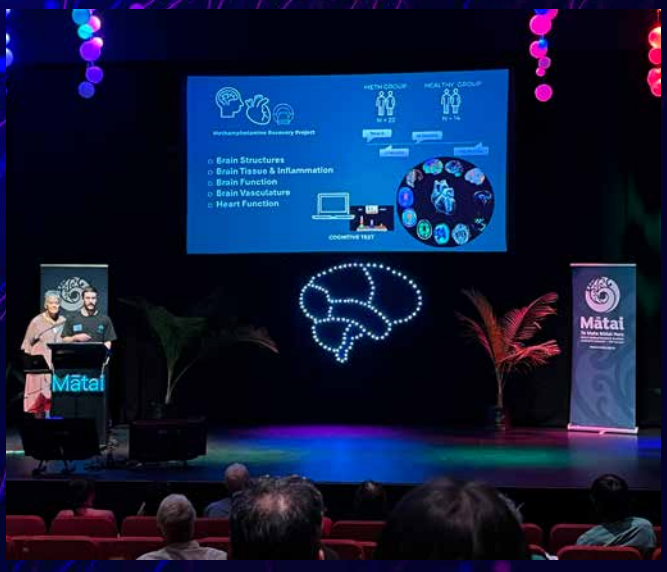
Mātai Summer Internship: In the Interns' Own Words

Mātai Symposium 2025

The Mātai Symposium 2025 brought together over 60 speakers across advanced MRI, AI and digital twins, neuroscience, precision medicine, community-led hauora and innovation, indigenous health equity, creative technologies, OneHealth, workforce development, and much more. The successful delivery of the symposium was supported by interns, who played an important role in preparation and organisation behind the scenes. Their contributions across planning, coordination, and event support helped ensure the symposium ran smoothly and created a welcoming experience for all attendees.

> "We had the opportunity to hear from leading experts, engage in discussions, and ask questions that deepened our understanding of our chosen fields of study. Having the opportunity to talk about our own projects allowed us to build confidence and refine our communication skills. Beyond learning, the symposium provided a chance to network with researchers, clinicians, and fellow students, fostering connections that may influence our future career paths. We left feeling inspired and motivated to continue our learning, knowing the work we do now can contribute to real change in health, research, and wellbeing." — **Miah Somerton**

Mātai interns were exposed to the work of leading scientists, hapori leaders, postgraduate students, and internationally recognised researchers through the two-day symposium, which attracted more than 500 attendees. They also played an important role in its success, helping prepare for the symposium, providing hands-on support during the event, and judging the Tairāwhiti high school poster competition. The symposium highlighted inspiring research journeys, including that of former Mātai intern-turned-PhD researcher Ben Bristow, pictured with Wendy Mohi (Senior Research Associate at Mātai), sharing the impactful work behind the Hīkoi methamphetamine recovery project.



back to the
IMAGE
OF THE
FUTURE
SYMPOSIUM 2025
PROGRAMME

28-29 November 2025

Leadership & Personal Development

Leadership Capability & Development

Leadership sessions, led by Stu Potter (Leadership Consultant), were a consistent highlight for interns and a cornerstone of the programme. These sessions challenged students to think more deeply about themselves, their values, and how they show up in the world, both personally and professionally.

Through a mix of interactive discussions, real-world scenarios, and reflective exercises, interns developed skills in critical thinking, communication, and debate. Stu emphasised that leadership is not just about leading from the front, but also about knowing when to step back, support others, and contribute to a collective outcome.

> "I've grown my leadership skills through Stu Potter's Monday morning sessions, especially by speaking in front of large groups and stepping into situations that challenged me" **– 2025/2026 Mātai Intern**

A key focus of the sessions was self-awareness – encouraging interns to reflect on their decision-making, their environment, and the impact they have on those around them. These kōrero often extended beyond traditional leadership concepts, prompting students to consider their role within their communities and the importance of staying grounded, adaptable, and open to growth.

The programme also exposed interns to a range of leadership styles through guest speakers including Matane Blanford (Managing director Rata Forests), Jacob Kohn (CEO Futurity Bio-ventures), Toni Hoskin (Coach Well by Design), and Alicia Hoskin (Olympic Multi-Gold Medallist), who shared their experiences across different industries and contexts. Their stories reinforced that leadership takes many forms and is shaped by both opportunity and purpose.

Final research presentations can create anxiety for interns, so Stu introduces the much-loved Mātai Amazing Race to ease nerves. Evolving each year with input from past cohorts, the challenge weaves together iconic regional landmarks, programme learnings, and team-building. It reconnects interns with their roots and community while strengthening relationships before they return to university.

> "Stu Potter's leadership sessions will always be a favourite, causing us all to think deeply about our place in the world and how we need to stay aware to our surroundings to help us better support our personal growth" **— Imogen Amor Bendall, and reflective of all interns sentiments.**

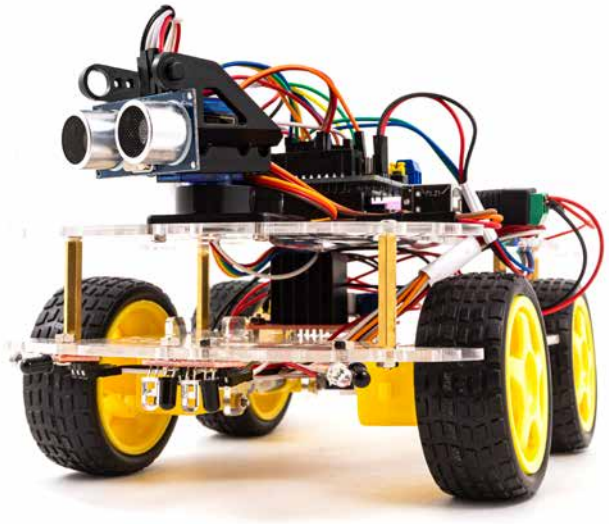
Leadership development was a cornerstone of the internship programme, with Stu Potter's sessions challenging interns to reflect on their values, communication, teamwork, and personal growth. Through interactive activities, guest speakers, and the much-loved Mātai Amazing Race, interns strengthened leadership skills, built deeper connections with one another and the region, and learned that leadership can take many forms.


EXIT


The Challenges
1. Before you leave, you must complete your lego challenge.
2. Summers about fun at the beach with mates. Build a beach sculpture with a Matai theme and take a team photo with it.
3. It's summer. On your trails, be on the lookout and take in nature. Get a photo of a grasshopper or cicada in your hands.
4. Time to put that waiata practice to use. Busk in town and make at least $5.
6. You're never too far away from fish in Gissy. Get a team photo with a marlin.
7. Take a team photo with a person that is world famous in Gissy. Bonus points if you find someone with international flex.
8. Create your most artistic team photo at the highest point in the first city to see the sun.
9. Back yourself to do a massive bomb. Pop
10. Get a photo with the Ikaroa Sculpture
11. Purchase a funny outfit from a secon
make a social media post in your outfit. Points awarded to the team with the most
12. Get a photo on the helm of the Star
13. Find a 67 in the wild. Cannot be the
eam.

Tōnui Collab: Robotics & Game Development

TŌNUI COLLAB



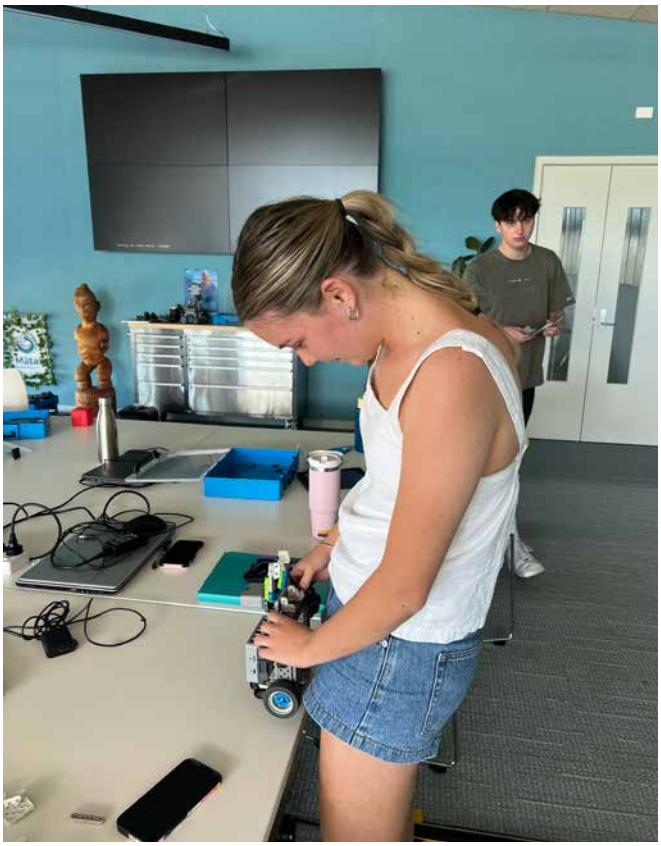
The interns took part in two hands-on workshops with Tōnui Collab that focused on innovation, teamwork, and creative problem-solving. The first workshop was a robotics session where they worked in pairs to build a robot. Once the base robots were complete, they were encouraged to use their innovation skills to customise and modify them.

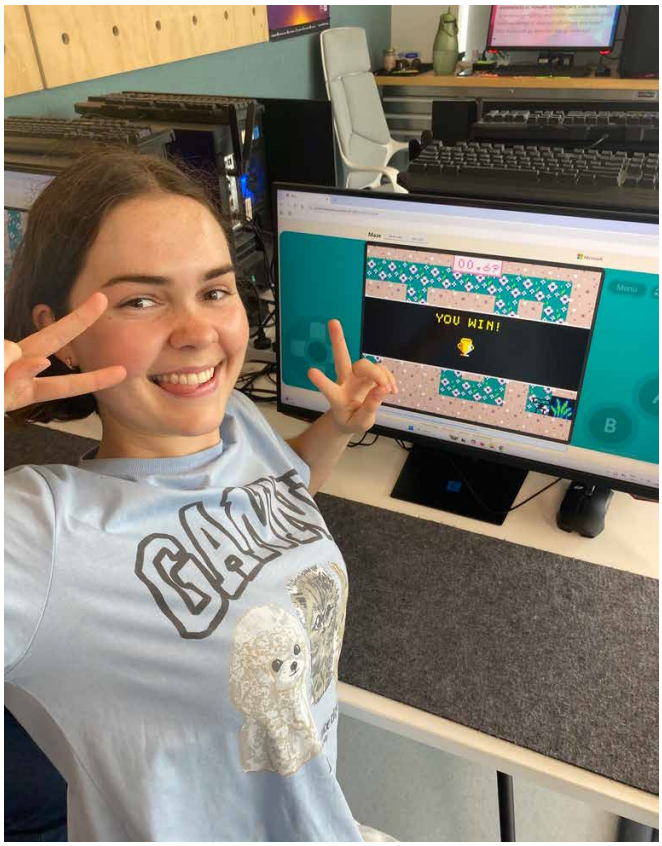
The second workshop focused on game development. Students worked in groups of three to solve a logic puzzle, encouraging collaboration and critical thinking, and then developed their own video games.

These workshops supported the development of key personal and professional skills, including communication, adaptability, and creative thinking.

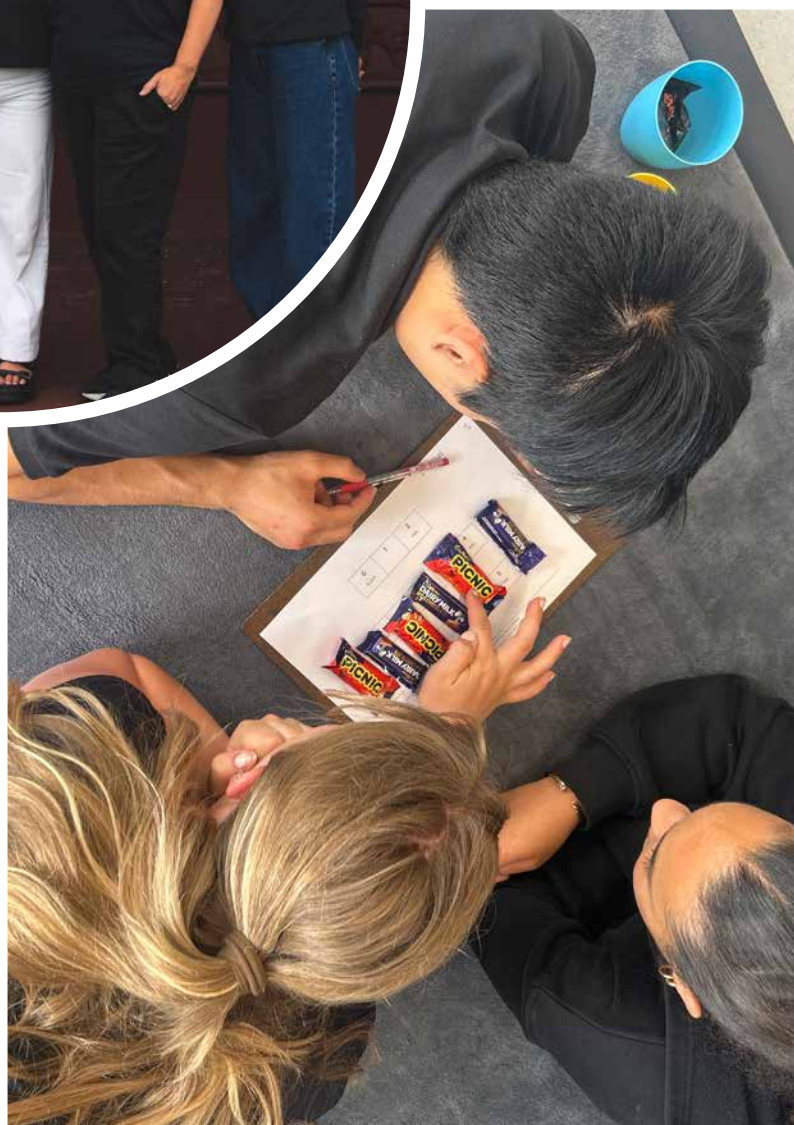
> "I really enjoyed engaging with Tōnui Collab... to see the STEM opportunities they are providing out there for Gizzy's rangatahi, especially our wahine." – **Imogen Amor-Bendall**

Circle image following page (left-right): The Tōnui Collab whānau who co-locate with Mātai: Kiri Wilson, Shanon O'Connor, Atareta Wilson-Karini, Melka Oakley, Te Manuhuia Paenga.






TŌNUI
COLLAB


PICNIC

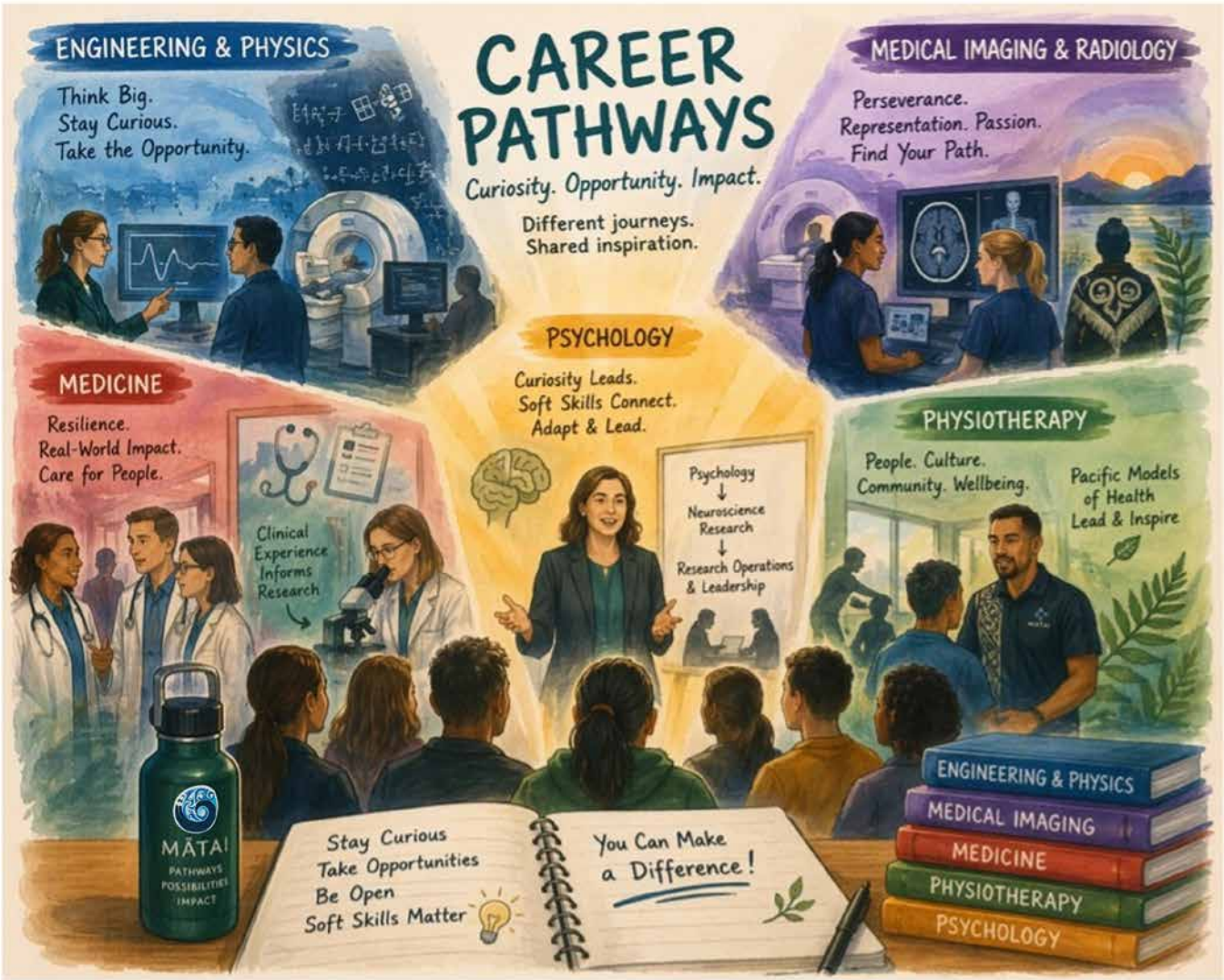
Careers Pathway

Career pathways sessions provided interns with the opportunity to hear directly from professionals across engineering, physics, medical imaging, medicine, physiotherapy, and psychology. Speakers including Associate Professor Samantha Holdsworth, Dr Sergio Dempsey, Leo Dang, Emeritus Professor Terry Peters, Professor Nils Forkert, Taylor Emsden, Dr Saralyn MacKenzie, Dr Patrick McHugh, Dr Sarah MacEachern, Dr Oka Sanerivi, and Dr Jackie Williams shared their journeys, insights, and advice.

A consistent theme across all sessions was that there is no single pathway to success. Instead, careers are shaped by curiosity, openness to opportunity, and a willingness to take on new challenges. Interns gained valuable insight into the realities of different professions, alongside practical advice on mentorship, wellbeing, and lifelong learning.

Interns also heard from the University of Waikato about new rural and regional pathways into medicine, reinforcing opportunities to train and return to serve communities like Tairāwhiti.

During the Physics and Engineering career pathway session, Associate Professor Samantha Holdsworth, Dr Sergio Dempsey, and Leo Dang shared the twists and turns that shaped their career journeys.



Connection & Team Culture

Sports days were a highlight of the programme, providing space for interns to connect outside of the research environment. Whether at the beach swimming, playing football and volleyball, or boogie boarding, these sessions fostered strong relationships, teamwork, and a sense of balance alongside the academic demands of the internship. These shared experiences helped build a supportive team culture, reinforcing the importance of wellbeing, connection, and whakawhanaungatanga as part of personal and professional development.

Strengthening body, mindset, and team connection at Mātai and the gym.

Research Communication & Presentations

Mātai interns delivered high-quality mid-year and final presentations that showcased the breadth and real-world relevance of their research. Presented to the wider Mātai team, whānau, stakeholders, and funders, these sessions created a valuable opportunity to connect research with community and demonstrate programme impact.

Interns presented on a diverse range of topics, including brain imaging, addiction, child wellbeing, cardiovascular health, data sovereignty, and clinical research – many grounded in challenges facing the Tairāwhiti Gisborne region.

Across both milestones, interns showed clear growth in their ability to communicate complex scientific concepts in accessible, engaging, and culturally grounded ways. Presenting to mixed audiences required confidence and adaptability, which was reflected in their thoughtful responses and strong understanding of their work.

Overall, the presentations highlighted both their technical capability and their development as emerging researchers, with a strong commitment to improving health outcomes for their communities.

> "This internship contributed to my professional growth by improving my public speaking skills and confidence, as well as providing valuable hands-on research experience. It also allowed me to build professional networks, and the experience has strengthened my CV for future opportunities." — **2025/2026 Mātai Intern**

Ella Arthur presenting her research project at the Mātai final presentations.

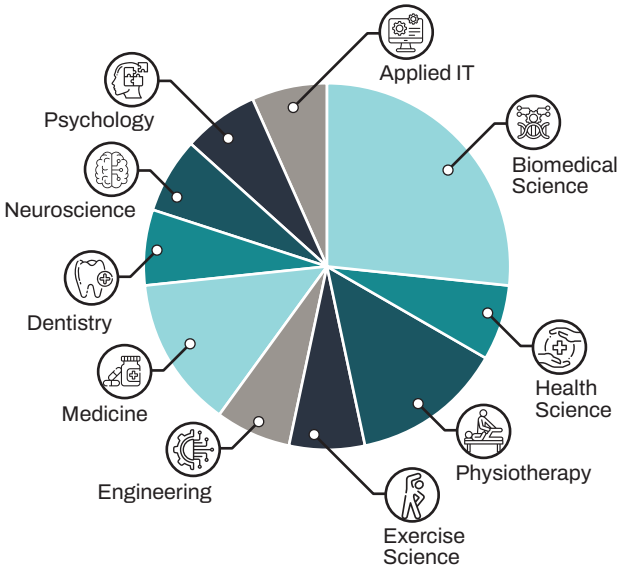
Intern Demographics, Snapshot & Reflections

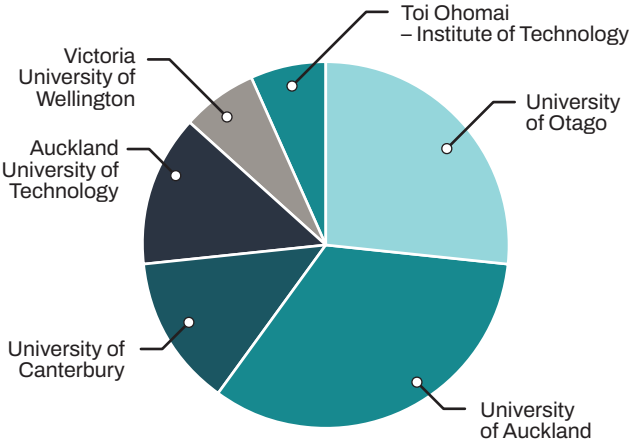
Cohort Overview

13/15
Local Tairāwhiti Students

53%
Māori/Pacific

9:5:1
Female/Male/Non Binary





Overall, how satisfied are you with the Mātai Summer Internship Programme?

4.7
Average Rating

★★★★★

Experiences That Mattered

Interns consistently described the programme as meaningful, enjoyable, and impactful. A strong sense of connection – with fellow interns, staff, and the wider Mātai environment – was central to their experience. Many spoke about feeling supported and motivated, with increased confidence in their future directions.

The balance of hands-on learning, community engagement, and projects connected to their studies or communities was a key strength.

> "My time at Mātai gave me a clear and realistic understanding of what research involves. It never felt like a typical job; each day was something I genuinely looked forward to."

> "I was grateful to work on a project connected to my studies that also benefits my community - it made the learning meaningful."

Building Confidence & Capability

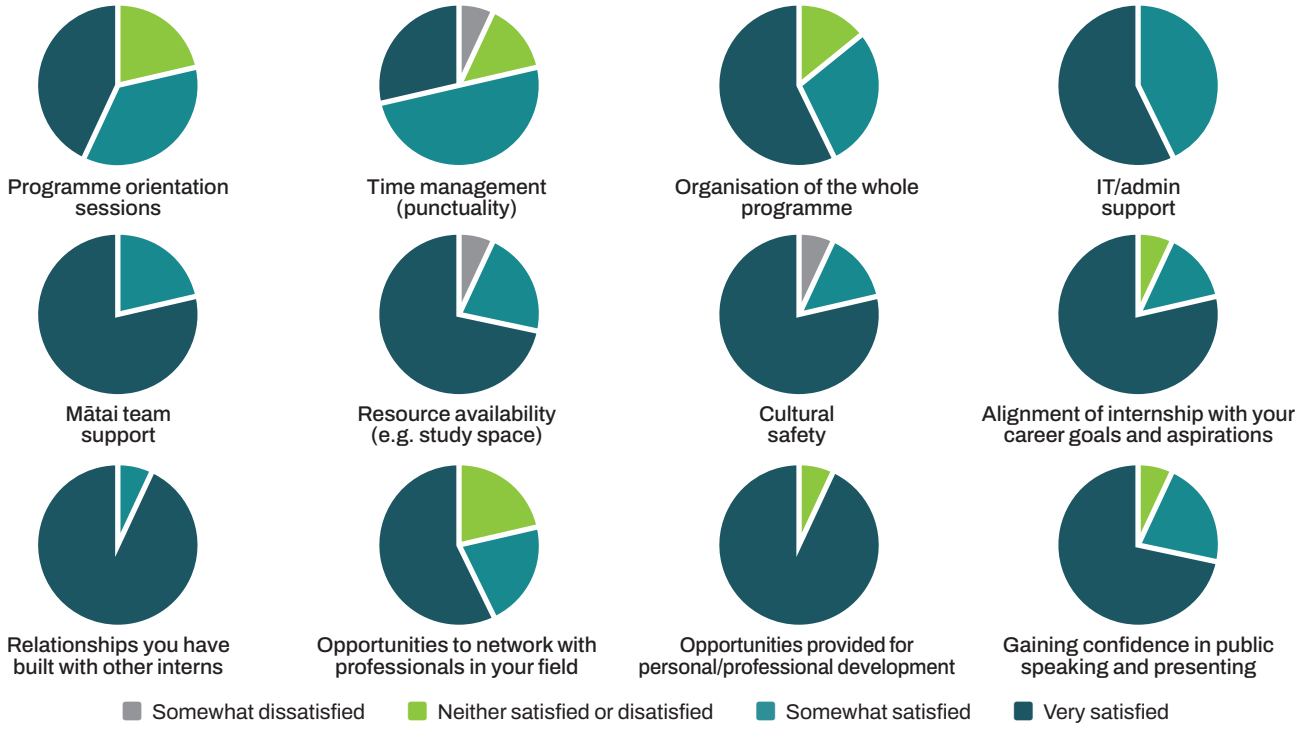
The internship supported strong professional growth. Interns reported increased confidence, improved communication and presentation skills, and a clearer understanding of working within a research environment.

They developed discipline, punctuality, leadership, and teamwork, while learning to apply academic knowledge in real-world contexts. Many also gained clarity around their future goals and felt more motivated to contribute to their communities.

> "I've seen a real improvement in my focus and efficiency over the 10 weeks."

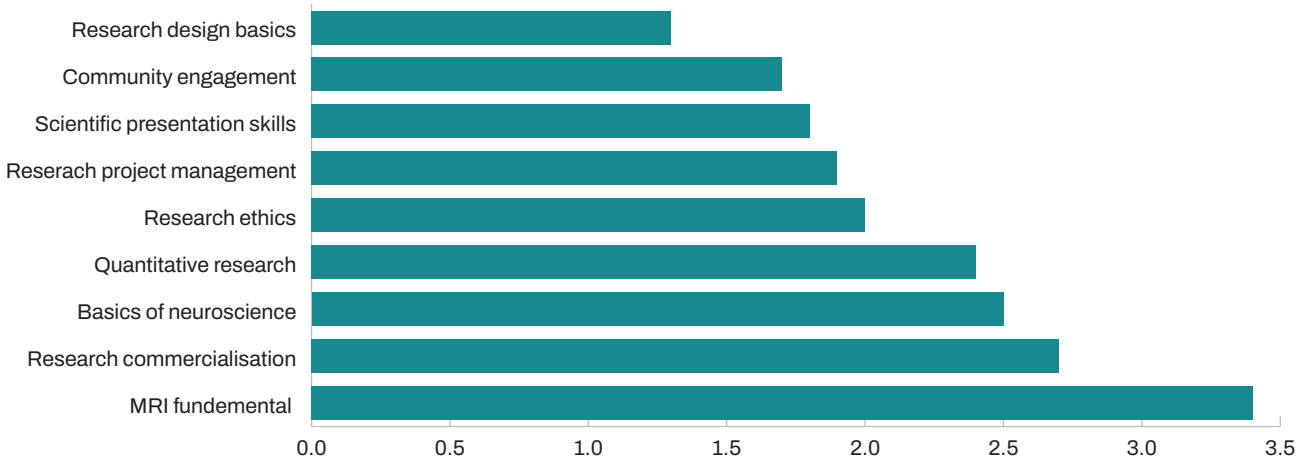
> "It strengthened my discipline and made me more confident presenting, from Journal Club through to my final presentation."

Overall Intern Satisfaction with Programme Components



Change in Intern Self-Rated Knowledge Across Subject Areas Following Programme Participation

Mean change in interns' self-rated knowledge from pre- to post-programme by subject area.
Positive values indicate increased knowledge, with larger values reflecting greater improvement.



What Interns Valued Most

- Strong sense of connection and community, including friendships and supportive staff.
- A welcoming, team-oriented environment.
- Community-focused elements such as waiata, mātauranga Māori, and giving back locally.
- A balanced programme combining research, learning, mentorship, and hands-on experiences.

Advice For Those Who Follow

Interns encouraged future participants to be open-minded, proactive, and willing to step outside their comfort zones. Asking questions, speaking up, and embracing new experiences were seen as key to making the most of the opportunity.

Equally important was building strong relationships and fully engaging with both the learning and the people around them.

Mātai Intern Alumni: From Internship to Impact

Mātai has built a strong and growing training ecosystem spanning undergraduate scholarships, internships, and postgraduate research. To date, this includes over 60 undergraduate scholarships, 79 internships, and more than 60 postgraduate researchers, including 19 PhD candidates.

While these programmes are interconnected, they are not strictly linear pathways. Mātai plays a key role in supporting postgraduate research through access to projects, data, and supervision, with many postgraduate students engaging with Mātai regardless of whether they previously participated as interns.

Together, these efforts are contributing to sustained momentum in developing research, health, and innovation capability, both within Tairāwhiti and nationally.

60 Undergraduate Scholarships

79 Internship Scholarships

61 Postgraduate Support

Several students from the 2025–2026 cohort are already contributing to international journal manuscripts incorporating research undertaken during their internships, with publications expected later this year.

The examples below highlight the diverse pathways of Mātai interns and the impact they are making across research, health, and innovation.

Holly Flyger

Mātai Intern 2023-24 & 2024-25

Most researchers are years into their academic careers before they have papers published in international journals. But 2024-25 intern Holly Flyger, a 19-year-old former Gisborne Girls High School student and Mātai scholarship recipient, published her first paper in the prestigious Neural Regeneration Research journal – an extraordinary achievement that was made possible through her internship.

Her research paper reviewed how MRI can help predict long-term outcomes for infants with perinatal hypoxic-ischemic encephalopathy (HIE) treated with therapeutic hypothermia.
Read the paper

Rachael Mclanachan

Mātai Intern 2024-25

Rachael contributed to research at Mātai that has since been published in a peer-reviewed journal. She was a co-author on "Multimodal MRI Reveals Brain Structural Differences and Executive Dysfunction in Early Methamphetamine Abstinence," highlighting the impact of intern-led research. The study identified structural brain differences and executive function impairments in methamphetamine users compared with healthy controls, improving understanding of brain harm and informing treatment and recovery approaches.
Read the paper

Samuel Porter

Ngāi Te Rangi
Mātai Intern 2024-25

As part of his internship research project at Mātai, 2024–25 intern Samuel Porter worked on "Automatic White Matter Segmentation on Ultra-High Contrast dSIR Images Using nnU-Net". This work has since been recognised internationally, with his abstract accepted for presentation at the 2026 International Society for Magnetic Resonance in Medicine (ISMRM) conference, the leading global conference in MRI research. This work helps improve the speed and accuracy of identifying white matter on MRI images, which can support more efficient brain analysis and strengthen future neuroscience and clinical research.

Hayley Templar

Mātai Intern 2024-25

Since completing her internship at Mātai, Hayley, 2024-25 intern, has continued to excel in her academic journey, completing the first year of a Master's degree in Forensic Psychology at Victoria University of Wellington. She has since progressed to the University of Auckland, where she is completing the preparatory year for the Doctorate of Clinical Psychology.

> "My journey into clinical psychology has been deeply influenced by the support I received from Mātai. Through Mātai, I developed greater confidence in myself and in my academic path. The skills that I learned, the relationships that I built, and the experiences I was exposed to have all played a significant role in shaping both my academic and professional direction. As I move further into my clinical training, entering placements, completing research, and continuing to develop my clinical skills, I aim to carry forward the values and skills I developed at Mātai."

Zara Potter

Ngāti Porou, Ngāti Kahungunu, Rongowhakaata, Rongomaiwahine, Ngāti Awa
Mātai Intern 2023-24

After her internship at Mātai, Zara, 2023-24 intern, continued her health pathway at the University of Otago and successfully gained entry into both Medicine and Dentistry. She chose to pursue dentistry and is now enrolled as a BDS2 student, working toward her five-year dental degree.

> "My long-term goal is to return to rural and coastal communities such as Tairāwhiti/Gisborne to contribute to improving hauora where it is needed most. My time at Mātai played a significant role in shaping this aspiration, highlighting the importance of accessible healthcare and the impact of research in underserved communities. I was especially inspired by the way Mātai engages and motivates rangatahi to explore careers in health. So that they can one day also support the health and wellness of our underserved regions."

Oli Gillies

Rongowhakaata
Mātai Intern 2023-24

Oli is now in his final year of a Bachelor of Engineering with Honours in Mechanical Engineering at the University of Canterbury, where he was also selected for the highly competitive Aerospace Engineering minor. Since his internship at Mātai, he has gained industry experience through engineering internships at AirRated in Christchurch and at Pultron Composites in Gisborne, contributed to projects focused on accessibility and automation, and is currently completing a final-year research project investigating corrosion in buried gas pipelines in partnership with a major New Zealand gas company. His work reflects a strong and growing engineering pathway, with interests spanning aerospace, design, automation, and infrastructure.

> "I hope to begin my engineering career next year in a graduate role, either within New Zealand or internationally." communities. I was especially inspired by the way Mātai engages and motivates rangatahi to explore careers in health. So that they can one day also support the health and wellness of our underserved regions."

Harry Naske

Mātai Intern 2024-25

Harry has continued exploring a wide range of engineering interests since their internship at Mātai, including robotics, rocketry, control systems, and communication protocols, while studying at the University of Canterbury. He has also tutored introductory computer science and completed an internship at Windcave company, which helped provide greater clarity about his career direction. He is now developing a strong interest in the power industry, particularly in the growing role of data analytics.

> "My time at Mātai gave me an early taste of what it looks like to apply signal processing and data analysis to real problems that matter to people. Getting that exposure so early into my electrical engineering pathway has been invaluable. When I encounter data-focused coursework now, I can immediately connect it to something real and understand why those skills matter. My time at Mātai also helped me develop a stronger cultural foundation, one I draw on regularly and hope to continue building as I work toward giving back to communities like Tairāwhiti."

Jet Wright, Katie Blackburne, Ben Bristow

Mātai Interns 2022-23

The Mātai Summer Internship Programme supports emerging researchers into advanced academic pathways. Three former interns (2021–22 cohort) have since begun PhD study at the University of Auckland in bioengineering and medical and health sciences.

Since their internships, Jet Wright (Auckland Bioengineering Institute), Ben Bristow (FMHS, University of Auckland), and Katie Blackburne (FMHS, University of Auckland) have continued to develop the research skills, confidence, and professional networks gained at Mātai. Their progression to doctoral study highlights the long-term impact of early research experience and mentorship, alongside contributions to publications and presentations at national and international conferences.

> "Our time at Mātai has been an incredible opportunity to return home to Gisborne while continuing to develop our skills at a high level. Beyond research and study, Mātai has played a major role in shaping our personal growth and maturity, both professionally and outside of work. Being able to pursue postgraduate study while remaining close to our whānau is something we deeply appreciate. The wide exposure to different areas of research, alongside the connections and relationships built with inspiring people, has shown us the incredible things that can happen when science, collaboration, and community come together."

Dr Samantha Holdsworth reflects on the programme's growing impact:

> "We're seeing our interns flourish in so many different directions – at university, in industry, and across a wide range of careers – while still holding a strong connection to home. One of the most rewarding moments is hearing a knock at the door during the holidays and finding former interns dropping in for a cup of tea. Those ongoing relationships and the sense of energy and possibility they bring back into our community is really exciting."

Supervisors, Session Leads & Programme Contributions

Simeon Alford
Presenter: AI in Research
Co-Founder – Aroha AI

Imogen Amor-Bendall
Intern Programme Junior Project Coordinator, Mātai
Undergraduate student – University of Otago

Lisa Bates
Programme support & philanthropy engagement
Philanthropy Director – Mātai

Katie Blackburne
Presenter: Introduction to neuroscience & neuroimaging
PhD Candidate – University of Auckland and Mātai

Matane Blanford
Presenter: Leadership Capability & Development Programme
Managing director – Rata Forests

Ben Bristow
Supervisor; Presenter: Introduction to neuroscience & neuroimaging
PhD candidate – University of Auckland and Mātai

Professor Graeme Bydder CNZM
Presenter: Weekly Seminar Series
MRI Pioneer | Emeritus Professor, UC San Diego | Member, Mātai Scientific Advisory Board

Dr Mark Bydder
Presenter: Weekly Seminar Series
MRI Physicist & Scientist | Senior Research Fellow - Mātai

Leo Dang
Presenter: Career pathways
Honorary Senior Research associate – Mātai
Founder HealthSyncX, Vietnam

Alisha Duncan
Intern logistics & Mātai Symposium support
Administrative and comms assistant – Mātai

Dr Sergio Dempsey
Supervisor; Presenter: Career pathways
Senior MRI Clinical Scientist – GE HealthCare & Mātai

Taylor Emsden
Presenter: Introduction to MRI & Career pathways
MRI Charge Technologist – Mātai

Professor Nils Forkert
Presenter: AI for Medical Images – from science to application
Professor – Radiology/Clinical Neuroscience, University of Calgary, Canada
Director – Child Health Data Science Program, Alberta Children's Hospital, Canada

Jardin Green
Presenter: Research innovation & commercialisation
Programme Lead – Momentum

Dr Peter Holdsworth
Weekly Seminar Series Enthusiast & Host of Visiting Luminaries
Technical Consultant - Pultron Composites Ltd

Associate Professor Samantha Holdsworth
Supervisor; Presenter: Career pathways
Chief Executive / Research Director – Mātai
Associate Professor – University of Auckland

Toni Hoskin
Presenter: Leadership Capability & Development Programme
Coach – Well by Design

Alicia Hoskin
Presenter: Leadership Capability & Development Programme
Olympic Multi-Gold Medallist

Ra Keelan
Presenter: Pūrākau and Māori worldview Tairāwhiti

Moana Kerr
Presenter: Game Development Workshop
STEMM navigator – Tōnui Collab

Jacob Kohn
Presenter: Leadership Capability & Development Programme
CEO – Futurity Bio-ventures

Dr Eryn Kwon
Supervisor; Presenter: Data management & ethics & AI
Research Operations Lead
Hugh & Moira Green Senior Research Fellow, Māta

Jeanette Lepper
Communications, media & intern report development
Media and writing specialist – Mātai

Dr Jordon Lima
Presenter: Genetics and Molecular Biology/ Kaupapa Māori Biomedical Research
Post-doctoral Fellow – University of Otago

Matua Owen Lloyd
Waiata leader: Gisborne Hospital sessions

Dr Sarah MacEachern
Presenter: Inclusion of Neurodevelopmentally and Behaviourally Complex Children in Medical Research
Assistant Professor – Paediatrics, University of Calgary
Developmental Paediatrician – Alberta Children's Hospital, Canada

Dr Saralyn MacKenzie
Presenter: Career pathways
Medical Practitioner – Gisborne Hospital, Health NZ
Head of Medicine – Mātai

Dr Josh McGeown
Supervisor; Presenter: Research Methods
Neurological Foundation Senior Research Fellow – Mātai

Dr Patrick McHugh
Presenter: Career Pathway
General Practitioner - Turanga Health
Community research liaison - Mātai

Associate Professor Tracy Melzer
Supervisor
Associate Professor – University of Canterbury

Kobus Mentz
Presenter: The Future Embraced
Director – Urbanism Plus

Lorraine Mentz
Special guest/intern mentor
CEO – Hugh Green Foundation

Johnny Moetara
Presenter: Toi Māori class
Kaiako and visual artist – Māori and Indigenous Arts, Te Wānanga o Aotearoa

Wendy Mohi
Supervisor
Senior Research Associate – Mātai

Tuterangi Nepe-Apatu
Intern mentor
Masters Candidate – AUT and Mātai

Dr Joanna Ngo
Supervisor
Special needs dental specialist – Oral Head of Department at Health NZ

Shanon O'Connor
Presenter: Game Development Workshop
Director – Tōnui Collab

Te Manuhuia Paenga
Presenter: Game Development Workshop/ Design Thinking
Lead STEMM navigator – Tōnui Collab

Molly and David Para
Waiata sessions
Kaumatua: Te Whatu Ora Tairāwhiti and Mātai whānau

Emeritus Professor Terry Peters
Presenter: What is MRI; Career pathways
Emeritus Professor – Western University
Scientist – Robarts Research Institute, Canada
Mātai Scientific Advisory Board

Dallas Poi
Presenter: Matāuranga Māori
Kaiwhakahaere – Population health, Manawaru and Tūranga Health

Leigh Potter
Supervisor; Presenter: Matāuranga Māori; Career pathways
Chief Operations Officer – Mātai

Stu Potter
Session Leader: Leadership Capability & Development Programme
Leadership Consultant

Zara Potter
Social media & intern programme support
Research Assistant – Mātai
Undergraduate student – University of Otago

Reweti Ropiha MNZM
Community engagement and hauora initiatives
Mātai Board of Trustees
CEO – Tūranga Health

Dr Tim Salmond
Supervisor
PhD Candidate – University of Otago
Senior Research Associate – Mātai
GP – Tairāwhiti

Christian Saludar
Supervisor; Presenter: Medical Imaging Processing
Student – Auckland Bioengineering Institute

Dr Oka Sanerivi
Supervisor; Presenter: Indigenous pacific research; Career pathways
Mana Tūāpapa Future Leader Fellow – Mātai & University of Otago

Associate Professor Miriam Scadeng
Supervisor
Associate Professor – University of Auckland
Principal Investigator – Mātai

Dr William Schierding
Supervisor; Presenter: Introduction to statistics
Honorary Senior Research Fellow – Mātai
Senior Research Fellow – Vision Research Foundation & University of Auckland

Mātai Smith
Community media engagement – Tūranga FM
Radio Host – Tūranga FM

Mary Spring
Presenter: Research Innovation & Commercialisation
PhD Candidate – University of Auckland
Auckland Committee member – Momentum

Davidson Taylor
Presenter & contributor: Mātauranga Māori
Senior Admin & Kaiārahi Tikanga | Cultural Advisor – Mātai

Dr Itamar Terem
Supervisor
Researcher – Stanford University & Mātai collaborator

Dr Maryam Tayebi
Internship Programme lead; Supervisor
Hugh & Moira Green Senior Research Fellow – Mātai

Rahia Tumutumu
Community media engagement – Tūranga FM
Radio Host – Tūranga FM

Nick Tupara
Presenter: Pūrākau of Ikaroa, Te Ikaroa a Rauru Puhi Kai Iti | Te Maro on Titirangi
Councillor – Tairāwhiti Māori Ward, Gisborne District Council

Jackie Williams
Presenter: Supporting a life in science and research
Psychologist, Canada

Kiri Wilson
Presenter: Game Development Workshop
STEMM navigator – Tōnui Collab

Atareta Wilson-Karini
Presenter: Game Development Workshop
STEMM navigator – Tōnui Collab

Jet Wright
Supervisor
PhD Candidate – University of Auckland and Mātai

Mātai Major Funders

Hugh Green Foundation

Fred Lewis Enterprise Foundation

JN & HB Williams Foundation est. 2021

Mangatawa Beale Williams Memorial Trust

Te Hauora o Tūranganui-a-Kiwa Ltd
Tūranga Health

Waipapa Taumata Rau University of Auckland

Dines Family Charitable Trust

Vision Research Foundation

hrc nz
Health Research Council of New Zealand
Te Kaunihera Rangahau Hauora o Aotearoa

Royal Society Te Apārangi

Peter & Bronwen Holdsworth Family

pultron COMPOSITES

Anonymous Donor

Trust Tairāwhiti
Regional Wellbeing
He Tohu Ora

Te Tītoki Mataora
MedTech Research Translator

Te Puni Kōkiri
Realising Māori Potential

Sunrise Foundation

Sport New Zealand
Ihi Aotearoa

Marsden Fund
Te Pūtea Rangahau a Marsden
Royal Society Te Apārangi

Rapanui Trust

QUEST Enterprise Trust

chapman tripp

Prostate Cancer Foundation NZ

Cooper Legacies
perpetual guardian

NZ Rugby Foundation

New Zealand Multiple Sclerosis Research Trust
Knowledge brings hope

Neurological Foundation
A pathway to hope

Ministry of Business, Innovation & Employment
Hīkina Whakatutuki

Lottery Grants Board
Te Puna Tahua
Lotto funds for your community

GE HealthCare

ANZ

Mātai

Te Mata Mātai Hura
Mātai Medical Research Institute
TAIRĀWHITI GISBORNE | NEW ZEALAND

2025/26 Summer Interns

Cheidan Moetara *Rongowhakaata, Ngāti Porou Manutuke Kura a Iwi*
Ella Arthur *Ngāi Te Rangi*
Frankie Muir
Imogen Amor-Bendall
Jamila Kate Miriama Fleming *Ngāti Porou, Ngāti Kahungunu*
Keeley Cairns
Ky Bartlett *Ngāti Porou*
Mathew Sung
Miah Somerton *Te Atiawa, Ngati One One*
Naiya Powley
Ned Clarke *Ngāti Porou, Ngāpuhi, Rongowhakaata*
Nicholas Kane
Noah Mason
Paris Maxwell *Ngāti Rangiwewehi, Ngāti Tūwharetoa, Te Aitanga-a-Mahaki*
Tui Cave *Rongowhakaata*