Genetics Otago presents

Ira Rangahau Māori

Genetics-based research by Māori

3rd and 4th June 2021

Main Common Room, University Union

Nau mai haere mai...

Genetics Otago, together with Allan Wilson at Otago, is pleased to bring you the second Ira Rangahau Symposium. Initiated in 2019 by Dr Phillip Wilcox (*Ngāti Rakaipaaka, Rongomaiwahine, Ngāti Kahungunu ki te Wairoa*), Ira Rangahau brings together Māori kaipūtaio (scientists) from around the motu to present on their genetics-related research ranging from the primary sector, to health, to whakapapa and te taiao (the environment).

Thank you to our Sponsor...

Allan Wilson at Otago

A UNIVERSITY OF OTAGO RESEARCH THEME

Genetics Otago

Genetics Otago is a University of Otago Research Centre, established in 2009. We currently have over 300 members, making us one of Australasia's largest genetics communities. Genetics Otago researchers drive innovation across New Zealand's agriculture, conservation and medical sectors. They also deepen our understanding of our origins, our humanity and our natural world.

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Kaiwhakahaere (Organisers)

Ben Te Aika (Ngati Mutunga,Te Ati Awa, Kati Wairaki, Kati Mamoe, Waitaha)
University of Otago
Ben is a specialist in multiple areas, including Māori economic development in environmental advocacy, toi Māori (Māori art), whakairo (carving), and tā moko. Ben works on projects to improve genomics research relevance to Māori. One initiative has enhanced kaitiaki practices for a Māori landowner group in their management of native species - a great example of commerce, science and kaitiakitanga in the hands of flax roots Māori. Ben is passionate about his tamariki, hunting, whakapapa and whenua

Alana Alexander (Ngāpuhi: Te Hikutu, Pākehā)
Department of Anatomy, University of Otago
Alana's research utilises the 'time-traveling' ability of population genomics and phylogenomics by combining genomics, advanced computational tools, and behavioural, ecological, and biogeographic data to infer processes leading to patterns of genetic diversity within and among populations. She often focuses on cetaceans (whales and dolphins) as many were hunted (or subject to bycatch) at an industrial scale for meat and oil well into the late 20th century, dramatically reducing population sizes in many species, often to the brink of extinction. As a Māori scientist she also maintains a strong interest in ensuring her research can be used to support kaitiakitanga and rangatiratanga of resources within the rohe of iwi and hapū. By helping organise Ira Rangahau, she got out of having to present herself!

Catherine Collins (Kāi Tahu, Pākehā)
Department of Anatomy, University of Otago
Catherine's research uses genomics to assess changes in populations through time, by applying ancient DNA techniques–. Her current research is focused on studying the settlement of Aotearoa and the Pacific, using genetic data from animals such as the kiore that traveled with people on their waka as they settled new islands. Despite helping organise Ira Rangahau, Catherine still got drafted in to giving a talk!

Phil Wilcox (Ngāti Rakaipaaka, Rongomaiwahine, Ngāti Kahunguu ki te Wairoa)
Department of Mathematics and Statistics, University of Otago
Phil initiated and organised the inaugural Ira Rangahau back in 2018 and is a Senior Lecturer in the University of Otago's Department of Mathematics and Statistics, with experience in applied genomics and statistical genetics. He is the current convenor of MapNet, a NZ-wide collective of gene mapping scientists and the Project Leader of the Virtual Institute for Statistical Genetics. He was involved in both the Biological Heritage National Science Challenge and the BioProtection Research CoRE in Māori-specific roles and was a mandated spokesperson for Ngati Rakaipaaka regarding the Rakaipaaka Health and Ancestry Study. He has worked on genetics of plant species (particularly forest trees) and human diseases. He teaches tikanga-based frameworks in science papers at both graduate and undergraduate levels, as well as statistics and quantitative genetics. He also co-teaches the Summer Internship of indigenous peoples in Genomics Aotearoa and is a member of the Health Research Council's Ethics Committee.

Rebecca Oliver (Pākehā)
Genetics Otago, University of Otago
Rebecca has been the Project Manager for Genetics Otago since 2019. Her role includes facilitating networking opportunities for researchers from wide and varied genetics backgrounds as well as making genetics more accessible to those outside of the research community. She has spent most of her time in the deep south growing up in Invercargill before moving to Dunedin to complete both her BSc(hons) in Genetics and her PhD (Department of Pathology) at the University of Otago. After a few years in Wellington, she was glad to be able to return 'home' to take up this position. Rebecca's research focused on the contribution of genetics to schizophrenia and bipolar disorder using both biostatistical and functional biological methods.

Jane Reynolds (Pākehā)
Events Hub, Division of External Engagement, University of Otago

Ira Rangahau Māori 2021

Rāpare 3rd and Rāmere 4th Hune

(Thursday 3rd and Friday 4th June)

Rāpare (Thursday) 3rd Hune (June)

All kaikōrero (speakers) on Thursday will speak for ~25 minutes, with ~5 minutes for pātai (questions).

Opening		
9:00am – 9:10am	Mihi Whakatau	Ben Te Aika Ngati Mutunga, Te Ati Awa, Kati Wairaki, Kati Mamoe, Waitaha University of Otago
9:10am –10:00am	**Kāputī**	
Session 1		**Chair: Alana Alexander**
10:00am – 10:30am	Kua ora au i a koe	Karyn Paringatai Ngāti Porou University of Otago
10:30am – 11:00am	Embracing Te Ao Māori in Biomedical Sciences to Improve Cancer Care Equity for Rural and Māori Communities	Jordon Lima Ngāti Porou University of Otago
11:00am – 11:30pm	Insights into the settlement of Aotearoa utilising modern and ancient DNA datasets	Catherine Collins Ngāi Tahu, Pākehā University of Otago
11:30pm – 12:00pm	Natural compounds as new drugs for anaerobic pathogens	Essie Van Zuylen Ngāi Tahu, Ngāti Kahungunu ki Wairarapa University of Otago [via zoom]
12:00pm – 1:00pm	**Kai + open kōrero**	
Session 2		**Chair: Catherine Collins**
1:00pm – 1:30pm	Forestry Genetics to Fruit Genetics - Journey from *Podocarpus tōtara* to *Malus* and *Pyrus* (apple & pear)	Chrissy Marshall Ngāti Kahungunu ki te Wairoa, Te Atainga-a-Māhaki Plant and Food Research [via zoom]
1:30pm- 2:00pm	Quorum sensing and CRISPR-Cas: Bacterial kōrero meets cell defence	Howard Maxwell Te Whakatōhea, Te Whānau A Apanui, Ngāti Porou University of Otago

Session 2 Cont.		Chair: Catherine Collins
2:00pm – 2:30pm	Generating disease free, immune-compatible pigs for transplantable biomaterials	Blaise Forrester-Gauntlett Ngāti Ranginui, Pākehā AgResearch
2:30pm – 3:00pm	Data analysis and Te Ao Mārama	Melissa Taane Ngāti Maniapoto University of Otago
Session 3		**Chair: Phil Wilcox**
3:30pm – 4:00pm	Ira Tātai Whakaheke: a tertiary genomic pathway	Helen Wihongi Ngāti Porou, Te Whanau a Apanui, Ngā Puhi, Ngāti Hine Director of Māori Health Research (Waitematā and Auckland DHBs)
4:00pm – 4:45pm	Panel kōrero	In-person speakers from the day answer general pātai
4:45pm	**Karakia and hui closing**	

Rāmere (Friday) 4th Hune (June)

Keynote Address		Chair: Phil Wilcox
9:00am – 10:00am	Ka hoki whakamuri ki tua: a genetic journey	Mere Roberts Ngāti Apakura, Ngāti Hikairo, Pākehā Keynote speaker
10:00am –10:30am	**Paramanawa kāputī (tea/coffee/light kai break)**	
Optional Activities		
10:30am – 11:30am	Lab Tour	Clinical Genetics Laboratory *Department of Women's and Children's Health*
11:30am – 1:00pm	Hands-on Workshop	Rebecca Oliver *Genetics Undergraduate Laboratory*

Optional Activities

Lab Tour

The purpose of this tour is to give those who do not work in a research laboratory an idea of what goes on 'behind the scenes' when DNA samples are 'sent for testing'.

The Laboratory for Genomic Medicine, led by Professor Stephen Robertson, is part of the Department of Women's and Children's Health and is located in the Hercus Building alongside the Department of Pathology. The group study a range of single gene disorders that are typically rare but collectively account for a large portion of disease burden within the population. The group have extensive experience and expertise in dealing with human DNA samples and medical records, to ensure both patient confidentiality and respect of the data entrusted to them. Through large-scale DNA sequencing they are able to identify possible causes for these diseases and study the function of the affected genes. While the identification of a cause does not necessarily mean a treatment or cure, it can bring a sense of power to patients and their whānau. The Lab also is the repository for biological specimens for several large studies including the Aotearoa Variome Project, the Rakeiora Precision Medicine Project and the Dunedin Multidisciplinary Health and Development Study. These studies aim to build valuable datasets that inform and guide medical practice and diagnostics.

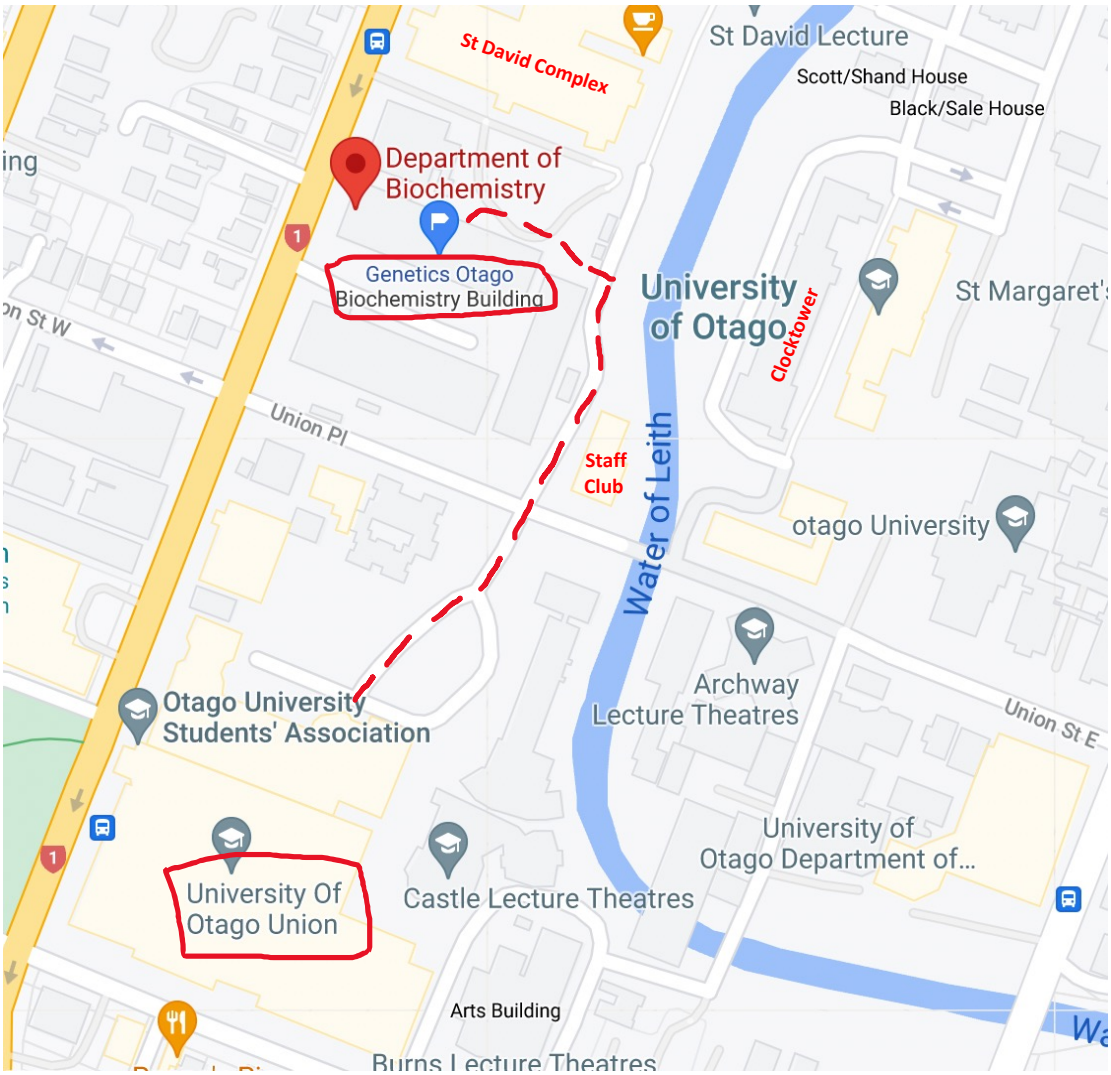
If you have registered for this activity, please meet at the main hui venue doors for departure by 10:20 am. Closed footwear is required.

Hands-On Workshop

A hands-on workshop for those with little or no experience in a genetics lab. The workshop will be based around the attack of a kiwi by an unknown predator, using various methods we will identify the predator responsible. Techniques included in this workshop are the use of pipettes, gel electrophoresis, microscope use and critical analysis of data.

If you have registered for this activity, please meet in the foyer of the Biochemistry Building at 11:30 am, for those of you unfamiliar with the campus a map is available on request. Closed footwear will be required, all other safety equipment will be supplied.

Hands-on Workshop Location



Exit the University Union building through the glass doors out to the Union lawn area, follow the main path that runs parallel to the Leith river. You should pass the Staff club and then see the Clocktower building on the opposite side of the river. Turn left into the Sciences courtyard (if you get to St David lecture theatres you have gone too far). The Biochemistry building is on the left had side. Please wait in the foyer with the black couches and someone will escort you to the lab space.

Talk Descriptions

Karyn Paringatai (Ngāti Porou)
University of Otago
Kua ora au i a koe [10:00am, Thursday]

I am a by-product of genetic research. Genetic research helped to save the continuation of my whakapapa. This presentation will look at whānau experiences with the CDH1 genetic mutation and provide an insight into how genetic research has affected how we interact with whakapapa and the knowledge contained within it for future generations.

Jordon Lima (Ngāti Porou)
University of Otago
Embracing Te Ao Māori in Biomedical Sciences to Improve Cancer Care Equity for Rural and Māori Communities [10:30am, Thursday]

Jordon will talk about structuring her Biomedical Sciences Honours thesis around whakataukī, which demonstrates the ability for one's Te Ao Māori and Academic identities to thrive together. She'll also talk about how she will carry this kaupapa over into her PhD, which focuses on circulating tumour DNA (ctDNA) as a highly accessible, blood-based alternative to traditional invasive methods of cancer surveillance for rural and Māori communities.

Catherine Collins (Ngāi Tahu, Pākehā)
University of Otago
Insights into the settlement of Aotearoa utilising modern and ancient DNA datasets [11:00am, Thursday]

Aotearoa and other islands in East Polynesia were settled relatively recently, within only the last 1,000 years. While oral traditions and whakapapa can recall the pathways that these humans took, genetic data to sit alongside these narratives are lacking. Catherine and her team have combined genome-wide data (or biological whakapapa) from modern and ancient populations across the Pacific to study the migration of people into the Pacific region, and ultimately Aotearoa.

Essie Van Zuylen (Ngāi Tahu, Ngāti Kahungunu ki Wairarapa)
University of Otago
Natural compounds as new drugs for anaerobic pathogens [11:30am, Thursday, *via zoom*]

Antimicrobial resistance (AMR) poses an urgent threat to the effective treatment of microbial infections by existing essential medicines. This includes pathogenic anaerobic bacteria which colonise human and animal gastrointestinal tracts. Repurposing existing compounds for antibacterial use is a strategy which fast-tracks antimicrobial drug discovery and the uncovering of novel therapeutic targets. Essie's PhD research is focused on characterising new antibacterial compounds that are effective against anaerobic bacterial pathogens which infect both humans and livestock, such as, *Fusobacterium* species and *Clostridiodes difficile* ('*C. diff*').

Chrissy Marshall (Ngāti Kahungunu ki te Wairoa, Te Atainga-a-Māhaki)
Plant and Food Research
Forestry Genetics to Fruit Genetics - Journey from Podocarpus tōtara to Malus and Pyrus (apple & pear) [1:00pm, Thursday, *via zoom*]

Howard Maxwell (Te Whakatōhea, Te Whānau A Apanui, Ngāti Porou)
University of Otago
Quorum sensing and CRISPR-Cas: Bacterial kōrero meets cell defense [1:30pm, Thursday]

Quorum sensing (QS), a means of bacterial communication, is used by bacteria to coordinate numerous cellular activities such as virulence, antibiotic production and CRISPR-Cas defense. Howard's research has utilised ChIP-seq, RNA-seq and other genetic methods to observe how *Serratia* sp. ATCC39006 coordinates cell defense using the smaIR QS system.

Blaise Forrester-Gauntlett (Ngāti Ranginui, Pākehā)
AgResearch
Generating disease free, immune-compatible pigs for transplantable biomaterials [2:00pm, Thursday]

The need for transplantable human organs in New Zealand exceeds availability from immune-compatible live or deceased donors. This is particularly relevant for the kidney, which accounts for most transplants carried out and patients on waiting lists in NZ and world-wide. Māori are disproportionately affected by this shortage due to higher incidence of kidney disease, poorer transplant survival and lower availability of compatible, healthy donors. Animal-to-human transplants ('xenografts') offer a vast new source of biomaterials to alleviate the severe shortage of human donor organs. Blaise and her team are combining gene editing and assisted reproductive technologies to generate immune-compatible, disease-free pigs as safe organ donors for humans.

Melissa Taane (Ngāti Maniapoto)
University of Otago
Data analysis and Te Ao Mārama [2:30pm, Thursday]

Melissa will be discussing how using genetic data influences the real world via improved breeding strategies and increased productivity relating to agriculture.

Helen Wihongi (Ngāti Porou, Te Whanau a Apanui, Ngā Puhi, Ngāti Hine)
Director of Māori Health Research (Waitematā and Auckland DHBs)
Ira Tātai Whakaheke: a tertiary genomic pathway [3:30pm, Thursday]

Dr Helen Wihongi is a community psychologist. Her doctoral research focused on the expression of tino rangatiratanga in health policy and practice. In 2013 she was employed by the Waitematā and Auckland DHBs to establish a Tiriti and kaupapa Māori research system across their interface. One of her responsibilities as the Director of Māori Health Research is to consider and embed tikanga Māori in clinical research practice. Influencing ethical decisions at an international, national, and regional level ensures this has a direct impact on her work. Last year she was appointed to the position of the Convener of the National Kaitiaki Group (cervical screening data).

Helen will be talking to the work the Māori Governance Rōpu does in the Rakeiora Project (funded by the Ministry of Employment, Business and Innovation). In particular Helen will be talking about some of the work Ira Tātai Whakaheke has done in Māori data management.

Mere Roberts (Ngāti Apakura, Ngāti Hikairo, Pākehā)
Keynote speaker [9:00am, Friday]

Dr. Mere Roberts is of Pākeha and Māori (Ngāti Apakura; Ngāti Hikairo) descent. A biologist, her Ph.D was on the ecology of the kiore rat on Tiritiri Matangi Island.

She has been a staff member of the University of Auckland's Schools of Medicine and Biological Sciences. In 2004 she was appointed Head of Science at Te Whare Wānanga o Awanuiārangi in Whakatane before returning to the University of Auckland as an Honorary Research Fellow in Anthropology.

Mere has represented Māori on a number of committees including the Foundation for Research Science and Technology; Ngā Kaihautū Tikanga Taiao (for the Environmental Risk Management Authority); the Ministerial Advisory Committee on Biosecurity; the Ministry for Economic Development on protocols for bioprospecting, the UNESCO (NZ) science subcommittee, and Trustee of the Auckland War Memorial Museum where she was responsible for developing the first Maori Natural History gallery. She has also served on the Governance Boards of two Crown Research Institutes (Scion and ESR).

Her academic interests are in cross-cultural understandings particularly in the area of indigenous science (mātauranga pūtaiao) and its interface with mainstream science. Among her research publications are those on kaitiakitanga; maramataka; the whakapapa of plants and animals; Maori values and perceptions of transgenics; biosecurity and bioprospecting protocols.

In 2003 she was made an Officer of the Order of Merit NZ for services to Maori and to science. Mere is now retired and enjoys participating in local restoration projects, and as a member of the Te Raki Paewhenua (North Shore) branch of the Māori Council.