

**FALLING**

**WALLS**

**LAB**

**NEW ZEALAND**

**Aotearoa New Zealand**

**Tuesday 21 Mahuru September 2021**

ROYAL SOCIETY TE APĀRANGI



## KAUPAPA CONCEPT

The Falling Walls Foundation founded the Falling Walls Lab in 2011 in order to:

- connect** aspiring innovators
- discover** and develop talents
- support** interdisciplinary dialogue and international cooperation
- develop** new ways of scientific communication
- build** new and strong networks



## KAIWHAKAWĀ JURY



### Professor Kathryn McPherson **Jury Chair**

**Deputy Vice-Chancellor, Auckland University of Technology**

Kath has a health professional background as a nurse, midwife and health visitor with an academic background in psychology and rehabilitation. She completed her PhD in 1998 and joined AUT first in 2004 as a Professor of Rehabilitation – establishing the Centre of Person Centred Research which is still running. Kath became Chief Executive of the Health Research Council of New Zealand in 2015 during which time the first increase of funding was made in 10 years (of 56% over 4 years), assessment was broadened to include consideration of the pathway to impact and Māori advancement, and significant advance was made in partnership with other government agencies to support evidence based decision making in the health and social care setting.

Kath returned to AUT in October 2019 as Deputy Vice Chancellor for an interim period but in view of Covid and the many challenges 2020 brought for the university sector as a whole and to AUT specifically, has offered to remain in post until 2021.

Kath's own research focuses on rethinking rehabilitation interventions, experience of recovery and adaptation, neurological rehabilitation and enhancing outcome measures.





## Chris Karamea Insley

**Chair and Executive Director at Te Arawa Fisheries Group and Chair of Te Taumata advancing Maori business interests in to all Free Trade Agreements and a Member of the APEC2021 Business Leadership Group**

I was born and raised with my koroua and kuia on the East Coast in Te Whanau a Apanui at Omaio. We were raised on a small dairy farm working on the land and entrenched in Te Reo and Maori tikanga. Today I am able to work and navigate seamlessly between our taha Maori and the world of Pakeha, commerce and government, at home and internationally.

I have graduated with Degrees and Masters Degrees in Commerce/Finance and Business Administration from Massey University and the University of Waikato respectively, while also completing several of the Harvard Business School Executive Education program studying Getting Global Strategy Right and International Finance.

I have extensive experience in technical, management, executive leadership and Governance in forestry, farming (horticulture), geothermal energy and the fishing industries here in New Zealand, internationally in private, public and Maori owned and led businesses. In everything I do I practically advance embedding works class science research and technology in to new product development and business processes.



## Professor Phil Lester

**Insect Ecology, School of Biological Sciences, Victoria University of Wellington**

Professor Lester works at Victoria University of Wellington, where his research is in population dynamics and ecology of social insects. Invasive ants and social wasps in the Pacific region are a particular focus. He currently sits on the editorial board of the journals Biological Invasions and Myrmecological News. Phil has been the recipient of both a Fulbright Senior Scholar Fellowship and a Royal Society Te Apārangi James Cook Fellowship. He has previously been Head of School for the School of Biological Sciences, and a prior President of the Entomological Society of New Zealand.



## Veronika Meduna

**New Zealand Editor for The Conversation**

Veronika Meduna is the New Zealand editor for The Conversation, a not-for-profit media organisation working with academics to provide evidence-based news and current affairs analysis. She is an award-winning science/environment writer and broadcaster, with experience across all multi-media publishing platforms. Before joining The Conversation, she produced and hosted a weekly science programme for New Zealand's public broadcaster RNZ, for which she won several journalism awards, including the Asia-Pacific Broadcasting Union's prize for best documentary.

She has written several books on science, most recently Towards a Warming World, published by Bridget Williams Books, and Science on Ice: Discovering the Secrets of Antarctica, published by Auckland University Press and, in an international edition, by Yale University Press. This book was a finalist in the 2013 Science Book awards.

Veronika contributes to other broadcasters and publications in New Zealand and internationally, including the NZ Listener, NZ Geographic, New Scientist and Deutsche Welle.

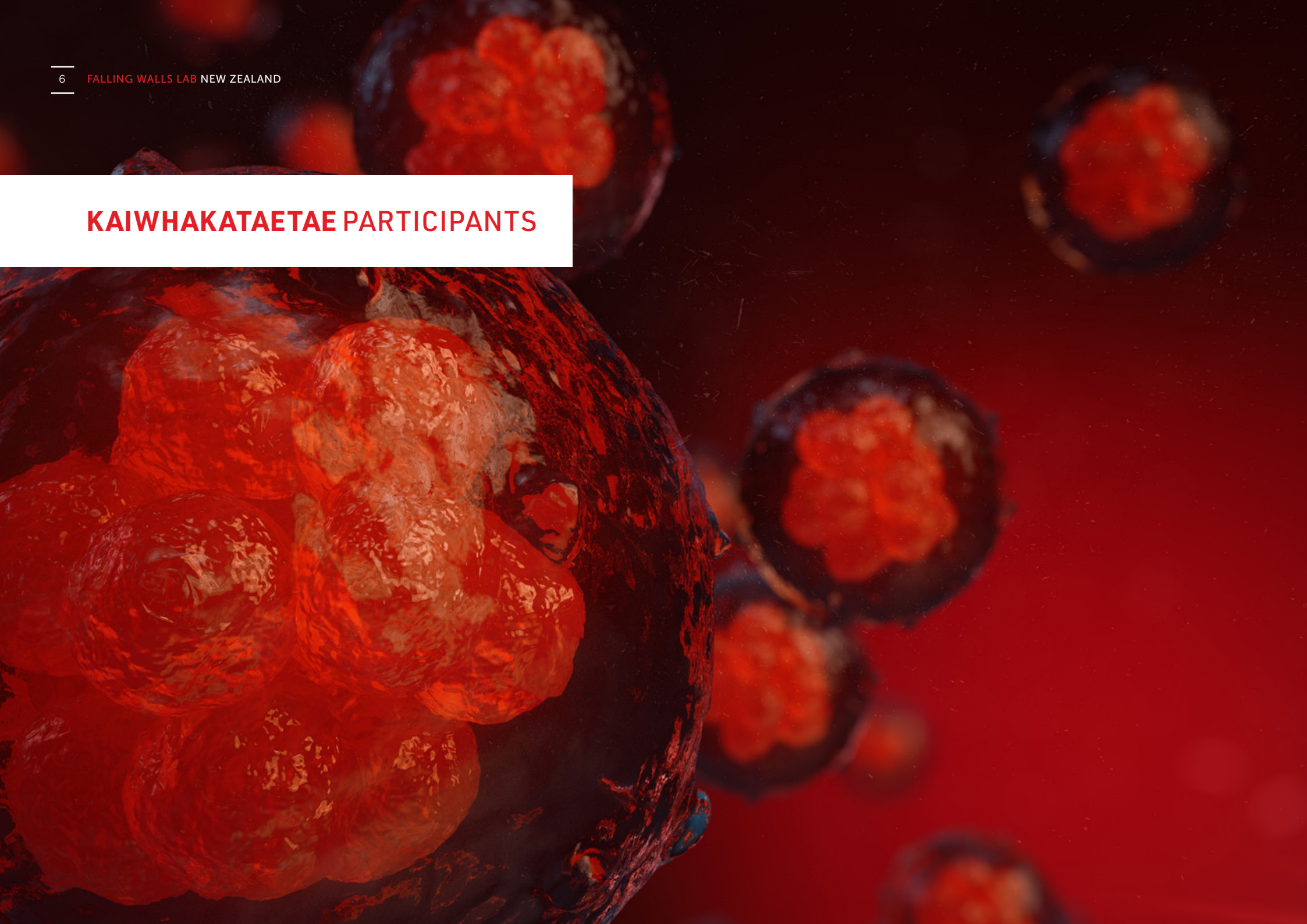


## Monique Surges

**CEO German-New Zealand Chamber of Commerce Inc**

After working in Germany, within the Fashion & Pharmaceutical Industry, and in Santo Domingo, Monique returned to New Zealand in 1993 to assist in growing the German-New Zealand Chamber of Commerce Inc. (GNZCC). The German Chamber is uniquely positioned to help both New Zealand and German businesses and individuals through an increasingly competitive global market environment. Partially funded by the German Federal Ministry of Economics, the GNZCC provides practical research, education and networking opportunities to members and customers in both countries and is part of the German Chamber network spread over 92 countries and 140 offices worldwide.

## KAIWHAKATAETAE PARTICIPANTS





## Order of presentations

1. **Abigail Bland**  
University of Otago
2. **Alba Suárez García**  
University of Otago
3. **Armano Papageorge**  
Victoria University of Wellington
4. **Charlotte Milne**  
Auckland Museum
5. **Dr Ferdinand Oswald**  
University of Auckland
6. **Dr Hamid Abbasi**  
University of Auckland
7. **Jaime Lara Aguayo**  
University of Auckland
8. **Jessica Fitzjohn**  
University of Canterbury
9. **Lewis Green**  
University of Auckland
10. **Muhammad Rehan**  
Massey University
11. **Dr Nick Smith**  
Riddet Institute
12. **Sachira Kuruppu**  
University of Auckland
13. **Dr Samarth**  
Plant & Food Research

# 1.

## Abigail Bland

University of Otago

Breaking the Wall of Chemotherapy-Induced  
Cardiotoxicity



Abigail Bland has recently finished her PhD at the University of Otago in the Department of Pharmacology and Toxicology under the supervision of Assoc Prof John Ashton. Her thesis examined the hypoglycaemic agent, metformin, using in vivo and in vitro models of ALK+ non-small cell lung cancer. Upon finishing her PhD she started working in cardiovascular disease with Assoc Prof Ivan Sammut, exploring carbon monoxide releasing molecules for the treatment of ischemia-reperfusion injury. Her main interests lie with targeting mitochondrial dysfunction in both cardiac injury and cancer.

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# 2.

## Alba Suárez García

University of Otago

Breaking the Wall of Credited Content



An intrepid explorer with a spirited inner child, my interests and curiosity span a myriad of seemingly unrelated topics, and yet, in moments of meditative bliss, the fragmented puzzle pieces connect and the picture grows, in both beauty and intricacy.

Passionate about animals and the natural world since an early age, I pursued undergraduate studies in Biological Sciences in the birth place of British Natural History broadcasting, Bristol. The fascinating behavioural and cognitive realm of animal studies, ethology, fuelled the ever-growing flame of my knowledge, and I continued my postgraduate studies in this field, specialising in Primatology.

Observing the astonishing behaviour of captive orang-utans interacting with a puzzle I implemented, I rediscovered my enthusiasm for storytelling and communication, and with additional scholarly training in Psychology of Creativity, I ventured to pursue my doctoral studies in Science Communication. My research explores engagement experiences to humanised accounts of science.

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3.

**Armano Papageorge****Victoria University of Wellington****Breaking the Wall of the New Zealand Housing Crisis**

Armano Papageorge is a PhD student at Victoria University of Wellington, School of Architecture. Armano began his studies in 2013 which has since seen him complete a Bachelors of Architectural Studies and a Masters of Architecture. Since mid-2018, Armano continued his passion for innovative construction solutions through the pursuit of a PhD. His research has recognised that the most capable means for resolving the housing crisis is through a foundational shift in how we construct our buildings.

Current construction techniques, such as timber framing and concrete formwork, have fundamentally remained unchanged for over a century, and it is evident that they are not able to deliver enough high-quality, affordable, warm, dry and safe homes for our citizens. Concrete 3D printing is a new construction technique that has exhibited enormous success in countries like Dubai, America, Germany and the Netherlands. However, New Zealand often falls behind with regards to the research and development of innovative construction solutions. Armano's research aims to help pioneer this much needed foundational shift by creating a case study for how concrete 3D printing can be effectively applied within the New Zealand construction industry.


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4.

**Charlotte Milne****Auckland Museum****Breaking the Wall of Public Engagement with Child Wellbeing**

I completed my MSc in geography (fluvial geomorphology) at UoA in 2020, using the latest in drone technology to understand riverbed change in the Kaikoura river catchments following the 2016 earthquake. Over the course of my postgraduate studies and since I worked on a large variety of physical and human geography research projects, covering topics including volcanic hazard communication, sea-level change across New Zealand, and 3D modelling of river flooding. I was also a graduate teaching assistant for over three years, where I gained my passion for the communication and effective dissemination of academic research.

I was 16 when I first interned at a museum and became fascinated with their position as research institutions and centres at the heart of communities. My research now focuses on how we engage the public with ongoing and relevant research while it is happening and has the greatest potential for impact.


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5.

**Dr Ferdinand Oswald****University of Auckland****Breaking the Wall of Sustainability with Gradient Concrete – Raima Rönaki**

Dr Ferdinand Oswald, originally from Germany, is a Senior Lecturer for Architecture Technology at the University of Auckland. Ferdinand designed the largest inner-city passive house project in Germany alongside Stefan Forster, which won the 2011 Green Building Award and the Deutscher Städtebaupreis, German Urban Development Award. He has been granted several European patents and has won research awards such as the Recycling Award 2015 and Innovation Prize Architecture and Building at BAU Munich 2017. Before moving to New Zealand, he was Assistant Professor at Graz University of Technology, Austria; and Visiting Professor at Qingdao Technological University, China and German University of Cairo, Egypt. He enjoys riding his bike along the beach to the University of Auckland.

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6.

**Dr Hamid Abbasi****University of Auckland****Breaking the Wall of Imprecision  
in Neurosurgical Resection**

Dr Hamid Abbasi is a post-doctoral Research Fellow in the Auckland Bioengineering Institute and an Early Career Researcher at the Center for Brain Research at the University of Auckland.

He received his PhD in 2018 in Engineering Science and holds Masters and Bachelor degrees in control, electronics, and instrumentation Engineering. Hamid is also affiliated with the Department of Physiology at the University of Auckland, where he has successfully developed deep-learning algorithms for the early identification of EEG biomarkers of hypoxic brain injury at birth.

Hamid is a machine-learning expert with a strong interest in leveraging the utility of artificial intelligence in neuroscience and healthcare. He is passionate about multidisciplinary research and developing practical solutions that translate from the lab to the clinic to improve patient experience and enhance the way clinicians practice.

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7.

**Jaime Lara Aguayo****University of Auckland****Breaking the Wall of Myoelectric Interfaces**

Jaime Lara is a PhD student at the Auckland Bioengineering Institute and a member of the "International Research Training Group on Soft Tissue Robotics", a multidisciplinary collaboration with the University of Stuttgart. This partnership aims to develop new simulation technologies and sensors to assist the development of new control strategies and concepts for robotic devices interacting with soft tissues. He is a biomedical engineer, and his interests include electrophysiology, signal processing and electronic design. His current research focuses on applications of high-density electromyographic recordings towards robotic control. Jaime is originally from Mexico but now lives in Auckland with his wife.

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8.

**Jessica Fitzjohn****University of Canterbury****Breaking the Wall of Breast Screening Inequity**

Jessica Fitzjohn is a 26-year-old mechanical engineer from Christchurch, New Zealand. She was born in Singapore and moved to New Zealand when she was seven years old. She completed a BE(Hons) in Mechanical Engineering at the University of Canterbury in 2016 and began a PhD there in 2018.

Jessie's thesis focuses on designing a method for automated breast cancer diagnosis using Digital Image Elasto Tomography and surface motion data from actuated breast tissue. Her research interests include bio engineering and mathematical modelling.

Outside of work Jessie is a competitive horse-rider and has competed for Canterbury and New Zealand. She is passionate about the outdoors and enjoys hiking, skiing and travelling.

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9.

**Lewis Green****University of Auckland****Breaking the Wall of Immunotherapy  
via Immunogenic Cell Death**

Kia ora, my name is Lewis Green and I grew up in Gisborne on the East Coast of Aotearoa New Zealand. I moved to Auckland in 2016 for university and have been there ever since. Although I was initially a bit unsure on what to study at university, I finally settled on Medicinal Chemistry and haven't looked back since. My honours level research focussed solely on the synthesis of bioinorganic compounds. However, for my doctorate research I made the decision to diversify and investigate the effects of metal-based compounds on immune system regulation. In particular, I am looking at changes to cancer cells following compound treatment and how these treated cancer cells can modulate and influence the immune system. Outside of my research I enjoy occupying my time with a range of activities. The main one of these is competing in, and coaching, rowing.

10.

**Muhammad Rehan****Massey University****Breaking the Wall of Gut Sampling**

I'm originally from Pakistan and did my engineering from there. Currently, I'm pursuing my PhD in microrobotics from Massey University. I have more than 10 years of research experience in the field of robotics and almost 3 years of extensive experience in the field of robotic capsule.

I had started my PhD in November 2018 and made significant progress so far. Mainly, I'm working on the development of a robotic capsule which has the potential to collect the microbiota and digesta sample from the gut. I have developed a working prototype of a robotic capsule and tested it on alive post-mortem intestinal tissue. The laboratory analysis of collected samples was promising that provided a proof-of-concept for the developed prototype. Currently, I'm working on the miniaturisation of the device so it can be tested in-vivo in live animals, a step before human trials.


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11.

**Dr Nick Smith****Riddet Institute****Breaking the Wall of Sustainable Global Nutrition**

Dr Nick Smith is a Research Officer at the Riddet Institute, New Zealand's Centre of Research Excellence in food science and nutrition, hosted by Massey University. Nick has a background in mathematical modelling of complex systems, undertaking his PhD developing predictive models for the human intestinal microbiome. Nick's current research is part of the Sustainable Nutrition Initiative at the Riddet Institute, developing the DELTA Model: a globally applicable tool to investigate sustainable nutrient production for human consumption. His goal is to understand what the future food system should look like in order to deliver nutrition for all without compromising sustainability.


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12.

**Sachira Kuruppu****University of Auckland****Breaking the Wall of Mesenteric Ischemia**

Sachira Kuruppu is a PhD student in the gastrointestinal group at the Auckland Bioengineering Institute. His research focuses on investigating the relationship between electrophysiology and motility of the intestine. Sachira holds a degree in Electronics and Telecommunication Engineering and is an experienced embedded systems engineer. His current work involves developing new computational and experimental techniques to improve high-resolution electrical and video mapping. He envisions that these techniques would further our understanding of GI motility and help create better therapies and diagnostic tools for gastrointestinal disorders.


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13.

**Dr Samarth****The New Zealand Institute  
of Plant and Food Research****Breaking the Wall of Long-term Plant Memory**

I was born and brought up in New Delhi, India where my interests to study plants primarily developed. I completed my Master's in Plant Biotechnology from the University of Hyderabad, India. I then moved to New Zealand to pursue my PhD in Plant Biology under the guidance of fantastic five (that's what I call my supervisory team; Emerita Prof. Paula Jameson, Prof. Dave Kelly, Prof. Matthew Turnbull, Prof. Richard Macknight and Prof. Anthony Poole) where I studied molecular control of mast flowering in New Zealand endemic flora. Since then, I have worked as a postdoctoral fellow in the lab of Prof. Richard Macknight to study the genetic variation and transcriptomic responses in perennial ryegrass. Currently, am working as a postdoctoral scientist under Prof. Kevin Davies studying the stress tolerance mechanisms and regulation of flavonoid production in hornworts, the basal land plants.


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## KAITAUTOKO PARTNERS

### Ngā mihi thank you to partners and supporters

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## KAITAUTOKO PARTNERS

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### Supporting Partners



### Network Partners







## KŌRERO MAI FEEDBACK

- What is your overall impression of the Falling Walls Lab New Zealand?
- What are your concrete suggestions for improvement?
- What was most challenging?




Please provide your feedback to:

Royal Society Te Apārangi,  
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E-mail: [international.applications@royalsociety.org.nz](mailto:international.applications@royalsociety.org.nz)



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