Riddet Institute
Kōkiri - Te Hā o te Kai

APRIL: 2024
IMPACT CASE: 06

FRONTIER

OUR INNOVATIONS FOR A HEALTHIER FUTURE

GROWING TOMORROW'S LEADERS

IT TAKES WORLD-CLASS SCIENTISTS AND CUTTING EDGE RESEARCH FOR NEW ZEALAND TO STAY AT THE FOREFRONT OF FOOD SCIENCE.

Food is central to New Zealand's economy. Over half of New Zealand's export income derives from food products. Today, more than ever before, our food industry relies on science and technology to ensure premium products, efficient processes and, increasingly, the development of high-value, IP-embedded specialty food ingredients.

At the Riddet Institute, our purpose is to keep New Zealand at the frontier of food science and we play a pivotal role in bringing scientific excellence to the New Zealand food industry. The Institute is internationally acclaimed and led by scientists of international renown. The Riddet Institute's environment for discovery and learning is fertile ground for building research capacity. Its students of today will be leaders of a prosperous food industry of tomorrow - in New Zealand and around the world - one that has the ability to develop innovative, healthier foods.

SINCE BECOMING A CoRE, THE RIDDET INSTITUTE HAS TRAINED

181

students who have graduated with PhDs

58

students who have attained other postgraduate qualifications

› Creativity, excellence, scholarship and learning

The Riddet Institute was established as New Zealand's only Centre of Research Excellence (CoRE) in food science in 2007. Since then, we've welcomed scientists from across New Zealand and the globe to provide opportunities and leadership training to inspire them to achieve at the highest levels of their field.

The Riddet Institute students gain the opportunity to work and collaborate with internationally regarded scientists and with commercial businesses both here in New Zealand and overseas. In studying with the Riddet Institute, they get to form a part of the exciting food research, education and industrial collaborative networks that benefit New Zealand's agri-food industry.

Through our intensive research-teaching approach, we've created a dynamic culture that highly values creativity, the pursuit of excellence, scholarship and learning. It's an approach that positions us to attract and train top graduates and prepare them for leadership in some of New Zealand's and the world's most prestigious research institutions and food industries

Today, more than half of the Riddet Institute's graduates have remained in New Zealand, with most now working in research institutions, universities or the food industry for companies including Fonterra, Synlait, Goodman Fielder. Others who have left to gain experience in overseas most often remain part of the Riddet Institute's collaborative networks, and in this way, continue to extend the depth and breadth of New Zealand's food sector.

› SNAPSHOTS OF EXCELLENCE

The researchers featured below started their careers as Riddet Institute PhD scholars. These bios provide a select sample of the breadth and depth of scientific talent that has been – *and is* – part of the Riddet Institute story.

Dr Anwesha Sarkar

Professor & Chair,
Colloids and Surfaces
University of Leeds, UK

Award-winning scientist, lecturer, and innovator in Food Colloids and Digestion

Professor Anwesha Sarkar was a Riddet Institute PhD scholar from 2007 to 2010. Professor Sarkar's thesis focused on food colloids and digestion. In 2009, she was awarded the Elsevier Young Scientist Award, and her thesis was included in Dean's List at Massey University.

After graduation, Professor Sarkar worked at the Nestlé Global Research Centre in Lausanne, and Nestlé Headquarters (Innovations) in Switzerland. In 2014, Professor Sarkar joined the University of Leeds in the United Kingdom to become a Lecturer in Food Colloids. She has since become a full Professor and Chair of Colloids and Surfaces at the university and serves as the Director of Research for the School of Food Science and Nutrition.

In 2019, Professor Sarkar received the prestigious Royal Society of Chemistry (RSC) Food Junior Medal in the UK. she is on the editorial board of the journals Food Hydrocolloids, Tribology Letters and Journal of Texture Studies, and herself has published over 120 peer-reviewed articles and book chapters. She is also the co-inventor of 8 patents, founded University of Leeds spin out MicroLub Ltd in 2023, is a recipient of the prestigious Institute of Food Technologists, USA (IFT) Research and Development Award 2024 (the first to receive from Europe) and is regularly invited to give keynote and plenary lectures around the world at conferences in food colloids, oral processing and soft matter areas.

Protein dynamics expert, Senior Lecturer in Theoretical Biophysics at The University of Auckland

Dr Mercadante obtained his PhD in Chemistry at The University of Auckland, split between Auckland and Cambridge as a European Molecular Biology (EMBO) fellow. After graduating, Dr Mercadante joined The Heidelberg Institute for Theoretical Studies in Germany, where he focused on studying protein conformational dynamics using computational methods.

He then worked at Zürich University in collaboration with the Weizmann Institute of Science in Israel. In 2019, Dr Mercadante was awarded a Fast Start Marsden Grant as Principal Investigator.

In 2020, Dr Mercadante returned to New Zealand and joined The University of Auckland as a Senior Lecturer. He leads a theoretical biophysics group that employs computer simulations directly coupled with experiments to investigate molecular dynamics of structured and disordered proteins, to ultimately understand and design molecular function.

Dr Davide Mercadante

Senior Lecturer,
University of Auckland

Dr Anant Dave

Regional Technical Manager
(Middle East and Africa),
Fonterra, UAE

From rural India to global impact, Food Scientist with a diverse career, now leading Technical Support at Fonterra

Dr Anant Dave's career is defined by his passion for food science research and a 15-year industrial career. Originally from rural Gujarat, India, he earned his doctoral degree from Massey University. His research tenure included work on colloidal oil body structures in plants, the digestion behaviour of non-bovine milks, and the digestibility of plant-based milks. He helped secure over 1 million NZD in research grants from the New Zealand-Singapore and New Zealand-China Strategic Catalyst Funds.

Dr Dave's industrial experience includes roles at Nestlé, Unilever, DuPont, and Ireland's Teagasc Food Research Centre. At the Riddet Institute, he contributed to the commercialisation of FerriPro, a dairy-based iron fortification ingredient used by Nestlé. In 2021, he joined Fonterra as Senior Research Technologist. He is now the Regional Technical Manager leading Fonterra's technical support and new business development in Middle East and Africa.

Award-winning Dairy Scientist with a rich research portfolio and leadership roles in ADSA and IFT

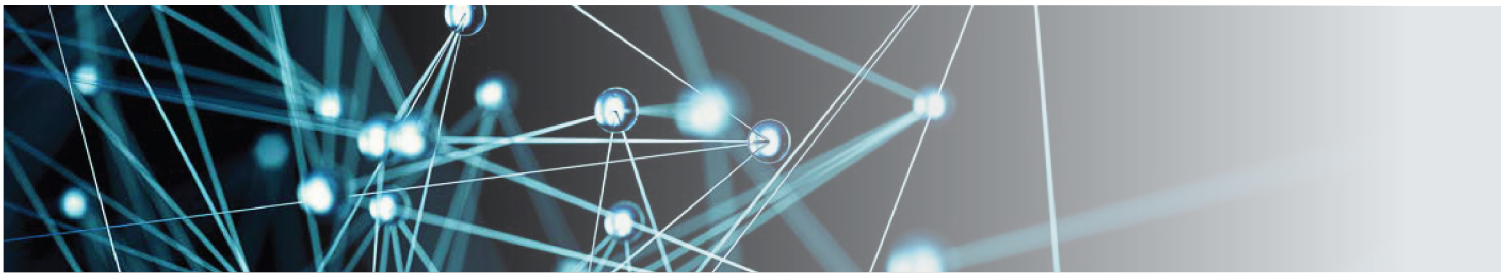
Dr Prateek Sharma had prior experience in industry as a food scientist in India and Ireland before coming to the Riddet Institute to pursue his PhD. Dr Sharma's PhD focused on shear work induced changes in rheology of model mozzarella cheese and his research career in dairy science, including product portfolios such as cheese, whey ingredients, UHT products, and liquid emulsions.

At Utah State University, he has a diverse research portfolio with focus upon understanding structure-function relationships in cheese and dairy powders, wear behaviour, and use of advanced rheological techniques in dairy foods.

Dr Sharma is recipient of prestigious awards including ADSA Foundation Scholar Award, Career-FIT, Marie-Curie post-doctoral fellowship and Erasmus Mundus scholarship from European Commission, William C. Winder and Rebecca Steward Winder Professorship Award 2022. Dr Sharma is past Chair (2022-23) for IFT Dairy Foods Division and currently serves on the overall planning committee of ADSA annual meeting.

Dr Prateek Sharma

Assistant Professor
(Food Science)
Utah State University,
USA



Dr Sarah Priour

Specialist in Fermentation
Nestlé, Switzerland

Innovator in fermentation and bacterial stability, leading research and development at Nestlé

After gaining her Master of Engineering in biology and food science from the Université de Technologie de Compiègne in France, Dr Sarah Priour joined Nestlé as a Junior Engineer Trainee before moving into a Junior Research and Development Specialist role. She then moved to New Zealand to undertake her PhD at the Riddet Institute.

Her thesis considered the stabilisation of dried Lactobacillus rhamnosus against temperature-related storage stresses. While at the Institute, Dr Priour competed in the Innovate 2018 competition, and her team made the final 6 innovations of the year.

After her PhD, Dr Priour returned to Nestlé in Switzerland as a Specialist in Fermentation. Her works focus on fermentation of different matrices and format and on bacterial stability in various formats. As a scientist and project manager, she designs and conducts lab- and pilot-scale trials and is involved in product development and deployment for industrialisation.

Champion of sustainable nutrition, studying global food systems and leading key research initiatives at the Riddet Institute

Dr Nick Smith was a PhD scholar with the Riddet Institute from 2017 to 2020. His research focused on mathematical modelling of microbial cross-feeding on hydrogen in the human colon.

Dr Smith is now a Research Officer at the Riddet Institute where he works as part of the Sustainable Nutrition Initiative®, a programme providing evidence for the sustainable food system debate and ensuring that human nutrition is seen as a key aspect of sustainability.

His expertise is in mathematical modelling of complex systems with a particular focus on human nutrition. He now studies the dynamics of global and national food systems and their impact on the nutrition of the global population, and plays a key role in the development of SNi models such as the DELTA Model®. He is also the science co-leader of an MBIE Endeavour funded research programme building a future scenario model for the NZ food system.

Dr Nick Smith

Research Officer
Riddet Institute, New Zealand

Dr Vikas Mittal

Technical Head
Beverage and Dairy
Kerry Ingredients, India

PhD scholar turned industry leader, innovating in Dairy and Functional Foods at Kerry Ingredients, India

Dr Vikas Mattal graduated with his PhD from Massey University in 2015. His research focused on the interaction of iron, protein, and orthophosphate in milk systems.

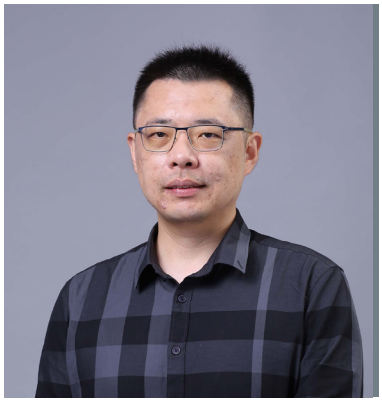
His PhD helped him to transition from a product developer to someone who understands the scientific principles driving product development. Over the past decade since leaving the Riddet Institute, he has worked in various domains including functional foods, Ayurveda based food products, and dairy products.

He is currently the Technical Head – Beverage and Dairy at Kerry Ingredients India, where he creates and applies innovative solutions to address technical challenges faced by consumers.

Leading fundamental research in Food Biophysics and developing health-benefiting food products at China Agricultural University

Associate Professor Qing Guo is an Associate Professor in Food Science. He holds a position at the College of Food Science and Nutritional Engineering, China Agricultural University, where he leads a research group focusing on fundamental research on food biophysics and the development of food products with added health benefits.

Assoc. Prof Guo completed his PhD in Food Technology from the Riddet Institute, Massey University in 2015. Before his current position, he was a postdoctoral research fellow at the Department of Chemistry & Biology, Toronto Metropolitan University, Canada.



Dr Qin Guo

Associate Professor
China Agricultural University
China

Dr Arup Nag

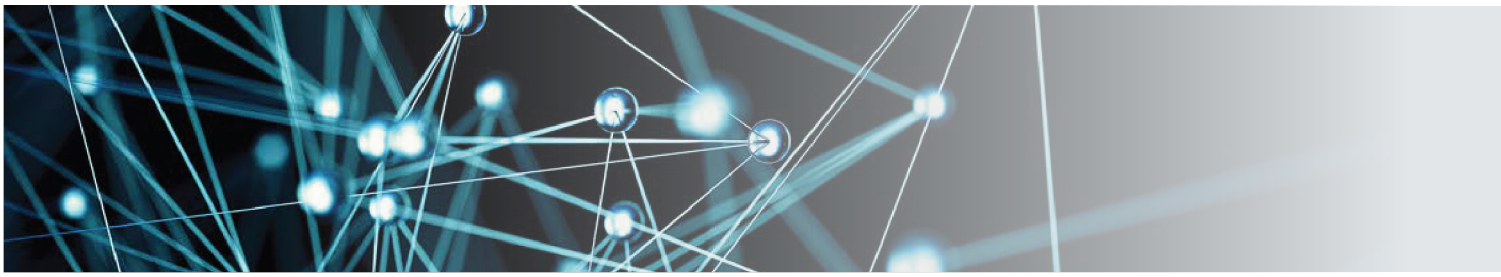
Food Innovation Manager
Riddet Institute and
CTO, ANDFOODS,
New Zealand

Driving innovation and commercial success in food technology at the Riddet Institute and ANDFOODS

Dr Arup Nag completed his undergraduate education and gained significant experience working in the dairy industry in India before moving to New Zealand to pursue his postgraduate studies at Massey University.

Dr Nag's PhD research focused on the stability of probiotic bacteria during long term storage. After his PhD, he joined the Riddet Institute as Food Innovation Manager, and several of his projects have since been successfully commercialised, shaping the future of food technology.

He is also a Co-Founder and the Chief Technology Officer for start-up ANDFOODS, a spinoff company focusing on high quality, nutritious, and functional dairy alternatives using technology developed at the Riddet Institute.



Dr Olivia Ogilvie

Research Fellow,
University of Canterbury and
Chief Executive Officer,
Opo Bio, New Zealand

From Dean's List PhD to leading researcher in Celiac Disease and Biomanufacturing at the University of Canterbury and Opo Bio

Dr Olivia Ogilvie received her PhD in 2020 from The University of Auckland, hosted by the Institute for Plant and Food Research and funded by the Riddet Institute.

Her PhD was placed on the Dean's List and investigated the relationship between food processing, structure, and digestion in celiac disease. Dr Ogilvie is now a Research Fellow at the University of Canterbury (Biomolecular Interaction Centre) with research interests spanning alternative proteins, protein allergens, and celiac disease.

She currently holds an HRC Emerging Research Grant focused on the microbiome's effect on digestion in celiac disease. Dr Ogilvie is also engaged in science commercialisation through Opo Bio, a start-up of which she is a Co-Founder and CEO. Opo Bio develop novel cell lines for scaling biomanufacturing, for which they have secured venture capital funding and reviewed support from the New Zealand Ministry for Primary Industries' Sustainable Food and Fibre Futures fund.

Award-winning researcher and innovator in food technology at the Riddet Institute

Dr Debashree Roy came to the Riddet Institute with prior experience in industrial research and development in the Middle East. She completed her PhD in Food Technology in 2021 at Massey University. Her thesis focused on understanding the structural changes in milk of different species during digestion.

Dr Roy has been one of the recipients of International Dairy Federation (IDF) Pavel Jelen Early Career Scientist Award (2022) and International Pieter Walstra Science Award (2022) for her research projects.Dr Roy became a Postdoctoral Fellow at the Riddet Institute after graduation and pursued fundamental and applied research for the development of structurally and nutritionally superior future foods.

In 2023, she won the Falling Walls Lab Aotearoa New Zealand competition with her pitch on breakthrough technology for developing plant-based cheeses. She is also a Co-Founder and the Agricultural Material Specialist for start-up company ANDFOODS, a spin-off company dedicated to pioneering new sustainable, plant-based foods using breakthrough technology from the Riddet Institute to make a significant contribution to the food system. Currently, Dr Roy is a Research Officer with the Riddet Institute and is pursuing research related to food structure, digestion, and innovation projects.

Dr Debashree Roy

Postdoctoral Fellow
Riddet Institute and
Agricultural Material
Specialist,
ANDFOODS, New Zealand

Dr Nikki Renall

Postdoctoral Fellow,
Massey University,
New Zealand

Exploring diet, gut microbiota, and metabolic health in Māori Women as Postdoctoral Fellow at Massey University

Dr Nikki Renall (Taranaki) graduated with her PhD from Massey University in 2021. Her PhD research explored the association between the habitual diet of Pacific and New Zealand European women with different metabolic disease risk and body fat profiles, in relation to the composition of their gut microbiota and metabolic disease risk.

Dr Renall is a New Zealand Registered Dietitian and a Hohua Tutengaehe Māori Health Postdoctoral Fellow at the Research Centre of Hauora and Health, Massey University. She is currently exploring the changes in Māori food practices over the last 200 years with Professor Lisa Te Morenga as part of a collaborative research project entitled Mātauranga Kai, funded by a Māori Health Research Postdoctoral Fellowship grant from the Health Research Council of New Zealand.

From mastering Dairy Science and Technology in Netherlands, Europe to innovating cheese products at Fonterra, Palmerston North

Before moving to New Zealand, Dr Siqi Li completed his Masters in Dairy Science and Technology from Wageningen University & Research in the Netherlands. He was then a Research Intern at Friesland Campina Innovation Centre, in The Netherlands, before coming to New Zealand to undertake his PhD with the Riddet Institute. His thesis was on understanding the impact of New Zealand milk seasonality on dairy product quality.

After completing his research, Dr Li undertook a postdoctoral fellowship with the Riddet Institute, before taking a role as Research Scientist at Fonterra in Palmerston North. He is currently working on the research and development of novel cheese products.

Dr Siqi Li

Research Scientist
Fonterra, New Zealand

Dr Hoang Du Le

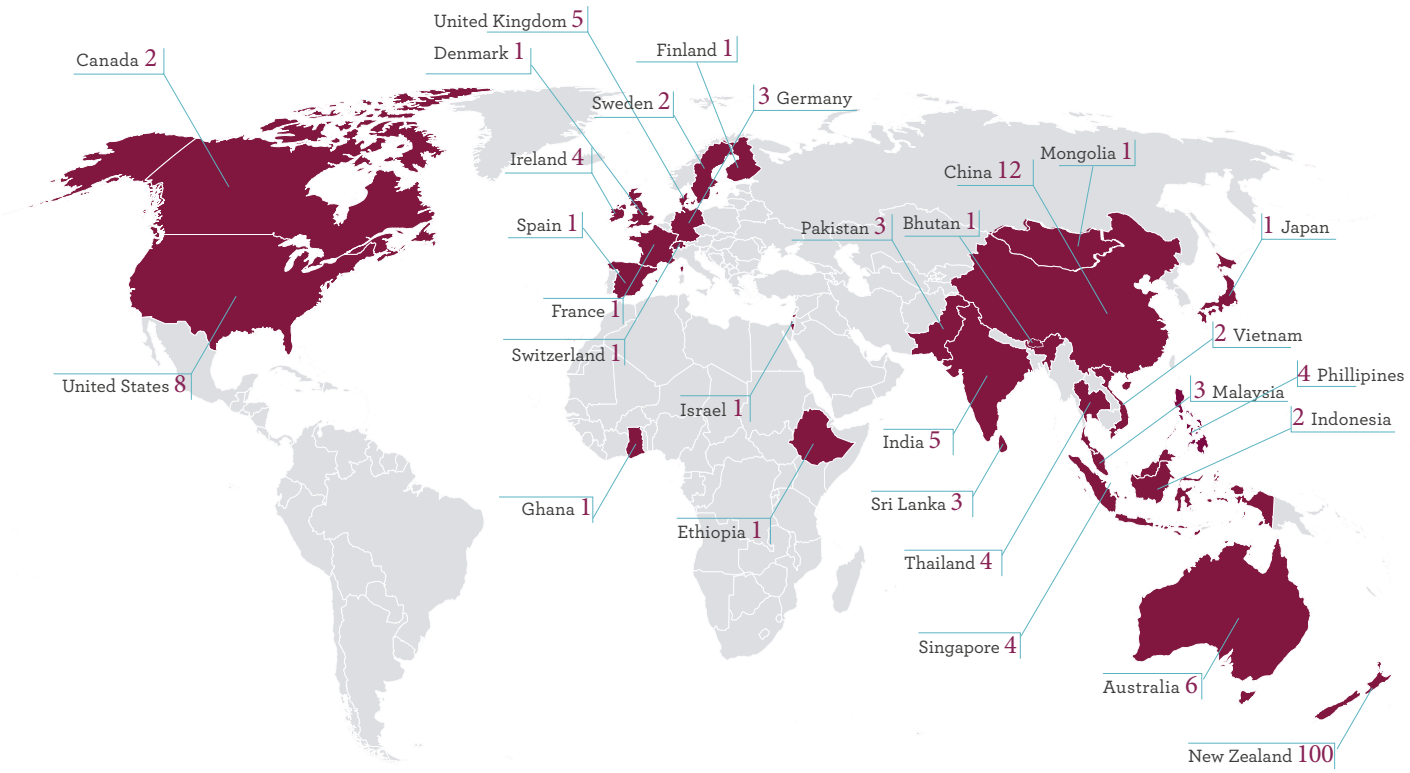
Associate Research
Scientist,
Néstle, Switzerland

PhD in Emulsions, award-winning presenter, and Research Scientist at Nestlé Switzerland

Dr Hoang Du Le has had a varied career across academia and industry. After undertaking his Masters in Food Science and Technology, Dr Du Le was a Lecturer at the HCMC University of Technology and Education in Vietnam. In 2017, he moved to New Zealand to undertake his PhD at Massey University in carbohydrate-based oil-in-water emulsions for delivery of short-chain fatty acids. During his PhD, he was a visiting researcher at the University of Leeds in the School of Food Science.

He also won the Three Minute Thesis People's Choice Award at Massey University in 2019. After his PhD, Dr Du Le joined Nestlé Product Technology Center based in Konolfingen, Switzerland as an Associate Research Scientist. In this position, he leads and supports various projects within Nestlé Nutrition Business.

Postgraduate Destinations



The Riddet Institute is a New Zealand government-funded Centre of Research Excellence

The Institute brings together New Zealand's leading scientists in food and nutrition in a collaborative, multidisciplinary national network. Partners include Massey University (host partner), the University of Otago, The University of Auckland, AgResearch and Plant & Food Research. The Institute's research programme is focussed on the effect of food structure on digestion and health, and through its work, it aims to be a catalyst for innovation to create sustained competitive advantage for New Zealand's food industry.

› The Riddet Institute Partners

MASSEY UNIVERSITY TE KUNENGA KI PŪREHUROA UNIVERSITY OF NEW ZEALAND
agresearch āta mātai, mātai whetū
Plant & Food RESEARCH RANGAHAU AHUMĀRA KAI
THE UNIVERSITY OF AUCKLAND NEW ZEALAND Te Whare Wānanga o Tāmaki Makaurau
University of Otago ŌTĀKOU WHAKAIHU WAKA

Riddet Institute ADVANCING FRONTIERS IN FOOD SCIENCE
Riddet Institute, Massey University, Private Bag 11 222, Palmerston North 4442 / Phone:+64 6 951 7295 / info@riddet.ac.nz