August / September 2025

Food New Zealand

NZ'S AUTHORITY ON FOOD TECHNOLOGY, RESEARCH AND MANUFACTURING

Who is responsible for food safety?

Aotearoa's top scientists dive right in

NZIFST 2025 Conference Awards

Meet the newly appointed Fellows and Distinguished Fellow

From Farm to Fork - and Beyond

The JC Andrews Address on the future of our food journey.

Micro and nano

A serious plastics issue?

THE OFFICIAL JOURNAL OF THE NEW ZEALAND INSTITUTE OF FOOD SCIENCE AND TECHNOLOGY INC.

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ON THE COVER
Consumers beware! Who is responsible for food safety? Kim Hill referenced Christmas pudding and tinned corned beef during a lively discussion at the NZIFST Conference, questioning 'when do forgotten pantry items go from edible to expired?'

October/November edition of Food New Zealand magazine

Features:
- Food ingredients – new releases in flavours, functional ingredients, core ingredients, clean labels.
- Cloud-based processes and food safety management.
- Packaging with AIP – new technology and materials for food packaging, sustainable and recyclable packaging.

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Welcome to the post-conference issue of *Food New Zealand*.

It's been about six weeks since the NZIFST 2025 Conference wrapped up in Palmerston North – a thought-provoking and rewarding experience for me as a first-time attendee. Bringing together a diverse cross-section of the food science and technology industry, from students and early-career professionals to seasoned experts and retirees, it was a privilege to meet so many of you in person, and to hear firsthand about the challenges, innovations, and research shaping the sector.

Across three days, attendees took in a wide range of sessions – from updates on food safety and science, to regulatory insights and future-focused discussions. One of the liveliest was the panel hosted by Kim Hill, *Let the Consumer Beware: Who is Responsible for Food Safety?* For those who joined us in that session, the cover image on this issue may bring a smile.

The conference also celebrated excellence across the industry. Congratulations to all award recipients, including NZIFST Supreme Fellow and Fellows, whose achievements were acknowledged at the Awards Dinner. If you missed it, you'll find plenty of highlights in this issue.

Of course, the conference was more than just sessions. From the Women in Science Breakfast to the Early Career Foodie Function, Brew Union drinks and the Fellows Lunch, the social programme offered plenty of chances to connect, reflect, and recharge.

Many thanks to the sponsors who made the conference possible, and to everyone who presented, or attended. Much of the content in this issue reflects the energy and ideas shared over those few days – we hope it gives you a taste of what you might have missed, or a moment to revisit.

Plans are already underway for next year's event. We look forward to seeing you there.

Chantell Bramley
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I feel deeply honoured – and genuinely excited – to step into the role of President of the New Zealand Institute of Food Science & Technology (NZIFST). When I reflect on my 18-year journey in the food industry, from hands-on roles at Matt Solutions and Formula Foods, to partnering with brilliant teams both here and internationally, it's really the people and connections I've made that stand out.

As I take on this new chapter, I can't help but look back with gratitude on my time as Vice President at NZIFST. The chance to listen to members, understand what inspires and sustains them, and help shape NZIFST's future was truly special. I've valued the opportunity to help refine NZIFST's vision and to see strategic initiatives come to life – always grounded in what our members value most: meaningful connections, learning, and community.

As I take up this role, my priorities for the next two years are clear and in alignment with our strategy:

- Firstly, to strengthen member engagement and celebration through awards, ensuring our network truly benefits everyone.
- Secondly, I am committed to expanding opportunities for professional development and knowledge-sharing, so we all grow and adapt as our industry evolves.
- Lastly, I aim to foster collaboration – with industry partners, academia, and each of you, to address our sector's challenges together.

My vision as President is personal. I want every NZIFST member to feel at home in our network, to know their voice matters, and to see their growth championed. Over the next two years, I'm committed to sparking more connections – whether at branch gatherings, over a coffee, or online so that we all feel part of something vibrant and supportive.

The food industry is facing rapid change, from technological innovation to sustainability demands. NZIFST has a proud history and is well placed not just to keep pace, but to actively shape the future. I look forward to working with our new Board and each of you to celebrate achievements, share expertise, and advance our profession. Thank you for your trust and support. I'm excited for what lies ahead.

Bob Olayo
President, NZIFST

Newsbites

Food New Zealand's round up of news about NZIFST members, associated companies and other items of interest.

Guy Roper to Chair DCANZ

The Dairy Companies Association of New Zealand (DCANZ) has appointed Guy Roper as its Independent Chairman.

Mr Roper takes up the position from Matt Bolger, who stepped down at the end of last year following his appointment to Fonterra's senior management team.

Mr Roper is an experienced director, with a strong background in the dairy industry. He was Chief Executive of Port Taranaki and has held a variety of senior roles at Fonterra and Kiwi Co-operative Dairies. He currently holds directorships at Fisher Funds Management and Port Nelson.

New Zealand Food Network teams up with kiwifruit industry to tackle food insecurity

New Zealand Food Network (NZFN), the country's largest food support charity and national food rescue, is working with the kiwifruit industry this season to help feed communities in need.

NZFN and its packhouse partners rescued and redistributed 160 tonnes of kiwifruit in 2024, and there continues to be growing demand for support to get healthy food into vulnerable New Zealand communities.

With the support of Zespri and in partnership with a nationwide network of packhouses, NZFN is leading the charge to increase access to nutritious kai and reduce food waste in the agriculture sector.

NZFN Chief Executive, Gavin Findlay, says, "Fresh produce must pass through many hoops before it ends up on the supermarket shelves... With the help of our network of incredible organisations, we're making sure that it's going towards nourishing Kiwis who need it most."

Zespri Head of Global Public Affairs Michael Fox says, "We're proud to work with NZFN to ensure that fresh and healthy kiwifruit which doesn't quite meet our export standards but is still delicious and safe to eat reaches those in need and makes a positive impact on our communities."

This initiative comes as NZFN's most recent Food Security Snapshot revealed that over half a million people are now being supported by NZFN's Food Hubs every month.

"Food insecurity remains a critical issue for many New Zealanders," says Findlay.

Onside CEO Ryan Higgs

Onside launches industry-first platform to tackle shared safety responsibilities in agri supply chains

Agri-tech company Onside has announced the launch of PCBU Enterprise, an industry-first digital platform designed to revolutionise shared safety management across agriculture supply chains in Australia and New Zealand.

Developed in partnership with ANZCO Foods – one of New Zealand's largest beef and lamb exporters, PCBU Enterprise addresses longstanding challenges related to joint safety responsibilities across the supply chain between enterprises, contractors, suppliers and transport operators.

The new platform offers a multi-party safety and risk network, enabling agribusinesses to collaboratively manage shared risk and map joint responsibility areas with their suppliers and contractors - allowing real-time communication, accurate compliance records, and inter-business risk reports.

"Loading yards, accessways, trucks, plants, paddocks, runways, irrigation trenches - anywhere operations intersect is where things can go wrong," says Ryan Higgs, CEO of Onside. "You can't hide behind organisational layers when safety fails."

The innovative platform has gained strong backing and collaboration from the National Livestock and Transport Safety Council (NLT&SC), which leads New Zealand's livestock transport sector in improving safety, standards, and outcomes across the industry.

Nestlé announces partnership with Cawthron Institute to explore potential of integrated multi-trophic aquaculture

Nestlé has announced a new research partnership with Nelson's Cawthron Institute to explore innovative food production practices across the value chain, including marine production systems.

In its announcement, Nestlé highlighted the need to find new ways of feeding a growing global population within planetary boundaries. The company pointed to aquaculture's potential to enhance the sustainability of food systems, from producing low-carbon ingredients for food to developing algal bioplastics for packaging.

Cawthron Institute is contributing to this research and development programme by studying the interactions between different species of seaweed and shellfish to assess the potential of integrated multi-trophic aquaculture.

Integrated multi-trophic aquaculture is a new approach that involves farming different aquatic species from various levels of the food chain together. It can enable the waste from one species to serve as food for another – a natural recycling process that helps to maintain water quality.

L-R: Karen Cooper, Nestlé, Lesley Rhodes, Cawthron Institute

From plate to planet: how sustainable gastronomy is redefining food values

Christian Philippsen, Managing Director, BENEO, Asia Pacific

Gastronomy is no longer just about taste – it's about ethics, provenance, and sustainability. As food choices increasingly reflect personal values, questions like "Who produced this?" and "What's its environmental impact?" are reshaping how we define quality and trust in our diets. This shift is influencing food brands to rethink everything from sourcing to processing.

Plant-based eating continues to grow, especially in Asia-Pacific, where the meat substitutes sector is projected to hit USD 4.35 billion by 2030. Pulses like the faba bean offer both nutrition and sustainability. Naturally high in protein and fibre, faba beans support soil health and reduce fertiliser use. BENEO's faba bean protein concentrate delivers 60% protein and functional properties for use in meats, dairy alternatives, and baked goods.

BENEO's new pulse plant in Germany operates entirely on renewable power and recycles its own waste heat. Using dry fractionation – an energy-efficient, water-free process – the facility sets a new standard for sustainable ingredient production. Locally sourced faba beans avoid irrigation and meet Farm Sustainability Assessment Gold standards. BENEO's zero-waste model uses every part of the crop, from protein concentrates to animal feed.

Sustainable gastronomy isn't just about meals – it's about systems. Every decision, from choosing traceable ingredients to supporting regenerative farming, helps build a healthier, more resilient food future. Sustainability is no longer a trend. It's the mindset behind every meaningful bite.

New diagnostic platform could detect Alzheimer's

Ren Dobson

A team of researchers from the University of Canterbury (UC) are developing a new diagnostic platform that could make early disease detection faster, cheaper, and more accessible. The same technology could also be used for drug testing, food safety, and winemaking quality control.

Lead researcher Professor Renwick Dobson says the technology could generate up to $371 million a year for New Zealand companies. "We want to make it possible for people to get accurate results quickly, whether it's checking for early signs of Alzheimer's disease, carrying out roadside drug testing, or monitoring fermentation in winemaking."

The team is designing microfluidic chips that control fluid movement without complex machinery, and electrochemical sensors that deliver wireless readouts. They're also engineering custom bioreceptors to detect specific compounds linked to diseases, drugs, and wine flavour profiles.

One of the most exciting applications is detecting Alzheimer's through proteins found in a person's tears. UC biochemist Dr Vanessa Morris says this could allow for quick, non-invasive diagnosis earlier in the disease's progression. "Using tears and the diagnostic tool could mean people are diagnosed even before they have significant symptoms and can receive treatment early, when it is most useful."

The project is also mentoring 13 early-career researchers in the latest biosensor and microfluidic technologies. "It's not just about this platform," says Dobson, "it's about building capability for New Zealand to keep leading in this space."

Sir Peter Gluckman: Low R&D investment leaves New Zealand lagging

The Annual Thomas Cawthron Memorial Lecture was held in early June in Nelson. Speakers Sir Peter Gluckman and Dr Kate Hutson discussed *'how can science better serve society?'*.

In his lecture, Sir Peter Gluckman highlighted the urgent need for New Zealand to increase investment in science and research to address major global and domestic challenges, including climate change, geopolitical tensions, and rapid technological disruption.

"New Zealand hasn't adequately funded R&D for decades," he said, noting that small, advanced economies spend about three times more per capita. He cited Treasury research showing long-term agricultural R&D had "enormous dividends."

He stressed the importance of fostering innovation, retaining local companies, and attracting multinationals, arguing this would deliver the growth New Zealand "desperately wanted." However, he warned that "New Zealand was currently well behind the eight ball in AI and other advanced technologies," and that low public trust was a key barrier.

Ways to build trust in science included "respecting other knowledge systems", he said. "The Cawthron Institute is a remarkable and critical part of New Zealand's science infrastructure... Its role in understanding New Zealand's aquatic and marine ecosystems should not be underestimated."

New research institute to advance the bioeconomy

1 July 2025 marked a new era for innovation to boost the bioeconomy as New Zealand's largest research institute is launched.

The Bioeconomy Science Institute brings together four Crown Research Institutes (CRIs) to form one powerful research organisation focused on optimising the use of biological resources and protecting the natural environment. With more than 2,000 people, the Bioeconomy Science Institute is New Zealand's largest research institute, supporting sectors contributing 80% of the nation's exports and more than 10% of GDP.

Through world-leading research, the Bioeconomy Science Institute will advance innovation in agriculture, horticulture, forestry, aquaculture, biotechnology and manufacturing; protect and enhance ecosystems from biosecurity threats and climate risks; enhance and protect our native forests; and develop new bio-based technologies and products.

"The formation of the Bioeconomy Science Institute is a really exciting opportunity," says Mark Piper, Transition CEO. "New Zealand's economy relies on the food and fibre sectors, with exports predicted to grow by 10% over the next four years. Challenges such as the changing climate, unpredictable weather events and the growing global population will require transformational change for New Zealand and the world. By bringing together more than 1,500 researchers into one organisation we can better support the future growth and resilience of the bioeconomy while maintaining a healthy environment."

The New Zealand Institute for Bioeconomy Science Limited (Bioeconomy Science Institute) brings together AgResearch, Manaaki Whenua – Landcare Research, Plant & Food Research and Scion into a single Crown Research Institute, the first step in forming new Public Research Organisations (PROs). Today also sees the formation of the New Zealand Institute for Earth Sciences Limited (Earth Sciences New Zealand), a merger of NIWA and GNS Science, and the New Zealand Institute for Public Health and Forensic Science (PHF Science), formed from ESR. The formation of a fourth PRO, for advanced technology research, is anticipated in 2026.

Conference Highlights

From thought-provoking sessions to lively networking and unforgettable social events, the NZIFST Conference 2025 brought together passionate professionals from across the food industry. Over the next three pages, we share a visual glimpse into the energy, connection, and inspiration that filled these days in Palmerston North.

Catering sponsored by Pacific Process

AGM: Wendy Bayliss, Esraa El Shall, Grant Boston

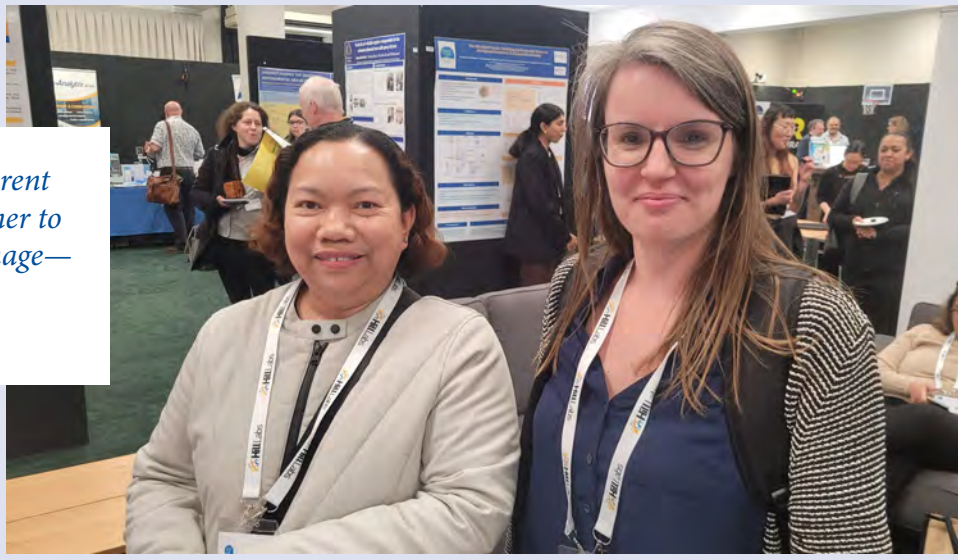
> *"It was insightful to hear the parallels drawn from four different sectors (dairy, meat, horticulture and seafood) during the plenary session."*
> Evelyne Maes, AgResearch.

Posters and Exhibitor social event

Navigating Food systems L-R Dr Marlon M. Reis (session Chair), Kalmia Kniel, Stuart Horne, Susan Tosh

L-R Bob Olayo, Dave Rout and Zach Rout at the Brew Union social

> *"It was important to hear how the different sectors of the food industry work together to promote and protect New Zealand's image—particularly in the area of food safety."*
> Debie Magistrado, Westland Milk Products.



L-R Debie Magistrado, Westland Milk Products and Evelyne Maes, AgResearch

> *"I'm going to be eating more oats and kiwifruit now!"*
> Margaret McCracken, Canary Enterprises.

L-R Anil Kaw, Westland Milk Products and Margaret McCracken, Canary Enterprises

"I have loved the networking opportunities and all the interesting presentations from the sessions."
Gia Ngoc Lam, University of Auckland

L-R Gia Ngoc Lam and Shailja Data, both University of Auckland

My highlight was Siouxsie Wiles at the Women in Science Breakfast - hearing her very positive, courageous, and brave stories. The Kim Hill panel was great fun, and the Early Career Foodies Function had a really nice sense of community."
Shailja Data, University of Auckland.

L-R Bob Olayo and Glen Neal at the Brew Union social

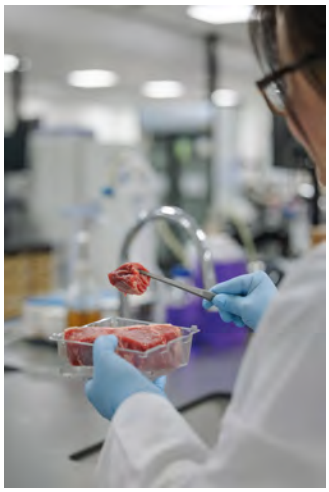
Enjoying the social event at Brew Union

David Pooch and Julie North

STEC testing: why it's essential – and how laboratories are meeting the challenge

Shiga toxin-producing *Escherichia coli* (STEC) continues to be one of the most serious foodborne pathogens facing the global meat industry. With an extremely low infectious dose and the potential to cause severe illness, including haemolytic uraemic syndrome (HUS), STEC has prompted stringent regulatory oversight and a growing demand for advanced laboratory testing services.

Public health impact



The consequences of inadequate STEC testing are significant. Infections can range from mild gastrointestinal discomfort to life-threatening complications. Common symptoms include:

- bloody diarrhoea
- abdominal cramps
- vomiting
- fever

In severe cases, particularly among vulnerable populations such as children, the elderly and the immunocompromised population, STEC can lead to HUS - a condition characterised by kidney failure, anaemia, and thrombocytopenia.

A notable example of the risks posed by STEC is the 1992–1993 Jack in the Box outbreak in the United States, where contaminated hamburger patties led to over 700 illnesses and the deaths of four children. The outbreak resulted in *E. coli* O157:H7 being classified as a reportable disease and marked a turning point in food safety regulation.

Regulatory requirements

In response to such public health threats, the U.S. Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) implemented mandatory testing in 2012 for the "Top 7 STEC" serogroups: O157:H7, O26, O45, O103, O111, O121, and O145.

These requirements apply to beef intended for hamburger production and are part of the Overseas Market Access Requirements (OMAR). Compliance is mandatory for exporters seeking access to the U.S. market.

Laboratory testing process

STEC detection begins with sample enrichment, followed by Polymerase Chain Reaction (PCR) testing. PCR is the industry-standard method for identifying key virulence genes associated with STEC:

- stx1 and stx2 – shiga toxin genes
- eae – adherence gene
- O-group specific genes – for serogroup identification

Screen-positive samples undergo confirmatory testing at the New Zealand Institute for Public Health and Forensic Science (PHF), which includes multiplex polymerase chain reaction (PCR) to detect O-antigen markers, toxin genes, and other required pathogenicity indicators. Results are submitted to MPI's national database, ESTAR, which supports industry-wide monitoring and traceability.

Laboratory capability in New Zealand

In New Zealand, Hill Labs is accredited to perform STEC testing at both its Christchurch and Hamilton facilities. The laboratory adheres to international standards and participates in national and global interlaboratory comparison programs (ILCPs), ensuring consistent and reliable results.

Hill Labs offers:

- direct access to technical and operational teams
- local support for faster response times
- industry-leading turnaround times
- reliable and trusted results

These capabilities position Hill Labs as a trusted provider for food producers navigating both regulatory compliance and public health responsibilities. ▪

Aotearoa New Zealand has a robust food safety system – and it shows

Raewyn Bleakley, Chief Executive, New Zealand Food & Grocery Council

In Aotearoa New Zealand, we can walk into a supermarket, grab our weekly groceries, and check out with confidence. This sense of trust isn't accidental - it's built on a coordinated, systemic effort between food suppliers, retailers, and regulators working quietly behind the scenes to keep our food safe.

Managing food safety, as the number one priority for food suppliers, is ever present in our daily lives, but even with all the checks and balances in place, we live in an imperfect world and occasionally cracks occur. This can then spark the final line of defense – the food recall system. This system was put to the test in 2024, when Aotearoa New Zealand faced one of its largest recall events ever[1]. Fifteen businesses had to recall sesame seeds and sesame-containing products due to potential Salmonella contamination. The response was fast and effective. Regulators, food businesses, and organisations like GS1 New Zealand acted quickly to pull affected products from shelves, reducing the risk to the public.

As technology is vital for keeping labelling information up to date, so too, technology plays a fundamental role in the food recall system. For example, GS1 New Zealand's ProductRecallNZ (PRNZ) digital platform helps businesses manage recalls and withdrawals with speed, accuracy, and confidence.

Recalls rely on fast, clear communication

New Zealand Food Safety (NZFS) data tell us that 88 consumer-level recalls were undertaken in 2024[2]. While that may sound concerning, it's a sign of a sound, responsive system.

Food recalls aren't failures. They're evidence that the system is working - showing there are enough checks and balances to protect consumers and food businesses alike. With the availability of a digital platform, food businesses are spotting issues early, sharing accurate information quickly, and protecting the people who matter most - consumers.

ProductRecallNZ is the platform that supported almost 75% of the 88 recalls in 2024. It allows food businesses to notify supermarkets, regulators, and logistics partners in real time, often resolving issues before a product even reaches the checkout.

What's driving recalls? A focus on consumer safety

Today's shoppers are more aware than ever. They read labels, scan for allergens, and want to know exactly what's going into their kai. From people checking for gluten to allergy sufferers avoiding peanuts or soy, transparency isn't just nice to have, it's essential.

That's why the biggest single cause of all recalls (40 of the 88) was

> *"It's about ensuring the information on label is true and accurate so that people can make informed choices, and brands are able to maintain their quality and consistency."*

undeclared allergens or labelling errors. Much of these issues can be managed by having robust internal systems to ensure that digital labelling and on/pack labelling are better synchronised: another area where integrated technology is key.

It's about ensuring the information on label is true and accurate so that people can make informed choices, and brands are able to maintain their quality and consistency. If a label says, 'dairy free', it should be. And if something isn't right, consumers deserve to know fast.

Despite the unprecedented size of the sesame seed salmonella scare, only 29 of the 88 recalls in 2024 involved potential microbiological contamination, and a further ten involved physical contamination.

Recalls, withdrawals, and doing the right thing

While the word 'recall' gets the spotlight, product withdrawals, often triggered by quality or non-safety labelling issues, also play a major role in keeping food standards high. In 2024 alone, 146 withdrawal events were logged through the ProductRecallNZ digital platform.

Whether it's a misprint on a best-before date or packaging that doesn't match what's inside, more companies are stepping up early, using systems to protect both consumers and their own reputation.

A system built for a smarter food future

Aotearoa New Zealand has one of the most connected, agile recall systems in the world. Something we should all be proud of.

From large retail chains to local food producers, a shared platform for managing and tracing these means consistent, timely information moves across the supply chain, avoiding confusion, delays, or duplication of communication. It's simply good business. And for the average shopper, it also means safer products, better labelling, and more peace of mind.

Safe kai is everyone's business

Food safety is not something we can take for granted. People want to know what's in their food, where it comes from, and rely on companies to act quickly when something goes wrong.

Aotearoa New Zealand's approach, helped by platforms such as GS1 NZ's ProductRecallNZ, shows that with the right digital tools, food recalls can be handled with speed, care, and transparency.

So next time you scan your shopping list, remember safe kai isn't just the goal, it's the expectation of our entire food system. And thanks to the rigour of those systems, it's delivered every single day. ▪

References

1. https://www.mpi.govt.nz/dmsdocument/69486-Consumer-level-food-recalls-annual-report-2024/
2. New Zealand Food Safety. Consumer-level Food Recalls Annual Report 2024

NZIFST/NZFSSRC conference highlights from the food safety perspective

Look both ways

From the NZ Food Safety Science & Research Centre (NZFSSRC, aka the Centre)

The NZIFST-NZFSSRC conference was both nostalgic and future-seeking. Four stalwarts of the food industry, including the New Zealand Food Safety Science & Research Centre's first chair, Kevin Marshall, took us on a fascinating ride from the 1960s (another country), through the 60-year evolution of organisations that punctuated the increasing sophistication of our food industries. What hasn't changed in 60 years is the country's economic dependence on food exports, and their dependence on the highest possible food safety standards.

For the first time, the Centre integrated fully with the NZIFST conference to deliver its food safety sessions and events. In previous years, it has held a separate symposium the day before the conference starts. The new format worked extremely well, and NZIFST and Centre organisers (Wendy Bayliss, Wendy Newport-Smith, Michal Dunn, Don Otter and his conference committee) must be congratulated on the result. It meant that many more NZIFST delegates had the chance to attend the popular 'Women in Science Breakfast' and the Kim Hill panel discussion.

The crowning highlight for the Centre (short for NZFSSRC) was the 2025 NZIFST award for *Significant Contribution to Food Safety* going to Centre Chief Scientist, Distinguished Professor Phil Bremer. Phil guides the Centre's science and research programme and is fondly regarded for his many personal attributes - modesty and integrity chief among them.

Phil's plenary presentation scanned global issues that will keep the Centre in business for the foreseeable future. To highlight some: the politicisation and weaponisation of the food supply, climate change and adverse weather events, the rising prevalence of restrictive and fad diets, the different attitude of younger workers, changing trade and supply relationships, increasing elderly and obese populations, loss of knowledge about food due to urbanisation, and how to best use AI to enhance food safety in a responsible and effective way. Phil says, *"We (food safety scientists) are sometimes steered off course by politicians and consumers – we're not always concentrating on what we should be: reducing those hazards, such as the presence of Listeria monocytogenes in ready-to-eat foods, which are causing the most harm."*

NZFSSRC Board Member, Fiona Wiremu, gently but firmly pointed out the elephant in the mainly export-focused room: the unaffordability of food, and actual hunger and malnutrition affecting children in our own country, which exports 90% of what it produces. With reference to government-provided school lunches, Fiona said that food quality and safety go hand in hand.

She explained, without laying blame, the effects of some regulations on Māori and catering on marae, for example trying to apply commercial kitchen regulations to marae kitchens, just doesn't really work. She emphasised how important wild food gathering is for her people when they can't afford shop-bought protein, and for traditional manaakitanga.

Both Fiona and keynote speaker, iwi agri-business leader Mavis Mullins, called for a national food strategy, but the question of who can and should lead such a project hangs in the air. Is this completely outside the remit of the Centre and NZIFST?

At the Women in Science Breakfast, guest speaker Associate Professor Siouxsie Wiles (University of Auckland) was very open about the incredibly stressful time she has endured over the last five years. Her internationally renowned public communications during the pandemic

L-R: Dr Libby Harrison and Siouxsie Wiles

earned her a social media onslaught, a costly dispute with her employer, and a huge amount of work on top of her already big workload. Despite all, she urges women scientists not to be put off, but to be mindful of her experiences and the naked misogyny she endured. Lest we forget. If anyone questions why we are still having these breakfasts, let them read some of the messages Siouxsie received.

On the topic of toxicity, Centre deputy director Tim Harwood (Cawthron Institute) impressed delegates with a list of naturally occurring toxins in food. Tim's career in toxin chemistry began with a childhood mission to pick rhubarb from his parents' garden. The leaves, as most New Zealanders know, are poisonous. His first ever experiment was to press juice from the leaves to spray aphids. However, the aphids were unmoved and carried on eating regardless, he said. Our grandparents knew to cut the green bits out of potatoes but most of the other hazards on Tim's list are generally unknown to the average NZ cook. Some poisons present in plants can enter the food chain through bees feeding on their flowers. The oft-repeated saying is that the dose makes the poison, so just don't binge on any one food and chances are you'll live to the next meal.

The topic for this year's panel, chaired by Kim Hill, was 'Let the consumer beware. Who is responsible for food safety?' In her opening feint, Kim took her panel to task about chickpeas, which, like many foods, can make you sick if you keep them in the fridge for too long. *"Why wasn't I told that?"* On interrogation by the panel, it became clear that Kim's fridge and pantry could be better managed. The panel was far too experienced to be ruffled by Kim's various angles of attack. There were some imaginative, if rather sweeping, solutions to the nation's food safety and digestion problems – price white bread out of the market. Perhaps, we should just get sick and then get over it (so as to develop immunity). The panel members were the unflappable Phil Bremer, Jocelyn Eason, Glen Neal and Siouxsie Wiles.

The panel was light relief after the sobering presentations by Kerry Mulqueen (Poultry Industry Association of NZ) and Aswathi Soni (MPI-NZFS) on highly pathogenic avian influenza (HPAI).

Kerry spoke about the HPAI strain, H7N6, which caused complete devastation to an Otago poultry farmer at the end of 2024. This strain is usually of low pathogenicity but had mutated in this case to become highly pathogenic. All 200,000 birds had to be destroyed and buried, and the whole site completely sanitised (ongoing) under supervision by MPI. It will be 2026 before the farm is back in business. So far the response has cost about $20million ($100 per bird). It didn't matter that the infection was confined to this one farm, all exports from NZ, including day-old chicks, stopped immediately and have not completely recovered.

If HPAI becomes endemic in our wild bird population, MPI have made it clear, that owing to the low possibility of being able to get it under control, they may not respond. And Kerry says the response from local government is highly variable and concerning. They may or may not help with the disposal of dead birds, including providing suitable sites. There could be repeated infections of domestic flocks, which may put an end to free range farming because of the flocks' greater exposure to droppings and drop-ins by wild birds.

L-R: Kerry Mulqueen (PIANZ) and Roger Cook (NZFS-MPI)

Aswathi, for her part, focused on the strain of HPAI that is causing havoc in the USA, namely the H5N1 strain. She updated delegates on the global statistics and, importantly, reassured them that the virus is not believed to pose a food safety risk, based on the evidence so far. She also highlighted that consuming properly handled and cooked poultry meat, eggs, pasteurised milk, and milk products remains safe. So far, there has been no human-to-human transmission of the virus – only animal-to-human. Aswathi said the new H5N1 strain (clade 2.3.4.4b) has infected 1073 dairy herds in the US (generally cows recover and are not euthanised) and more than 175 million hens, which had to be destroyed to stop the disease spreading. Further experimental or scientific evidence is needed to better understand potential routes for human transmission – whether through oral or other routes. Caution applies to consuming raw dairy milk, raw milk products, and raw poultry products due to the uncertainty around the evidence to date

When it comes to complacency, Pierre Venter from Fonterra had some strong words for the food safety delegates. He said food safety science is lagging behind innovations in the food industry and we need to get

On behalf of NZFSSRC, Director Libby Harrison would like to thank the President of NZIFST, Esraa El Shall, Wendy Bayliss, and all the staff involved in the Conference for accommodating the Centre so graciously. It was a very good conference all round. Congratulations.

L-R: Dr Libby Harrison, Professor Phil Bremer, Wendy Newport-Smith and Esraa El Shall

moving *now*. For example, food safety risk assessment must be a crucial part of the equation with respect to new technology such as cows being fed methane inhibitors, and we need better strategies for consumer education. We need real time risk assessment and more clarity on cause and effect. Pierre recommends that all food safety science PhDs must incorporate artificial intelligence to stay up to date.

Craig Billington of ESR (now the NZ Institute for Public Health & Forensic (PHF) Science) seems to be on the case with the latter. Catalysed by the development of rapid COVID-19 testing, PHF Science is working on real time, or very fast time, indicators for Salmonella and the presence of antibiotics in milk at collection.

Shailja Data (University of Auckland) talked about the risks associated with the so-called forever chemicals, PFAS for short. They have virtually indestructible carbon-fluorine backbones and are linked to many diseases including thyroid problems. There is a voluntary phase-out of PFAS in packaging. She says we need to understand more about our exposure to PFAS. The NZ Total Diet Study of Infants and Toddlers, which will be completed this year, aims to evaluate the risk to New Zealanders from exposure to a range of chemicals in foods.

Anne-Marie Perchec (MPI-NZFS) presented an overview of foodborne viruses, focussing on Hepatitis A (Hep-A) and Norovirus, which is vastly under-reported. Only common-source outbreaks of Norovirus come to official notice. A quarter to a third of these cases are foodborne. Hep-A has a very high hospitalisation rate, up to 94%. Imported frozen berries, which cannot be washed and are often eaten uncooked, are a prime source. The message for consumers is to avoid infection by simply heating them to a least 85oC for a minute or so.

Kali Kniel from the University of Delaware ranked Norovirus and Hepatitis A and E as first and second equal (globally), respectively, for frequency and severity of illness. She said the Norovirus is extremely robust, long-lasting, and more persistent in the environment than COVID-19, for example. Consumer behaviour is driving infections, she believes, e.g. the popularity of frozen berry smoothies and raw food trends.

Word limits here preclude covering all the food safety presentations in any detail. Roger Cook of MPI-NZFS gave the regulatory perspective, highlighting undeclared allergens as a common concern in food recalls, the post-COVID-19 interest in 'wellness', and the fact that hazards don't change, just their distribution.

Lucia Rivas (PHF Science) highlighted the emerging risk of bacterial Vibrio infections (from undercooked seafood or exposure to wounds when bathing in seawater), and Olga Pantos, also from PHF Science, gave us the latest research findings about the threats to human health from microplastics. (The Centre focussed on plastic packaging and microplastics in the June/July *Food New Zealand* issue).

Last, but not least, the conference organisers were delighted to welcome Nina Hommels from Wageningen University in the Netherlands, who, like Phil Bremer, addressed the big picture of food safety from a holistic viewpoint, introducing FoodSafeR, a European Commission funded project focused on emerging hazard identification. ▪

Oh no – did you say Lean?

Whatever your job, get the basics right first: why operational improvement still starts with Lean.

John Lawson, FNZIFST, Lawson Williams Consulting Group

Lean has been around for decades. Most companies have tried it, many have shelved it, and a few have mastered it. The problem? Too many businesses jumped to the tools without understanding the thinking. Now, with digital technologies flooding the market, the risk is even greater - automating broken processes and calling it progress.

If you're serious about succeeding in a digital world, start with getting the fundamentals of operational excellence right before you plug in the tech.

Why the basics still matter

Before you invest in sensors, dashboards, or AI, ask yourself:

- Are your processes stable and repeatable?
- Can your frontline teams spot and fix waste without being told?
- Do you know where value is created – and where it's lost?

If the answer is no, you're not ready for digital. At best, you'll digitise the chaos. At worst, you'll waste time and money chasing shiny objects that distract from real improvement.

Step 1: build a foundation of operational discipline

This isn't about running a kaizen workshop or 5S'ing a storeroom. It's about embedding core lean behaviours and principles that drive real improvement:

- **Standardised work:** without it, there's no baseline – and no way to know what's changing.
- **Visual management:** problems should be visible at a glance.
- **Daily problem-solving:** tiered meetings with accountability.
- **Flow and pull:** move away from batching and excess inventory.

Only once these principles are working can digital tools make a meaningful difference.

> *"The future isn't just digital. It's disciplined."*

Step 2: use digital to accelerate what's already working

Once your foundation is solid, digital tools become a force multiplier. Now you're ready to:

- **instrument the process** - use IIoT to track downtime, cycle times, quality metrics – in real time
- **automate intelligently** - free people from repetitive tasks only after the manual process is stable and understood
- **predict with data** - use machine learning to anticipate maintenance issues, demand shifts, or quality failures
- **drive faster improvement** - with live data and automated alerts, PDCA (Plan-Do-Check-Act) cycles shrink from weeks to hours.

It's not 'digital first'– it's 'Lean first, digital fast'

Digital transformation is seductive. The promise of visibility, automation, and insight is real – but **only valuable when built on stable, well-understood processes**. Here's the reality:

- A flawed process + digital = faster errors, more confusion
- A stable process + digital = real-time insight, faster learning, better results.

The takeaway – operational improvement isn't new – but it is non-negotiable

Before you install another screen or sensor, look at the fundamentals. Clean up the waste. Lock in the standards. Build a culture of daily improvement. Then – and only then – bring in digital to take you further, faster.

If your team can't improve a manual process, they won't improve a digital one either. *The future isn't just digital. It's disciplined.* ▪

John Lawson is founder of Lawson Williams Consulting Group. He initially studied Biotechnology at Massey and is a Fellow of NZIFST. He now enjoys leading a team of recruitment consultants, helping people like you develop satisfying careers.

Empowering businesses on their exporting and importing journey

Vincent Arbuckle, Deputy Director General, New Zealand Food Safety

With businesses exporting to all corners of the world and importing food for domestic consumption or re-exporting every day, New Zealand is home to a thriving food and fibre sector.

The New Zealand Government has set an ambitious goal to double the value of exports by 2034. The Ministry for Primary Industries (MPI) is central to achieving this target by supporting growth and maintaining a trusted food safety system – one of New Zealand's strongest selling points in global markets. A robust food safety system not only protects public health but also reinforces the integrity of the New Zealand food story.

To support this dynamic environment, MPI's Regulatory Advice Service plays a proactive role in guiding businesses through the food safety system. The service has two teams – Exporter Help and Food Importer Advice. The service is free to use for one-on-one advice. It also develops educational resources such as guides and webinars and works collaboratively across government to share insights and minimise challenges for businesses. That way, New Zealand businesses can successfully get their products overseas, and food importers can understand the rules so products can enter the country.

By working with the Regulatory Advice Service, businesses gain the confidence to navigate the regulatory and compliance landscape for both export and import requirements.

Exporter Help: Supporting every step of the journey

Our Exporter Help team assists small and medium-sized businesses and those working with them at all stages of their export journey – from those thinking about exporting, to established exporters needing clarification on requirements.

Export rules can vary significantly depending on the product and destination, and they often change. The team provides accurate, up-to-date information to help businesses export efficiently and avoid costly mistakes.

In June, the team hosted a well-attended webinar: *Introduction to overseas market access requirements (OMARs) for animal products* which was developed in response to industry demand. The recording is now available to view on the MPI website.

Food Importer Advice: Ensuring safe and suitable imports

Anyone bringing food into New Zealand for sale needs to register with MPI as a food importer and follow other important rules that help keep food safe and suitable.

Established in late 2024, Food Importer Advice offers guidance, education, and ongoing support to help businesses meet food safety obligations and ensure imported products are safe and suitable for consumers.

A Food Importer Information Pack has been recently developed for registered food importers. The guide provides a clear overview of the duties as a food importer, including a handy checklist to make sure all the right steps are taken. The Food Importer Information Pack can also be found on the MPI website.

Get in touch

For support navigating your food and fibre exporting requirements, contact the Exporter Help team on exporterhelp@mpi.govt.nz, call 0800 674 490, or visit www.mpi.govt.nz/export/get-help-with-exporting/.

For help understanding food importing requirements, contact the Food Importer Advice service on foodimporteradvice@mpi.govt.nz, or visit www.mpi.govt.nz/foodimporteradvice. ▪

The new step by step Food Importer Information pack

Our Exporter Help team are here to assist you

Micro and nano

John Brooks' view of the food world through the lens of a microbiologist.

Professor John D Brooks, FNZIFST

I taught "micro" for 36 years at university level, conducted research, and wrote papers and books. This was all about the interaction of bacteria, yeasts and moulds with our food, and ways in which we can detect, measure, and control them.

This article is not about microorganisms. I overheard a conversation at the recent Fellows' Luncheon during the NZIFST conference. The participants were talking about microplastics in foods and whether they are a serious issue. For some time, I have been concerned about the amount of plastic our household throws out. Some, but not all, goes to the recycling centre. Has the move from plastic straws to paper ones, and the banning of plastic bags in our local supermarket, had any impact on the amounts of plastic that go to the tip? I suspect not. I did a very quick survey of the food storage cupboard and refrigerator in our kitchen. Half of the food is packed in plastic. The remainder is in aluminium and tin cans, or cardboard. Despite our efforts to avoid plastic packaging when shopping, many foods are unobtainable in other packaging materials.

Microplastics, which are plastic particles measuring less than five millimetres across, have been detected in various human tissues, including the lungs, placenta, breast milk, and blood. These particles originate from the degradation of larger plastics, intentional addition to consumer products, and environmental contamination [1]. While research on human exposure and health effects is ongoing, the presence of microplastics in human lung tissue and the potential for immune responses raise concerns about their impact on human health. There are now over 9600 different types of plastic, each with its own chemical makeup and potential toxicity, and these chemicals are probably of more concern than the physical particles that carry them into the body. I think that this is an important distinction.

Research points to two main entry routes into the human body – we swallow them and we breathe them in. This article is primarily interested in the former, i.e. the micro and nano particles that are contained in food and water.

Most research to date has been on microplastics in the marine environment. Plastic litter enters our seas and oceans, where it never completely breaks down. Instead, it breaks up into smaller and smaller particles, eventually becoming microplastics. The UV radiation from sunlight contributes to this process of degradation, and further breakdown results in plastic nanoparticles [2]. I have seen evidence of this in my greenhouse. 750g yoghurt containers, used to save seeds, become brittle and disintegrate into small particles and powder after about nine months.

Microplastic particles have been found in fruits and vegetables, beef, pork and fish muscle, and, though estimates of human ingestion vary dramatically, the results suggest people might be consuming in the order of tens of thousands of microplastic particles per person per year.

Interestingly, the issue of microplastics is now being weaponised by those who wish to prevent the production and sale of cell-based meats. In its Senate Bill 261, Texas has now joined six other states prohibiting the offering for sale and sale of cell-cultured protein for human consumption and provides civil and criminal penalties [3].The

Bill alleges that the creation process involves direct interaction with microplastics that can cause disruptions in the human cell membrane. I find it slightly amusing that a similar Bill has been enacted in Indiana that runs from 1 July 2025 to 30 June 2027. If Indiana allows the ban to expire, it is claimed that cultivated meat products will then be required to display the phrase: "This is an imitation meat product."

In a recent research paper: *Nanoplasticsmediated physiologic and genomic responses in pathogenic Escherichia coli O157:H7* [4], it was reported that "differentially charged nanoparticles (NP) of polystyrene can influence the growth, viability, virulence, physiological stress response, and biofilm lifestyle of the pathogen. Positively charged NPs were found to have a bacteriostatic effect on planktonic cell growth and affect cellular viability and biofilm initiation, compared with negatively charged and uncharged NPs". Significantly, virulence traits, including Shiga-like toxin production, were upregulated.

However, based on the available evidence, FSANZ has stated that "In light of this information, our current view is that plastic contamination of the food chain is unlikely to result in immediate health risks to consumers. This view is supported by EFSA, which considers that while further work is required, it seems unlikely microplastics are harmful to consumers".

It is clear that much more study of plastic microparticles and their effects on humans is required. ▪

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Macro and Australian Organic Food Co. stand out for industry-first packaging

Nerida Kelton FAIP, Executive Director-AIP, Vice President Sustainability & Save Food - WPO

Box-bottom paper bags and mono material retort pouches took centre stage at the recent edition of the Australasian Packaging Innovation & Design (PIDA) Awards with both innovative packaging designs taking out multiple awards.

"While the finished product may look like a typical spout pouch to consumers, it represents a significant leap forward in mono material innovation."

Australasian first box-bottom paper bag

Macro Health Food Box-Bottom Paper Bags, from Woolworths Food Co, were recognised with two gold awards in the food and sustainable categories.

Macro, a Woolworths brand offering high-quality foods, is committed to sustainable packaging solutions that align with consumer expectations for reduced plastic and recyclability. Their innovative response is the introduction of a flat box-bottom stand up paper bag for dried fruits and nuts, which is a first in the Australian market.

Macro's shift to paper-based packaging delivers significant benefits for both consumers and the environment including replacing existing soft plastic packaging with a kerbside recyclable paper-based alternative, incorporating advanced barrier technology for product freshness.

Kerbside recyclability of the box-bottom paper bags allows for easy disposal at home. Consumers can simply place the pack in their kerbside recycling bin without needing to make a special trip to a drop-off point.

The design also offers advanced barrier technology ensuring product freshness and protection, without compromising on quality.

The flat box-bottom stand-up bag format optimises shelf presentation and transport efficiency. This efficient design helps to reduce waste and transportation costs.

The transition to paper results in an 86% reduction in plastic usage, saving 96 tonnes of plastic annually across 12 million packs.

By prioritising both functionality and environmental responsibility, Macro are setting a positive example for industry.

World-first mono material retort pouch

Australian Organic Food Co. was also recognised with a gold in the Sustainable category and a silver in the Food category for their Vanilla Custard Mono Material Retort Pouch. This world-first packaging was in partnership with Flavour Makers + Cheer Pack Asia Pacific.

The Australian Organic Food Co. Vanilla Custard is a delicious, single-serve, on-the-go snack made with certified organic ingredients. Thanks to the retort cooking process, the custard inside is commercially sterile, while the high-barrier packaging ensures sterility throughout its shelf life. This innovative approach means their custard requires no refrigeration, making it perfect for lunch boxes, desk drawers, or vending machines, and ideal for distribution through ambient supply chains.

The new mono material retort pouch is recyclable and maintains a low oxygen transmission rate after retorting and offers sufficient durability to withstand the rigours of the supply chain.

Inserting a spout into the new pouches created a new set of technical challenges to overcome as bonding soft plastics to rigid plastic components at high speed has typically required temperatures too high for mono material structures, often leading to material shrinkage or damage to the barrier layer. This was overcome with the new design.

To further enhance the design, the new cap shape uses 20% less plastic compared to the previous version without compromising functionality or accessibility. This thoughtful improvement underscores a commitment to material reduction.

While the finished product may look like a typical spout pouch to consumers, it represents a significant leap forward in mono material innovation. This achievement was made possible through the creation of two highly specialised, state-of-the-art films and an augmented converting process developed specifically for this application. That is why the pack is the first of its kind to be launched, world-wide.

What makes Woolworths and Australian Organic Food. Co. stand out is that they were willing to undertake the research and development to design innovative and unique packaging that not only offers a lower environmental impact but also sets them apart from their competitors.

The Australasian Packaging Innovation & Design (PIDA) awards are the exclusive entry point for Australia and New Zealand into the prestigious WorldStar Packaging awards; with Macro and Australian Food Co. now eligible to enter the next round which will be open later in 2025. Both packs are new to the categories they serve and are a testament to how innovative the packaging technologists are in the Australasian Region. ▪

New Zealand PIDA Award entrants

Calling all New Zealand companies; the 2026 Australasian Packaging Innovation & Design (PIDA) awards will be open later this year and the AIP are encouraging everyone to apply across the 19 categories. If you would like to find out more about the PIDA awards, please reach out to the AIP.

JC Andrews address: From Farm to Fork – and Beyond

Mike Boland

There was a big trend in the food industry in the early 2000s to study "Farm to Fork" – the life cycle of food. Food needs to be eaten, but it has got to do something for you too. That is why I say "from farm to fork - and beyond."

The title also reflects my career because I started off with on-farm research, focusing largely on production-related work. I then moved into food research and then into nutrition and health and what happens to food after you ingest it. It has been an interesting journey.

My research has been all about proteins – notably dairy and meat and kiwifruit.

Kiwifruit

Kiwifruit contains only about 1% protein by weight, so not a protein food as such, but around half of that protein is a very powerful proteolytic enzyme called actinidin, or its precursors.

Kiwifruit helps the gastric digestion of proteins, and can be particularly important as we get older, when our digestive enzymes are not as good as they used to be. We can develop allergies from undigested peptides – but if we eat kiwifruit at the end of a meal it could alleviate these symptoms: problem solved.

Actinidin has been a focus throughout my career. I first worked on this enzyme back in my PhD.

Dr Arcus at Otago University published a nearly relatively unknown paper in1959 – the first description of actinidin, which he also named, based on the genus of the kiwifruit, Actinidia. At Massey, we got involved in the early 1970s, unaware of this paper – I isolated the enzyme and others at Massey (Allan Carne and Chris Moore) sequenced it, and Ted Baker and his team did a 3-D structure from X-ray crystallography. I investigated its catalytic properties and got a PhD.

Then I went back to on farm research at the Department of Scientific and Industrial Research (DSIR). I did a lot of work with nitrogen metabolism in lupins, clovers and soybeans - all nitrogen-fixing leguminous plants - and on onion flavour development – all driven by enzymes.

Later I returned to kiwifruit. Kiwifruit:

- improves digestion
- enhances the release of branched chain amino acids (BCAA) from proteins
- breaks down bioactive and allergenic peptides (e.g. from gluten).

Mike Boland presents the JC Andrews address

NZIFST Fellow awarded JC Andrews Award

Renowned expert in food science Dr Mike Boland is this year's recipient of the JC Andrews Hall of Fame Award.

Dr Boland was presented the award during the NZIFST Conference in Palmerston North in June.

The JC Andrews Hall of Fame Award is NZIFST's top award and recognises senior Institute members who have made a substantial contribution to science and technology and leadership in the food industry.

Presented annually, the award is in memory of Massey University's first Chancellor, Dr John Clark Andrews, who helped establish Massey University's food technology degree course.

BCAA – elevated levels in the blood, notably of leucine, can stimulate muscle anabolism, helping build muscle. This is useful for sports nutrition, but particularly valuable for older people as a means of avoiding or minimising sarcopenia.

Actinidin is an important digestive aid, breaking down proteins and peptides in the stomach, including the gliadin-derived peptides that cause gluten intolerance, and although we are yet to show this in humans, we have shown it in pigs and *in vitro* using well established models of human digestion. Our studies have generally been based on consumption of two kiwifruit with the meal. Actinidin does its work in the stomach, being active at quite acidic pH. They must be green kiwifruit (*Actinidia deliciosa*). The original gold kiwifruit (*Actinidia chinensis* cv HORT 16A) has very little actinidin. Sungold, the newer gold variety, has some – but not nearly as much as green.

The kiwifruit work has led to some very interesting times in my career. I was in Auckland working at Mt Albert when the Rainbow Warrior went down, and we did pilot scale work at Cedenco in Gisborne – extracting kiwifruit juice and concentrating it. We chartered a plane to fly back to Palmerston North and flew into the approach of cyclone Bola. We landed looking at the runway out of the side window!

Dairy

I was at the DSIR until just before it was disbanded in 1990. I then was recruited by the New Zealand Dairy Research Institute, where I was appointed as head of the dairy protein section.

I strongly believe what happens with food is influenced by how it is produced. An important source of variation in milk properties relates to cow breed, so we focussed initially on genetics, particularly on the known genetic variants of the major milk proteins, some of which vary between breeds.

We investigated the main variants of beta lactoglobulin – the main whey protein, in fact 50% of whey protein. It is a globular protein that unfolds when heated and when it cools down it doesn't fold back the same way – there are disulfide crosslinks that change and lead to reactions such as coagulation, gelatinisation and precipitation.

We investigated the problem of fouling of heat exchangers, especially in UHT – milk going through UHT heat exchangers can foul them quite badly. But we found that if you used the beta globulin B variant rather than the A variant it didn't foul nearly as much.

The total amount of protein in milk stays about the same, even if the balance between proteins changes. Beta lactoglobulin is at lower levels in B variant milk, so there is more casein. Based on this, we did a project with Kaikoura Dairy Company – they made only cheese. We introduced a breeding programme, together with the Livestock Improvement Corporation, where cows were bred to be beta lactoglobulin BB only, so after a few years, the majority of the herd carried this variant. The cheese yield increased and cheese quality improved.

Then Fonterra came along. You know you are in the 21st century if you have had three different jobs and are still sitting at the same desk. The industry underwent lots of restructures following deregulation.

Our work also led to A2 milk. Jeremy Hill needs credit for leading this work. The Dairy Board sold the patent – now owned by the A2 Milk Corporation. Early day claims about A2 milk and diabetes, and A2 milk and heart disease, are not well founded, however the beta casein A2 protein is more fully digested than the A1 variant and may have benefits for people who are otherwise milk intolerant. The A1 variant has peptides produced during gastric digestion that you can develop an intolerance to, so for those who have milk allergies it may be useful to try A2.

The genetics of cows determines the protein characteristics. Milk fat is largely a consequence of what they eat and how it is digested in the rumen, and grass-fed cows will give a healthier lipid profile.

2016 was my first retirement – from Fonterra. ►

Meat

When he heard about my impending retirement from Fonterra, Paul Moughan, then of the Riddet Centre, made me an offer I couldn't refuse. Later it became the Riddet Institute. I worked on protein nutrition with Lovedeep Kaur, amongst other things.

We first worked on digestion of meat aided by kiwifruit (what else?). We got a Dumont D'Urville grant from MBIE – a joint system of funding between the NZ and French governments - and worked with Thierry Astruc at INRA de Thiex, based in the mountains above Clermont-Ferrand. We worked in each other's labs, two-three weeks of the year – for three-four years - on the digestion of meat proteins. It was very effective. France has a great meat technology lab at INRA, NZ offers nutrition and biochemistry, so it was a great match.

FIET
Food Industry Enabling Technologies

Following on from that there was the FIET programme – MBIE supported. This was a big programme to increase general capability in food processing, particularly with emerging technologies. The programme, led by Richard Archer, involved Massey University, the University of Auckland, AgResearch, University of Otago, Canterbury University, Plant & Food Research, and some other organisations. I led the meat processing sector of this. Our work aimed to take cheaper cuts of meat and add value. We looked at using kiwifruit to tenderise the meat.

We partnered with ANZCO when Jono Cox was there and subsequently with Silver Fern Farms. We looked at processes such as enzyme treatments and sous vide cooking.

Then we got involved with the Meat Industry Association and we worked on a project called "The Pasture Raised Advantage" – comparing pasture-fed and grain-finished meat (in New Zealand, grain-finished cows only spend their last few months on grain.) The diet makes a significant difference to nutrition profile notably of the lipids, leading to more healthy lipids in the grass-fed animals.

Retirement

And so to retirement: I am now living in Golden Bay operating an accommodation business – Twin Waters Lodge, about 15 kms from Farewell Spit.

There is so much work completed that is a result of working with the right people. So many valuable collaborations and partnerships. Mentors, co-workers, co-authors, and wonderful support staff. I thank them all. The most important thing you can do for a successful career is to work with good people. ▪

Q&A with Dr Boland

Q: Do you have a favourite area of research or activity?

What's been most important to me has been the people I have worked with. I've had some students that I have mentored that have gone on to great heights, for instance Jeremy Hill – Fonterra's Chief Science and Technology Officer – and Skelte Anema – who would be the top milk protein scientist in the world, and so many others. I have also very much enjoyed being involved in the Ministry of Inspiration's "Milk Magic" science workshops for school children at Nelson's Cawthron Inspire Festival that introduces kids to science.

Q: What are the biggest challenges still to solve in food science?

Providing proper nutrition for the whole world. I know that's like saying "world peace", but it is such a big issue. We produce enough food to feed everybody, but between the political interferences, the economic disparities and the amount of food that gets wasted, people are going without. And it's not going to be solved by technology, it will only be solved by people and politics.

Q: Will the new hybrid foods replace the current food we eat today?

That remains to be seen. Rather than replacing what we eat, we are going to need more food overall. One way to do this is to waste less of what we have. Some research currently in the works combines plant proteins with meat that would otherwise be wasted or go into pet food production.

Q: Congratulations on winning the JC Andrews Hall of Fame Award. This prestigious award is great recognition of your substantial career. What does it mean to you to win the award?

It is very nice to get the award, but I feel a lot of that good work was done by other people working with me. A lot of the most important things that came out of my work were done by teams and collaborations. I have had some really good collaborations over the years and some significant international collaborations. They all contributed.

European Hygienic Engineering & Design Group

David Lowry, FNZIFST, Chairperson, EHEDG New Zealand

EHEDG was delighted to have a stand at the NZIFST Conference in Palmerston North showcasing the interactive Good vs Bad Hygienic Training Stand, displaying common faults in hygienic design in the NZ Food Industry. The display unit attracted good interest with those investigating most often surprised in seeing hygienic design faults that they could readily identify in their own facilities.

David Lowry co-chairperson of the EHEDG NZ Regional Section is pictured showing a visitor to the booth on how to use the Training Stand.

EHEDG was also very pleased to announce a new student prize opportunity for next year's conference applicable to any oral, poster, or 3-minute presentation sessions. The topic for the student project needs to address hygienic design, fouling and/or cleaning of food process equipment or surfaces. A project may not specifically address these topics but may include or touch on these projects. For more information on the award, scan the attached QR Code for entry criteria.

We are also really excited to be able to confirm the running of a second Advanced Hygienic Design Course for 2025 in Christchurch from 3-6 November inclusive. The course will be held at the Novotel Cathedral Square Hotel Conference Centre which is an excellent venue and right in the city centre. For information on the course, go to the NZIFST Upcoming Events page and download the Course brochure. Information on the course is also posted on the EHEDG global website. There is already strong interest for this course which is only run twice per year and is limited to the first 24 delegates to register. Your early interest is highly recommended.

For further information on EHEDG membership, the EHEDG Advanced Hygienic Design Course, and the NZ Regional Section activities please contact me, David Lowry – co-chairperson EHEDG NZ at info@ehedg.co.nz ▪

EHEDG exhibitor stand at the NZIFST Conference 2025

Lipids and nutraceuticals

Laurence Eyres

Recently a few of our members, the secretary, and myself, attended the annual NZIFST conference held in Palmerston North where six lipid papers were presented. We were fortunate to have with us several notable overseas speakers including Professor Selina Wang from the University of California, Davis, Dr Phillipp Meissner from Germany (Max Rubner) and several eminent speakers from New Zealand. In my unbiased opinion, our six papers were jewels in the main event:

The pursuit of quality – Selina Wang

Dr Selina Wang is a chemist and an Associate Professor of Cooperative Extension at the Department of Food Science and Technology at the University of California, Davis. Her work on the quality and purity of supermarket olive oil from 2009 to 2011 led to the establishment of California olive oil standards in 2014.

Selina is a Professor at UC Davis, California. She is becoming famous for blowing the whistle on fraudulent oils being pushed in the USA (85% of all oils tested), ruining the market for genuine people. She was recently invited to give a talk to the Italian producers and the IOC, but we warned her about accepting an offer she cannot refuse and the risks of finding a horse's head in her bed. Her presentation was excellent, and she happily fulfilled the 27 minutes allocated by the conference organisers.

In 2020, her research group published the first extensive study of commercial avocado oil quality and purity. Her mission-driven program focuses on applied research in three key areas: developing rapid analytical methods to assess food quality, purity, and nutrient density; studying the impact of processing and climate change on food chemical composition; and finding ways to valorize agricultural byproducts to enhance sustainability and improve human, animal, and planetary health.

https://scholar.google.com/citations?view_op=view_citation&hl=en&oe=ASCII&user=DPvRymMAAAAJ&pagesize=100&sortby=pubdate&citation_for_view=DPvRymMAAAAJ:HE397vMXCloC

Authenticity and contaminants – Dr Philipp Meissner

Philipp is a scientist in Bertrand Matthaus lab in Germany. Philipp started at the Max Rubner-Institute, the federal research institute for nutrition and food, becoming head of the research group on the holistic use of oilseeds and fruits and collaborates closely with the groups of lipid authenticity and standardization. His research is on oil crop compounds and processing, especially rapeseed. This leads to scientific work on lipid-protein oxidation, oilseed protein utilization, and phenolic secondary plant metabolites.

Betrand was a key researcher in the initial development/identification and quantification of GE and MCPD esters in oils and fats. Philipp reviewed the criteria for authenticity of oils that claim to be genuine:

- stigmastadiene
- trans-fatty acids
- polymeric triacylglycerols
- fatty acid alkyl esters
- pyropheophytin A
- K270/.

Results of the olive oil surveillance in New Zealand – Kirill Lagutin (Callaghan Innovation).

Kirill has a long-standing interest in food fraud prevention and the development of analytical tools to protect food authenticity. He is leading several food integrity projects focusing on developing solutions to protect and promote food integrity among key stakeholders, including the food industry,

Kirill gave a very entertaining paper on the results of looking at some recent market retail olive oils using their developed technique of NMR.

Avocado oil from Kenya – Dr Allan Woolf (Plant & Food Research)

This was a combined science paper and a wildlife documentary in the style of David Attenborough. Thoroughly entertaining and scientifically fascinating. It is sobering to see the harsh conditions of subsistence living in third world countries. Well done to Plant & Food Research and their scientists operating in these poor countries.

Extraction of edible plants in New Zealand – Professor Marie Wong, Massey University

Marie gave some highlights from her work on niche edible oils over the last 25 years. She is a recipient of the JC Andrews award and has many publications in this area along with supervising keen young food scientists at Massey.

Refining edible oils – Dr Angela Newton, Bakels Edible Oils

Angela is now a veteran of the processing field in New Zealand, currently leading the technology team at Bakels Edible Oils in Mount Maunganui. Bakels Edible Oils are now the leading processor in NZ and possible Australasia.

Student posters

There were two excellent posters by Roy (Youwei) Wang, PhD student at Massey.

1. Does fruit rot proportion affect the quality and composition of cold-pressed avocado oil?
2. Effect of malaxing temperature and rotten fruit on the formation of 3-MCPDE and glycidyl esters in avocado oil. ▪

The Kim Hill Panel – Let the consumer beware: who is responsible for food safety?

Panelists: Glen Neal, Phil Bremer, Jocelyn Eason, Siouxie Wiles

What is fast becoming known as a highlight of the annual NZIFST conference, the Kim Hill Panel, a light-hearted look over a not so light-hearted topic, did not disappoint.

In the interest of exploring AI (another detailed discussion topic at this year's conference), the Editors chose to employ AI tools to produce this summary of the lively debate.

Herewith...

The debate: Navigating the Food Information Minefield

In an era where everyone's a nutrition guru and spinach has somehow become controversial, a fascinating conversation unfolded about the chaos of modern food advice. The speakers dove headfirst into the overwhelming world of dietary information, where social media influencers battle actual scientists for our attention - and often win.

The discussion kicked off with a humorous critique of the internet's latest food villains: spinach (apparently an inflammation culprit) and lentils (mineral absorption saboteurs). But beyond the laughs, serious concerns emerged about distinguishing credible expertise from clickbait health content. The speakers highlighted how many online "experts" prioritise viral content over scientific rigor, leaving consumers more confused than ever.

A particularly intriguing theme emerged around selective ignorance as a survival strategy. Some admitting to deliberately avoiding certain topics like microplastics - choosing blissful ignorance over information overload. This sparked discussion about whether an "ostrich approach" might actually be mentally healthier in our data-saturated world.

The conversation took a fascinating turn toward control and anxiety, suggesting that dietary choices often serve as psychological anchors in uncertain times. People gravitate toward extreme measures - mega-dose vitamins, restrictive diets - seeking control when the world feels chaotic.

The speakers ultimately championed moderation and personalised approaches, acknowledging that genetics, environment, and individual physiology make one-size-fits-all solutions impossible. Their key message? Trust established research processes, embrace common sense, and maybe don't believe everything you read about spinach on the internet.

Kim Hill and Glen Neal in lively debate

L-R: Siouxie Wiles, Jocelyn Eason, Kim Hill, Glen Neal, Phil Bremer

Editor: And when prompted to produce our action plan…

The "Let's Fix Food Confusion" Action Plan

Your Heroic To-Do List for Saving Humanity from Spinach Panic:

- **Become a Food Detective** - Figure out if your spinach is plotting against you while experts argue about whether lentils are mineral thieves. Spoiler alert: Even the scientists can't agree, so good luck with that!
- **Master the Art of Influencer vs. Expert** - Learn to spot the difference between someone with a PhD in nutrition and someone whose main qualification is having really good lighting for their TikTok videos.
- **Solve the Great Globalisation Food Mystery** - Determine whether our modern food system is slowly poisoning us or actually keeping us alive longer. Plot twist: It might be both!
- **Investigate the Raw Food Revolution** - Find out why people are suddenly excited about eating things that look like they just fell off a truck, and whether this is brilliance or madness.
- **Decode the "Kill Step"** - Learn about the ominously named process that makes food safe to eat (hint: it involves making bacteria very, very dead).
- **Become a Public Health Educator** - Convince people that mega-dosing vitamin C won't turn them into superheroes, just expensive urine producers with potential kidney issues.
- **Champion Team Vaccine** - Promote actual medical miracles while gently explaining why treating measles with orange juice is a spectacularly bad idea.

Good luck! You'll need it more than you need that third cup of coffee (which, according to someone on the internet, is definitely going to kill you). ▪

Editor's note

The debate was recorded at the time, on iPhone, in segments of no longer than one minute each for easier uploading. Some parts of the debate were not recorded. In total 12 segments were captured (approximately 75% of the whole debate). Otter AI was chosen as best for transcribing and summarising from video. However, only ten files can be uploaded in one session. So this further reduced the total content. Otter AI produces full transcribe, useful summaries and key themes. Summaries were then copied into Claude – chosen for its excellent ability to write and amend based on command. Claude provided the text in this article, based on what it received from Otter AI – no edits were made by the Editors.

A charge was paid to access Otter AI (enables uploading of files), access to Claude was unpaid.

So – this article is more for entertainment purposes than a complete summary of the full debate. Sometimes – you just have to be in the room.

Thank you sponsors & exhibitors!

Thank you to all the sponsors and exhibitors for their generous support in making the 2025 NZIFST conference possible. Their partnership played a key role in bringing the event to life, providing a platform for collaboration, learning, and the exchange of ideas within the food science and technology community. The success of the event would not have been possible without them.

L-R Mark Inglis, Sachi Chaudhary, Andrew Mill of Eurofins

Franz Lim from Lab Supply

L-R Owen Catchpole, Daniel Mee, Anna Williams, Kirill Lagutin, Cynthia Sun, Jolin Morel, Stephanie Harvey, of Callaghan Innovation

L-R Dave Rout, Formula Foods, Zach Rout, Formula Foods, Steph Trower, Original Foods Baking Co

L-R Corrine Ryan, Mediray, Ira Banhatti, BioMerieux

L-R Beata Mahalean, Matt Solutions, Julie Warren, Fonterra, Bob Olayo, Matt Solutions, Ben Somerton, Fonterra

NZIFST Awards for 2025

NZIFST Awards are presented every year the Conference Dinner. This year's master of ceremonies was Don Otter. Esraa El Shall (Immediate Past President) presented many of the Awards.

Fellows: L-R: Abby Thomspon, Steve Taylor, Claire Redman, Nicola Wilson

Fellows for 2025

Four new Fellows and one Distinguished Fellow were presented.

Abby Thompson

With a distinguished career marked by exceptional leadership and technical expertise, Abby made a profound impact on the food science field. As Chief Operations Officer at Miruku, she led strategic initiatives, managed multimillion-dollar budgets, and built robust national and international networks. Her tenure as CEO of FoodHQ led to significant advancements in food science and innovation, earning her a reputation as a trusted advisor and mentor. Her contributions to the food sector, including a strong background in R&D and co-founding Emerging Proteins New Zealand, have shaped policy and driven industry transformation. She has engaged actively with the Central Branch, delivering talks and embodying NZIFST values. Abby also founded the 'Food Tech Big Day Out,' introducing hundreds of high school students to food technology careers.

Nicola Wilson

Nicola stands out as a leader in New Zealand's food science and technology sector, with a career marked by innovation, industry advancement, community service, and a passion for inspiring the next generation. At Leaft Foods, she helped develop and scale sustainable protein ingredients, and earlier at Goodman Fielder, she supported food product development for one of NZ's major manufacturers. She actively mentors others and shares her expertise widely, helping demystify complex science for diverse audiences. Nicola plays a visible role in public outreach and food technology advocacy, consistently supporting the profession's growth in New Zealand.

Steve Taylor

Steve is a seasoned researcher and thought leader in the field of nutrition and dairy research, with 31 years of experience at the Fonterra Research and Development Centre and its predecessor, New Zealand Dairy Research Institute. He is known for advancing protein processing and applying AI to improve R&D efficiency. Steve has led the discovery of functional whey protein ingredients and supported nutritional product development. A committed mentor, he has helped develop young talent and foster industry-academic collaboration. His work has shaped industry research processes and contributed significantly to the dairy sector's innovation capacity in New Zealand.

Claire Redman

Claire is a distinguished professional in the food science and technology sector, with a career marked by exceptional contributions to food product development and safety. She has developed innovative processes and new products, such as converting waste streams into value-added products and creating health-based oil spreads, and managed regulatory compliance in diverse organisations, including Plant & Food Research and Hemp Connect. Claire has been instrumental in developing food safety policies and coordinating health and safety programs. She played a hands-on role in technical project delivery and process optimisation. Her dedication to food science is further evidenced by her involvement in the NZIFST, where she has served as a committee member and judge for secondary school food technology awards.

Distinguished Fellow – Anne Scott

The NZIFST Board would like to recognise a new Distinguished Fellow. Any Member of the Institute may be elected as a Distinguished Fellow who, in the opinion of the Board has:

- attained a position of eminence in food science and technology,
- made an extraordinary contribution to the disciplines of food science and technology,
- rendered services of an exceptional nature to the Institute, or
- merits election on any other appropriate basis.

There have only been 11 Distinguished Fellows in the NZIFST, and the last one was awarded 20 years ago.

Anne Scott's election as a Distinguished Fellow recognises a lifetime of service to NZIFST. Since 1975, she has held nearly every key leadership role in the Institute and been instrumental in shaping its strategic direction, networks, and publications. Her stewardship of Food New Zealand magazine built a strong platform for member engagement, and her practical, unfiltered advice and leadership across decades of conferences and committees have made her a central figure in the organisation's development. Anne's enduring commitment and knowledge have profoundly shaped the Institute's identity and culture.

Distinguished Fellow: L-R: Esraa El Shall, Anne Scott

Emerging Leader – Grace van Tilborg

This award is to recognise a young technologist, scientist, or engineer for their endeavour or achievement, and leadership potential, within the food industry.

Grace has rapidly built a reputation for technical strength and leadership. She has led innovative flavour development and R&D projects, including pioneering a novel food system alongside experienced dairy scientists and engineers. Claire has built-in curiosity, sharp observational skills, and the ability to communicate clearly. Promoted to Senior Applications Technologist in 2023, she now manages team workloads and steps in for the R&D Manager. Grace actively supports the Auckland Branch of NZIFST and regularly visits schools to promote careers in food technology

Emerging Leader: L-R: Esraa El Shall, Grace van Tilborg

Significant Contribution to Food Safety Award – Phil Bremer

Sponsored by New Zealand Food Safety

Congratulations to Professor Phil Bremer - Professor of Food Microbiology at the University of Otago and Chief Scientist for the New Zealand Food Safety Science and Research Centre (NZFSSRC). Professor Bremer has played a key role over his 40-year career, advancing food safety science in New Zealand through research, policy influence, and mentoring. His work on microbial safety, risk assessment, and food system resilience has shaped national food safety practices. He leads innovation programmes and bridges research, industry, and regulation.

Significant Contribution to Food Safety Award: L-R: Phil Bremer, Vince Arbuckle

Mary Earle Mentorship Award – Neala Hart

This award recognises members who have excelled at mentoring others in achieving their career objectives through moral, social and intellectual support.

Neala Hart has shown sustained dedication to mentoring within the NZIFST community. Since 2012, she has served the Auckland Branch in roles including Student Rep, Treasurer, and now Chair, as well as supporting national conference organising. She's organised countless student career events, workshops, and school outreach activities, and has promoted the food technology profession through initiatives like 'FutureInTech' and 'Inspiring the Future.' Her workplace mentoring at companies including Suntory Oceania and Fonterra has helped shape the next generation of food scientists. Neala's consistent leadership, outreach, and support for students and young professionals embody the spirit of the Mary Earle Mentorship Award.

Mary Earle Mentorship Award: L-R: Esraa El Shall, Neala Hart

Ron Hooker Award – Anne Scott

This award was established to honour the outstanding voluntary contribution given by Ron Hooker to the NZIFST since its formation in 1965. This award recognises significant past or current service or contribution to the NZIFST, developing the affairs of the Institute, its Branches or Divisions.

Anne Scott's service to NZIFST spans nearly five decades. She has held key roles including National Secretary, Auckland Branch Chair, Vice President, and President – leading the successful bid to host the IUFoST Congress in New Zealand. As Editor of Food New Zealand magazine from 2006 to 2025, she transformed the journal into a trusted, wide-reaching publication that championed the Institute's mission and balanced member and industry content. Her leadership of conference committees and continuous support of NZIFST governance has shaped the Institute's profile and finances. Anne's contributions have been pivotal to the Institute's development and visibility.

Ron Hooker Award: L-R: Esraa El Shall, Anne Scott

Lifetime Achievement Award – Brent Vautier

This award recognises long and exceptional service and/or contribution to a New Zealand Food Industry sector in a scientific, technical, teaching, marketing or managerial role; and is specifically for industry personnel approaching, or in retirement.

Brent Vautier's 50-year career with Fonterra and NZDRI has contributed significantly to the development of world-leading dairy protein ingredients. He helped commercialise several innovative products including caseinates and functional whey proteins, and supported the design and commissioning of manufacturing plants. His deep expertise in technical development and production processes has shaped Fonterra's NZMP protein portfolio. Brent has also played a key mentoring role within Fonterra's R&D teams, passing on knowledge to future leaders. His hands-on leadership and practical problem-solving have left a lasting mark on New Zealand's dairy industry.

Lifetime Achievement Award – Dave Mael

Dave Mael has devoted 51 years to Griffin's Foods, rising from cadet to senior technical leadership roles. He has modernised production lines, introduced new equipment and efficiencies, and supported food technologists through practical R&D support. Dave's deep mechanical and baking knowledge helped shape the company's continuous improvement culture and training. His influence extends across the Asia-Pacific region and into countless careers he helped shape through mentoring. Known for his humility and reliability, Dave exemplifies practical, long-term commitment to innovation and people.

Lifetime Achievement Awards: L-R: Dave Mael, Brent Vautier

JC Andrews Award – Mike Boland

This Award is presented annually in memory of Massey University's first Chancellor, Dr Jack Clark Andrews, who proposed that a food technology degree course be established at Massey University. The award recognises Institute members who have made a substantial contribution to science and technology in the food industry.

Dr Mike Boland is a globally respected dairy food scientist and biotechnology expert whose work has spanned academia, industry, and strategic R&D. As Global Programme Leader at the NZ Dairy Board, he oversaw major milk research programs, and has published widely across food functionality, nutrition, and digestion. He built cross-institutional collaborations that have benefited both the NZ dairy sector and human health. A Fellow of NZIFST, the NZ Institute of Chemistry, and the Riddet Institute, Mike has made a lasting impact on food science and technology in New Zealand through his research leadership, industry relevance, and knowledge transfer.

JC Andrews Award: L-R: Esraa El Shall, Mike Boland

Poster Competition winners: L-R: Norma Bagarinao, Esraa El Shall, Nyasha Makaza, Mishenki Rajapakse

3-Min Pitch winners: L-R: Steffi Anna Thomas, Nyasha Makaza, Esraa El Shall, Sheba Culas

Student competition winners

The winners of the Riddet Institute Student Poster competition are:

1st Norma Bagarinao, University of Otago

2nd equal – Nyasha Makaza, Massey University

2nd equal – Mishenki Rajapakse, Auckland University of Technology

3rd Thi-Van Nguyen, Massey University

The winners of the University of Otago 3-Minute Pitch competition are:

1st Steffi Anna Thomas, University of Otago

2nd Nyasha Makaza, Massey University

3rd Sheba Culas, Massey University

The winners of the Student Essay competition are:

1st Carly Smith, University of Otago

2nd Xie Chengqi, Massey University-Jiangnan

3rd Gabriel Giller, University of Otago

4th Abdullah Mutis, University of Otago

5th Christopher Conway, Massey University

Student Essay winner: L-R: Don Otter, Carly Smith, University of Otago

Strategy update

Tēnā koutou katoa,

Our workstream leads and their committees have been instrumental in driving our vision forward, focusing our efforts on targeted activities to achieve our goals. Recently, our workstream leads convened in an in-person workshop to synergise their activities and prioritise key areas of focus for 2025 and 2026. This collaborative session was highly successful, resulting in a cohesive plan and budget for 2025. The prioritised activities are outlined below.

Our workstream leads and their committees have achieved remarkable milestones over the past year, driving our vision forward with targeted activities. Some of the key highlights include:

- **Piloting the first 'remote branch' initiative** by successfully running an event in Nelson.
- **Launching our new website** with an improved provisional look and feel, enhancing user experience.
- **Increasing visibility of conference activities** on social media, thereby gaining more reach and engagement.
- **Promotional activities on LinkedIn** to showcase careers in Food Science and Technology, attracting more interest and participation.
- **Raising awareness of awards** to drive nominations and recognise excellence within our community.

A massive thank you goes out to all the workstream committees for their continued efforts and to our Branch Chairs and Committees for keeping our branches vibrant and dynamic.

Ngā mihi

Esraa El Shall
Immediate Past President and Strategic Workstream Lead.

NZIFST

A supportive and networked community driving a vibrant and sustainable food industry

Advance the profession of food science and technology by celebrating success, facilitating life-long learning and engaging members in a collaborative community

H1 2025 Priorities	H2 2025 Priorities	H1 2026 Priorities	H2 2026 Priorities
Networked Community - Plan for consistent approach to event planning and coordination – 'speaker coordinator' - Incentives for local committee **Demonstrating Value** - Launch new website with provisional look - Agree and kick off work on rebranding with a tighter brief to simplify the name and refresh the logo - Develop communication plans for members/ stakeholders/ all platforms and membership benefit comms **Vibrant Industry** - New Collaboration award and reignite nominations - Review & realign – Science Fairs **Professional Development** - Develop plan for career support offering for members	**Networked Community** -Recruit 'speaker coordinator; -Invest in a pipeline of quality speakers -Continue piloting remote branches **Demonstrating Value** - Develop a promotion plan/ calendar/ proposed budget to drive new memberships -Delivery of comms plan -Logo/Name project cont. **Vibrant Industry** -Identify new areas of collaboration and make recommendation to the Board -Review and recommendation on existing forums and partnerships (consolidate/ redirect energy) -Promote food science and technology careers (HoS, ITF etc.) -Increase profiles/show case current members -Create Foodies role models **Professional Development** -Recommendation to the Board for a plan and budget on mentorship and formal training opportunities -Delivery of career support offering for members	**Networked Community** -Invest in technology to improve webinars experience -Standup Remote branches and invest in them to grow -Reward membership milestones **Demonstrating Value** -Launch website/online connection forums to enable access to peer support -Launch of refreshed logo and name Refresh comms plans -Delivery of promotion plan to drive membership subscriptions **Vibrant Industry** -Confirm collaboration award and sponsorship -Drive awards nominations -Continue member showcase **Professional Development** -Delivery of mentorship programme -Delivery of formal training opportunities	**Exec & Workstream Leads** -Review and adjust outputs of H2 priorities and 2027 priorities **Networked Community** -Check and adjust priorities and success of 'speaker coordinator' **Demonstrating Value** -Comms and promotion plans for 2027 **Vibrant Industry** -Continue FST promotion **Professional Development** -Student council creation -Engagement scoring system or professional development points

The New Zealand Institute Of Food Science & Technology Inc

New members

NZIFST welcomes the following new members.

New standard members

Dipin Pappachan, *Account Manager,* IMCD New Zealand Ltd

Sonya Hook, *Regulatory Compliance Specialist,* Mars New Zealand

Yanan (Susan) Wang, *R&D Project Lead,* Oceania Dairy Ltd

Colin Oliver, *Managing Director,* Produco Ltd

Dion Palu, *Food Safety Consultant,* Quality Solutions Pacific

New graduate members

Natthawadee Laothepphitak

New student members

Lincoln University: Steev Chuzhikunnel Shaji, Ashwin Suresh, Harikrishnan Puthanveetl, Siya Siby, Ankit Bishnoi, Ana Veronica Carrera Ontaneda.

Massey University: Thi-Van Nguyen, Chunyang Ma, Bolin Li.

University of Otago: Jonathan Lau.

NZIFST Directory

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The New Zealand Institute Of Food Science & Technology Inc

Branch news

Updates from around Aotearoa New Zealand

Catch up on the latest happenings from our national branches — from recent events and speaker sessions to prizegivings and member gatherings, this section showcases the vibrant activity and community spirit across our network.

L to R: Helen McDonald, Rebecca Douglas-Clifford, Grant MacDonald, Julie North, Mike Boland, Marion McNeilly, Julie Bryant

Nelson Tasman

What an honour for our local legend Mike Boland, who was invited to deliver the JC Andrews address at conference this year! Mike has championed a stellar career with strong focus on proteins and gave a great summary of his work in meat and dairy over the years. However, it is possibly his work in kiwifruit and its potential to reduce symptoms of some allergies through action on peptides in the stomach that really stimulated some great discussions.

We were delighted Mike agreed to deliver his address again to our local members, just a couple of weeks ago. It was a wonderful opportunity to gather, and as a small group there were plenty of questions and discussion throughout his presentation.

It was fantastic to have our new president Bob beaming in also for what we are proudly claiming to be his first 'branch' presentation. Fantastic to have you join us Bob (and bearing with our tech). It was a really worthwhile update and ideas session. A lot to look forward to ahead.

We plan to meet again as a local network, in late November. A chance to reflect on the year and toast the festive season. Love to see many of our local foodies there.

Julie North

Attendees engage with a Wintec student presentation while sampling innovative food concepts.

Waikato

AGM, Sensory Workshop and Wintec student poster

The NZIFST Waikato Branch held its Annual General Meeting on 29 May 2025, at Wintec in Hamilton, bringing together professionals and enthusiasts from the region's food science and technology community. Ahead of the AGM, attendees took part in a Sensory Workshop led by Marcus Loi, followed by an engaging showcase of food innovation prototypes and posters presented by four Wintec students: Digvijay, Yash, Ruth, and Jamie.

The event also served as a moment to acknowledge and thank the outgoing branch committee for their contributions during the 2024/2025 term. This was followed by the election of the new committee for the 2025/2026 term. The newly elected members are:

Chair and Board Rep: Marcus Loi

Secretary: Katharine Adam

Committee members: Colin Pitt, David Platts, Jane Stockton, Richard Gray, Naila Aishath, Chathurika Samarakoon, Brooke Morgan and Amit Taneja.

Marcus Loi

Otago-Southland

To accompany their AGM, the Otago Southland Branch had a fascinating seminar by Dr John Hale, an Otago Alumnus in Microbiology from BLIS Technologies, about the story of how BLIS Technologies came to be. John wove the tale about John Tagg and his discovery of *Streptococcus salivarius*, the little bacterium that could - a metaphor from the story of the little engine that could. In 25 years of BLIS Technologies, this bacterium has become the world's leading oral probiotic. With more than 1 billion doses consumed since its launch in 2002, *Streptococcus salivarius* claims responsibility for preventing primarily streptococcal sore throats and helps reduce other health conditions such as halitosis, prevention of respiratory infections, and controlling dental diseases.

Since its transition from the agar plate, *Streptococcus salivarius* has been manipulated into many more appealing forms – from pineapple chunk ice cream to toothpaste. Their small team of just eight scientists have been busy in recent months becoming the first lab in NZ to get green lab status and telling the gathered group about new horizons and future directions for the company.

John left us with a few wise words on the importance of keeping trade secrets and the finicky but necessary nature of regulations and patents. He reminded everyone to keep an open mind as chance favours the prepared mind. As we let John's enthusiasm infect us, you couldn't help but think that this small but mighty team have taken for themselves a few inspirations from the little bacterium that could. All the best for another 25 years BLIS Technologies!

Otago Southland members immersed in a seminar by Dr John Hale on "Celebrating 25 years of BLIS Technologies: Streptococcus salivarius - the little bacterium that could."

Looking ahead, Otago-Southland branch have planned a networking event at Danone (5 August) and their annual Career event (11 September, Otago Business School). The Careers evening is a free event encouraging students of any study level to come and practice their networking skills and learn about what many avenues your degree can take you in.

Brigitte Klimek

Newly elected committee. Back row L-R: Bob Olayo, Rex Johnstone (Chair), Stephanie Trower (Membership Secretary), Katie Brown Student Rep), Rebecca Dodson (Events Co-Ordinator), Robyn Marshall, Ujwal Chaudhari (Student Rep), Anna Sabolera, Alice Zhu (Student Rep), Craig Houston. Front row L-R: Janette Busch, Michelle Neyra, Hannah Lee (Vice Chair), Jasmin Estrera. Absent: Charlotte Sullivan (Minutes Secretary), Margot Richards (Journal Rep).

Canterbury-Westland

Branch AGM & AgResearch Presentation

The Canterbury-Westland Branch held its AGM on 19 April with 28 attendees. After the standard formalities, the Chair presented a summary of the NZIFST Strategy Roadmap and discussed the four pillars and their specific objectives and goals, then a review of the year's activities:

- four factory tours
- two events in person or hybrid
- two student events
- three networking events

Elections followed with many committee members continuing and several new members (see photo).

Chris Davis, stepped down as deputy chair and was thanked for his five years of committee service.

Also acknowledged were the hosts of factory tours and events held over the past year and the significant contribution of Matt Solutions for making their venue available for meetings and events at no cost to the branch.

Our speaker, Alex McGrath was then introduced. Alex is AgResearch Senior Manager, Food & Fibre Partnerships and a proud West Coaster with a dairy upbringing followed by early work experience in IT and the meat industry. As the mum of two beautiful boys, making a difference for Aotearoa's prosperity and future is what drives her in her work at AgResearch.

As Sector Manager for Food & Fibre, she enjoys being able to work with and between our world class (Food & Fibre) sector and science, to support new ideas and opportunities which will support a prosperous future for us all.

Alex gave us an overview of how the AgResearch works. As one of the seven Crown Research Institutes it employs almost 800 staff (a mix of permanent, casual, students and contractors), has 54% female, 45% male staff and a role spilt of 77% science to 23% science support.

AgResearch has an impressive legacy of more than 100 years supporting NZ farming and pastoral industries. Its current sector priorities are:

- climate change mitigation and adaptation
- healthy soil and waterways
- fit for purpose biosecurity
- enhanced animal health, welfare and productivity
- world leading genetic gains
- future resilient forages
- added value food and bioproducts

Alex then shared details on research priorities and capabilities including emerging foods. For example, new opportunities through diversification of proteins sources and the associated food safety and environmental considerations.

During wrap up and Q&A, Alex recommended students and those in the early stages of their careers, keep an eye on the CR changes.

Margot Richards

Canterbury-Westland

Hill Laboratories Facilities Tour, Christchurch

In April, Barbara Muller gave nine Canterbury-Westland NZIFST members an in-depth tour of Hill Laboratories' Christchurch facility covering sample reception, sorting, conditioning, analysis and results.

The Christchurch site specializes in time-sensitive water and food microbiology testing, such as Biochemical Oxygen Demand (BOD) and dry matter analysis of agricultural samples, which help determine the value of animal feed. More complex chemistry is handled at the Hamilton lab, as it's not practical to duplicate expensive equipment and expertise across both sites.

Every sample is logged on arrival with a unique number, date and time, allowing prioritisation of tests according to critical deadlines, such as the 24-hour window required for many water samples. This system is essential for managing the high volume of samples that arrive daily, especially those sent overnight by councils and other clients.

Automation – with barcode tracking and electronic workflows, streamlines most processes at this facility. Water testing uses closed systems and precise water baths for temperature control, while food samples are homogenised and prepared using automated dispensers, reducing manual handling and improving accuracy. Some traditional plate and tube methods are still used however, for some pathogen tests where no modern alternative exists.

Hill Laboratories also boasts an in-house PCR platform developed by a talented molecular biologist, enabling multiplex detection of pathogens such as Listeria monocytogenes and other species. The PCR workflow includes rigorous quality controls, with positive and negative samples run throughout the process to ensure reliability. Clients use Listeria data in different ways, from simple presence/absence reporting to detailed species tracking for risk management, particularly in the dairy industry.

The tour highlighted the lab's combination of traditional microbiology, advanced automation, and robust quality systems, all underpinned by a unique family ownership model.

Bob Olayo

Canterbury-Westland branch members & Lincoln students at Hill Laboratories with host Barbara Muller (far right)

Auckland

AGM and Allergy Awareness event June 2025

Auckland branch NZIFST members braved a wet and windy June evening to attend our 2025 branch AGM.

Supriya Sally warmed up the crowd with a game of meet-and-greet bingo. Outgoing Chairperson, Clinton Meharry then presented AGM formalities, including a review of the year, key events, membership numbers, and financials.

Neala Hart (Chair), Supriya Sally (Vice Chair), Rebecca Fok (Secretary), along with Ella Zwagerman, Sarah Leakey, Julia Ling, Joanne Kelly-Tuckey, Christine Jian, Violet Xu, and Rhiannon Hudson were introduced as the new committee. John Kyalondawa and Parinaaz Kaur (AUT), and Eyka Susanto (UoA) were also nominated as student representatives onto the committee.

Once the AGM was concluded, the evening's main attraction – the Power of Allergen Awareness, was introduced, showcasing a range of speakers from across our food industry:

Mark Dixon, CEO of Allergy NZ, highlighted the culmination of more than forty years of allergen awareness advocacy culminating in Pharmac-funded EpiPens. He then demonstrated their use using the *'orange to the thigh, blue to the sky'* catchphrase.

Sirwan Ed Eivani (Neogen) outlined how food manufacturers can mitigate allergen risks using a range of detection tools, from lateral-flow-kits to Elisa, through to ATP machines and protein surface swabs.

Debbie Hawkes (Allergen Bureau) updated the audience on ongoing Australasian efforts to harmonise allergen limits globally with the Codex Alimentarius Commission.

Tim Grainger (Venerdi) shared lessons from over two decades in allergy-free baking, highlighting initial difficulties with finding reliable ingredients through to the importance of finding trusted suppliers to meet his customer's needs.

Auda Finan (Savour) then regaled the audience with her story as a small start-up successfully bringing a range of plant-based cheeses and butter to market.

Audience members were then invited to ask the panel questions at the end of the evening.

Special thanks to all our speakers, the AGM sub-committee (Supriya, Christine, Julia, Rebecca, and Linda), and event sponsor Hawkins Watts for making our 2025 AGM a success!

Clinton Meharry

Branch committee members and speakers from the recent Auckland branch AGM

Keynote from the Power of Allergen Awareness/Auckland branch AGM. L – R Auda Finan (Savour), Mark Dixon (Allergy NZ), Debbie Hawkes (Allergen Bureau), Tim Grainger (Venerdi) and Sirwan Ed Eivani (Neogen)

Central

May meeting – AGM and $Million/KG food by-product

It's that time of year again – AGM time; that time when a brave group of volunteers takes up the challenge of delivering an engaging programme for Central Branch members. Attendance was distributed between Palmerston North (22 people) and Wellington (5 people) through a video link, with a few attendees joining remotely. Our AGMs are generally uneventful with contested elections a rarity, and that was the situation here when incumbents were largely reappointed unopposed. By that act, members endorsed the performance of the 2024/5 committee for one of our most active years, with close to monthly branch meetings (10 in total) reported by Branch Chair Craig Honore.

One fundamental change during the year was the change in venue for our Palmerston North meetings. After decades at Massey University Food Technology Department, new rules for hosting non-university events made it too difficult to continue booking those facilities. Fortunately, we have been welcomed to a new venue across the road at the Fonterra Research and Development Centre, the venue for this meeting. Our challenge now is to not lose our strong links to the Massey Food Technology student community, which has provided a life force for our activities since the formation of NZIFST 60 years ago.

With the AGM formalities completed, our Chairman welcomed Dr John Higgins and Dr Steve Kirk, speakers for the night. John and Steve are responsible for forming Medical Collagen New Zealand Ltd (MCNZ), a Palmerston North startup. They presented a talk titled "High value collagens – Medical devices and food have much in common." MCNZ arose from an earlier biomaterials startup based in Marton, later acquired by a British company that redirected operations. John and Steve decided to start over to pursue a New Zealand-based producer of high-value medical collagen.

The medical collagen industry recovers collagen protein from animal sources for applications like tissue engineering, wound healing, sutures, drug delivery and surgical implants. Collagen is used for its tensile strength, biocompatibility, and biodegradability. By-products of the meat industry (tendons and hides) are key raw materials. New Zealand's BSE-free status gives it a unique advantage, assuring products are prion-free. MCNZ uses bovine Achilles tendons to produce materials for medical use and works with medical device companies to customise extracts.

The parallels between food and medical devices relate to regulatory controls on medical collagen, often more stringent than those applied to novel foods under joint AU-NZ regulations.

One intriguing aspect was the value chain: recovered bovine Achilles tendons go from $1/kg (pet food) → $100/kg (precursor) → $10,000/kg (medical grade) → $1mil/kg (final medical form like dental membranes). That's "value-add"!

Steve concluded the presentation by demonstrating a range of products. After the build-up, the materials resembled crinkled heavy-duty paper – but with those returns, no one's complaining.

Last, but not least, the time has come for this branch correspondent to hang up his pen. This will be my final contribution to *Food New Zealand*. After nearly 20 years reporting for Manawatu and Central Branch, I'm extending my retirement to NZIFST. Thank you for the feedback and the warm commendations and generous gift at the AGM. Best wishes to my successor, who will be reporting in the next issue of *Food New Zealand*.

Allan Main

Dr John Higgins addresses Palmerston North-based Central Branch NZIFST members on experiences establishing a high value-add start-up business in preparing collagen for medical device manufacture

Dr Steve Kirk demonstrates examples of high value medical collagen produced locally

Members of Central Branch with Dr John Higgins at the MCNZ facility.

Central

Medical Collagen New Zealand Limited Facilities Tour, Palmerston North

We followed up the fascinating talk by Dr Steve Kirk and Dr John Higgins of Medical Collagen New Zealand Limited (MCNZ) in May, with a visit to their manufacturing facility in Palmerston North.

John Higgins showed us a modest cardboard carton full of finished collagen in its packaging and bedded in documentation ready to courier off to a US client – that one box was valued around USD $30,000. It took about three weeks to process plus about four weeks to build its Certificate of Analysis (COA).

We saw the clean rooms set up as positive pressure boxes inside the building. We saw the elaborate water treatment system to convert Palmerston North's good city water into very good, low-conductivity, commercially sterile, virus-free, pyrogen-free water. This water is the indispensable tool for extracting, washing and carrying the collagen in multiple steps from tendon through to freeze-dried product.

MCNZ is on the up. Its customers are mostly sophisticated medical device manufacturers. Its problems are mostly good ones: how best do you grow productive capacity and product flexibility, which all demand staff and capital, to exploit an expanding market?

For we foodies? We can learn a lot by looking just next door at other industries processing biological products to even more exacting standards than we face. MCNZ operate under an RMP (Risk Management Programme) as do most food manufacturers in New Zealand, but they have an overlay of strict requirements for their offshore medical markets. The parallels with food are strong and as a Branch we may seek some more talks and visits like this.

Thank you John and Marie-Laure for the evening.

Richard Archer

John Higgins addressing Central Branch with clean rooms in the background.

Q&A with Claire Redman

Food NZ is all about connection between our readers and others in the industry. Every issue we will ask a member of NZIFST a few short questions. Here we are introducing one of the Institute's newest fellows: Claire Redman.

Claire at Kāpiti Cheese around 2001

What does being a Fellow of NZIFST mean to you?

I'm grateful and humbled to be recognised. It's been a good reminder to stop and reflect on what I've done and be proud of my achievements. It's validating that my efforts have made real contributions to the NZ food industry.

What sparked your interest in food science and technology?

I've always loved food and science. Growing up, my childhood friend and I made colourful baking creations. We visited Massey's open day and were drawn to the Technology program. The Pilot Plant tour (thanks Garry Radford) showed me I could combine creativity and science. My friend became a chef and nurse.

Your proudest achievement is...

My first real food tech job at Kapiti Cheese in Paraparaumu! I was tasked with reproducing their flagship cheese, Kikorangi in a small 2x3m lab in the warehouse.

Any significant mentors?

Anne Perera was my Team Leader in my early career, and her insights, guidance and friendship have had a long-lasting impact on my career.

What areas of food science excite you the most right now?

Targeted nutrition products for specific wellness outcomes are flooding social media platforms and are promoted by influencers. The challenge will be producing products with evidence-based results (requiring significant investment). Also, we need food to exist, but are we producing to thrive on our planet or just surviving? And for how long?

Any advice for your younger self, or young food science professionals?

Be open to every opportunity, especially if it challenges you. Everyone you work with, you can learn from and add to your story. ▪

Waste to wealth: collagen extraction from seafood by-products

Every year, millions of tonnes of seafood by-products are tossed aside - yet hidden within that waste is one of the most valuable proteins in the health and beauty industry: collagen.

Carly Smith, Student, University of Otago

Introduction

Imagine spending a hot summers day on the boat and returning home with fresh fish for dinner. As you fillet the fish, you discard the skin, scales, bones, heads and tail. For all your hard work, only 25% of the fish is kept, while the remaining 75% is wasted (Yuan et al., 2024). On an industrial scale, this amounts to 20 million tonnes of seafood waste dumped into landfills each year—enough to fill approximately 8,000 Olympic-sized swimming pools. This creates significant environmental challenges and is a major contributor to the growing issue of food waste. However, around 30-40% of these discarded by- products consist of high-quality proteins, primarily collagen, which is gaining popularity as consumers become more aware of its health benefits. Recent research highlights the promising potential of repurposing seafood by-products for collagen extraction, offering a solution to mitigate environmental damage, meet market demand and enhance the economic prospects of the fishing industry.

What is Collagen?

Collagen is a key protein found in animals and helps give structure and strength to tissues including skin, bones and joints. In other words, it's like the glue that holds your body together. So far, 29 types of collagen have been identified, all sharing a similar structure that resembles a twisted rope made of three strands. When collagen is broken down via a process called hydrolysis, it produces smaller pieces called peptides. These peptides act as 'keys' that unlock a variety of health benefits (Ahmed et al., 2020). Because of this, collagen is highly valuable in the pharmaceutical, medical, cosmetic and food industries.

Why is Collagen so good for you?

When you consume collagen, your body breaks it down further into smaller peptides or amino acids. These tiny building blocks are absorbed in the small intestine and sent into your bloodstream, where they get to work supporting your health. Studies show that collagen peptides can have beneficial effects on joint and bone health. For example, research found that post-menopausal women who took collagen supplements for a year experienced a significant increase in bone density, helping to protect against osteoporosis (König et al., 2018). Additional benefits include improved bone mass, increased cartilage volume, and reduced joint pain in individuals with osteoarthritis (Salim et al., 2024). But collagen's benefits go beyond joints and bones. It's actually the most abundant protein in our skin, and supplementing with hydrolysed collagen has been linked to increased skin hydration, improved elasticity, and a reduction in wrinkles—helping to slow down the aging process and support wound healing (Choi et al., 2019). Collagen's antioxidant activity plays a role in fighting damage from free radicals, which can speed up skin aging and weaken hair and nails. Further research suggests it may have other beneficial properties, including anti-tumour, anti-microbial, and blood-clotting effects (Ahmed et al., 2020). In short, collagen does more than just keep skin looking youthful—it's a powerhouse protein that supports your overall health from the inside out.

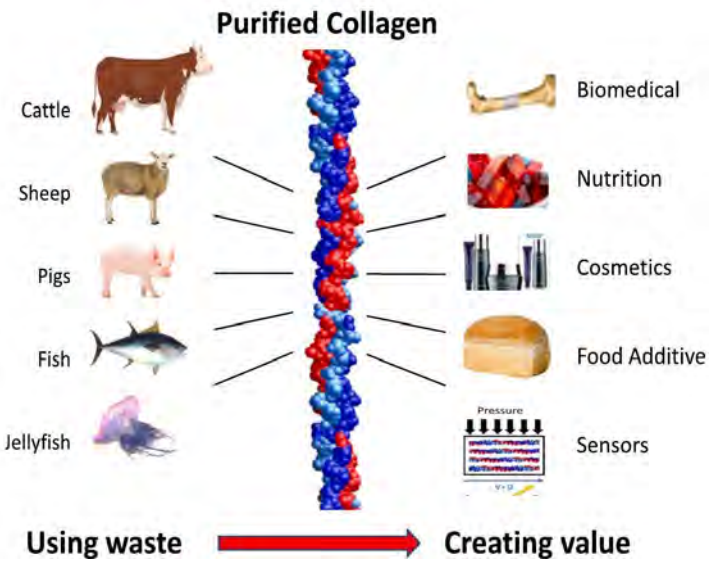

Figure 1. Salim, N.V. (2024). Graphical Abstract (Image). International Journal of Biological Macromolecules, 278, 134374. https://doi.org/10.1016/j.ijbiomac.2024.134374

Where does Collagen come from?

Collagen is extracted from the by-products of marine, porcine, and bovine animals including the skin, bones, cartilage, tendons, and scales. Bovine and porcine skin and bones are rich and readily available sources of collagen. However, the use of bovine collagen is limited due to concerns over the risk of disease transmission and allergic reactions in 3% of the population. Additionally, porcine collagen is less commonly used due to religious and cultural beliefs. Collagen from marine organisms is becoming increasingly preferred due to its safety, high yield and absence of religious barriers (Ahmed et al., 2020).

Collagen Extraction

Just like a chef perfecting a recipe, scientists have spent years refining techniques to optimise collagen extraction from by-products. The first step is a pre-treatment with a weak acid or base to remove non- collagen components (Gaikwad & Kim, 2024). Several key techniques exist for collagen extraction. Acid-soluble collagen (ASC) weakens collagen's twisted rope structure, breaking it into smaller bioactive peptides. Enzyme-soluble collagen (ESC) uses enzymes like pepsin to accelerate protein breakdown (Ahmed et al., 2020). Pal et al. (2015) found that combining these methods significantly enhances yield, reporting an 18.81% increase when both acid and enzymatic treatments were applied to Rohu fish skin. Enzyme treatment improves collagen solubility in acid, increasing extraction efficiency. A more advanced method, ultrasound-assisted collagen (UAC), applies high-frequency sound waves to break fish tissues, easing collagen release. Petcharat et al., 2021 found ultrasound increased collagen yield by over 30% from clown featherback fish skin. Another method, salt-soluble collagen (SSC), dissolves collagen using salts like NaCl but is limited due to collagen's low solubility in salt solutions (Ahmed et al., 2020). Despite advancements, these methods have limitations—they are time- consuming, energy-intensive, and require strong chemicals with environmental impacts. Additionally, marine collagen has a lower melting point, making it sensitive to heat and processing conditions, potentially altering its structure and effectiveness.

So, where to next?

Research has highlighted several promising methods to extract collagen peptides from seafood by-products, benefiting both human health and the environment. However, to maximise collagen yield and quality, we need a deeper understanding of its physical and chemical properties. Further studies should explore how different extraction techniques impact collagen's structure and bioactivity to ensure the best possible health benefits. At the same time, transitioning to more sustainable and innovative extraction methods is essential. This requires investigating potential combinations or novel approaches. By refining these processes, we can not only meet the growing demand for collagen but also drive economic growth and sustainability in the seafood industry. ▪

Student Essay winner: Carly Smith, University of Otago

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