

NZIFST Annual Conference Speaker Abstracts



Building New Zealand Inc.

NZIFST Conference 2022
5 - 7 July, Rotorua

Day 1 – Tuesday July 5th 2022

Session Title: A - Opening Plenary

Name Tony Egan

Job Title Managing Director

Organisation Greenlea Premier Meats Ltd



Presentation Title: Collaboration - A veritable love fest!

I will share experiences of collaboration with you and explain how they have led me to take a keen interest in one of the world's oldest professions, and equally exciting, one of the dirtiest!

I will grapple with my learnings from an encounter with a highly contagious disease and I will reveal my partners. At the risk of creating even more methane in Rotorua, I will ponder our environmental issues. So, let's collaborate to build N.Z.Inc. at the NZIFST conference in July.

Session Title: A – Opening Plenary

Name Mark Piper

Job Title Director Category, Strategy & Innovation

Organisation Fonterra Cooperative Ltd



Presentation Title: Sustainability/decarbonisation and future focus

New Zealand pastures produce some of the most emissions-efficient ruminant-sourced products in the world including nutrient dense dairy. Our ability to produce more than we require to help nourish our small New Zealand population enables us to support the nutritional needs of populations elsewhere in the world, and in doing so earn valuable export dollars. Yet because of our small population, a relatively small industrial and manufacturing sector, and an already significant contribution from renewable energy, agriculture makes up almost 50% of New Zealand GHG emissions.

As the world starts to experience some of the effects of climate change it is as important as ever that scalable practical solutions are created to reduce NZ emissions. In doing so we should aim to achieve the combined goals of producing products the world needs and desires, increasing export returns to New Zealand, and significantly reducing emissions. To this end Fonterra is working with in a wide range of collaborations involving a diverse range of technologies to try to enable such solutions.

Collaborations have always been important to develop and prove ideas for GHG mitigation technologies and for Fonterra to help in the development of new technologies. Success in one or a number of these technologies will help Fonterra continue to provide the world with emissions efficient dairy and provide technologies that can be used to reduce emissions in other food chains both in New Zealand and elsewhere.



Session Title: B1 – Food Integrity

Name Debbie Hawkes

Job Title Allergen Bureau Board Director

Organisation Allergen Bureau



Presentation Title: What the FAO : WHO needs to know about what the Allergen expert panel said?

In response to a request from Codex Committee on Food Labelling (CCFL), an FAO /WHO expert panel on risk assessment and food allergens, formed and met, with the 3 specific aims.

1. validating and updating the list of foods and ingredients in the GSLPF based on risk assessment;
2. establishing threshold levels in foods of the priority allergens; and
3. evaluating the evidence in support of precautionary labelling.

Whilst the formal report is not due until 2023 and we are yet to understand the full impact, what insights might we gain from what we know so far, what might be next on the horizon for allergen labelling and precautionary allergen labelling and how do we best prepare ourselves for the future.

Session Title: B1 – Food Integrity

Name Kirill Lagutin

Job Title Principal Research Scientist

Organisation Callaghan Innovation



Presentation Title: The case for Food Integrity

New Zealand is highly regarded for its food safety programmes and the quality of its products. Products carrying a fern mark or labelled as produced in New Zealand are often sold at a premium. With some unique products (Greenshell™ mussels, Gold kiwifruit, Manuka honey) the food and fibre sector accounts for over 82% of New Zealand merchandise export. The quality, safety, uniqueness and provenance premium make New Zealand products a perfect target for product fraud. The value of this sector to NZ is hard to overstate, yet the scale, nature, and risks of product fraud are largely unknown.

In this presentation, I discuss the link between food safety, quality and authenticity as key elements of the food integrity, the risk exposure of NZ products to fraudulent activities; the opportunity this challenge presents; and possible next steps for NZ Inc.

Session Title: B1 – Food Integrity

Name Hannah O'Brien

Job Title Director

Organisation Hunt and Gather Bee Co.



Presentation Title: Chats at the Farmers Market - what our customers are telling our small business

Our high level of interaction and contact with our customers, on a weekly basis, has helped us to keep up-to-date with what our customers really want and adapt our products and services to meet their needs and wants. From casual chats at the Farmers Market every weekend, and throughout the local food industry, I have compiled some of my key learnings about our customers behaviour and how their thoughts about our food system have changed over the past 5 years. Hopefully these insights might be useful to you when looking at your new products and how your company will adapt to meet the needs of your customers.

Session Title: B1 – Food Integrity

Name Kate Parker

Job Title Packaging Research Leader

Organisation Scion



Presentation Title: Sustainable Packaging for Food Applications

Packaging plays a key role in the protection and containment of food products. However, as concerns around plastic pollution and the overall impact we are having on the environment increase, packaging must also be sustainable. More and more countries are signing up to the global commitments of 'all packaging being reusable, recyclable or compostable' and we must ensure our packaging meets these criteria to retain market access for NZ's food products. This presentation will discuss some of the current trends in packaging, their limitations (including concerns around food contact compliance) and their role in maintaining food integrity.

Session Title: B2 – Process Engineering

Name Merit Mathew

Job Title PhD Engineering Student

Organisation Massey University



Presentation Title: Rate Controlling Mechanisms in Atmospheric freeze-drying

Atmospheric freeze-drying (AFD) can be a cost-effective alternative to vacuum freeze-drying (VFD), but slow drying rates limit adoption. With thin sections such as in leaves and petals the rate of AFD is relatively high, and air a better drying medium than vacuum. Understanding rate-controlling mechanisms in AFD and impacts of herbage structure will help overcome bottlenecks. This project has developed a heat and mass transfer model for AFD by considering the intrinsic material and structural properties and the sublimation kinetics of ice.

The model has been validated experimentally using pure ice and hops. New apparatus was developed to generate high-quality weight loss data in-situ. The model predicts drying well. Results suggest AFD of ice is externally mass transfer limited and AFD of hops is internally mass transfer limited. This model may help end-users run AFD simulations for different products to find the best drying strategies for useful drying rates.

Session Title: B2 – Process Engineering

Name Mariero Gawat

Job Title PhD Student

Organisation Massey University and Riddet



Presentation Title: Microwave technology for meat processing

Advance microwave technology known as Coaxially induced microwave pasteurisation and sterilisation (CiMPAS) has found application in food preservation. The system uses industrial microwave frequency (915 MHz) with a pressure vessel and circulating water. This was designed to achieve rapid and uniform heating for a shorter processing and better nutrient retention. Microwave heating is challenging for meat due to its composition and structure of the meat. In this study, CiMPAS was used to investigate the effects of microwave heating on the ultrastructure and quality of goat meat and lamb. The quality of the meat subjected to microwave heating (5 mins) was compared to the sous-vide cooked muscles (60 °C for 9 h). Both processes produced meat having the same level of tenderness, using Warner-Bratzler Shear Force. Microwaved meat had higher cook loss and pronounced ultrastructural changes. The results highlight how rapid and high-temperature heating by CiMPAS leads to changes in the meat ultrastructure and quality.

Session Title: B2 – Process Engineering

Name Biniam Kebede

Job Title Senior Lecturer

Organisation University of Otago



Presentation Title: Effects of processing on the flavour and digestibility of legumes

Legumes are nutritious but are not widely utilised to their full potential due to various factors, i.e. low protein digestibility and undesirable odours. In an attempt to maximise their utilisation, hydrothermal processing is the most widely adopted technique. There is a lack of systematic studies to understand the effect of processing on sensory and nutritional aspects. This work aimed to study the impact of processing on the (i) volatile and fatty acid profile (contributing to odour) and (ii) digestibility of starch and protein (contributing to nutrition). Pre-soaked legumes were boiled at varying durations and subjected to volatile and in vitro protein and starch digestibility analyses. Volatile compounds likely to contribute to undesirable odours (e.g. aldehydes and alcohols) were reduced due to processing in the first 15 to 30 min. The rate and extent of starch and protein digestion at the small intestinal phase increased due to processing time.

Session Title: B2 – Process Engineering

Name Colin Pitt

Job Title Area Sales Manager

Organisation Burkert Fluid Controls



Presentation Title: Successes and failures in the Food and Beverage processing industry and the benefits of communication

A quick resume of my career starting with NZCDC, moving to LIC and then back into food processing. Experience in filtration, analysis, fluid dynamics. Two examples of successes and two of failures I have seen in water bottling and in dairy processing. My main message is that communication and collaboration are cost-effective strategies long-term. Plenty of time for questions and discussion.

Session Title: B3 – Nutrition and Health

Name Nick Smith

Job Title Research Officer

Organisation Riddet Institute – Massey University



Presentation Title: Capturing food nutrient trade in an interactive app

International trade in food is extremely important economically, but less widely understood is the role of this trade in global nutrition. We combined international food trade data with the DELTA Model®, which calculates nutrient availability compared to human requirements, to develop an interactive application. The app allows users to view the main import and export partners for the supply of 29 nutrients in a given country, as well as the major commodities responsible for this trade. We found that only four out of 170 countries produced enough of all nutrients to meet the needs of their own population. 60 countries produced enough protein and energy. Food trade increased the number of countries with sufficient access to these nutrients to nine, and protein-energy sufficiency to 125. New Zealand achieved protein-energy sufficiency but fell short for several micronutrients. This tool gives crucial evidence for the importance of food trade for nutrition security.

Session Title: B3 – Nutrition and Health

Name Katharine Adam

Job Title Microbiologist

Organisation Quantec



Presentation Title: Bovine Bioactive Whey Protein Consumption Supports the Human and Animal Microbiomes

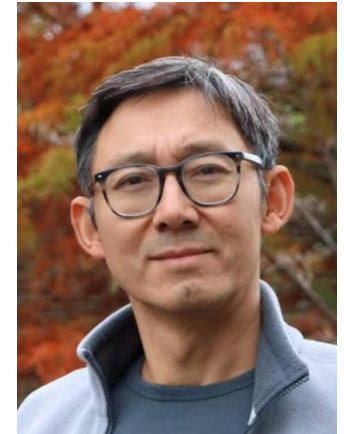
It is now widely accepted human and animal health are interconnected with the health of an individual's microbiome. Diet and consumption of drugs, especially antibiotics, can have positive and negative effects on the microbiomes which can influence a person's health and wellbeing. The microorganisms in a microbiome can be considered good, bad, commensal, or mostly good but sometimes bad (opportunistic pathogens). Consumption of Bioactive Whey Proteins (BWP) can help maintain a healthy balance between these groups of microorganisms through selective antimicrobial activity. In this work, in vitro methods were used to test the selective antimicrobial activity of BWP against a range of bacteria found in the gut including E. coli and some probiotic lactobacilli. BWP was selectively more active against the disease-causing bacteria than the health enhancing bacteria. Future work is focussed on how the gut microbiome-enhancing properties of BWP can translate into in vivo benefits for gut health-based applications.

Session Title: B3 – Nutrition and Health

Name Hong Xin

Job Title Lead Technologist

Organisation Fonterra



Presentation Title: Dry Blended Nutritional Product Capability Study

A recent study on the dry blended nutritional product capability shows nutritional products with different formulations generally have a common coefficient of variation (CV) for most nutrients. This common CV can then be used as an empirical guidance to help determine the standard deviation and capability ranges of these nutrients for NPD product. In addition, based on fundamental statistical method, we have also developed a mathematical model to predict standard deviation with better accuracy. In this mathematical model, ingredient batch variation, testing error, and inhomogeneity of blended product have been chosen as the major controlling factors. This mathematical model is then validated using the existing product information.

Session Title: B3 – Nutrition and Health

Name Dominic Agyei
Job Title Senior Lecturer
Organisation Otago University



Presentation Title: Physicochemical characterization and drug-likeness evaluation of bioactive food compounds

Food-derived compounds play a significant functional role in diets. These functionalities can range from biological properties (e.g., antioxidative, antihypertensive, and immune-enhancing behaviors) to physicochemical functionalities (e.g., foaming, gelling, emulsifying behavior) and sensorial properties (e.g., tastant compounds). The biofunctional properties of food compounds result from the high degree of structure-activity traits that these compounds carry. This unique feature makes it possible to use in silico and computational tools to predict important features such as physicochemical characteristics, molecular docking, drug-likeness evaluation, and functionality assessment of food compounds. Predicting these important features reduces the time and cost of developing bioactive food compounds/ingredients. This talk will present advances in computational and in silico tools for the modelling, prediction, and structure-activity relationship studies of food compounds. A case study involving the in silico discovery and physicochemical characterization, molecular docking, and drug-likeness evaluation of antioxidant and hypotensive peptides from flaxseed proteins will also be discussed.

Session Title: B4: Perceptions of Flavour, Sponsored by AgResearch

Name Renyu Zhang
Job Title Research Scientist
Organisation AgResearch Ltd



Presentation Title: Mechanisms and strategies to develop dry-aged meat flavour

Dry-ageing of fresh meat has been the subject of growing research interest over the past 20 years. The advantage of dry-ageing over commonly used wet-ageing is in flavour development, although the reported results are not consistent. Recent developments in metabolomics and volatile research have advanced the knowledge in unlocking biomolecular signatures for dry-aged meat flavour. The underlying mechanism for flavour development of dry-aged meat is driven by an interplay between microbial activity (mostly yeast and moulds), lipid oxidation and dehydration. Flavour profile of dry-aged meat can vary due to factors like animal sources, intramuscular fat content, use of novel dry-ageing techniques and ageing parameters. Release of lipid-derived volatiles and flavour precursors further contributes to enhancing the flavour of cooked dry-aged meat. Tailored flavour profiles and consistent quality can be achieved through manipulating these key elements when designing dry-ageing strategies.

Session Title: B4: Perceptions of Flavour, Sponsored by AgResearch

Name Santanu Deb-Choudhury

Job Title Senior Scientist

Organisation AgResearch Ltd



Presentation Title: Food flavour development using AI, analytics and development chefs

Food palatability is largely determined by flavour, that includes odours, tastes and freshness or pungency (trigeminal senses). Flavour compound (chemical) profile of ingredients is therefore a logical starting point for principles that might underlie the choice of acceptable ingredient combinations in prepared foods. The use of artificial intelligence (AI) and data mining as an initial stage of ingredient pairing based on compound share, followed by validation of these combinations using extraction technologies allows for statistically significant links among ingredients and the discovery of unique flavour patterns. Information on the chemical makeup present in various food ingredients and the use of AI in establishing patterns of ingredient combinations, provides a route to discovering flavour patterns that transcend established recipes and chefs' selection. Our approach relies on compound pairing rather than ingredient pairing for generating unique flavours and the validation of these combinations using input from real-life chefs and consumers.

Session Title: B4: Perceptions of Flavour, Sponsored by AgResearch

Name Mariza Gomes Reis

Job Title Senior Scientist

Organisation AgResearch Ltd



Presentation Title: Differences in the Aroma Profile of Dairy and Non-Dairy Cheeses

Plant-based foods have increased in popularity among consumers. Although non-dairy cheese sales continue to grow, the category remains in its earlier stage of development compared to other plant-based analogues (e.g. milk). It has been recognised that there are two general mindsets to the flavour development of non-dairy cheeses: (1) Embrace the unique flavours and characteristics derived from the plant and (2) mimic the sensory attributes of conventional dairy cheese. Nonetheless, if the goal is to embrace or mimic the flavour characteristics, the end product should have sensory properties that consumers find desirable. In this study, we characterise the aroma of 8 non-dairy and 16 dairy cheeses belonging to 3 cheese categories (Cheddar, Mozzarella and Parmesan). In total, fifty-three aroma compounds were detected in the cheese samples by headspace-SPME-GC-MS. Aroma compounds identified belonged to several chemical classes including alcohols, aldehydes, aromatics, ketones and sulfur compounds. In general, the two types of cheese (non-dairy and dairy) shared the same class of compounds, however, the proportion of those compounds across the samples differ considerably. Multivariate analysis revealed a clear difference in the aroma profile among groups of samples. Key dairy aroma associated with rancidity (e.g. free fatty acids) showed higher concentrations in some of the non-dairy cheeses, while other key cheese aroma compounds were not detected or detected at low concentrations (e.g. methyl ketones) in some non-dairy cheeses. Our observations suggest that adjustment of the proportion between desirable and undesirable aroma compounds could be a critical factor to achieve a desirable flavour profile on non-dairy cheeses.

Session Title: B4: Perceptions of Flavour, Sponsored by AgResearch

Name Jihan Kim

Job Title Scientist

Organisation AgResearch Ltd



Presentation Title: Generation and identification of kokumi compounds and their validation by taste-receptor assay: An example with dry-cured lamb meat

Kokumi tastants are small γ -glutamyl peptides (GGP) that enhance flavour in foods. We sought to generate GGP from the meat crusts of dry-cured lamb, an underutilised protein resource, identify these using mass spectrometry, and validate their functional activity using a kokumi-calcium sensing receptor (CaSR) assay. The water-soluble extract (WSE) of meat crust was hydrolysed by protease A (PA) and treated with glutaminase (GA). Fifteen GGP were identified, with 14 being significantly increased in PA and GA groups compared to WSE, as were along with free amino acid levels. The GA extract activated CaSR with higher potency and efficacy than PA and WSE suggesting the generation of potent kokumi tastants. The in vitro receptor assay might be an expedient tool for screening kokumi tastants prior to conducting human sensory analysis. Collectively, our findings indicate that the meat crust can be a valuable source to generate kokumi tastants via a two-step enzymatic reaction.

Session Title: C1 – Better Business through Quality Governance

Name Dean Stockwell
Job Title Director
Organisation Dean Stockwell Consulting



Presentation Title: Governance in food safety - it's all about the Board, or is it?

The Board has a key role in food safety governance, and it should be a top-of-agenda item. There have been many epic food safety fails impacting consumer health and safety, some with tragic outcomes. Such events impact company reputation, finances and even survival - matters that Boards have a keen interest in. Dean's presentation provides a food safety governance road map and discusses how the food safety professional can influence senior management and directors to commence the food safety governance journey.

Session Title: C1 – Better Business through Quality Governance

Name Ray Haddad

Job Title Trainer and Managing Director

Organisation Food Surety Ltd



Presentation Title: Seeing the system: The power of the process-based audit

Food businesses and their context, supply chains etc. are getting more complex, this leads to more complex food safety and quality management systems and audits. Hence collaboration is key.

This presentation is aimed at seeing the system/the big picture, sharing practical tips on using the process-based approach, helping auditors, both external and internal, finding their direction and pace, throughout the audit process, to help them delivering their audit objectives collaboratively which in turn should help the auditee achieve their objectives too.

Session Title: C1 – Better Business through Quality Governance

Name Catherine Richardson

Job Title Value Stream Lead – Quality Management

Organisation Zespri International Ltd



Presentation Title: Can Good Quality Governance drive Business Growth?

Can Good “Quality Governance” Drive Business Growth?

Our Kiwifruit industry is one of New Zealand’s real success stories. Collectively, the industry has taken an obscure, uncommercialized fruit, introduced this as a new fruit to the global produce business, built a major food brand and grown revenue year on year to exceed \$NZ4 b in 2021-22. Quality has been one of the key cornerstones of this growth.

Sustained Quality is never an accident but a deliberate choice. Implementing this choice across a global supply network that comprises a large number of independent production units. This presentation will look at how quality has been managed at an industry level and what role this has played in the growth of the Kiwifruit industry.

Session Title: C1 – Better Business through Quality Governance

Name Craig Houston
Job Title Blood Products Manager
Organisation ANZCO Foods/ANZCO Healthcare



Presentation Title: How a Quality Management System can increase margins in your business

What is the difference between a Rolls Royce and a Mitsubishi Mirage, a fish skin and a collagen mask or a piece of waste meat and a heart valve? The raw materials are very similar but if you further process them in a controlled way using an accredited quality system, the end products are significantly different in form, function and value. A company taking a commodity product and further processing using a recognised and audited QMS, a transformation can occur to lift you up and differentiate your business from your competition.

Session Title: C2 – Engineering for Sustainability

Name Mario Alayon-Marichal
Job Title Development Engineer
Organisation Plant and Food Research



Presentation Title: Drying second grade fruits: scaling up process from laboratory data to industrial validation

New Zealand generates around 8,900 tonnes of second-grade fruits per year, approximately 10% of the total production. One of the multiple options of the second-grade fruits is to dry them for healthy snacks and/or ingredients. By performing laboratory-scale tests, data can be generated (drying kinetics and isotherms) that will allow for scale-up of the drying process. Kinetically, the fruit weight is registered as function of drying time. Moisture ratio (MR), as a function of the time, allowed identification of the different drying zones. The drying isotherms measured the water activity as a function of the equilibrium moisture content at a constant temperature. Isotherms at 60, 70 and 80°C were estimated from the Clausius-Clapeyron equation, using data at lower temperatures. The drying isotherms were used to estimate the critical moisture content (CMC). All this information was used to successfully dry the fruits in an industrial tray air dryer.

Session Title: C2 – Engineering for Sustainability

Name Suchima Gonapinuwala

Job Title PhD Student

Organisation Massey University



Presentation Title: Native collagen from fish waste - a study of extraction conditions

Commercial fish processing uses less than half of the fish as edible flesh and the rest is discarded as waste or used for low-value applications such as fertiliser or fish feed. Fish skin, which constitutes a higher portion of this waste has been under consideration for decades as an alternative source of type-I collagen for potential biomedical applications. The main challenge in this attempt as compared to mammalian collagen is the preservation of native triple-helical structure due to its poorer stability caused by low contents of proline and hydroxyproline. For this reason, weak organic acids have been used for extraction, which involve longer times and complex processing.

In our study, we extracted type-I collagen in its native form using hydrochloric acid in a shorter time duration. We have incorporated this finding in our attempt of developing a fish collagen extraction method for potential biomedical applications.

Session Title: C2 – Engineering for Sustainability

Name Richard Edmonds

Job Title Food Processing Engineer

Organisation Plant & Food Research



Presentation Title: Future foods from fractured fiber: A fast fail approach

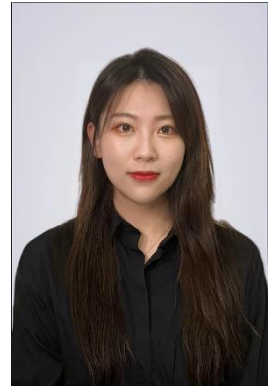
At present, vast quantities of vegetable pomaces are produced each year. Currently disposed of as animal feed at a low return, the vegetable fibre contained in this biomass has potential to be utilised and made into healthier foods. The exciting new idea in this work is the creation of a smooth, palatable fibre ingredient based on vegetable pomace using a novel proprietary process. Ultimately, the project will deliver the technology to take low-value fibrous plant material (pomace), arising from a range of fruit and vegetable processes, and convert it into a highly-valued food ingredient or supplement that ameliorates a significant dietary deficiency that global public health authorities are eager to correct. We will present the techniques and methods used in our “fail fast” approach from lab bench to pilot plant. Our successful process, built from the ground up, is now proven at pilot scale and compared favourably to commercial alternatives.

Session Title: C2 – Engineering for Sustainability

Name Ziqian Feng & Yanyu Zhang

Job Title PhD Students

Organisation Lincoln University



Presentation Title: Replenish fresh water with clean upcycling of Liluva

Industrial processing treatments of legumes including soaking, blanching, canning, and sprouting have been widely applied to remove undesired enzymes and odours and extend the shelf life. It has been observed that pre-treatments of legumes decrease the anti-nutritional compounds and increase the bioavailability of proteins and minerals. However, most of these treatments tend to cause solid loss (containing proteins, vitamins, starch, minerals, and other water-soluble content) which leach into the processing water. Recent studies have emphasized the potentials of legume processing water (Liluva) on nutritional and functional properties. The water-soluble bioactives in the water can be utilized either nutrient isolates or food product nutritional reinforcement. On the other hand, it has been exhibited that legume wastewater demonstrates textural properties such as emulsifying and foaming abilities which can be applied in bakery food production.

Session Title: C3 – Kai Moana

Name Sabrina Tian
Job Title Innovation Research Science Manager
Organisation Sanford Ltd



Presentation Title: Functional Food and Ingredients from the Ocean

Sanford is proud of its heritage and the growth achieved in its more than 130 years, as a seafood company with around 1,400 people, delivering a diverse range of quality products to our domestic and international markets.

Seafood has been proved to contain functional components, such as long-chain ω -3 fatty acids, especially EPA and DHA, which bring many health benefits to humans. The Innovation team at Sanford has researched and demonstrated ways in utilising and extracting functional ingredients from various seafood resources, as well as conducting physiological evaluation for some ingredients. Key projects include working with Cawthron Institute and Massey University for the High Value Nutrition National Science Challenge in order to understand the relationships between inflammation, metabolism and musculoskeletal function with Greenshell™ Mussel intake. This presentation will showcase Sanford's R&D and Innovation capability and highlight the importance of science discovery and validation in functional ingredient development and commercialisation.

Session Title: C3 – Kai Moana

Name Jolin Morel
Job Title Research Scientist
Organisation Callaghan Innovation



Presentation Title: Creating value from marine by-products using supercritical and subcritical solvents

The Plant and Food Research led “Cyber-Marine” programme aims to develop sustainable technologies to better utilise New Zealand’s fisheries resource, aiming for 100% raw material utilisation. Current fish processing factories focus largely on the production of fillets from selected species. By-products such as frames, by-catch, skins and heads, are typically rendered to low value products such as fish meals and crude oils for fish and animal feeds or diverted to marine-derived fertilizers. These by-product streams often contain phospholipids and triglycerides enriched in omega-3 fatty acids. Novel technologies including extraction with sub- and supercritical fluids such as dimethylether (DME) and CO₂, can enable purification and concentration of these compounds, to deliver alternative high-value products.

Sub- and supercritical fluids are increasingly being used as green solvents for food processing. Subcritical DME is of particular interest as it is partially miscible with water, allowing it to extract water, and both polar and non-polar lipids. This is not possible during rendering or when using supercritical CO₂. This partial miscibility allows extraction to be carried out without first drying the feed material, enabling the use of lower-energy processing techniques.

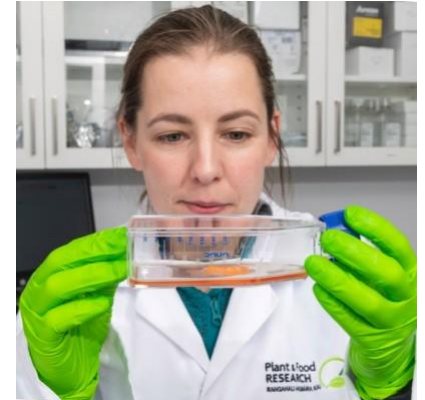
This work, part of the larger Cyber-Marine programme, evaluates the yield and composition of lipid extracts, when liquid DME and supercritical CO₂ are applied to biomass from three exemplar marine species; whole jack mackerel, an oily fish; hoki frames and heads, a hoki fillet by-product; and Greenshell™ mussel meat. Our work also investigates the effects of varying moisture content on DME extraction performance and extract composition.

Session Title: C3 – Kai Moana

Name Georgina Dowd

Job Title Senior Scientist

Organisation Plant and Food Research



Presentation Title: Cellular Agriculture of Seafood in New Zealand: a new opportunity to share our kaimoana

In vitro cell culture is a process where cells are removed from a living organism and are maintained in an artificial environment. When these cells are provided with appropriate nutritional and environmental conditions, they are capable of self-renewing over extended periods of time.

Cells derived from fish have been used for decades in supporting the traditional culture of seafood (e.g. infectious diseases). Recently, however, fish cell lines are being investigated as an alternative way of producing seafood through a novel technology called cellular agriculture. By definition, cellular agriculture is the production of agricultural products from cells, and this includes fish meat.

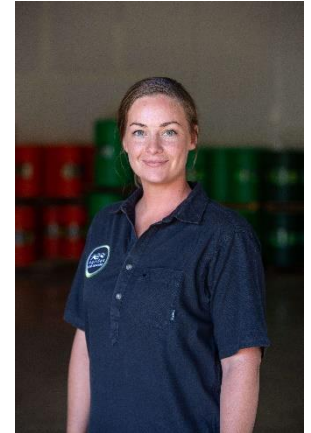
At Plant & Food Research, we are tackling the scientific challenges underpinning the technology. We are working to understand this technology and its relevance to New Zealand Inc., identifying threats and opportunities, and considering whether this technology represents a new way in which we can share our kaimoana with the world.

Session Title: C3 – Kai Moana

Name Clare Bradley

Job Title CEO

Organisation Agrisea NZ



Presentation Title: Seaweed is the new superfood.

AgriSea staff have been taking AgriSea's animal health tonic (a fermented seaweed tonic) for many years, and there is lots of anecdotal evidence of its health benefits. We therefore decided to develop a fermented seaweed beverage as a health food product, which will allow consumers to receive all the health benefits seaweed has to offer. This project is supported by funding from High Value Nutrition Ko Ngā Kai Whai Painga, which is a National Science Challenge designed to facilitate the development of high value, science-backed health foods within New Zealand.

Specifically, this health food product is a tonic that is made by fermenting *Ecklonia radiata*, a brown seaweed that is found throughout New Zealand's coastlines. Seaweeds have many potential health benefits for humans, and brown seaweeds in particular are a source of several unique molecules that have functional health benefits. For example, phlorotannins are a type of bioactive molecule that is only present in brown seaweed. A large number of scientific studies have been performed on phlorotannins, which indicate that these molecules could have extensive beneficial effects including: anti-oxidant, anti-diabetic, anti-hypertensive and improving sleep quality. In the coming weeks we will be identifying and analysing the bioactive molecules that are present in the beverage, in order to better understand its health benefits. Further, we will be performing sensory trials with consumers, which will provide insights that will be used to improve the product.

Session Title: C4 – Harnessing sensory and consumer science for industry outcomes

Name Sophie Gallier

Job Title Chief Scientific Officer

Organisation Dairy Goat Co-operative NZ Ltd



Presentation Title: Palatability and sensory perception of infant formulas according to caregivers and a trained sensory panel

The sensory characteristics of infant formula (IF) is a factor influencing parents' IF choice and acceptance by the child. Flavour learning occurs in the first postnatal months and may shape preferences later in life. Beyond the source of proteins (e.g. cow milk, goat milk, plant-based) in formulas, processing impacts the physicochemical and sensory characteristics of formulas. The objective of the sorting task conducted by a trained panel was to gain an initial appreciation of the IF sensory space and where DGC's IFs were positioned relative to this sensory space. DGC's IFs clustered with other common cow milk and goat milk IFs, with flavour and texture described as typical for IFs. The objective of the consumer tasting study was to investigate the volatile organic compound (VOC) composition and consumer acceptability of IFs. Results illustrated that the VOC profile and flavour characteristics significantly influence the relative liking of IFs.

Session Title: C4 – Harnessing sensory and consumer science for industry outcomes

Name Damir Torrico

Job Title Senior Lecturer

Organisation Lincoln University



Presentation Title: Mouthfeel perception of dairy and non-dairy yoghurts using structure/tribology and dynamic sensory evaluation

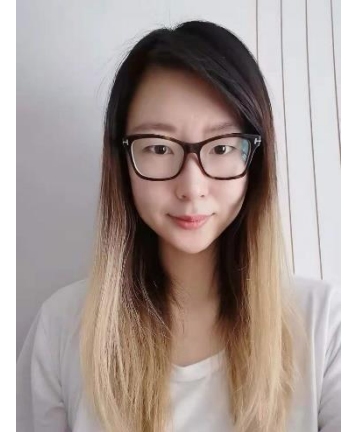
Plant-based alternatives to yoghurts are gaining popularity. However, widespread adoption of these products is often limited by their sensory properties. Texture in yoghurts is affected by rheological and micro/macro structures. Recently, food tribology has been used in oral processing studies, as it can explain the fundamentals of texture. This study aimed to evaluate the mouthfeel perception of dairy and non-dairy yoghurts using instrumental analyses and dynamic sensory evaluation. Results showed that non-dairy yoghurts had generally a higher particle size, firmness, consistency, and friction coefficient compared to dairy yoghurts. Differences in friction coefficients were observed for dairy and non-dairy yoghurts based on their fat content. The findings of this study are useful to understand the intrinsic mouthfeel properties of non-dairy yoghurts. Besides, this research provides valuable insights into the oral processing of dairy and non-dairy products.

Session Title: C4 – Harnessing sensory and consumer science for industry outcomes

Name Xiaojing Sharon Wu

Job Title Doctoral Candidate

Organisation Auckland University



Presentation Title: Current practices and opportunities for modified textured foods

With the ageing population, more individuals require texture modified foods (TMFs) due to the increased prevalence of chewing or swallowing difficulties common in older age. In turn, consumer perspectives of TMFs require further research attention. Our study explored how are the sensory aspects of currently available TMFs (puree, minced and moist and soft and bite sized) are perceived by key stakeholders (dietitians, speech-language therapists and community dwelling older adults). We selected three types of TMFs for consumer testing: freshly made TMFs by foodservice, commercially packaged TMFs, and TMFs made via sous-vide processed or hydrolysed meat. Palatability was tested via a validated 7-point sensory rating scale and in-depth perceptions were tested via focus group discussion. Three main themes emerged through content analysis will be discussed in this presentation. Developing nutritious and safe TMFs for dysphagic people requires promoting active insight exchange between dietitians and speech-language therapists.

Session Title: C4 – Harnessing sensory and consumer science for industry outcomes

Name Ao Chen

Job Title Postdoctoral Fellow

Organisation Feast Lab, Massey University



Presentation Title: On-the-pack voluntary well-being messaging for milk targeting Chinese older adults

Milk has a big share in global market of foods claiming suitability for older adults. Our study explored this market by looking at milk targeting Chinese older adults available on both online and physical stores in China. It provided a comprehensive survey of voluntary well-being messaging appearing on-the-pack and makes a unique contribution to food products' well-being messaging through introducing a framework for classifying on-the-pack voluntary well-being messaging. Type, content, and frequency of voluntary well-being messaging were compared between milk sources (i.e., cow vs. goat) and brand origins (domestic vs. international). Further compliance and alignment between on-the-pack voluntary nutritional claims and mandatory nutrition information provided helpful information for the industry, which could guide the consumers to find the right products, manufacturers to create on-the-pack well-being messaging strategically and policymakers to improve the regulations.

Session Title: D - Plenary

Name Craig Armstrong

Job Title Director - Customers

Organisation NZTE



Presentation Title: A distance-based approach to critical and competitive food and beverage challenges.

Our global food system is diverse and yet connected. Short term interests, diverse practises and distance from market impacts our ability to be competitive. The pandemic, talent and logistics issues, rising costs, a looming recession and now a global conflict, has revealed much that needs to evolve.

A crisis presents unique conditions that allow for innovation and divergent thinking. At a time when travel was not possible, a collaboration of growers, manufacturers, brand owners, professional services, and key influencers set out to keep shoppers connected to quality, tasty, fresh, ethically sourced, nutritious and safe food and beverages.

That thinking and action succeeded in lifting awareness and preference for NZ food and beverages.

Who made up the collaboration? Why did it need to be a collective force? How was success measured? What worked? What is the opportunity now?

And what's now needed of you?

Session Title: C - Plenary

Name Donna Purdue

Job Title Chief Economist

Organisation MBIE



Presentation Title: Towards A More Circular New Zealand

The New Zealand Government's economic plan is to build a high-wage, low emissions economy that provides economic security in good times and bad. It provides a significant opportunity to improve our economic prosperity, restore nature, and improve living standards for all New Zealanders. Achieving it requires a new economic system – one that is regenerative and circular rather than extractive and linear. Recognising this, the Government has outlined a vision for a circular economy by 2050. Circular business models are a key theme within the Government's first Emission Reduction Plan (ERP), released in May 2022. Unlike many other countries, NZ is at the beginning of its circular journey. Some great businesses are already doing fantastic work in this space, but a lot more needs to be done. We will need to adopt new ways of thinking and working together – Government, business, iwi and community in partnership. Collaboration will be key.

Session Title: C - Plenary

Name Jodie Kuntzsch

Job Title Chief Action Officer

Organisation Aleotion & Businesses for Climate Action



Presentation Title: Collaborations that have greater purpose

The need and desire for collaboration to tackle today's challenges is becoming increasingly evident. Our businesses and communities are dependent upon proactive teamwork. While it seems simple to bring people together and draft an action plan, collaborations never follow a linear path. The idiosyncracies and complexities leaves us struggling to turn our shared ambition into results. A greater understanding of the 'how to' can help us unlock collaborative outcomes that meet the urgent needs of our changing world and generate value well beyond the bottom line.

Day 2 – Wednesday July 6th 2022

Session Title: E - Plenary

Name Alex Worker

Job Title Chair

Organisation Future Food Aotearoa



Presentation Title: Aotearoa New Zealand's Food Future

Aotearoa New Zealand's modern food system is being disrupted by future technologies. Taking a systems change approach; we explore the opportunities through collaboration to transition our food & fibres industries before its too late.

Session Title: E - Plenary

Name Brendan Haigh
Job Title General Manager Innovation
Organisation Miraka



Presentation Title: The Miraka Journey

Miraka has a unique history and position in the New Zealand's food Industry. The foundation story is one of boldness and courage, which led to the establishment of New Zealand's first Maori owned dairy company, built on a unique proposition of renewable geothermal power. Brendan will tell the story behind Miraka's establishment and growth, but also discuss the ongoing role of collaboration, which places Miraka within an ecosystem of sustainable businesses and the heart of a community.

Session Title: E - Plenary

Name Vince Arbuckle

Job Title Deputy Director-General, NZFS

Organisation MPI



Presentation Title: Food Safety Governance – How do you maintain the clean green NZ image?

Vincent Arbuckle, Deputy Director General New Zealand Food Safety has been in role for 12 months and will reflect on this time in the role and the food safety system at large. Vince will share his thoughts on the outcomes being sought across the system to ensure consumers and our global reputation as a trusted producer of high value foods is protected from the risks associated with food. He will provide his view on both the challenges and opportunities to drive better food safety outcomes and provide some insights into the work that New Zealand Food Safety has underway including an increased focus on emerging risks and public communications around food safety. He will reflect on the changing trends in consumer expectations and what this means for Food Safety both for the regulator and industry.

Session Title: F1 – Food Safety – Salmonella Outbreak

Name Jo Kingsbury
Job Title Senior Scientist
Organisation ESR



Presentation Title: Emergence of poultry-associated Salmonella Enteritidis infections in New Zealand

Internationally, contaminated eggs are a significant cause of foodborne salmonellosis; the major responsible serotype is Salmonella Enteritidis which can colonise hen ovaries and contaminate egg contents prior to shell formation. Therefore, this serotype is a concern for the egg layer industry but was not considered endemic in New Zealand poultry. In March 2021, S. Enteritidis was isolated from a broiler carcass during routine National Microbiological Database sampling; the first confirmed detection of S. Enteritidis from poultry in New Zealand. ESR genomically linked this isolate with a cluster of human salmonellosis cases from the North Island dating back to May 2019. For some cases, the consumption of chicken or eggs was identified as a suspected source during epidemiological investigations. Genomically linked isolates were subsequently detected from hatchery, broiler and egg layer operations. As of 1 March 2022, there have been 125 cases associated with the outbreak, and the outbreak is ongoing.

Session Title: F1 – Food Safety – Salmonella Outbreak

Name Bruno Butler

Job Title National Manager, NZFS Readiness & Response

Organisation MPI



Presentation Title: Response Management of the 2021 Salmonella Enteritidis outbreak in poultry

In 2021, New Zealand Food Safety and the Ministry of Health launched a joint Response to address an outbreak of Salmonella Enteritidis (SE) in the New Zealand Poultry Industry. Utilising the Coordinated Incident Management System (CIMS) framework, and bringing centralised leadership, governance and coordinated effort to the issue – NZFS were able to effectively and efficiently ‘respond’ to the evolving needs. Balancing the delicate push / pull priorities of public health, industry reputation, ongoing market access and farmer welfare – all amongst a COVID-19 environment. This presentation, delivered by the Response Manager – Bruno Butler, will discuss; why we care about SE, why we stood up a response, what the response did, some of the challenges, and how we achieved success.

Session Title: F1 – Food Safety – Salmonella Outbreak

Name Nigel French

Job Title Professor of Food Safety and Veterinary Public Health/Chief Scientist

Organisation Massey University/NZFSSRC



Presentation Title: Genomic insights into an outbreak of poultry-associated Salmonella Enteritidis ST11 in New Zealand

Whole genome sequencing linked the first confirmed detection of *S. Enteritidis* ST11 in New Zealand broiler poultry in February 2021, to a cluster of human salmonellosis cases initially notified in May 2019. Further investigations provided evidence of a link between more recent human cases and both eggs and poultry meat, and multiple isolates that were closely related to the initial cluster were recovered from clinical and poultry-associated samples. Genomic analysis of 177 isolates indicated a recent introduction of this lineage into New Zealand, with subsequent amplification and evolution over a short time-period. Phylogenetic analyses provided evidence of transmission through the poultry production chain, involving a breeder flock/hatchery. The high degree of similarity between isolates from poultry environmental and clinical sources was consistent with transmission between poultry and humans through the food chain. This work shows the value of genome sequencing to address specific epidemiological questions in an ongoing outbreak of foodborne illness.

Session Title: F1 – Food Safety – Salmonella Outbreak

Name Kerry Mulqueen

Job Title Senior Technical Officer

Organisation Poultry Industry Association of New Zealand



Presentation Title: Dealing with Salmonella and Secrecy - An Industry perspective.

In April 2021 MPI contacted the PIANZ office to ask for information about a Salmonella Enteritidis (SE). The office was not to be privy to any information till 10 days post this first call. The first call were then subject to signing a confidentiality agreement so only those affected with SE were party to the process. This is the process that has been followed throughout the response with the question why is Industry not involved. The first confirmed SE outbreak was in 2020 and associated with a likely egg source-this source was then not discovered till June 2021. Industry had no knowledge of this issue. The first detection was in poultry via the National Microbiological Data (NMD) testing with then tracing back to breeder flocks. The NZ experience has been that there was SE delivered in the chicks from a point source.

Session Title: F2 – Circular Economy

Name Max Kennedy

Job Title Managing Director

Organisation Biolighthouse Ltd



Presentation Title: Circular Processing for Whole of Resource Utilization: Co-Products Past, Present and Future

From our earliest days New Zealanders have always been very good at making do and utilizing all resources available. It is part of our history and culture. We are niche market players and do this exceptionally well. We have a proud history of adding value to make high value co-products. Times have now moved on and we are exposed to the imperatives of climate change, society's expectation to utilize all the resource and have a circular economy. There is now a bigger recognition of the interconnectedness of systems. This requires a new processing paradigm which I refer to as circular processing.

This presentation reflects on my career of developing co-products or observing developments in the field. It will highlight some lessons learnt and paint a picture of what whole of resource utilization and the circular economy will look like in New Zealand in the future

Session Title: F2 – Circular Economy

Name Peter Dyer

Job Title Principal Engineer

Organisation Callaghan Innovation



Presentation Title: Valorisation of primary industrial waste streams

The processing of primary goods produces vast amounts of trade waste. These waste streams contain large volumes of water, fat, protein, and minerals which all have their economic value. Current processing technologies, integrated with the existing processing plant, in the correct sequence can significantly increase the revenue for primary industries and, at the same time, produce a vast volume of clean water as a by-product.

The objective of this presentation is to show the mindset/strategy behind how to approach integrating product recovery systems into a plant and the process we go through to achieve a productive result, moving from concept to production plants. Industrial examples of this journey in the Olive and wool scouring industries will be discussed.

Session Title: F2 – Circular Economy

Name Jaspreet Singh

Job Title Associate Professor

Organisation Massey University



Presentation Title: Sustainable Food Processing: Role of Innovative Technologies and Ingredients

It is now important for the food researchers to address environmental and food security issues while designing food processing techniques for the future. At the same time, consumers demand nutritive and tasty foods that can contribute to a healthier life.

Our research attempts to answer two important fundamental questions: “Can we (our food industry) manufacture superior (nutrition & taste) plant-based functional ingredients and foods for local and global export market?” and “Is it possible to develop efficient and disruptive food processing technologies, which contribute towards solving the problems of food sustainability we are going to face in the next 30 years?”

Based on inspirations from natural structure of plant-foods, we are keen to develop new technologies/processes to create “Biomimetic or Natural-like Processed Foods” with superior functionality and health benefits. This unique approach involves the utilisation of new technologies and alternative food ingredients along with ‘whole of plant’ material rather than their single fractionated component thus contribute towards future food sustainability and minimisation of food processing waste. More specifically our research program focuses on studying internal microstructure of natural and processed plant-foods, organisation of native starch and protein in them and how it relates to the kinetics of nutrient release during oral-gastro-small intestinal digestion in vitro. NZ’s agro-food industry, growers and our people are expected to get significant benefits from this research..

Session Title: F2 – Circular Economy

Name Jessica O'Connor

Job Title PhD Student

Organisation Otago University/AgResearch



Presentation Title: Overview of on-farm food loss and waste

On-farm food loss and waste is estimated to contribute 16% of agricultural-related greenhouse gas emissions globally. Reductions in these emissions have the potential to make a significant impact on climate change. There is a plethora of research being undertaken in this area across countries, food supply chains, and stakeholders. However, complexities between definitions, methodologies, preferred solutions, and differing food supply chain contexts can be difficult to navigate. This presentation provides an overview of the knowledge and current research of food loss and waste on-farm (including horticultural and agricultural farm types). The benefits and weaknesses of associated definitions, differences in quantification methods, understanding of drivers, current management options, and opportunities to address research gaps are also discussed.

Session Title: F3 – 3 Minute Pitch Competition

Name Lovedeep Kaur

Job Title Senior Research Officer

Organisation School of Food and Advanced Technology, Massey University



Presentation Title: The Role of Kiwifruit Consumption in Plant Protein Digestion

Plant proteins are gaining popularity as they are seen as an environmentally friendly answer to the growing global demand for protein foods. However, there is insufficient knowledge on how these proteins are digested in the human digestive tract and how their digestion may be influenced by other components of the food matrix such as kiwifruit. Thus, the aim of this study was to determine the effects of actinidin in Green (*Actinidia deliciosa* var. 'Hayward') and SunGold (*Actinidia chinensis* var. *chinensis* 'Zesy002') kiwifruit on plant protein digestion, using a 3-stage in vitro model. Four commonly consumed plant proteins, including pea protein, almonds, tofu, and quinoa, were digested in the presence or absence of Green or SunGold kiwifruit extract. Both kiwifruit extracts altered the digestion patterns of all digested proteins, particularly in the gastric digestion phase. However, their impacts varied among different proteins. The results suggest the potential of kiwifruit for improvement of digestive health.

Session Title: F4 – Consumer Insights

Name Jo Muller

Job Title Group Client Director & Commerce Lead

Organisation Kantar NZ



Presentation Title: Developing for consumer value in the new normal

Kantar the leading Market Research agency in New Zealand have been monitoring issues that New Zealand consumers care about through Better Futures for 13 years, monitoring consumer attitudes and behaviours in relation to Covid-19 since 2020 and are now on the pulse of how kiwis are responding to current economic shocks.

We explore Consumer change in values and behaviours accelerated by Covid-19 as well as economic conditions and consumer constants to provide a perspective on where opportunity lies for NZFIST members to develop for consumer value in the new normal. How might technology, sustainability, cost of living pressures create challenges and opportunities and how can consumer understanding help build New Zealand Inc?

Session Title: F4 – Consumer Insights

Name Damien Mather

Job Title Senior Lecturer

Organisation Otago University



Presentation Title: The benefits of using Best Worst Discrete Choice Experiments to quantify the importance of food attributes.

This study adopted a Best Worst Discrete Choice Experiment (BWDCEs) approach to assess the relative importance of different food safety and sustainability attributes. Discrete Choice Experiments (DCE)s stimulate a real-world food purchase scenario by requiring trade-offs between features (Wijnen et al., 2015). This paper uses BWDCEs, which combines DCEs and Best-Worst Scaling (BWS). This method allows researchers to obtain more choice observations and estimate models for individuals without increasing the sample size or asking respondents to complete more choice tasks or more complex rating tasks. These rich observations can improve the statistical efficiency of the estimated coefficients.

Session Title: F4 – Consumer Insights

Name Dave Monro

Job Title Chief Advisor – Food and Nutrition

Organisation Heart Foundation



Presentation Title: Food Reformulation - a collaborative approach for improving low-cost high-volume foods.

Processed foods contribute to the nutrient intakes of New Zealanders diets and can be major sources of salt and sugar. For example, 75% of our salt intake comes from processed foods.

Since 2007, the Heart Foundation has implemented a food reformulation programme focused on reducing salt and sugar levels across processed foods. The programme is Ministry of Health funded and involves establishing voluntary targets in partnership with the food industry. Industry consultation is done on a one-to-one level and as an industry roundtable.

Voluntary reformulation targets have been set for 49 targets across 39 food categories. This includes 13 sugar reduction targets. Reductions of between 10% and 40% in the median salt and/or sugar levels have been achieved in the majority of food categories. Targets are revised on an ongoing basis to foster continual company engagement and to support ongoing improvements to food categories.

Session Title: F4 – Consumer Insights

Name Erin Young

Job Title Assistant Research Fellow

Organisation Otago University



Presentation Title: The use of eye-tracking and physiological measures in consumer food science

Food choice is considered a low involvement decisions process, and consumer responses to food and packaging often occurs subconsciously. Self-reporting on determinants of choice can be inaccurate, impacted by taking the determinants into conscious consideration in addition to social desirability bias. The use of eye-tracking and physiological measurements to augment self-reported results can provide additional clarity in consumer food science research.

Session Title: G - Plenary

Name Palatasa (Tasa) Havea

Job Title Dean, Pacific Students' Success

Organisation Massey University



Presentation Title: Navigating Wellbeing in the Chaos of Uncertainties - A personal journey

Our current chaos comes to us through different forces that are beyond our control. The climate changes cause unprecedented extreme natural disasters globally, the wars increase our costs of living, the covid lock-downs ..., the list goes on. All these forces affect our well-being in major ways. How do we sustain morale, productivity, and well-being in such a chaotic environment? This presentation shares a personal life journey characterized by overcoming obstacles in order to move forward. These obstacles mostly came from personal failure to meet the systemic standards. Success in personal development is seen as a result of well-being that was based on an internal desire to deal with forces within rather than our quest to control the external forces.

Session Title: H1 – Food Safety – Future Tools and Trends

Name Anne-Marie Perchec - Merien
Job Title Specialist Adviser Microbiology
Organisation New Zealand Food Safety, MPI



Presentation Title: *Vibrio parahaemolyticus*: an emerging food safety challenge in New Zealand

Vibrio parahaemolyticus (Vp) are halophilic bacteria ubiquitous in marine environments throughout the world and are free-living in seawater or attached to suspended matter. Vp are often present in seafood, and while most Vp strains do not pose a human health risk, some strains cause gastroenteritis, and can lead to a serious illness in immunocompromised people.

Until recently, only a small number of Vp outbreaks, all linked to overseas travels, have occurred in New Zealand. However, since 2019, there have been repeated Vp outbreaks associated with the consumption of both recreationally harvested or commercially produced domestic shellfish. Consequently, New Zealand Food Safety now considers Vp to be an emerging foodborne pathogen in New Zealand.

This talk will present the latest information regarding the ongoing Vp outbreak and discuss the research needed to address the knowledge gaps, the collaborative work undertaken with industry to improve shellfish harvest practices and the public messages provided to raise consumer awareness.

Session Title: H1 – Food Safety – Future Tools and Trends

Name Aswathi Soni

Job Title Scientist

Organisation AgResearch Ltd



Presentation Title: Hyperspectral imaging as a robust tool to monitor the inactivation of *Clostridium sporogenes* spores in food

Clostridium sporogenes spores are regularly used as a surrogate in demonstrating the effectiveness of thermal food processing regimes. The conventional methods used for enumeration of spores are time, cost and labour intensive. Our study aimed to evaluate the feasibility of using hyperspectral imaging (HSI) and deep learning approaches for detecting dead and live *C. sporogenes* spores in food. HSI technology works on the principle of diffuse reflectance. Based on this, it was postulated that the thermally inactivated spores will have a different spectral signature when compared to the live spores. Multivariate analysis of the HSI data could detect the presence of spores and the accuracy of prediction in quantification was significantly improved by deep learning classification frameworks, namely 1D- convolutional neural networks (CNN) and random forest (RF) model (overall accuracy of 90-94 %). HSI has a strong potential for replacing the conventional testing methods, however, further research and validation are warranted.

Session Title: H1 – Food Safety – Future Tools and Trends

Name Craig Billington

Job Title Science Leader

Organisation ESR



Presentation Title: Genomics for food safety and quality – what is the future bringing us?

Whole-genome sequencing (WGS) has revolutionised the discrimination and characterisation microorganisms, providing unprecedented resolution to unravel the genetic relationships between isolates. This has proven very useful for food producers to gain insight as to how and where pathogens such as *Listeria* and *Cronobacter* are contaminating food products throughout the processing chain. Despite many NZ food producers using WGS routinely and observing the cost-benefits, some are hesitant to uptake the technology. This may be due to the perception that it is expensive or too slow to inform real-time decision making. However, sequencing technologies and the tools to analyse the data (bioinformatics) are advancing rapidly and will undoubtedly provide feasible and affordable real-time options for industry applications in the future. This talk will highlight some of the opportunities that these advancements could provide for the food industry, as well as the hurdles to overcome to achieve these as viable options for the end-user.

Session Title: H1 – Food Safety – Future Tools and Trends

Name Rose Collis
Job Title Post Doctoral Scientist
Organisation AgResearch Ltd



Presentation Title: Antimicrobial resistance in two New Zealand dairy farm environments

Antimicrobial resistance (AMR) is a global threat to human and animal health and antimicrobial usage in food-producing animals is an established consumer concern. Internationally New Zealand (NZ) is a low user of antimicrobials in animal production. However, antimicrobial usage on NZ dairy farms and its potential for driving the spread of AMR is unknown.

This study focused on two NZ dairy farms with different management practices over 15 months. Study aims were to determine the prevalence and distribution of (i) specific antimicrobial resistant bacteria using culture-based methods and (ii) antimicrobial resistance genes (ARGs) utilising shotgun metagenomics, from bulk tank milk (n=25), effluent (n=28), faeces (n=30) and soil (n=30). Our findings suggest a relatively low prevalence of the specific antimicrobial resistant bacteria and low abundance of ARGs in the two NZ dairy farm environments. This research will improve our understanding of the baseline levels of ARGs on NZ dairy farms.

Session Title: H2 - Dairy

Name Irina Miller

Job Title CEO/Co-Founder

Organisation Daisy Lab



Presentation Title: Precision Fermentation For Dairy Identical Proteins

Daisy Lab is a precision fermentation company that is rethinking food for sustainability. New Zealand is the largest exporter of dairy proteins. These exports deliver nutrition to those who need it and create prosperity for our farmers and our communities. Yet it comes at a cost to our environment, polluting our waterways and generating substantial greenhouse gas emissions. At Daisy lab, we use precision fermentation to produce dairy identical proteins. Precision fermentation technology builds on traditional methods of fermentation. By utilising recombinant DNA technology, we alter the genetic makeup of micro-organism, so they produce dairy proteins. With rising global populations, alternative proteins are crucial to meeting growing demand for protein. It is an integral part of the global movement to supplement or replace traditional nutrient sources with climate conscious animal-free alternatives. Compared to animal agriculture, precision fermentation offers unprecedented savings in water use and greenhouse gas emissions.

Session Title: H2 - Dairy

Name Marit van der Zeijden

Job Title PhD Student

Organisation Riddet Institute – Massey University



Presentation Title: The effect of milking frequency on bovine milk composition and functionality

Traditionally, dairy farms in New Zealand utilize a twice-a-day (TAD) milking production system. An increasing number of farms are adopting a once-a-day (OAD) milking production system for a range of reasons including, but not limited to, a lack of long-term quality staff and changing lifestyle expectations. Cows milked OAD had lower yields of milk, fat, and protein, but higher percentages of fat and protein than cows milked TAD. To get a better understanding of the consequences of a OAD milking production system for the processing characteristics of milk, we explored its impact on milk composition and physicochemical properties throughout the milking season. Milk samples from OAD and TAD milking production systems were taken in early, mid and late lactation. Three heat treatments commonly used in dairy processing were applied to the milk and the impact of OAD milking on heat-induced changes to the proteins was analysed.

Session Title: H2 - Dairy

Name Gieun Yun

Job Title PhD Student

Organisation Fonterra & Massey University



Presentation Title: Modelling the reaction kinetics of β -lactoglobulin and κ -casein interactions during heating of skim milk

Excessive heat treatment of dairy products can lead to poor quality, such as the formation of lumps or sediments. Such properties are often caused by interactions between milk proteins during heating. Thus, having kinetics to predict these reactions is important to avoid these issues.

Most research to date has focused on the heat-induced denaturation of beta-lactoglobulin (β -lg) – the major whey protein in milk. This denaturation reaction is often simplified and is only the initial step in a series of reactions to take place (e.g., β -lg aggregation with κ -casein). Yet, very limited work has been done on producing a model that puts these reactions together.

We will present a conceptual model that we developed based on the series of protein reactions happening during heating. Preliminary work on validating this model against literature and experimental data on heated skim milk samples has been carried out. Once complete, the model will be applied to industrial processing systems for operational optimization.

Session Title: H2 - Dairy

Name David Everett

Job Title Strategy Lead – Foundational Science

Organisation AgResearch



Presentation Title: Where's the Cheese? Nature's Strategy for Structural Nutrition

Cheese contains a complex arrangement of nutrients that interact to form what we know as structure. The release of these nutrients confers health benefits to the human body, but the effect depends upon the processing steps during cheese manufacture, interactions with other nutritive components, and a complex series of biochemical reactions that occur during oral, gastric, and intestinal digestion. Cheese undergoes comparatively little structural disintegration under mouth and stomach in vitro digestive conditions, and most cheese digestion takes place during the intestinal phase. Cheese molecular components are also present to modulate uptake of other components. One example of this is a complex lipid called sphingomyelin which interacts with cholesterol to alter cheese digestibility and deliver positive effects for human health. This presentation will outline why structural interactions are an essential part of understanding nutrition, and why cheese is an exemplar of an optimal strategy for nutritional delivery.

Session Title: H3 – Bridging the Chasm: Utilising Science for Commercial Outcomes

Name Sam Heenan

Job Title Senior Research Advisory Manager

Organisation Research & Enterprise, Otago University



Presentation Title: Food Innovation and Design: Leveraging sensory capabilities and external partners

Front-end innovation and R&D teams are often merged in food companies to foster collaboration with demand teams tasked to elucidate unmet needs of the consumer. Speed to market is still a race and the use of exciting hybrid methods, such as iterative prototyping with consumers in an in-home environment have evolved to meet this demand. Limitations still exist in the innovation cycle when moving from concept to scalable products that can result in not delivering to consumer expectations. Traditional sensory methods based on fundamental knowledge are still very much needed and provide guardrails for product development. Capturing sensory profiles of product prototypes in the front-end innovation phase enables data driven decisions with confidence. This presentation will highlight how techniques from sensory science can add value to the innovation cycle. Examples of good sensory practice and how to leverage fundamental sensory methods to obtain valued outcomes will be shared.

Session Title: H3 – Bridging the Chasm: Utilising Science for Commercial Outcomes

Name Evelyn Fraser

Job Title Consultant

Organisation E Fraser Consulting



Presentation Title: Leveraging Product Performance within Product Lifecycle Management

Once a product is in market and launched, how can you ensure that you are still meeting your customer needs, are relevant versus the competition and gain insights for future renovation and/or innovation projects? Examples of both simple and more complex methods to identify valuable datapoints will be shared. Discussion will also cover how these insights can be used as part of a Product Lifecycle Management (PLM) programme.

Session Title: H3 – Bridging the Chasm: Utilising Science for Commercial Outcomes

Name Jordan van der Wel

Job Title R&D Manager

Organisation Tatua Cooperative Dairy Company



Presentation Title: Paving the Whey for H.A. - Hypoallergenic Hydrolysates

Commercialisation of high-quality ingredients for food for special medical purposes and highly-specialised infant formulas requires a highly-collaborative approach to traverse the chasm from concept to commercialisation.

Tatua's development journey with hypoallergenic whey hydrolysates, used for management of Cows milk protein allergy, has required collaboration with customers and research providers, as well as understanding market regulatory hurdles. Knowing customers' requirements and having a robust understanding of test methods is vital when navigating the journey through to commercialisation. Things that may seem routine become complex problems when there are contradictory product requirements.

For example, between wet cleaning that would typically be used to remove allergenic material and the desire to maintain a dry packing environment for infant formula suitable ingredients.

Cross-functional collaboration is essential to understand not only product characteristics, processing and scale-up considerations, but also test development, validation procedures and engineering support for design and construction of purpose-built facilities.

Session Title: H3 – Bridging the Chasm: Utilising Science for Commercial Outcomes

Name TBC

Job Title TBC

Organisation TBC

Presentation Title: TBC

TBC

Session Title: H4 - Plant & Food Research: Future Urban Consumer

Name Alexander Schnack
Job Title Scientist
Organisation Plant & Food Research



Presentation Title: Exploring psychophysiological proxies to measure consumer responses to horticultural innovations

Modern time challenges, such as climate change and population growth, require a rethinking of traditional agricultural production. PFR's Horticulture goes Urban programme is exploring how produce from farms using future agricultural technologies such as controlled environment agriculture, robotics, artificial intelligence, and genetic editing of plants are perceived by consumers.

Emotions play an important role in how consumers respond to new products. Emotions are traditionally studied using consumers' self-reported feelings, a subjective approach with debated validity. Thus, our social science team is exploring an alternative approach that uses virtual reality (VR) and machine learning techniques instead to study emotion-related psychophysiological responses during product evaluation. Many VR headsets offer integrated sensors capturing electroencephalogram (EEG), eye-movement, facial movement, and heartbeat, measures that can provide important insights into how consumers really feel. We think this innovative research methodology will be of interest to the agriculture/horticulture and retail sectors alike.

Session Title: H4 - Plant & Food Research: Future Urban Consumer

Name Tracey Phelps

Job Title Scientist

Organisation Plant & Food Research



Presentation Title: The Robot Next Door: Consumer Acceptance of Future Agriculture Technologies

Recent developments in agriculture technologies (i.e., controlled environment agriculture, genetic editing, and robotics) provide opportunities for improved safety in regulatory procedures while also increasing efficiency in production yields. However, little is known about consumer acceptance of these emerging future technologies. On one hand, future consumers may embrace novel agriculture technologies as an opportunity to produce innovative and premium products, while on the other hand may fear long-term health and technology consequences. The research explored consumers' imaginary future thinking through technology scenarios in forty-eight focus groups throughout rural and urban New Zealand and Australia. Results show that participants see benefits for increased safety standards and enhanced control over environments, whilst simultaneously show concern for technology going 'too far' and 'playing God' with natural processes. The findings help inform food producers, policy-makers, and consumer research in how to provide safer future food alternatives that overcome acceptance barriers of consumers.

Session Title: H4 - Plant & Food Research: Future Urban Consumer

Name Jenny Young

Job Title Researcher

Organisation Plant & Food Research



Presentation Title: The lesser of two evils: Consumer attitudes to X-ray as a phytosanitary treatment

Irradiation using X-ray has potential as a phytosanitary treatment, and as a possible replacement for methyl bromide fumigation. Global studies have indicated consumer negativity and even fear of food irradiation, and retailers may be resistant to stocking irradiated products. However, recent research is scarce for New Zealand consumers. We present findings from an online survey of New Zealand consumers (n=1,142), which measured attitudes to four food technologies, including food irradiation. We obtained responses about X-ray as a food treatment, and then in comparison with methyl bromide. Whilst most consumers were uncertain about the use of X-rays, some held concerns regarding personal health effects. However, when compared with methyl bromide, X-ray was strongly preferred. Overall, these findings help inform researchers, fruit and vegetable suppliers, and policy-makers about the need for education and transparency in labelling, to build the most effective communication strategy about food treatment using X-ray.

Session Title: H4 - Plant & Food Research: Future Urban Consumer

Name Ivy Gan

Job Title Scientist

Organisation Plant & Food Research



Presentation Title: The Various Aspects of Sustainability of New Agri-food Technologies

While many new agri-food technologies are positioned as sustainable, it is unclear how consumers interpret and respond to such sustainability claims. This study, through 48 online focus groups across New Zealand and Australia, explored how consumers perceived new agri-food technologies through multiple sustainability lenses, using controlled environment agriculture, automation and robotics, and gene editing as examples. The productivity and efficiency empowered by new technologies were considered positive, offering optimised production value with minimised environmental impact. However, concerns were raised around the potential of creating monopolies and causing inequity across different social groups in technology adoption. Job losses and the livelihoods of small stakeholders were a widespread concern. New technologies were also considered disruptive to the human-food-nature relationships, and the continuation of knowledge, culture, and social identity. To address such dilemmas with new agri-food technologies, a more holistic approach is needed to sustainability, encompassing environmental, economic, social, and cultural aspects.

Day 3 – Thursday July 7th 2022

Session Title: I1 – Food Safety – Understanding and Managing Risk

Name Nicola King

Job Title Senior Scientist

Organisation ESR



Presentation Title: Introducing ERIS: A new way to keep on top of emerging food safety risks

Members of the New Zealand Food Safety Science & Research Centre needed a system to help them become more proactive, and less reactive, to emerging food safety risks. ERIS (Emerging Risk Identification System) is a two-year pilot project focused on identifying emerging food safety risks and using scientific expertise to respond to these. The ERIS team have established processes to identify and communicate emerging food safety risks, and to support food companies to act. There are already over 90 identified risks, covering a wide range of foods. These risks involve a range of chemical and microbiological hazards, some clearly hazardous to humans, others only possibly. Scientific research is used to understand risks. There are challenges. Most relate to the grey area of what we should consider an emerging risk, and what is ultimately important to New Zealand's food industry. Grappling with these maximises the benefits of ERIS to those involved.

Session Title: I1 – Food Safety – Understanding and Managing Risk

Name Tom Wheeler

Job Title Senior Scientist

Organisation Cawthron Institute



Presentation Title: Composition of New Zealand Pyropia and Porphyra seaweeds from a food safety perspective

Seaweeds are commonly eaten internationally as a whole food, e.g. sushi and wakame. In New Zealand, Porphyra and Pyropia spp. (karengo/parengo) are a traditional food for Māori. Internationally, some food safety concerns for seaweeds have been identified, notably iodine and heavy metal toxicity, and food-borne pathogens. However, in New Zealand the food safety risks of seaweeds have not been very well characterised. We measured levels of iodine and heavy metals in New Zealand Porphyra and Pyropia spp. Further, the effect of processing on elemental composition and microbiological load was investigated. All species tested had levels of iodine that are well within acceptable limits. Inorganic arsenic was present up to 90% of that allowed by FSANZ. Low levels of lead and cadmium were also detected. Processing to a protein-enriched extract significantly reduced levels of inorganic arsenic. Monitoring is advised as part of food safety certification.

Session Title: I1 – Food Safety – Understanding and Managing Risk

Name Tim Harwood & Karen Lau

Job Title Manager – Food & Bioactives & Manager Food Science

Organisation Cawthron Institute & NZFS



Presentation Title: Determining whether a food is novel or traditional

This project co-funded by Wakatū Incorporation and MPI has generated an interactive resource for New Zealand food and beverage businesses that can be shared, updated, and used to help unlock the potential Aotearoa has to become a global player in the high-value food market, which includes indigenous foods and food ingredients. The Online Novel Food Assessment Tool (<https://novel-food-tool.upshift.co.nz/>) is an interactive resource, used for guidance purposes only, to help determine whether a food or food ingredient may be considered traditional or novel (non-traditional). It aims to aid small to medium-sized New Zealand businesses understand and navigate the Food Standards Australia New Zealand (FSANZ) application process for novel foods. The tool generates a likely pathway and guidance for a business to follow, with links and assistance to populate the correct documents with the right information to the appropriate regulatory agency.



Session Title: I1 – Food Safety – Understanding and Managing Risk

Name Soundarya Karamcheti

Job Title PhD Student

Organisation Otago University & AgResearch



Presentation Title: Challenges in developing microbiological models for complex biological systems.

A one-step dynamic model was developed to model the growth of Shiga toxin-producing *Escherichia coli* (STEC) on beef surfaces during commercial boning and chilling regimes (hot, warm, and cold). Experimental results indicate that depending upon the boning profile, STEC populations on beef under simulated cooling profiles in the laboratory reached the stationary phase ($\sim 10, 10, 7 \log_{10}\text{CFU/g}$ for cold, warm, and hot boning cooling profiles, respectively) within the first 10 hours of processing. Importantly the final numbers obtained, and the bacterial growth rates differed based on the initial inoculum levels (~ 10 and $8-9 \log_{10}\text{CFU/g}$ for an initial inoculum of 4 and $2 \log_{10}\text{CFU/g}$, respectively). The One-step Bayesian model fits data better than a commonly used deterministic model. However, inconsistencies between growth rates of different inoculum levels and levels observed in situ monitoring programmes indicate that further experiments and improved models are required to describe a complex biological system.

Session Title: I2 – Alternative Proteins

Name Miranda Burdon

Job Title Co-Founder

Organisation Food Nation



Presentation Title: Is it "And" or "Or"?

Alt proteins garner a lot of coverage and have globally been the recipient of huge investment. In NZ the market seems to be struggling to decide how they feel about this new food group, where it sits and who the consumer set are - or are they? How should we be viewing this opportunity for NZ and how are consumers and the market approaching it.

Session Title: I2 – Alternative Proteins

Name Lovedeep Kaur

Job Title Senior Research Officer

Organisation SFAT, Massey University



Presentation Title: Animal Proteins versus Alternate Proteins: Achieving Optimum Digestion Characteristics through Processing

The fast-growing popularity of alternative sources of proteins, particularly plant proteins, is creating endless opportunities to create new food textures or versions of conventional foods. However, there is a need to understand how different protein formulations and processing methods affect the protein digestibility and bioavailability or nutritional profile of the final product. Plant proteins are usually considered inferior to animal proteins due to their lower digestibility. Recent research has shown that it is possible to modify the structure of the proteins, through processing to achieve optimum digestibility. Therefore, it matters not just what you eat but how it is made. Careful screening of native and processed proteins to categorise them into rapidly (RDP), slowly digestible (SDP) and resistant (RP) proteins would be helpful to develop a new class of personalised protein foods. This presentation provides an updated viewpoint and discussion on the processing-related aspects of alternative and animal proteins and how they impact their protein digestion kinetics. .

Session Title: I2 – Alternative Proteins

Name Boning Mao

Job Title PhD Student

Organisation Massey University & Riddet Institute



Presentation Title: Understanding the mechanisms of fibre formation by plant proteins during thermomechanical processing

Plant-based meat analogues are gaining popularity. Various thermo-mechanical processes (TPM) are applied to create fibrous structures from plant-based ingredients. However, there is no consensus on meat-like fibrous structure development mechanics during TMP. This research aims to better understand the fibrous structure formation by plant proteins (soy, pea and rice) through a novel High Temperature-Shear Process (HTSP) and high moisture extrusion. The rheology results showed that the dispersions made from rice protein isolates created the weakest cross-link network. In contrast, the dispersions from soy protein isolates formed the most robust network, which was consistent with the hardness of the final products. Furthermore, the analogues made from pea or soy protein had a layered and fibrous architecture, whereas the rice protein formulations did not form any layered structure. The layered and fibrous structure of soy and pea protein-containing meat analogues was shown to be supported by hydrogen bonding, which was the most common type of presence in the products.

Session Title: I2 – Alternative Proteins

Name Ruchita Rao Kavle

Job Title PhD Student

Organisation Otago University



Presentation Title: Nutrient content and nutritional indices of wild harvested Huhu grub (*Prionoplus reticularis*)

Prionoplus reticularis (or Huhu grubs) are an important edible insect unique to New Zealand. This study is aimed to determine the nutrient content (proximate composition, profile of minerals and fatty acids) and nutritional indices of four identifiable development stages of Huhu grubs. Huhu grubs were found to contain substantial levels of nutrients (26.2-30.5% protein, 32.1-58.4% fat, and 1.5-3.2% ash) on a dry weight basis, and 28 minerals were detected. The most abundant minerals were potassium (5936.7-11200.0 mg/kg), magnesium (1233.3-1306.7 mg/kg), iron (28.0-37.0 mg/kg) Cadmium and lead were the only two heavy metals that could be detected in Huhu grubs. Palmitic acid, oleic acid, and linoleic acid were the most abundant saturated, monounsaturated, and polyunsaturated fatty acids, respectively. The atherogenicity indices ranged between 0.32 and 0.37, and thrombogenicity index range was 1.63 – 1.99. Based on the present study, wild harvested New Zealand Huhu grubs can therefore be nutrient dense.

Session Title: I3 – Riddet

Name Nick Smith
Job Title Research Officer
Organisation Massey University



Presentation Title: Examining global cropland use and making predictions for the future

With the need for the food system to become more sustainable while feeding an increasing global population, tools to investigate future scenarios can be useful to aid decision making. A mathematical model for forecasting future cropland requirement was developed in conjunction with the DELTA Model®: an existing model calculating global nutrient availability. The model found the crops with the greatest global yield variations: nuts, fruits, and vegetables of minor significance to global nutrient availability. Sugar crops showed the least overall yield variation. The greatest potential for increasing global nutrient production by improving poor production was found for maize, wheat, and rice. Investigation of New Zealand's cropland efficiency was also undertaken. The combined model allowed the contribution of plant production to global nutrition to be quantified, and the cropland requirement of future food production scenarios to be estimated.

Session Title: I3 – Riddet

Name Amber Milan

Job Title Research Fellow

Organisation AgResearch & Liggins Institute, Auckland University



Presentation Title: Heat treatment of bovine milk impacts gastric emptying and nutrient appearance

Milk structural assemblies (e.g., casein micelles) occur naturally and may be modified by processing, and this may influence milk's nutritional impacts.

Heat treatment of dairy ensures microbiological safety and extends shelf life. Both pasteurisation and ultra-high temperature (UHT) processing are known to alter structural assemblies. Despite their widespread use, only four human studies have addressed how heat treatment affects nutrient delivery and have shown more rapid nutrient appearance from UHT vs. pasteurised milk, with altered gastric emptying rate proposed as a mechanism.

We hypothesised that differences in bovine milk structural assemblies arising from different processing methods would hasten gastric emptying and nutrient delivery following consumption of UHT compared with pasteurised milk. A randomised, double-blind crossover trial assessed gastric emptying rate (using magnetic resonance imaging) and plasma amino acid and lipid appearance following a dose of each milk in healthy women.

The trial outcomes and potential implications of dairy processing on nutritional quality will be discussed.

Session Title: I3 – Riddet

Name Indrawati Oey

Job Title Head of Food Science Department

Organisation Otago University



Presentation Title: Pulsed Electric Fields changes mastication behaviour and consumer perception of plant foods

Pulsed Electric Field (PEF) processing induces structural and texture changes of solid plant-based foods. It is still unknown whether these changes might affect hedonic value (e.g. consumer liking), perceived satiation, particle breakdown during mastication and nutrients release during digestion of PEF-treated plant foods. This presentation discusses effect of PEF application, under optimised process conditions to achieve desirable manufacturing outcomes, on the texture of different plant foods (i.e. cooked legumes with different chewiness were created, crunchy and reduced oil content of fried potato was produced). Overall result showed that PEF could influence the mastication and consumption behaviour, causing minor shift in the digestion kinetics. For example, enhancement in the rate of in vitro protein digestibility without stimulating starch hydrolysis was observed in PEF-treated legume after cooking. Clearly, PEF may aid better texture design of plant foods while controlling the impact on mastication behaviour, digestion, consumer perception and satiety upon consumption.

Session Title: I3 – Riddet

Name Bangxiang Chen

Job Title Research Fellow

Organisation Auckland University



Presentation Title: Bioengineering perspectives of food digestion - pathways of in vitro devices in food innovation

The biological human digestion system is analogous to a physical engineering system involving sensing, signal processing, decision control and actuation. Though complexly innervated anatomy, the voluntary and involuntary phases of deglutition have mostly the individual neural controls except for the transitions. Studies to replicate or bio-mimic the different stages of deglutition have been driven by the mounting needs in food innovation and healthcare research for the past two decades. In this presentation, we would like to discuss how the in-vivo tests in practice for studying food texture impact in deglutition can be supplemented with in vitro experiments to benefit the pace of innovation.

Session Title: J – Closing Plenary

Name Mavis Mullins

Job Title

Organisation

Presentation Title: TBC

TBC



Session Title: J – Closing Plenary

Name Ian Proudfoot

Job Title Global Head of Agribusiness

Organisation KPMG



Presentation Title: Health of the Nation is the Responsibility of Food Producers too!

The importance of our food and fibre exports to world has been very clear over the last two years. The sector has shown great resilience to continue to trade and generate wealth which benefits all New Zealanders during the pandemic. However, it has also never been clearer that more than a million people in our country experience some level of food or nutritional insecurity on a day-to-day basis. Food production and distribution is on part of Aotearoa's complex food system which ultimately has to balance the health of our people, the health of our natural environment, the needs of tangata whenua and the ability to deliver prosperity to our economy. Over the last two years, the Aotearoa Circle's Mana Kai Initiative has worked to create a whole system view of the values and purpose of our national food system. Ian will talk to parts of this work to update on its status and explain why every organisation that participates in the food system has a role to play in ensuring that every one of our five million New Zealanders has access to affordable, accessible, nutritious and sustainable kai.

Session Title: J – Closing Plenary

Name Richard Archer

Job Title Logan Campbell Professor of Food Technology

Organisation Massey University

Presentation Title:

