Content

ICFA2023

MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the organizing committee and our sponsors, we are delighted to welcome you to the fourth International Conference on Food Analysis (ICFA), Melbourne, 20th – 23rd November 2023.

It's fantastic to be able to return to a face to face format and we have an excellent venue at Moonee Valley Racing Club to hold this year's event.

The conference theme is ***Global Food Sustainability in a Changing Climate***. We are all aware of the consequences of population growth and climate change on food supply and sustainability and our shared responsibility to invest in identifying solutions.

The ICFA Conference organizing committee have put together an exciting and varied program exploring the challenges of food testing, this is your opportunity to look to the future and consider how you can play a role in ensuring food sustainability in a changing climate. Sessions include alternative proteins, native foods, food safety and food fraud, residues in food, emerging residues in the food chain, food allergens, sensory evaluation and capacity building in the Asia pacific region.

Welcome to Melbourne, we look forward to you joining us for the scientific program and the social events. A chance to reconnect with friends and colleagues and the chance to make new friends and colleagues.

Neil Shepherd
Chair, Conference Organising Committee
Sector Manager, Life Sciences
National Association of Testing Authorities, Australia

HOSTS

SPONSORS

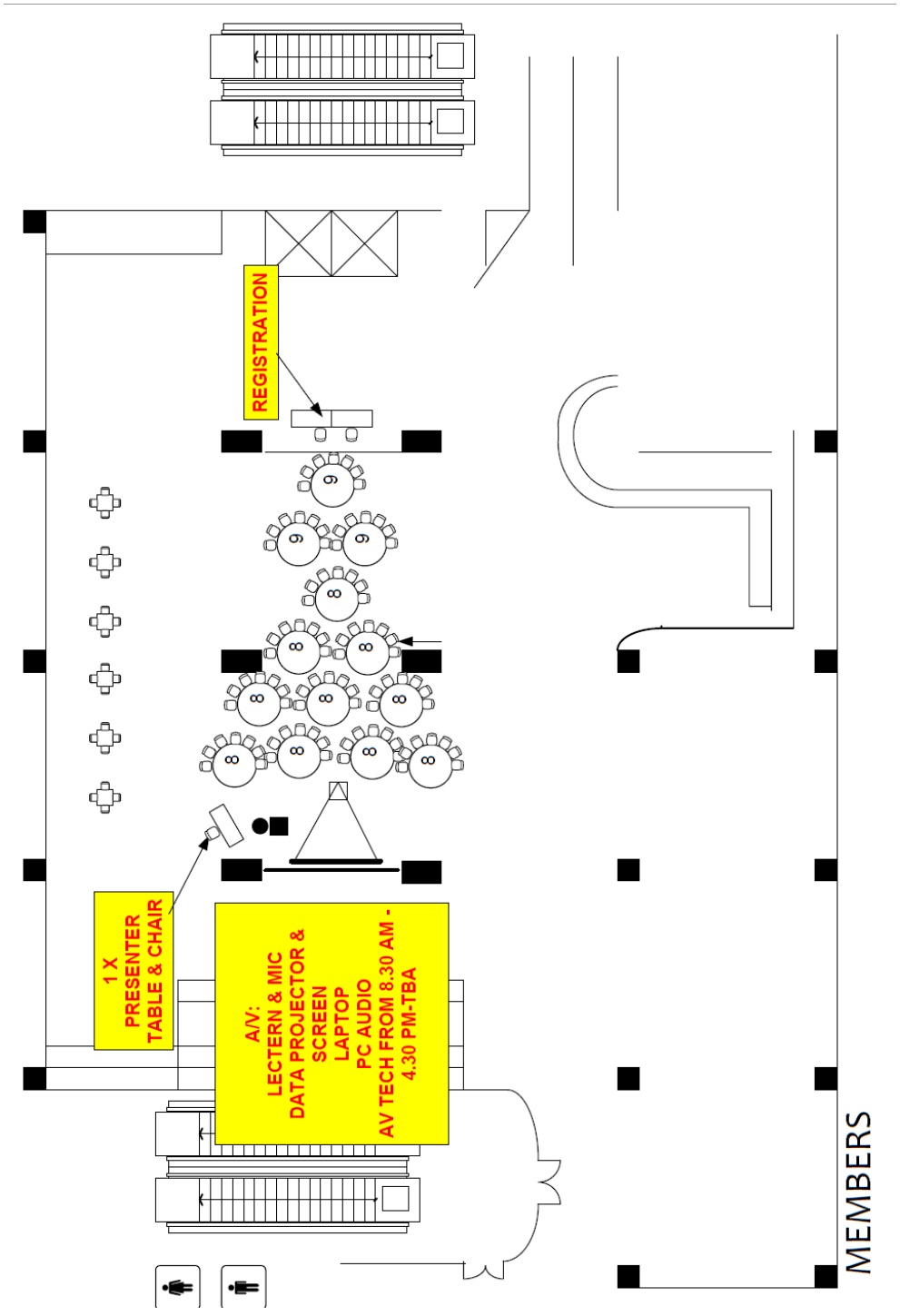
Quality Results = Safe Food

Safe, high-quality food should always be the expectation, and with our Pegasus® BT, the power and speed of TOFMS is harnessed to help you ensure it happens. Not only will the Pegasus BT streamline your analysis time, but its unique software and hardware features provide increased sensitivity, giving you the ability to identify unknown analytes in your food sample and eliminate the guesswork.
From pesticide testing and foodomics to determining freshness and flavor content, ensuring your food's quality is easier than ever.

LECO Australia Pty Ltd
+61 (0) 2 9849 5900
www.leco.com

LECO
EMPOWERING RESULTS
Elemental Analysis | GC Mass Spectrometry | Metallography

VENUE


REGISTRATION
1 X
PRESENTER
TABLE & CHAIR
A/V:
LECTERN & MIC
DATA PROJECTOR &
SCREEN
LAPTOP
PC AUDIO
AV TECH FROM 8.30 AM -
4.30 PM-TBA
MEMBERS


CITYLINK
CITYLINK
GATE 7
ACCESS ROAD
GATE 6
PUBLIC CAR PARK
MEMBERS' CAR PARK
ENTRY POINT
WILSON STREET
LEGENDS
THOMAS STREET
LEGENDS CAR PARK
CHILDCARE CENTRE
CONSTRUCTION ZONE
GRANDSTAND
HOSPITALITY OFFICE
DEAN STREET
TOILETS
HORSE FLOAT PARKING
GATE 1
FEEHAN AVE
GATE 2
TO MOONEE PONDS TRAIN STATION AND MOONEE PONDS JUNCTION

bioSys AUSTRALIA PTY LTD

GOLD STANDARD DIAGNOSTICS

NEOGEN

Food Safety & Quality Testing Solutions

Simple "On-site", ELISA & PCR Test Kits

- **Comprehensive range of 26 Allergens**
- Food Pathogens
- Foodborne Viruses
- GMO
- Species Identification
- Natural Toxins
- Pesticides
- Drug Residues
- Vitamins
- Nucleic Acid Isolation
- Many other analytes on request

Automation Equipment

- Lateral Flow Device Reader
- Automatic ELISA Systems

Validated and programmed for use with our kits to provide an integrated solution

fapas **Proficiency Tests (PT) and QC & Reference Materials**

- Food & Beverage Chemistry
- GMO Analysis

Trusted global provider for over 30 years with 600 individual PT per year & 4500 participants in 140 countries

For further information please contact: **BioSys Australia Pty Ltd**
Suite 3, Level 1, 397 Smith Street, Fitzroy VIC 3065, Australia
T: +61 (0)3 9416 0093 **E:** info@biosys.com.au

PROGRAM

The 4th International Conference on Food Analysis Incorporating:

- The 27th Conference of Residue Chemists (CRC)
- The 15th Government Food Analysts' Conference (GFAC)
- The 9th Analytical Conference of the Asia Pacific Food Analysis Network (APFAN)
- The 4th Australian Food Metrology Symposium (AFMS)

'Global food sustainability in a changing climate'

Moonee Valley Racing Club, Racecourse Exhibition Centre,
location of the 4th ICFA 2023
Feehan Ave, Moonee Ponds, Victoria, Australia

Monday 20th November
Registrations are available from 4:00PM
Social Mixer **5:00PM – 7:00PM**
Delegates are invited to attend a social mixer at the conference venue. **Light refreshments including beverages and canapes will be provided.**

Tuesday 21st November

Registration available from 8:00am		
9.00–9.15	**Conference Opening with Acknowledgement of Country** **Neil Shepherd,** *Chair of Organising Committee, NATA*	
9.15-9.55	**Plenary Address** **Measurements Supporting the Global Food System** **Dr. Bruce Warrington,** *Chief Metrologist of Australia, CEO - National Measurement Institute (NMI)*	
9.55-10.25	**Keynote Address** **Global Food Sustainability in a Changing Climate** **Prof. Todor Vasiljevic,** *Victoria University*	
10.25-10.30	**Introduction: How to use SLIDO in the conference** **James Roberts**	
Morning Tea: 10.30-11.00		
Session 1: Alternative Proteins *Chaired by Assoc. Prof. Alice Lee*		
11.00-11.30	**Dr. Liang Qu,** *School of Food and Bioengineering, Wuhu Institute of Technology, China*	Alternative Protein Meat in China: Industry, Status, Prospects, and Challenges
11.30-11.50	**Prof. Andreas Lopata,** *James Cook University*	Allergenic Proteins in Alternative Food Production
11.50-12.10	**Sam Mallard,** *Food Safety Team Leader - Australian Superintendence Company*	Residues in Black Soldier Fly Larvae - An Alternative Protein Source
12.10-12.30	**Kenneth Dods,** *Principal - SAGE Consultancy*	Agrifutures Hemp Foods Program Synopisis and Project Hemp Seed protein for Food and Feed
12.30-12.40	Q&A Panel	
Lunch: 12.40-13.40		
Session 2: Native Foods *Chaired by Prof. John Orbell*		
13.40-13.55	**Paul Saeki,** *CEO - Northern Australian Aboriginal Kakadu Plum Alliance (NAAKPA)*	Introduction to NAAKPA, Food Safety Approaches and Export Considerations with Australia Native Foods
13.55-14.15	**Gavin Rose,** *Kinvara Scientific*	Bunya Tree (*Auracaria bidwillii*) Nuts, Australia's Indigenous Edible Conifer Nut
14.15-14.35	**Reece O'Brien,** *Principal Advisor - Federation of Victoria Traditional Owner Corporations*	Victoria's Traditional Owner Native Food and Botanicals Strategy – A First Nations Vision for the Future of the Native Foods and Related Industries
14.35-14.50	**Mariel Keaney,** *HDR Student - Macquarie University*	Authenticating Genuine Kakadu Plum Powders using Nuclear Analysis Techniques
14.50-15.00	Q&A Panel	
Afternoon Tea: 15.00-15.30		
Session 3: Food Safety and Food Fraud *Chaired by Prof. Phillip Marriott*		
15.30-16.00	**Prof. Samuel Godefroy,** *Universite Laval, Canada*	Impact of Trade Regulation
16.00-16.20	**Dr. Debashish Mazumder,** *Principal Research Scientist - ANSTO*	Nuclear Analysis Techniques for Meeting Traceability Challenges in the Food Supply Chain
16.20-16.40	**Dr. Nina Welti,** *Impact Lead - Trusted supply chains, CSIRO*	Food Safety and Food Fraud - Is Big Data Trusted Evidence?
16.40-17.00	**Dr. Andreas Hofmann,** *NRZ Authent, Germany*	The German National Reference Centre for Authentic Food and Its Role in the Fight Against Food Fraud
17.00-17.10	Q&A Panel	
End of Day		

Wednesday 22nd November		
Session 4: Residues in Food *Hosted by Perkin Elmer*		
8.30-8.50	**Dr. Leah Macdonald,** *Australian Pesticides and Veterinary Medicines Authority (APVMA)*	Pesticide Regulation and Maximum Residue Limit Establishment in Australia
8.50-9.10	**Maresa Heath,** *Project Officer - Plant Residues, Agriculture Victoria*	Regulatory Residue Testing in Victoria
9.10-9.30	**Bruce Chen,** *Managing Director - Symbio Laboratories*	Multi Pesticide Residue Analysis for Australian Fresh Produce by High-Resolution Mass Spectrometry and Result Statistics in Recent Years
9.30-10.10	**Dr. Michelangelo Anastassiades,** *CVUA Stuttgart, EU-CRL Germany*	A Resume of the QuEChERs Revolution. Who Can Remember the PAM?
10.10-10:20	Q&A Panel	
Morning Tea: 10.20-10.50		
Session 5: Emerging Residues in the Food Chain *Hosted by LECO*		
10.50-11.20	**RMIT University Team:** **Prof. Vincent Pettigrove** **Pulasthi Serasinghe** **Tanya Paige**	Pesticide Contamination in Victorian Inland Waters and How to Minimise Their Environmental Impacts The Identification and Detection of Emerging Pesticides of Concern within the Greater Melbourne Area Background Concentrations and Spatial Distribution of PFAS in Surface Waters and Sediments of the Greater Melbourne Area, Australia
11.20-11.35	**Keith Henderson,** *Team Leader – Surveillance, Food Standards Australia New Zealand (FSANZ)*	Food Standards Australia New Zealand Surveillance and Monitoring
11:35-11:50	**Diane Wilkinson,** *Director - Complementary & Over the Counter Medicines Branch, Therapeutic Goods Administration (TGA)*	Overview of the Regulation of Medicines in Australia and the Food Medicine Interface
11:50-12:05	**Tran Tang,** *Assistant Director - Imported Food, Department of Agriculture, Fisheries and Forestry (DAFF)*	Imported Food Inspection Scheme
12.05-12.20	**Dr. Åsa Jämting,** *Senior Scientist - Nanometrology, National Measurement Institute (NMI)*	Metrological Considerations of Micro- and Nano-Contaminants in Food
12.20-12.30	Q&A Panel	
Lunch: 12.30-13.30		
Session 6: Food Allergens *Hosted by BioSys Australia*		
13.30-14.00	**Prof. Samuel Godefroy,** *Universite Laval, Canada*	Helping the Consumer to Understand Compliance
14.00-14.20	**Assoc. Prof. Alice Lee,** *University of New South Wales*	Reducing Allergenicity through Food Processing: A Path to Safer Immunotherapy
14.20-14.40	**Prof. Andreas Lopata,** *James Cook University*	Seafood Allergy

14.40-15.00	**Assoc. Prof. Jason Tye-Din,** *Walter and Eliza Hall Institute of Medical Research*	Defining a Safe Gluten Threshold and Non-invasive Dietary Monitoring in Coeliac Disease
15.00-15.10	Q&A Panel	
Afternoon Tea: 15.10-15.40		
Session 7: Sensory Evaluation *Hosted by Evolve Scientific*		
15.40-16.05	**Paul Saeki,** *CEO - Northern Australian Aboriginal Kakadu Plum Alliance (NAAKPA)*	Bringing Native Teas to Market; a NAAKPA Experience
16.05-16.25	**Dr. Soumi Paul Mukhopadhyay,** *Sensory and Consumer Science Researcher - Department of Primary Industries (DPI), NSW*	Science Behind Our Senses – Comparison Between Effective vs Affective Testing
16.25-16.45	**Dr. Permal Deo,** *Senior Lecturer - Food Science, Clinical and Health Sciences, University of South Australia*	Sensory Analysis of Bush teas: a comparison of Terminalia infusions
16.45-17.00	Q&A and Review session Closing reviewing sensory feedback from participants	
17.00-17.30	Transport to be organised to conference dinner	
Conference Dinner: 18:30-22:00pm **Mr. Hive Kitchen & Bar, Crown**		

Thursday 23rd November

Session 8a: Capacity Building in the Asia Pacific Region *Chaired by Assoc. Prof. Thomas Yeager*		
9.00-9.30	**Stewart Jones,** *Asian Pacific Food Analysis Network*	Capacity Building In the Asia Pacific Region
9.30-9.50	**Raluca Iavetz,** *Section Manager - Chemical Reference Values, National Measurement Institute (NMI)*	Matrix Reference Materials in Support of Laboratories' Quality Assurance
9.50-10.05	**Dr. Liang Qu,** *School of Food and Bioengineering, Wuhu Institute of Technology, China*	How to establish the quality and safety management systems for the novel food - key points of QC/QA and food allergen control
10.05-10.25	**Luminita Antin,** *Team Leader - Chemical Proficiency Testing, National Measurement Institute (NMI)*	Improving Laboratory Quality in the Asia-Pacific Region Using Proficiency Testing
10.25-10.35	Q&A Panel	
Morning Tea: 10.35-11.05		
Session 8b: Capacity Building in the Asia Pacific Region (Continued) *Chaired by Stewart Jones*		
11.05-11.20	**Dr. Roberto Fusetto,** *National Chromatography Specialist - Perkin Elmer*	Learning about the new PerkinElmer GC2400 system: Features and Applications
11.20-11.40	**Glenn Angelo M. Alindog,** *Microbiology Laboratory Head – Products, Intertek Philippines*	Status and Challenges in Food Safety in the Hospitality Industry in the Philippines
11.40-12.00	**Li Hui Ling,** *University Sains Islam Malaysia, Malaysia*	Proficiency Testing Program For Meat Authenticity
12.00-12.20	**Assoc. Prof. Kunchit Judprasong,** *Institute of Nutrition, Mahidol University, Thailand*	Collaborative Study of Iodine Analysis by Inductively Coupled Plasma Mass Spectrometry in Iodized and Non-Iodized Seasoning Sauces
12.20-12.30	Q&A Panel	
Lunch: 12.30-13.30		
Workshop *Chaired by (A) Gavin Rose (B) Dean Clarke*		
13.30-15.30	**Workshop A:** **QuECHERs - 20 Year Anniversary** **Led by Dr. Michelangelo Anastassiades (CVUA Stuttgart, EU-CRL Germany)**	**Workshop B:** **Allergens Testing - Special Interest Group (AT-SIG)**
Afternoon Tea: 15.30-16.00		
16.00-16.30	Conference Remark and Close	

Tea Breaks and Lunches on daily basis	**Poster Pitch** **Speaker 1 Dr. Carol Tadros**, *Environmental Scientist, ANSTO* - Development of a geographical fingerprint using nuclear techniques to support country of origin labelling for Kakadu plum **Speaker 2 Wenan Cai**, *PhD Candidate, University of Melbourne* - Beneficial effects of cocoa powders and dark chocolate in protecting the Gram-negative probiotic Escherichia coli Nissle 1917 **Speaker 3 Karla Heric**, *PhD Candidate, Victoria University* - A novel solution to plastic pollution: Microbial degradation of microplastics in wastewater treatment **Speaker 4 Evonne Shuan Wong**, *Monash University* - Analysis of coffee bean volatiles using GC□GC–MS and GC–NPD with headspace solid-phase microextraction **Speaker 5 Julia Hillebrand**, *Monash University* - Improved separation and resolution using headspace SPME with comprehensive two dimensional GC–MS for analysis of hop (*Humulus lupulus L.*) **Speaker 6 Yuesong Wu**, *Monash University* - Natural Pyrethrin GC and GC×GC Analysis: On-Column Transformation & Retention Indices **Speaker 7 Ernest Chuku**, *PhD Researcher, University of Tasmania* - A novel application of nuclear techniques for characterising Pacific oyster *Crassostrea gigas* (Thunberg, 1793) for aquaculture production

Every day, analytical laboratories are challenged with balancing high productivity with efficient operations. And with the growing trend of hybrid work models, gas chromatography operators seek remote access to their GC – whether they're working in a different part of the lab or at a completely different location.

Discover the **GC 2400™ Platform**, offering innovative technology that enables access to real-time information on the go. Efficiently monitor the status of your sample runs with a detachable, intuitively designed touchscreen, helping you make faster decisions from anywhere – in or out of the lab.

Experience innovative GC workflows with the **smart, simplified, and sustainable GC 2400 Platform**.

For more information on the GC 2400 Platform,
visit www.perkinelmer.com/GC2400Platform

PerkinElmer
For the Better

OPENING ADDRESS

Plenary Speaker

Dr. Bruce Warrington

Chief Executive Officer & Chief Metrologist

Bruce Warrington is Australia's Chief Metrologist and CEO of the National Measurement Institute (NMI) in the Department of Industry, Science and Resources. NMI maintains peak measurement standards for Australia and works with researchers, industry, and the community to deliver accurate and reliable measurements. A graduate of the University of Otago in New Zealand, he completed a DPhil in atomic physics research at Oxford in the UK and worked with CSIRO in Sydney on the development of atomic clocks. He has been with NMI since it was formed in 2004, working in a variety of roles before taking on the responsibilities of Chief Metrologist in September 2017 and CEO in May 2018.

Keynote Speaker

Prof. Todor Vasiljevic

Professor of Food Science, Leader, Advanced Food Systems Research Unit

Prof. Vasiljevic has 30 years of research, consulting and teaching experience in various academic roles, working closely with the food industry. After his Bachelor of Engineering with a Food Technology major he specialized in Dairy Science, completing his doctorate at University of Alberta, Canada. For the past 20 years he has been leading the research and teaching entities in the food science programs at Victoria University. Under his leadership, the Advanced Food Systems Research Unit has become a benchmark for fundamental and commercial research for the food clusters in rural Australia. The main focus of Prof. Vasiljevic's work has been on providing integrated solutions to contemporary issues in the dairy industry, ensuring innovative processing and contributing to a safe and sustainable food supply.

Since July 2002, PM Separations have been providing food safety, microbiology, forensic and environmental laboratories with high quality products and industry leading customer service.

At this year's ICFA, we are proud to highlight the following supply partners:

- ✓ NSI Food and Water Chemistry standards and proficiency programs
- ✓ CIFGA ISO 17034 mycotoxins, marine toxins, and cyanotoxins
- ✓ Affinisep food safety extraction products
- ✓ Celebrating the 20-year anniversary of the release of UCT's QuEChERS products.

Our friendly team are onsite so please make sure you come past to say hello and grab some free goodies.

If you are unable to come past the booth and would like to know more about our products, please contact us at customerservice@pmsep.com.au and our team can assist you.

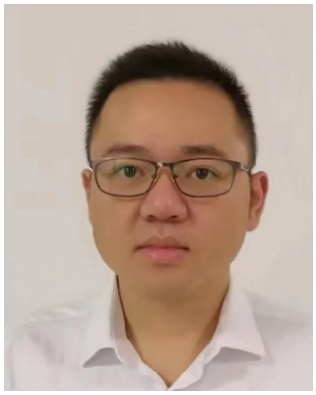
PM Separations your total solutions partner, making the difficult easy.

SESSION SPEAKERS

Session 1: Alternative Proteins

Dr. Liang Qu

Lecturer - School of Food and Bioengineering, Wuhu Institute of Technology, China



Dr. Qu is a lecturer at the School of Food and Bioengineering, Wuhu Institute of Technology, China. He received his PhD in Biochemical Engineering from Nanjing University of Technology in 2013. He is one of the pioneers as R&D personnel who started to develop alternative protein products in China since 2019, and he has his own understanding and insights on the development of alternative proteins industry in China.

He has been appointed as R&D director in several Chinese listed companies and startup companies in the industry of alternative proteins, majoring in the areas of plant protein processing, animal cell culture and micro-protein fermentation technology. His leading startup projects have raised over 20 million U.S. dollars. Among the plant-based protein product industry, his team developed popular products that achieved the highest e-commerce retail sales of Chinese market in 2021. His team submitted the first domestic application for fermented edible mushroom protein as an innovative food ingredient to Chinese FDA in 2022 that promoted the industrialization process of micro-protein fermentation industry. Currently, he is leading a research team working on plant-based protein food processing and micro-protein fermentation technology at Wuhu Institute of Technology.

Prof. Andreas L. Lopata

Professor in Molecular Sciences - James Cook University

Andreas L. Lopata is Professor of Medical Sciences in the College of Public Health, Medical and Veterinary sciences at James Cook University, Townsville, Australia. Since 2011 he is head of the Molecular Allergy Research Laboratory in the Australian Institute of Tropical Health and Medicine and since 2021 Professorial Research Fellow in the Tropical Futures Institute at James Cook University-Singapore.

He is considered one of the world leaders on molecular analysis of food allergies and has contributed to the development of national and international guidelines. His predominant focus has been on developing and employing advanced molecular technologies to investigate allergenic proteins in traditional and alternative foods, understand the interactions of allergens with the immune system and to develop novel interventions and diagnostics for food allergy.

Prof. Lopata is principal investigator in the ‘Centre for Food Allergy Research’, a NHMRC Centre for Research Excellence since 2013 as well as the ‘National Allergy Centre of Excellence’, aiming at the facilitation and acceleration of allergy research to reduce the incidence of food allergies and translation into practice.

He promotes translational science with over 250 publication and editorial board support on leading journals, including section editor Asia-Pacific of the WAO World Allergy Organisation Journal.

Sam Mallard

Food Safety Team leader - Australian Superintendance Company

I am an analytical chemist with a profound commitment to scientific excellence and societal betterment. My career spans enterprising projects aimed at enhancing laboratory systems and contributing to the broader community. Grounded in a passion for research and development in analytical chemistry, I continuously seek opportunities for scientific growth and innovation.

My leadership style fosters positivity in fast-paced environments, emphasizing superior services and collaboration. Overseeing laboratory operations, I ensure compliance with international standards and business continuity. My expertise includes monitoring technological advancements, implementing strategic upgrades, and conducting meticulous residue and contaminant testing in line with ISO17025 standards. I also coordinate same day/ next day analyses of critical parameters like pesticides, mycotoxins, dioxins, PCBs, PAHs, elemental and trace metals, and microbiological assessments for food products.

Proficient in various analytical techniques, including LC-MSMS, GC-MSMS, GC-FID, ICP-MSMS, and wet chemistry, I possess the skills and experience to contribute significantly to discussions on global food sustainability in the face of climate change. My career's core focus on ensuring food safety aligns perfectly with the conference's themes. I look forward to sharing my insights and expertise, actively contributing to sustainable solutions and positive change in this vital field.

Kenneth Dods

Principal and Owner - SAGE Consultancy

Kenneth Dods is the principal and owner of SAGE Consultancy, as an experienced Food Scientist and Research Coordinator he has over 35 years of Food research and development with over 65 peer reviewed publications in Australian Food Agriculture Forestry and Fisheries research. He specialises in development and application of food chemistry for use in agricultural government and industry objectives. As an ISO and GLP accredited and NATA certified analyst, he has led and contributed to multiple research team outcomes as a compositional chemistry expert for over 35 years, with his teams achieving numerous national and international awards for project outcomes. Current hemp feed research for ruminants is world leading in establishing safety limits and nutritional guidelines for ruminant hemp feed use in Australia.

Current research interests include improving industry knowledge about the chemistry of Honey, Hemp and Sandalwood products for human consumption and the certification of new food products for high value markets, including export certifications, meeting medicinal and therapeutic market needs, and food ingredient criteria. His expertise enables consideration of the whole of the supply chain including, HACCP requirements, critical quality control and how Natural Capital Accounting (NCA) can assist industry to manage sustainable production.

Kenneth's qualifications include a Master's in food science from Curtin University with over 65 peer reviewed publications delivering to a Food and Agricultural Chemistry agenda and he is a current member of AIFST and past treasurer of the Western Australian branch.

Session 2: Native Foods

Paul Saeki

CEO - Northern Australia Aboriginal Kakadu Plum Alliance Co-operative

Paul Saeki is the current Chief Executive Officer for the Northern Australia Aboriginal Kakadu Plum Alliance Cooperative Limited. He has previously worked for the Indigenous Land and Sea Corporation and within the Higher Education international and research sectors. He has an Honours in Archaeology, Grad Dip in Law, Masters in Project Management and a Diploma of Food Science and Technology. He has also completed studies in cosmetic chemistry and is based in Darwin.

Gavin Rose

NATA Technical Assessor, Consultant - Kinvara Scientific

Gavin transferred from NSW DPI to Unit Leader of Victoria State Chemistry Laboratory Organic Chemistry from 2001 -2011 and Senior Research Scientist, Primary Industries Research Victoria, EPA Centre and Latrobe University co-location, Macleod, 2011-2014. From there to Research Fellow, Melbourne University Chemistry School for the Centre for Aquatic Pollution Investigation and Management 2014-2017. Since 2018 he has been a consultant scientist and director of Kinvara Scientific P/L. Gavin has written or co-authored 27 refereed scientific journal articles, and co-authored two books on environmental residues. He is a regular reviewer for the Elsevier Food Science Journal. He has been a member of the ICFA Organising Committee since 2016 and previously Residue Chemist's Conferences since 2007.

Gavin has been an ISO 17025 Technical Assessor covering organic residues, nutrients and minerals in food and the environment for NATA since 2002, completing three assessments a year on average within Australia, New Zealand and Asia. In 2017, NATA's 70th anniversary year he was awarded Assessor of the Year (one of three).

Reece O'Brien

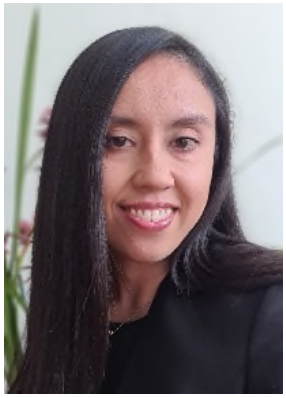
Principal Advisor - Economic Development, Federation of Victorian Traditional Owner Corporations

Reece is the Principal Advisor – Economic Development at the Federation of Victorian Traditional Owner Corporations. He began his involvement with Aboriginal communities as a native title lawyer, working predominantly in the Kimberley before working in the oil and gas industry with companies committed to agreement making with native tile holders and Aboriginal communities. Most recently, prior to joining the Federation, Reece was a founding member of, the then, DELWP's Aboriginal Inclusion Unit.

In his role at the Federation, Reece leads work in progressing economic development for Victoria's Traditional Owner Corporations as a foundational means to those First Nations groups achieving self-determination. His current work includes various projects supporting the implementation of Yuma Yirramboi, Victoria's Aboriginal Economic and Employment Strategy, and leading the implementation of the Victorian Traditional Owners Native Food and Botanicals Strategy (TONFABS).

Mariel Keaney

HDR Student - Macquarie University



Mariel Keaney is a graduate of the Master of Sustainable Development at Macquarie University, where she received the Award for Academic Excellence. These studies sparked interest in sustainable food systems and Indigenous knowledge, leading to her current Master of Research at Macquarie University, in partnership with ANSTO. This research project applies nuclear techniques to verify the food provenance of native bushfoods. Mariel is a Chartered Accountant with previous experience across the mining, healthcare, and technology sectors. A devout foodie, Mariel is looking to expand her passion and love of food towards the equitable and just sustainable food systems of the future.

Session 3: Food Safety and Food Fraud

Prof. Samuel Godefroy

Full Professor of Food Risk Analysis and Regulatory Policies - Université Laval, Québec, QC, Canada

Samuel Godefroy is the former Director General of Health Canada's Food Directorate, Canada's Food Standard Setting body and a former Vice Chair of the FAO/WHO Codex Alimentarius Commission.

Dr. Godefroy has over 25 years' experience in food regulatory science and policy including 15 years, at the Executive level leading food regulatory teams and organizations at Health Canada

Prof. Godefroy is the founder and the current president of the Global Food Regulatory Science Society, a non-for-profit organization, aiming to promote food regulatory science disciplines at the international level.

Prof. Godefroy is the President Elect of the International Union of Food Science and Technology IUFoST (2024-2026)

Samuel is currently Full Professor of Fod Risk Analysis and Regulatory Policies in the Department of Food Science, Faculty of Agriculture and Food Sciences, Université Laval, Québec, QC, Canada and is leading the development of a Food Risk Analysis and Regulatory Excellence Platform (PARERA), hosted by the Institute of Nutrition and Functional Foods (INAF) of Université Laval.

Prof. Godefroy currently serves as a senior food science and regulatory expert on a number of advisory bodies and committees domestically and internationally, including on the International Advisory Committee of the China Centre for Food Safety Risk Assessment (CFSA). Prof. Godefroy also serves as a strategic and operational advisor to international food safety capacity building initiatives focused on regulatory enhancement, implemented by the United Nations Industrial Development Organization (UNIDO) and the Food and Agriculture Organization of the United Nations (FAO).

Dr. Debashish Mazumder

Principal Research Scientist - Australian Nuclear Science and Technology Organisation

Dr Debashish Mazumder is a Principal Research Scientist in the Australian Nuclear Science and Technology Organisation (ANSTO). He leads the Food Provenance research at ANSTO and the leader of the Forum for the Nuclear Cooperation in Asia (FNCA) supported project 'Combating Food Fraud Using Nuclear Technology (CFF) project in Asia. Through his leadership, the provenance team has developed iso-elemental provenance technology for end-users to authenticate the source of origin of food for industries to meet traceability and bio-security challenges and mitigate food fraud in the supply chains.

Dr Mazumder is an adjunct Professor at the University of New South Wales. He was part of the 'Blue Carbon Horizons Team' who won the Eureka Award in 2019 for Environmental Research and his Seafood Provenance team has received the Sydney Fish Market Seafood Excellency Award 2022 for the development of a novel seafood provenance technology for the seafood industry.

Dr. Nina Welti

Impact Lead – Trusted Supply Chains, CSIRO Agriculture and Food

Nina leads CSIRO's Trusted Supply Chain portfolio to maximise the impact of innovation and research ensuring that CSIRO science creates solutions that are relevant to industry, benefit human health, and reduce environmental impacts. The portfolio aims to improve the return of value to Australian producers and improve the trust of agricultural supply chains, by improving the measurement, monitoring and transparency of Australian agricultural supply chains.

Her focus is to develop transparent and trusted solutions that empower consumers and producers with the knowledge and provide assurance that our actions accumulate to positive outcomes, underpinning the trust and confidence throughout the food supply system. Nina's research takes mechanistic understanding of carbon and nitrogen cycling to build tools that can verify the provenance of agricultural products.

Dr. Andreas Hofmann

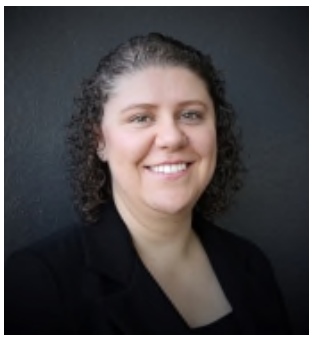
Director and Professor - National Reference Centre for Authentic Food, Max Rubner-Institute, Germany

Andreas Hofmann studied Chemistry obtained his doctoral degree from the Technical University Munich (Germany) for studies at the Max-Planck-Institute for Biochemistry in the laboratory of Robert Huber. After a postdoctoral period at the National Cancer Institute in Maryland (USA), Andreas held a Lectureship in Structural Biochemistry at The University of Edinburgh and moved to Brisbane in 2006 to establish and lead the Structural Chemistry Program at the Griffith Institute for Drug Discovery until 2018. In his current post, Andreas is the deputy HoI of the National Reference Centre for Authentic Food at Germany's Max Rubner-Institute in Kulmbach where he also leads the data management team. He is still affiliated with The University of Melbourne through an honorary position. He was EULAR Young Investigator 2004 and the recipient of the inaugural Biotechnology Prize by Yourgene Health, Taiwan, in 2019. Andreas has published more than 180 refereed papers and book chapters and authors four text books. He serves as referee for many international journals, funding bodies and research facilities and is an Academic Editor at PLOS ONE and Scientific Reports.

Session 4: Residues in Food

Dr. Leah Macdonald

Assistant Director of Residues and Trade - Australian Pesticides and Veterinary Medicines Authority



Leah Macdonald is currently an Assistant Director of the Residues and Trade team within the Australian Pesticide and Veterinary Medicines Authority (APVMA). She joined the APVMA in 2018, the same year in which she received her PhD in chemistry from the University of New England. Leah has spent over 5 years working as a Risk Manager within the APVMA Registration Management program, which is responsible for the evaluation of applications for agricultural and veterinary chemical product registrations and permit approvals. Leah is currently on secondment to the APVMA Risk Assessment Capability program where she works as part of a team of regulatory scientists tasked with assessing residues data for pesticides and veterinary medicines and making recommendations regarding consumer safety and trade risk.

Maresa Heath

Project Officer of Plant Residues - Agriculture Victoria

Maresa has worked with Agriculture Victoria within the Department of Energy, Environment and Climate Action (DEECA) and its predecessors since 1989. Maresa was initially employed at the State Chemistry Laboratory as a pesticide residue chemist and is now employed with the Chemical Operations team within Agriculture Victoria. This team is responsible for regulating the use of agricultural and veterinary chemicals in Victoria. Maresa's main role within this team is to manage the Targeted AgChem Residue Program (TARP) conducted by DEECA. This program analyses fresh produce samples grown within Victoria for pesticide residues and helps identify chemical use practices that may not be in accordance with Good Agricultural Practice (GAP). Maresa works closely with laboratories contracted by DEECA and supports field officers with technical, chemical related issues as part of the many investigations that they conduct to assist with regulating the use of agricultural chemicals in Victoria.

Bruce Chen

Managing Director, Symbio Laboratories

Bruce Chen, Managing Director at Symbio Laboratories, laid the foundation for his career in science at the University of Sydney, where he earned his Master of Science degree in 1992.

He began as a residue chemist at Lachley Meats in Forbes, New South Wales, before he joined Symbio Laboratories in 1995. With over 30 years of experience in pesticide residue and environmental contaminants testing, Bruce has become a leading figure in the field. His dedication and expertise have been recognized through various roles, from Analytical Chemist to now Chief Executive Officer.

Bruce's dedication to food safety and environmental protection is evident through his extensive expertise in food and water chemistry, laboratory quality management, and project management. He is a qualified signatory in chemical testing, and has served as a technical assessor for NATA since 1999.

His impact goes beyond work, with active involvement in committees and ongoing professional development for the young generations. As Managing Director at Symbio, Bruce leads the way in ensuring top-quality laboratory testing services for the food, agricultural, and environmental industries.

Dr. Michelangelo Anastassiades

CVUA Stuttgart-European Union Reference Laboratory for Pesticides Requiring Single Residue Methods (EURL-SRM), Stuttgart, Germany

Michelangelo Anastassiades joined the CVUA Stuttgart in 1994 and has been working in the field of pesticide residues ever since. From 2000 to 2002, Michelangelo worked as a visiting scientist at the Eastern Regional Research Centre of the U.S. Department of Agriculture. He received his Ph.D. at the University of Hohenheim/Germany in 2001, with a thesis on the analysis of pesticide residues using supercritical fluid extraction. He returned to the CVUA Stuttgart in 2002 and has been heading the EURL-SRM, which is funded by the European Commission (EC), since 2006. The duties of the EURL include development of methods, organisation of proficiency tests, technical assistance to the EC and European Food Safety Authority, as well as trainings and workshops for National Reference Laboratories of EU Member States. AOAC INTERNATIONAL presented the 2023 Harvey W. Wiley Award, the Association’s highest honour for lifetime scientific achievement to Michelangelo earlier this year.

Session 5: Emerging Residues in the Food Chain

Prof. Vincent Pettigrove

Lead, Aquatic Environmental Stress Research Group – RMIT University

I am the Head of AQUEST (the Aquatic Environmental Stress Research Group) at RMIT University. My primary research interests are to understand and address the impacts of aquatic pollution on aquatic ecosystems. Other research interests include freshwater sediment toxicity, exotic fish management, pesticide pollution, endocrine-disrupting chemicals, macroinvertebrates, and the use of fish and other biota as indicators of sediment pollution. I have designed and conducted a broad range of biological and water quality research and monitoring programs that help catchment management authorities, water authorities and environmental regulators identify the priority issues impacting aquatic ecosystems. I have produced over 125 published journal articles and peer-reviewed conference papers. I was the Chief Executive Officer at the Centre for Aquatic Pollution Identification and Management (CAPIM) at the University of Melbourne from 2010 to 2018 and have over 30 years of experience working with and within government agencies assessing freshwater aquatic ecosystems and understanding the impact of pollution on these systems.

Pulasthi Serasinghe

PhD Candidate – RMIT University

In 2019, I completed my Bachelor of Science (Hons) degree, with a specialization in Food Science and Technology, at the University of New South Wales in Sydney. In 2020, I joined the esteemed research group, namely the Aquatic Environmental Stress Research Group (AQUEST) within the RMIT University in Melbourne. As part of the Aquatic Pollution Prevention Partnership (A3P), through a collaborative initiative between AQUEST and the Melbourne Water Corporation group, I am currently pursuing my PhD under the guidance of Professors Vincent Pettigrove and Dayanthi Nugegoda. My ongoing research primarily revolves around the identification and detection of emerging pesticides that pose a threat to aquatic ecosystems, with a particular focus on non-target aquatic systems. This work is conducted in close collaboration with the National Measurement Institute (NMI) Australia and its analytical partners. My primary research interests encompass environmental science, analytical chemistry, and applied biotechnology.

Tanya Paige

PhD Candidate – RMIT University

Tanya is a PhD student within the Aquatic Environmental Stress research group (AQUEST) at RMIT in collaboration with NMI. Her work involves examining the spatial distribution of emerging contaminants across aquatic ecosystems of the Melbourne region. She is investigating PFAS and synthetic musk fragrances, as more data on the occurrence of these compounds is needed to understand their impact on the local aquatic environment. Tanya is currently working on developing sampling methods using aquatic passive samplers, alongside analytical methods using gas chromatography coupled to mass spectrometry (GC-MS/MS) for synthetic musks.

Tanya has a background in both organic synthesis and analytical chemistry and her professional interests include chemistry, method development, and environmental health. She completed a Bachelor of Science with Honours (Deans Scholars), majoring in applied chemistry at RMIT. Her Honours project in 2017 involved the synthesis of a library of small organic molecules as potential Alzheimer's disease treatments. In 2018, she worked as a research assistant for the Persistent Organic Pollutants (POPs) group at RMIT, which involved performing solid phase extractions (SPE) on aquatic PFAS samples and developing analytical methods using GC-MS/MS for the simultaneous detection of legacy POPs including polychlorinated biphenyls (PCBs), brominated flame retardants (BFRs) and organochlorine pesticides (OCPs).

Keith Henderson

Surveillance Team Leader - Food Standards Australia New Zealand

I originally studied geology before working for ten years in geotechnical engineering and construction, geology and chemistry laboratories.

I went back to university to complete a Bachelor of Human Nutrition before moving into the public service with various roles including Senior Scientist at Food Standards Australia New Zealand (FSANZ), Assistant Director at the Australian Pesticides and Veterinary Medicines Authority (APVMA) and eventually Surveillance Team Leader at FSANZ.

I love my job, but sometimes miss being out in the field amongst the construction equipment and big trucks!

Diane Wilkinson

Director, Complementary & Over the Counter Medicines Branch, Therapeutic Goods Administration

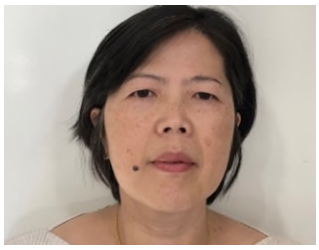
Director of the Business Improvement and Support Section of the Complementary and Over the Counter Medicines Branch. Diane has experience in General, Paediatric and Accident and Emergency nursing (Registered nurse) and as a medical herbalist practitioner (Diploma Herbal Medicine) prior to joining the TGA.

Diane has been with the TGA for 20 years and has experience in the pre-market, post market and business improvement sections of COMB. Most recent projects have included the policy development and implementation of a number of reforms to the regulatory framework for complementary medicines, such as Permitted indications and Sports Supplements reforms.

Diane will provide an overview of the risk based regulatory framework for therapeutic goods in Australia and the potential overlap between the regulation of certain foods and medicines, which is referred to as the 'Food-Medicine Interface'.

Tran Tang

Assistant Director - Imported Food, Department of Agriculture, Fisheries and Forestry



Food imported into Australia is subject to requirements under the Biosecurity Act 2015 and the Imported Food Control Act 1992 (the IFC Act). The Department of Agriculture Fisheries and Forestry administers this legislation to protect Australia against biosecurity risks and to ensure imported food is compliant with Australia's food standards.

Imported food is inspected by the Department of Agriculture, Fisheries and Forestry (the department) through a risk-based inspection program known as the Imported Food Inspection Scheme (IFIS).

Imported food is inspected to check it meets Australian requirements for public health and safety and is compliant with Australia's food standards, primarily the Australia New Zealand Food Standards Code (the Food Standards Code). When a consignment of imported food has been referred for inspection, the inspection will involve a visual and label assessment and may also include sampling the food for the application of analytical tests.

Dr. Åsa Jämting

Senior Scientist - Nanometrology, National Measurement Institute

Dr. Åsa Jämting is a senior scientist in the Nanometrology Section, National Measurement Institute, Lindfield, Sydney. She is the manager of the state-of-the-art nanoparticle characterisation facility, specialising in measurement and characterisation of a large number of different nanoparticle systems using a wide range of characterisation techniques. She is particularly interested in characterising nanoparticles in complex matrices, such as wastewater, food and sunscreen formulations. Her current research is focussed on various projects related to emerging measurement challenges for particulate materials, such as nanoparticles and microplastics in matrices of varying complexity.

Session 6: Food Allergens

Prof. Samuel Godefroy

Full Professor of Food Risk Analysis and Regulatory Policies - Université Laval, Québec, QC, Canada

Samuel Godefroy is the former Director General of Health Canada's Food Directorate, Canada's Food Standard Setting body and a former Vice Chair of the FAO/WHO Codex Alimentarius Commission.

Dr. Godefroy has over 25 years' experience in food regulatory science and policy including 15 years, at the Executive level leading food regulatory teams and organizations at Health Canada

Prof. Godefroy is the founder and the current president of the Global Food Regulatory Science Society, a non-for-profit organization, aiming to promote food regulatory science disciplines at the international level.

Prof. Godefroy is the President Elect of the International Union of Food Science and Technology IUFoST (2024-2026)

Samuel is currently Full Professor of Food Risk Analysis and Regulatory Policies in the Department of Food Science, Faculty of Agriculture and Food Sciences, Université Laval, Québec, QC, Canada and is leading the development of a Food Risk Analysis and Regulatory Excellence Platform (PARERA), hosted by the Institute of Nutrition and Functional Foods (INAF) of Université Laval.

Prof. Godefroy currently serves as a senior food science and regulatory expert on a number of advisory bodies and committees domestically and internationally, including on the International Advisory Committee of the China Centre for Food Safety Risk Assessment (CFSA). Prof. Godefroy also serves as a strategic and operational advisor to international food safety capacity building initiatives focused on regulatory enhancement, implemented by the United Nations Industrial Development Organization (UNIDO) and the Food and Agriculture Organization of the United Nations (FAO).

Assoc. Prof. Nanju Alice Lee

Associate Professor - University of New South Wale

Alice Lee is an Associate Professor in the School of Chemical Engineering at UNSW and has over 20 years of research experience in food chemistry and food safety with special expertise in food allergy/allergen as well as in vitro diagnostic technologies, and developed >35 rapid immunodiagnostic tests. She integrates food science/engineering and molecular allergology to study food allergies. As CIE of the OPIA trial, she is investigating mechanistic of IgE/IgG4 in response to immunotherapy. Alice's research focuses on deepening our understanding of the relationship between molecular studies of allergens responding to "processing" and their allergenic/allergic potential in view to developing "hypoallergenic" therapeutics for immunotherapy.

Prof. Andreas L. Lopata

Professor in Molecular Sciences – James Cook University

Andreas L. Lopata is Professor of Medical Sciences in the College of Public Health, Medical and Veterinary sciences at James Cook University, Townsville, Australia. Since 2011 he is head of the Molecular Allergy Research Laboratory in the Australian Institute of Tropical Health and Medicine and since 2021 Professorial Research Fellow in the Tropical Futures Institute at James Cook University-Singapore.

He is considered one of the world leaders on molecular analysis of food allergies and has contributed to the development of national and international guidelines. His predominant focus has been on developing and employing advanced molecular technologies to investigate allergenic proteins in traditional and alternative foods, understand the interactions of allergens with the immune system and to develop novel interventions and diagnostics for food allergy.

Prof Lopata is principal investigator in the 'Centre for Food Allergy Research', a NHMRC Centre for Research Excellence since 2013 as well as the 'National Allergy Centre of Excellence', aiming at the facilitation and acceleration of allergy research to reduce the incidence of food allergies and translation into practice.

He promotes translational science with over 250 publication and editorial board support on leading journals, including section editor Asia-Pacific of the WAO World Allergy Organisation Journal.

Assoc. Prof. Jason Tye-Din

Associate professor - Walter and Eliza Hall Institute of Medical Research

Jason is a gastroenterologist and coeliac disease researcher. He heads the Coeliac Research Lab at the Walter and Eliza Hall Institute and a coeliac clinic at the Royal Melbourne Hospital. His research interest is in understanding gluten immunity to inform the development of novel therapies and diagnostics for coeliac disease and he works closely with academic and industry partners to advance coeliac drug development.

Session 7: Sensory Evaluation

Paul Saeki

CEO - Northern Australia Aboriginal Kakadu Plum Alliance Co-operative

Paul Saeki is the current Chief Executive Officer for the Northern Australia Aboriginal Kakadu Plum Alliance Cooperative Limited. He has previously worked for the Indigenous Land and Sea Corporation and within the Higher Education international and research sectors. He has an Honours in Archaeology, Grad Dip in Law, Masters in Project Management and a Diploma of Food Science and Technology. He has also completed studies in cosmetic chemistry and is based in Darwin.

Dr. Soumi Paul Mukhopadhyay

Sensory and Consumer Science Researcher - Department of Primary Industries, New South Wales

Dr Soumi Paul Mukhopadhyay is a sensory and consumer researcher with NSW Department of Primary Industries. She has had over 15 years of "Fast-Moving Consumer Goods" (FMCG) industry and academic/research experience in India, Italy and Australia with Nestle, Whirlpool Corporation and Goodman Fielder, to name a few. She brings together a fresh perspective of how sensory attributes of different food products can be better communicated to various stakeholders in the language they understand. Soumi has expertise in understanding how sensory and consumer science can facilitate better promotion and placement of various products (from grains, legumes, honey, dairy, fruits and vegetables, wine and olive oil to everyday grocery products). This includes leading and completing the 2019-20 Hort Innovation funded project OL17003- "Australian Olive industry sensory training" to deliver of a series of integrated training programs for promoting Australian olive products and developing a guide to understand and appreciate the products in domestic and international markets

Soumi is a trained member of the Australian Olive Oil Sensory Panel (AOOSP) at Wagga Wagga and has had extensive palate training. She is frequently travelling in and around Australia and New Zealand for various show-judging of olive oils, table olives, honey, dairy and other products. Soumi is currently holding a Conjoint Senior Lecturer role with University of Newcastle and also a professional member of Australian Institute of Food Science and Technology (AIFST). She is an Australian expert on the subcommittee FT 024-06 mirror to ISO/TC34/SC12 in the Standards Australia Committees and Joint Standards Australia/Standards New Zealand Committees.

Dr. Permal Deo

Senior Lecturer in Food Science, UniSA Clinical and Health Sciences, University of South Australia

Dr Permal Deo holds a PhD in Molecular Biology from Queen's University-Belfast and joined UniSA in 2010 after having worked at The University of the South Pacific, Fiji Islands. His research examines the role of natural products on Advanced Glycation End products (AGE)-induced cell signalling cascade as an alternative therapeutic approach in preventing or delaying the onset of chronic diseases. He has strong research interest in the health benefits of Australian Medicinal and Native Food plants and examines the antioxidant and/or anti-inflammatory activities of bioactives as potential mechanism of action in disease prevention. He has authored and/or co-authored over 65 peer-reviewed scientific publications.

Session 8a: Capacity Building in the Asia Pacific Region – Asia Pacific Food Analysis Network (APFAN)

Stewart Jones

Coordinator - Asia Pacific Food Analysis Network

Stewart Jones has a Bachelor of Science degree with Honours in chemistry from the University of Western Australia (UWA). During his career he has worked in a number of private and government laboratories. For over twenty years he was a senior manager at the Australian Government's National Measurement Institute, NMIA (formerly the Australian Government Analytical Laboratories, AGAL).

Stewart retired in 2016 and in 2018 took over the reins as the Coordinator of APFAN, the Asia Pacific Food Analysis Network. In 2020 he came back to the NMIA as a consultant for the Pacific Quality Infrastructure Initiative (PQII). And in 2023, he was welcomed into the AOAC SEA (Association of Official Analytical Collaboration South East Asia) family as the Co-Chair of the Capacity Building Working Group.

He has been involved with capacity building activities for the last thirty years on several international projects and consultancies for the Australian Government and the World Health Organization (WHO). Stewart has applied his knowledge of risk management to assist laboratories and food industries in many countries in the Asia Pacific region.

Raluca Iavetz

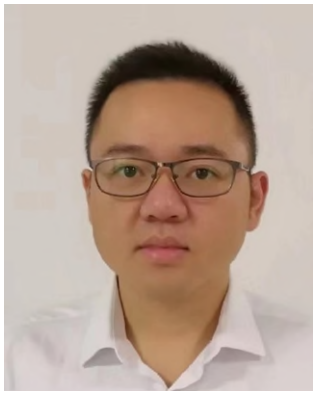
CRV Manager (CRV - Chemical Reference Values), National Measurement Institute

Raluca Iavetz is the manager of the Chemical Reference Values section at National Measurement Institute (NMI). Raluca has a MSc degree in Analytical Chemistry from UNSW and 31 years experience as a professional analytical chemist. In her current role she oversees the management of a team of scientists providing chemical proficiency testing, reference chemical measurements as well as reference material production and characterisation

Raluca has delivered training courses on proficiency testing and measurement uncertainty. She is also chair of the National Association of Testing Authorities (NATA) Proficiency Testing Scheme Providers and Reference Materials Producers Accreditation Advisory Committee.

Dr. Liang Qu

Lecturer - School of Food and Bioengineering, Wuhu Institute of Technology, China



Dr. Qu is a lecturer at the School of Food and Bioengineering, Wuhu Institute of Technology, China. He received his PhD in Biochemical Engineering from Nanjing University of Technology in 2013. He is one of the pioneers as R&D personnel who started to develop alternative protein products in China since 2019, and he has his own understanding and insights on the development of alternative protein industry in China.

He had been appointed as R&D director in several Chinese listed companies and startup companies in the industry of alternative protein, majoring in the areas of plant protein processing, animal cell culture and micro-protein fermentation technology. His leading startup projects have raised over 20 million U.S. dollars. Among the plant-based protein product industry, his team developed popular products that achieved the highest e-commerce retail sales of Chinese market in 2021. His team submitted the first domestic application for fermented edible mushroom protein as an innovative food ingredient to Chinese FDA in 2022 that promoted the industrialization process of micro-protein fermentation industry. Currently, he is leading a research team working on plant-based protein food processing and micro-protein fermentation technology at Wuhu Institute of Technology.

Luminita Antin

CPT Team Leader (CPT - Chemical Proficiency Testing), National Measurement Institute

Luminita Antin (NMI) is the team leader of the Chemical Proficiency Testing (PT) program for NMI. Lumi has a MSc degree in Chemistry from Macquarie University and over 20 years' experience as a professional analytical chemist. She has considerable experience in the development, validation and documentation of chemical test methods and associated quality assurance procedures.

Session 8b: Capacity Building in the Asia Pacific Region – Asia Pacific Food Analysis Network (APFAN)

Dr. Roberto Fusetto

National Chromatography Specialist – Perkin Elmer

Highly motivated, result driven, and goal-oriented Ph.D professional with comprehensive experience in analytical chemistry, chromatography, and mass spectrometry.

I completed the PhD at Melbourne university studying the metabolism of insecticides in the model organism Drosophila melanogaster where I used different chromatography and mass spectrometry techniques to identify, characterise and quantify pesticides metabolites.

I am passionate about black and white photography and when I am not outshooting, I spend time with my family cooking authentic Italian dishes.

Glenn Angelo M. Alindog

Head, Microbiology Laboratory – Products, Intertek Philippines

For 11 years, I was a lecturer-researcher at Cavite State University and Far Eastern University in the Philippines. My research work centered on chitinolytic bacteria and genetic analysis of coffee using isozyme markers.

After my stint in the academe, I transferred to Intertek Philippines initially as a Microbiology Lab Analyst. After nine years, I now lead the two Intertek Microbiology Laboratories (Makati City and Cebu City).

I am a Registered Microbiologist (RMicro) of the Philippine Academy of Microbiology. On the side, I am a contributing photographer for Vogue Italy.

Li Hui Ling

PhD candidate, technical assessor - Universiti Sains Islam Malaysia, Malaysia

My name is Li Hui Ling. I am currently on study leave, pursuing my Ph.D. at Universiti Sains Islam Malaysia (USIM). Previously, I held a position as a scientific officer in the Chemical Metrology Division at the Department of Chemistry Malaysia. During my tenure at the Terengganu branch of the department, I gained experience in various laboratories, including food, water, environmental, and toxicology labs. Furthermore, I have accumulated eight years of experience as a certified technical assessor for ISO 17025 since 2015. I serve as the internal auditor for both department branches and several private laboratories. My exposure also extends to ISO 17043, ISO 17034, ISO 45001, and ISO 27001.

Assoc. Prof. Kunchit Judprasong (PhD)

Head of Food Chemistry Unit, Institute of Nutrition, Mahidol University

Associate Professor Dr. Kunchit Judprasong is lecturer at the Institute of Nutrition, Mahidol University (INMU), Thailand and act as ASEANFOODS Coordinator at the ASEANFOODS Regional Centre and INFOODS Regional Database Centre and deputy coordinator of APFAN. He received his MSc in Food and Nutrition for Development from Mahidol University, Thailand and his PhD in Analytical Chemistry from the same university in 2007. He has been a task force expert of the IUNS-INFOODS Task Force members, FAO since 2007. He has 36 years working experience in food and nutrition research especially in development of methodology for nutrient and non-nutrient analyses such as vitamin D, iodine, selenium by LC-MS/MS etc. Dr. Kunchit is one of the key persons in developing food composition database for Thailand, studying indigenous foods, developing food reference materials, and organizing proficiency testing for nutrition labelling.

ABSTRACTS

Session 1

Alternative protein meat in China： Industry Status, Prospects, and Challenges

Presenter: Dr. Liang QU[1]

[1]School of Food and Bioengineering, Wuhu Institute of Technology, China

As the world's largest consumer of animal protein, China urgently needs to find new solutions for sustainable protein supply. Therefore, the alternative protein industry, as an innovative and future protein industry, conforms to the development trend of the age. Along with the trend, there are three major alternative protein products: alternative protein meat, alternative protein milk, and alternative protein eggs. Alternative protein meat is the dominant products of the alternative protein industry in China, with the most investment yet. Currently, main technological paths for alternative protein meat industry in China consist of plant-based protein processing, animal cell culture and micro-protein fermentation technology.

Tofu, as a traditional plant-based protein food, has been producing in China for over two thousand years. However, plant-based alternative proteins obtained through modern deep processing technology have just emerged in recent years. According to Ipsos' prediction, China's plant-based protein market will reach 10.86 billion U.S. dollars in 2025, doubling from 2020, with an average annual growth rate of 18.8%. Nowadays, cell culture meat technology and microbial fermentation protein technology in China are still in the R&D stage. They are expected to be achieved industrialization in at least 5-10 years because of technical barriers in terms of cost, scale-up, and product quality control.

This report covers major cell culture meat and microbial fermented protein technology startups in China. The crucial challenges faced by China's alternative protein industry include: a) Consumer acceptance; b) Manufacturing costs compared to animal protein; c) Food market access; d) Product quality standards and quality control. This report also introduces the current status of food quality standards, food regulation, and market access permission of alternative proteins industry in China.

Allergenic proteins in alternative food production

Presenter: Professor Andreas L. Lopata

How can we feed 10 billion people by 2050 and make the global food system better for the planet, people, and animals? More consumers than ever are demanding alternative proteins that are as delicious, affordable, and accessible as conventional products. Achieving this requires cultivating a global ecosystem of science and support for alternative proteins as a more sustainable way to feed the world. As alternative food production is expanding in Australia, perceived food safety concerns need to be addressed, in particular regarding allergenicity.

Edible insect proteins are increasingly introduced as an alternative sustainable novel food source and the biochemical, computational and immunological analysis is presented as an model how other novel food proteins could be investigated for their allergenic potential. The finding impact directly on allergen detection, policies regarding food labelling and general food safety.

Residues in Black Soldier Fly Larvae an alternative protein source

Presenter: Sam Mallard

My current research is the development of an analysis protocol for trace levels of pesticides, mycotoxins, and heavy metals in black soldier fly larvae (BSFL). The aim is to create a protocol that can be easily implemented in routine laboratory testing environments, thereby facilitating the marketing of BSFL. The BSFL are being studied as a potential source of alternative protein in response to the rapidly emerging market for alternative protein sources. As the demand for alternative protein sources grows with increasing population growth, edible insects are emerging as a viable alternative, but just how safe for consumption are they?

The BSFL in the study have been fed a variety of food waste products, and the testing will aim to demonstrate the safety of the BSFL as an alternative protein source. The study will use an advanced protocol to detect hundreds of commonly tested pesticides and a dozen mycotoxins, along with heavy metals. However, it is important to note that not every pesticide will be targeted in this study, highlighting the ongoing need for further research in this field.

In conclusion, this research will aim to demonstrate the potential of the BSFL as a safe alternative protein source and the importance of ongoing research to ensure the safety and quality of emerging insect-based protein sources as a viable supplement to traditional protein sources.

The study represents an important first step towards the analysis of traditional Australian bush foods. This research can serve as a model for future studies on the safety and quality of other insect-based foods, including the witchetty grub. By establishing an analytical protocol for BSFL, this study may provide a useful framework for the analysis of a wider variety of insects, including traditional bush foods. As the demand for alternative protein sources continues to grow, the significance of these findings for the food industry and the broader scientific community cannot be overstated.

I believe that this work aligns perfectly with this year's theme on Global Food Sustainability in a Changing Climate, and would serve as an excellent starting point for further discussion on the emerging testing demands for laboratories, and stimulate productive discussions among conference delegates about the evolving landscape of alternative protein sources.

Agrifutures Hemp Foods Program Synopsis and Project Hemp seed protein for Food and Feed.

Presenter: Kenneth Dods

Remnant industrial hemp seed cake is produced as a by-product of oil extraction (1 kg of hemp seed produces 650g of hemp seed cake after oil processing). This protein cake has a natural protein content ranging from 30-50% with cold pressing maintaining the proteins in their native state and preserving the functional attributes of the proteins.

Industrial hempseed is a complete source of protein, providing most of the essential amino acids at levels sufficient to maintain a healthy diet (Callaway,2004a; Kim & Lee,2011; Wang et al., 2008), and it is also rich in iron and zinc. This project seeks to isolate native proteins from hemp using the methods as described by Dapčević-Hadnađev et al.,2019; Tang et al., 2016 and others that describe a method of extracting protein from industrial hempseed to produce a hempseed protein isolate (HPI, at least 90% protein content).

These protein concentrates and isolates are preferentially sought by the feed industry because hemp antinutritional factors such as phytic acid and native free phenolic composition have been removed or bound to reduce antinutritional effect. Protein isolates and concentrates are more effectively utilised in

formulated diets where space for other specific components in the diet formulation are valued. This is particularly important for meat-meal replacement in a high-performance animal or aquaculture diet.

The project will also selectively isolate proteins from the concentrate using pH dependant zwitterion precipitation assisted by selected saturated salt treatments. Selective extraction enables examination of protein concentrates for their functional properties as food ingredients which can then be certified for their unique functional attributes such as foaming, emulsifying, thickening, or gelling capacities. When marketed as functional food ingredients these protein isolate products can achieve significant and unique market value as egg white or albumen replacement ingredients, non-dairy milk ingredients and use in substitute meat analogues.

Session 2

Introduction to NAAKPA, food safety approaches and export considerations with Australia native foods

Presenter: Paul Saeki

As an emerging industry, the Australian native food sector has numerous challenges, and in particular ensuring Aboriginal people are direct beneficiaries of their traditional knowledge and cultural resources and that they are active proponents of the sector. This presentation will provide an overview of the Northern Australia Aboriginal Kakadu Plum Alliance Co-operative and provide an insight into some of the organisations' projects to improve quality within the supply chain which covers large areas of remote northern Australia. The presentation will also consider regulatory practices required for the export of native species and extracts and provide an overview of NAAKPA's strategies moving forward.

Bunya Tree (*Araucaria Bidwilli*) nuts, Australia's indigenous edible conifer nuts

Presenter: Gavin Rose

Bunya nuts are a nutritious food and have been an essential dietary component for indigenous people for thousands of years. For this era the indigenous site of the Bunya tree forests in south east Queensland were sacred to the local Bonyi Bonyi people who hosted a periodic bunya festival drawing together indigenous tribes from northern NSW and southern Queensland. The festival was held over the summer nut harvest months and the festival would have included serious formal business in addition to social interaction and inter-clan betrothal arrangements. Traditionally the nuts were roasted or fermented for consumption but recently boiled or made into flour. Since European settlement the nuts have been undervalued as a food source. This presentation will describe harvesting of the nuts, processing and present a food value analysis of a northern rivers sourced bunya nut flour and show comparisons with other staples of the western diet.

Victoria's Traditional Owner Native Food and Botanicals Strategy – A First Nations vision for the future of the native foods and related industries.

Presenter: Reece O'Brien

Victoria's Traditional Owner Native Food and Botanicals Strategy TONFABS) aims to ensure the place of Traditional Owners within an authentic, vibrant and growing industry that respects the inherent rights of Traditional Owners.

The TONFABS takes a multi-faceted approach to realising its aims. A central pillar of the TONFABS approach is the protection of Indigenous and Cultural Intellectual Property (ICIP). As part of

establishing an ICIP protection framework, the TONFABS Cultural Protocol has recently been launched. The Protocol is a best practice guide for all those in the industry and provides a comprehensive statement by Victoria's Traditional Owners around their vision and plans for the future.

The presentation will be an opportunity to better understand First Nations' people's connection with native plants and their expectations around their use.

Authenticating genuine Kakadu plum powders using nuclear analysis techniques

Presenter: Mariel Keaney

Mariel Keaney[1], Debashish Mazumder[2,4*], Carol V. Tadros[2,4], Jagoda Crawford[2], Patricia S. Gadd[2], Paul Saeki[3], Jesmond Sammut[4] and Neil Saintilan[1]

[1]School of Natural Sciences, Macquarie University, Sydney, NSW, Australia.
[2]ANSTO, Lucas Heights, 2234 NSW, Australia.
[3] Northern Australia Aboriginal Kakadu Plum Alliance (NAAPKA), Darwin, Australia,
[4]Centre for Ecosystem Science, The School of Biological, Earth and Environmental Sciences, The University of New South Wales, UNSW Sydney 2052, Australia.

Kakadu plum (Terminalia ferdinandiana) is a plant species endemic to northern Australia. As a commercial plant product, Kakadu plum is attracting increasing consumer interest due to its multiple nutritional qualities. This commercial value of Kakadu plum means that it may be susceptible to food fraud. Our research determined the prevalence of food fraud in the e-commerce market through the use of iso-elemental provenance techniques at ANSTO. Stable isotope analysis (SIA) and elemental profiling using X-ray fluorescence (XRF) through Itrax were used to evaluate the authenticity of 13 commercially available Kakadu plum powdered samples purchased from Australian and overseas suppliers. These commercial samples were validated against samples provided directly from First Nations harvesters. Overseas and Australian-sourced powders were found to have distinct isotopic and elemental profiles, with the former sample group showing highly enriched δ13C values, indicating they are fakes. It was also observed that the majority of overseas products sold as Kakadu plum were deceptively labelled as other products upon delivery. The findings of our research showed the infiltration of food fraud along the supply chain of overseas-sourced Kakadu Plum powder product. Given the complexities of multi-national food systems, this research demonstrates the effectiveness of nuclear analysis techniques for detecting fraudulent products in the supply chain.

Session 3

Impact of Trade Regulation

Presenter: Professor Samuel Godefroy

Food fraud can have serious implications for food safety. For instance, if a product is adulterated with unsafe substances or allergens are not properly labelled, it can pose health risks to consumers. Additionally, fraudulent practices can undermine consumer trust in the safety and quality of food products.

Developing economies and native foods are also the target for food fraud.

Ensuring food safety and combating food fraud is a multifaceted effort that involves collaboration among various stakeholders, including government entities, food producers, suppliers, retailers, and consumers. It's crucial to implement measures that safeguard both the safety and integrity of the food supply.

The presentation will update the conference on current issues surrounding standards steeling and application, and trade (CODEX and AOAC, and the Global Food Regulatory Science Society).

Nuclear Analysis Techniques for meeting traceability challenges in the food supply chain

Presenter: Dr. Debashish Mazumder

Debashish Mazumder[1], Patricia S. Gadd[1], Jagoda Crawford[1], Carol V. Tadros[1], Jesmond Sammut[2] and Neil Saintilan[3]

[1,2]Australian Nuclear Science and Technology Organisation (ANSTO), Lucas Heights, 2234 NSW, Australia.
[2,1]Centre for Ecosystem Science, The School of Biological, Earth and Environmental Sciences, The University of New South Wales, UNSW Sydney 2052, Australia.
[3]School of Natural Sciences, Macquarie University, Sydney, NSW, Australia

Producing safe and high-quality food is important to ensure consumer confidence, mitigate biosecurity and food safety risks, and support industry and regulatory bodies to maintain integrity in the global supply chain. ANSTO in collaboration with university and industry partners have developed a provenance technology using nuclear analysis techniques to determine the geographical source of origin of food with a high degree of accuracy. This technology has great promise for the development of a market chain traceability system for food and has potential to be applied to the wider adoption across agricultural sectors.

Food safety and food fraud – Is big data trusted evidence?

Presenter: Dr. Nina Welti

Food safety and quality is highly regulated in Australia to ensure it meets export requirements and standards. This helps Australia maintain and grow access to domestic and export markets. Over time, as regulations change based on emerging understanding of food safety risks and their impact on public health evolves.

Alongside mandatory regulation, there is rising interest in food provenance for consumers, producers, and government authorities looking to improve supply chain transparency and offset issues around food safety, environment, and authenticity. Downstream supply chain customers want confidence that the claims they are paying premiums for are attributable to the specific products they purchase.

To underpin the trust of agrifood supply chains, there is an increasing need for objective, quantified evidence. The data used to provide this evidence must also be trustworthy and balance potential commercial and scientific outcomes.

There is an opportunity to use disperate public data collections and create trusted, accessible tools that provide assurance and verification of food safety and provenance. Using evidence-based methods and approaches in a competitive marketplace ensures long-term viability and utility of valuable datasets. This is a big challenge, beyond the realms of a single organisation, to connect these rich databases in a way that's trusted, shareable and useful. I will present a project which is taking on the challenge and brings together expertise on isotopes, supply chains and data harmonisation between CSIRO, with the Australian Nuclear Science and Technology Organisation (ANSTO), Geoscience Australia (GA) and National Measurement Institute (NMI), co-funded by the Australian Research Data Commons.

The German National Reference Centre for Authentic Food and its role in the fight against food fraud

Presenter: Dr. Andreas Hofmann

Andreas Hofmann[1,2], Ilka Haase[1]

[1]National Reference Centre for Authentic Food, Max Rubner-Institut, E.-C.-Baumann-Str. 20, 95326 Kulmbach, Germany. [2]Faculty of Science, The University of Melbourne, Parkville, Victoria 3010 andreas.hofmann@mri.bund.de, ilka.haase@mri.bund.de

In the aftermath of the horse meat scandal in 2013, the European Commission undertook to increase consumer protection with respect to misleading and deception with efforts culminating in Regulation (EU) 2017/625 by the Commission and the Council that sets out rules on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products. The regulation has been in effect since 2019 and designates European reference centres for the authenticity and integrity of the agri-food chain (Art. 73), with the mission to support the official control bodies in the fight against food fraud and with respect to consumer protection (Art. 97).

In accordance with this regulation, the German Federal Ministry for Food and Agriculture established the National Reference Centre for Authentic Food (NRZ-Authent) that started operating in 2019 and, at European level, has only recently been joined by the Austrian Agency for Health and Food Safety.

The NRZ-Authent supports the efforts of the official food control authorities in Germany on food authenticity, most of which operate at state level, albeit there are also some federal institutions among the stake holders. Its main tasks comprise the knowledge dissemination and communication/networking, analytical competencies with methodologies mirroring those most prevalent in the food control laboratories, as well as the establishment of relevant databases and data analysis tools, including inventories of reference samples. Importantly, the NRZ-Authent is not engaged in routine control activities, but rather supports analytical method development and serves as an interface between the different stake holders.

Here, we present an overview of the different tasks of the NRZ-Authent with respect to its role as a federal entity (i) supporting the state-level authorities, (ii) coordinating projects and concepts, and (iii) developing resources for the fight against food fraud.

Session 4

Pesticide Regulation and Maximum Residue Limit Establishment in Australia

Presenter: Dr. Leah Macdonald

This presentation will outline the role of the Australian Pesticides and Veterinary Medicines Authority (APVMA), which is the Australian Government regulator of agricultural and veterinary (agvet) chemical products. For an agvet chemical product to legally be manufactured, imported, supplied, sold or used in Australia, it must be registered by the APVMA, unless exempt by the Agvet Code. The APVMA registration process involves scientifically evaluating the safety and efficacy of a product in order to protect Australia's trade and the health and safety of people, animals and the environment.

Also covered will be how the APVMA sets maximum residue limits (MRLs) for agricultural and veterinary chemicals in agricultural produce entering the food chain. These MRLs are set at levels that are not likely to be exceeded if the agvet chemicals are used in accordance with approved label or permit instructions. At the time the MRLs are set, the APVMA undertakes a dietary exposure evaluation to ensure that the levels do not pose an undue hazard to human health or unduly prejudice trade.

Regulatory Residue Testing in Victoria

Presenter: Maresa Heath

Agriculture Victoria is responsible for regulating the use of agricultural and veterinary chemicals in Victoria. A number of intelligence gathering activities are undertaken to assist with ensuring that agricultural chemicals are used in accordance with the relevant legislation. These activities include: responding to complaints from the public, auditing chemical users, conducting an annual produce monitoring program and monitoring results from external sources.

The Targeted AgChem Residue Program (TARP) is planned and implemented by Agriculture Victoria. Within a given year, specific commodities grown in Victoria are targeted for collection and analysis. The range of commodities is broad, but each year those thought to be most at risk of having unacceptable residues are included in the program. Any unacceptable residue detected may be due to the misuse of a chemical, so a traceback to the grower is conducted to investigate the cause of the residue.

This presentation will discuss the role of sample analysis to assist Agriculture Victoria in regulating the use of agricultural chemicals in Victoria. As part of this, an overview of Victoria's Targeted AgChem Residue Program (TARP) will be presented with a summary of the results for the past two years.

The quality and accuracy of the results reported is critical for both TARP and the many investigations that are conducted by Agriculture Victoria as they are used to determine the level of compliance action that is taken by Authorised Officers. As a way of assessing the competency of laboratories and to help identify gaps in multiresidue screens, in recent times the analysis of 'check samples' has been introduced. These samples have incurred residues as opposed to spiked proficiency samples and are just one of the many tools that can be used to assess the systems that a laboratory has in place to support the results they report. The results of these 'check samples' and how they are used will be presented.

Multi Pesticide Residue Analysis for Australian Fresh Produce by High-Resolution Mass Spectrometry and Result Statistics in Recent Years

Presenter: Bruce Chen

More than 8000 pesticide products are formally registered for use in Australia. This presentation briefs the successful application of sensitive and robust multi-residue pesticide methods capable of analysing over 500 pesticide analytes in Australian fresh produce and agriculture commodities.

The analytical method adopted the traditional QuEChERs method approach, with modification to fit a wide range of herbicides. The use of orbit trap HRMS technology makes the method efficient and robust enough to cope with a wide range of matrices.

Detailed statistics were illustrated in the article that over 40,000 samples were tested, containing > 250 individual sample types categorised in 23 food classifications in the recent years. > 120 pesticides and associate metabolites were detected. Pesticide groups and individual analytes that were frequently detected in certain commodity groups were discussed.

It is important for on-going pesticide residue testing programs to be in place at state and national levels to ensure the food safety objective of Australian consumers, and that good agricultural practices are followed.

A Resume of the QuEChERs Revolution. Who can remember the PAM?

Presenter: Dr. Michelangelo Anastassiades

A contribution to the development of standards and methods is an analytical approach called QuEChERS (pronounced "kechers"), which stands for quick, easy, cheap, effective, rugged, and safe. It is an extraction process for testing for most pesticide residues and their metabolites. The QuEChERS

method led to the development of two important official methods for pesticide residue analysis: EN 15662 and AOAC Official MethodSM 2007.01.

Current developments are examining ways to cover 20-25% of pesticides and pesticide metabolites not amenable to the basic QuEChERS method. This entails finding analytes with similar properties and grouping them as much as possible under the same basic techniques. In addition, many labs have expanded QuEChERS to include other classes of compounds for subsequent quantification.

Session 5

Pesticide contamination in Victorian inland waters and how to minimise their environmental impacts

Presenter: Professor Vincent Pettigrove

Advances in the use of passive samplers and in analytical technologies has enabled more effective detection of pesticides for lower cost when surveying inland waterbodies. An overview of pesticides detected in Victorian inland waterbodies are presented from the many studies that my research team have conducted in the past 15 years. Our research also conducts ecotoxicological tests on laboratory cultured and field organisms to determine whether the presence of these pesticides pose a risk to aquatic ecosystem health. We find that urban rather than rural areas tend to have a larger variety of and presence of pesticides. The sources of urban pesticides appear to be from many sources including building materials, paints, herbicides applied to roads and other hard surfaces, insecticides applied to turf and for the control of termites and ants. We hope that understanding the types and amount of pesticides contamination in aquatic environments will help regulators and pesticide users consider ways to reduce environmental impacts from pesticide contamination. Minimising environmental impacts of pesticide pollution can occur in many ways, these include using non-chemical options for pest control, using pesticides that will have a low toxicity to nontarget organisms, improved education and support services to enable safe and efficient use of pesticides.

The identification and detection of emerging pesticides of concern within the greater Melbourne area

Presenter: Pulasthi Serasinghe

Pesticide monitoring programs play a vital role in assessing environmental pesticide contamination and aligning it with water quality standards. They assist in pinpointing contamination sources in catchment regions, offering crucial insights for management decisions. However, challenges arise in selecting which pesticides to monitor, given the constant influx of new ones in the market. The diversity of pesticides for various land uses and their varied application times complicates the design of effective monitoring strategies. Moreover, differing agency criteria and insufficient database capacity contribute to the risk of unchecked pesticide exposure in aquatic ecosystems. Currently, there is limited research on emerging pesticides in Australian regional areas due to the absence of a robust regional pesticide assessment framework. This hampers the monitoring of emerging pesticides in non-target aquatic systems, with existing studies in Victoria focusing on a narrow range of pesticide groups, representing only a fraction of potentially used pesticides in the region. My PhD research is centred around the identification and detection of emerging pesticides in local surface water systems, with a particular focus on the Greater Melbourne area. I have developed a prioritization approach for assessing pesticides in local catchments, which was tested in this region. This approach combines broad-scale passive sampling with high-resolution mass spectrometry (HRMS)-based suspect screening to identify multiple pesticides that may be of concern. In the later stages of my research, I investigated the seasonal occurrence of these pesticides and worked on developing a robust and sensitive multi-residue method to accurately quantify their presence in surface water systems. The overall goal of my PhD project is to

provide valuable insights that will assist regional monitoring programs in effectively and accurately tracking these newly identified pesticides in water systems. This monitoring is essential for regulating these pesticides and ultimately protecting non-target aquatic organisms and their ecosystems.

Background concentrations and spatial distribution of PFAS in surface waters and sediments of the greater Melbourne area, Australia

Presenter: Tanya Paige

Little is known about the background concentrations of per- and polyfluoroalkyl substances (PFAS) in Australian urban waterways and whether their presence and concentrations are associated with particular catchment land-uses.

As part of my PhD, a survey was conducted of 33 per- and polyfluoroalkyl substances (PFAS) in streams and wetlands (n = 65) in Greater Melbourne, Australia, to determine background concentrations and major catchment land-uses contributing to PFAS pollution. Sites consisted of streams and constructed urban wetlands with independent catchments that were classified by their dominant catchment land-use – either residential, industrial, municipal wastewater treatment plants, or rural. Melbourne was considered a suitable city to establish background concentrations as there is no manufacturing of PFAS and few point sources of PFAS pollution.

Samples were extracted using solid phase extraction (SPE) and analysed using liquid chromatography coupled to tandem mass spectrometry (LC-MS/MS) at the National Measurement Institute (NMI), Australia.

While diffuse PFAS pollution was detected across the urban waterways, significant differences between land-use types were observed depending on the PFAS congener and also on the PFAS class (perfluorosulfonic acids (PFSAs) or perfluorocarboxylic acids (PFCAs)). Results suggests that different types of PFAS-containing products were used in the various catchment land-uses and that congeners transported diffused through air and water to varying degrees. Results will be discussed based on occurrence patterns across the different land-use types for total PFAS and individual PFAS compounds. This topic is covered in greater detail in my recently accepted research paper in Chemosphere.

Food Standards Australia New Zealand Surveillance and Monitoring

Presenter: Keith Henderson

An overview of FSANZ surveillance and monitoring, including highlights from:

- The 27th Australian Total Diet Study (per- and poly-fluoroalkyl substances);
- Survey of Patulin in Apple Juice and other Apple Products; and
- An introduction to FSANZ's Laboratory Panel.

Overview of the regulation of medicines in Australia and the Food Medicine Interface

Presenter: Diane Wilkinson

Diane will provide an overview of the risk based regulatory framework for therapeutic goods in Australia and the potential overlap between the regulation of certain foods and medicines, which is referred to as the 'Food-Medicine Interface'.

Imported Food Inspection Scheme

Presenter: Tran Tang

The presentation will provide an overview information of the Imported Food Inspection Scheme with an emphasis on the analysis of imported food and tests applied to the food.

Metrological considerations of micro-and nano contaminants in food

Presenter: Dr. Åsa Jämting

The interest and awareness of various contaminants in food and related matrices is increasing and many international bodies (regulatory, standardisation, consumer groups) pay interest in particles on the micro-to-nano scale. The development of standardised methods and guidelines for testing the presence as well as properties of these particles is also of increasing importance, to generate comparable and reliable results. Common questions that may arise for these contaminants are: what is the size, shape and identity of the entities we are trying to measure; how much is detected versus present; is the measurement technique we are using capable of measuring the properties we are interested in; what are the associated risks and/or regulations and who do we talk to about our results? Here, some of the challenges from a metrological point of view are discussed and evaluated, in the light of available and proposed instrumentation.

Session 6

Helping the Consumer to Understand Compliance

Presenter: Professor Samuel Godefroy

Much work on allergen management has been completed recently in Canada. In this presentation we will cover allergen management under PAL, the changing law and regulation around novel foods and ingredients and "Vegan" and "plant-based" claims: risk implications for milk-and egg-allergic consumers in Canada.

Reducing Allergenicity through Food Processing: A Path to Safer Immunotherapy

Presenter: Associate Professor Nanju Alice Lee

Allergen specific immunotherapy offers a promising avenue for the treatment of food allergies. However, it is associated with significant health risks due to the use of allergenic food sources. Food technology and processing play a crucial role in developing hypoallergenic food allergens for immunotherapy purposes. Hypoallergenic food allergens are proteins derived from common food allergens that have been modified to reduce their allergenicity while retaining their immunogenic properties. These modified allergens may used in immunotherapy to desensitise individuals with food allergies, helping them build tolerance to the allergenic foods. This paper will present a strategy using food technology and processing to generate modified allergens with hypoallergenicity for use in immunotherapy.

Seafood Allergy

Presenter: Professor Andreas L. Lopata

Food allergy is a chronic disease, with increasing prevalence of up to 10% globally, and comes with a heavy burden not just economically, but also on quality of life. Seafood is the most complex and under-investigated food commodity among the 'big eight' food groups. The rates of seafood allergy seem to be region-specific and prevalence's have been reported between 0%-7% worldwide, with up to 3% in the USA and 8% among seafood-processing workers. In countries with high seafood consumption, fish and shellfish are the second most common triggers of food allergy. The different groups of allergenic proteins are discussed as well as limitations in current food safety assessment approaches.

Defining a safe gluten threshold and non-invasive dietary monitoring in coeliac disease

Presenter: Associate Professor Jason Tye-Din

Coeliac disease is a chronic immune disease affecting 1.4% of the global population. The strict exclusion of gluten, the gluten-free diet (GFD), improves patient symptoms and quality of life and leads to healing of the small intestine, which reduces morbidity and mortality. Accurate monitoring of the GFD to establish its adequacy is an important clinical goal but current approaches are suboptimal. Novel objective stool and urine tests for gluten immunogenic peptides may offer a solution…but how well do they perform? Furthermore, despite the importance of a strict GFD to patients with coeliac disease there is little controlled, high-quality data that defines a safe threshold of gluten consumption. High quality data to establish a threshold will inform health policy and food regulatory standards and support optimal population health. Jason will report on two of his studies addressing these unmet needs.

Session 7

Bringing Native teas to market; a NAAKPA experience

Presenter: Paul Saeki

Bringing native foods to mainstream markets is not as straight forward as conventional exotic species (as most foods grown in Australia come from overseas). This presentation will provide an overview of the process and the journey NAAKPA stakeholders have experienced in bringing Jilungin tea (*terminalia canescens*) to market. With so little testing data available to date for numerous native species of foods and teas, the reluctance of health regulators to approve production is understandable, and this presentation will highlight some of the challenges in operating in this sector where technical data is limited and the cost of testing prohibitive.

Science behind our senses – Comparison between Effective vs Affective testing

Presenter: Dr. Soumi Paul Mukhopadhyay

Sensory traits have a profound influence on consumers' expectations of end-product quality. Being able to articulate these sensory attributes at all levels of the value chain is crucial for our Australian growers/producers in connecting with consumers and increasing sales. Understanding these important sensory attributes and relating them to the product quality is a scientific process. In this presentation, Dr Soumi Paul Mukhopadhyay will delve deeper into the "science behind your senses". She would talk about everything relating to sensory science- and highlight the different ways you can conduct sensory evaluation in everyday life.

Sensory analysis of Bush teas: a comparison of Terminalia infusions

Presenter: Dr. Permal Deo

P. Deo[1], B. Simpson[1], P. Saeki[2], M. Watkins[3] and S. Semple[1].

[1] UniSA Clinical and Health Sciences, University of South Australia. Adelaide 5000, Australia. [2]Northern Australia Aboriginal Kakadu Plum Alliance (NAAKPA) Cooperative, Brome, Australia. [3]UniSA Allied Health and Human Performance, University of South Australia. Adelaide 5000, Australia.

This collaborative project between the Northern Australia Aboriginal Kakadu Plum Alliance (NAAKPA) Cooperative and university researchers is examining the bioactivities, phytochemical composition and sensory attributes of tea beverages produced from the leaves of different *Terminalia* species. For this presentation the data on the sensory attributes and evaluation will be reported. Kakadu plum (*Terminalia ferdinandiana*) and related species *T. canescens* (Jilungin) were analysed and compared with a commercial green tea. All teas were aqueous infusions of the leaves (tisanes), prepared using brewing and boiling techniques and served warm-to-hot for analysis. A descriptive analysis was performed to define the sensory attributes of the tisanes using trained panelists over two sessions.

Sensory evaluation was further conducted by 20 panelists using a 9-point hedonic scale against a series of attributes.

The findings from the sensory analysis along with other bioactivity and chemical studies being performed in parallel, lay a foundation for further studies examining these tisanes including opportunities to expand the role of local and culturally relevant herbals as commercial tea beverages.

Session 8a

Capacity Building in The Asia Pacific Region

Presenter: Stewart Jones

Accurate food analysis measurements are critical to safeguard public health and to facilitate food trade. International laboratory quality guidelines were first socialised in the 1980s but only became formal standards in 1995. Since then there have been successive revisions, with the most notable changes being the closer and closer alignment of the ISO 9001 and ISO/IEC 17025 standards and the consideration of business activities as processes. Capacity building efforts are now focussed on continual progress into method validation and estimation of measurement uncertainty, traceability of measurement and harmonisation of methods.

The Asia Pacific Food Analysis Network (APFAN) was established in 1989 and seeks to assist laboratories in the region to satisfy the ISO/IEC 17025 traceability requirements through the use of low-cost Reference Materials (RMs) and Proficiency Testing (PT). A previous activity focused on developing Food Reference Materials (RMs) Networks in the Australasian Region and produced eleven candidate RMs that were distributed to participant laboratories.

APFAN is currently conducting a multi-phase project that produces and distributes PT materials free of charge to food analysis laboratories. Follow-up PT Workshops have been held in Indonesia (PT1) in 2018, in Thailand (PT2) in 2019, and in the Philippines (PT3) in 2023. The next Workshop (PT4) will be held in Kuala Lumpur in 2024. APFAN endeavours to provide both chemical and microbiological PT materials, given the significance of microbial contaminants to food safety. These Workshops discuss the PT results in detail, to enable the participant laboratories to improve their methodologies and adopt a more uniform approach to regional food analysis.

APFAN is also reviewing the 'ASEANFoods Methods Manual' that was first issued in 2011, with a view to produce the 'APFAN-ASEANFoods Methods Manual 2nd Edition'. APFAN members have been updating the methods to ensure they comply with the format, validation and measurement uncertainty requirements of the ISO/IEC 17025:2017 laboratory standard. It is hoped that future cooperation with the AOAC (Association of Official Analytical Collaboration) International SEA (South East Asia) Section will result in some specific guidelines for laboratories to adopt uniform methodology across the Asia Pacific region.

The Asia Pacific region is home to 60 percent of the world's population, scattered over a vast area. Indonesia alone consists of 17,500 islands where 800 different languages are spoken. The region conducts 42 percent of the world's trade and it is the world's largest trading bloc. We could not get a more diverse collection of cultures and talent. It is true that the Asia Pacific region needs the services of APFAN more than ever before. As APFAN looks to the future, the need to achieve equivalence of standards between economies in the Asia Pacific trading region, particularly in the areas of food analytical systems and food safety systems is evident.

Matrix Reference Materials in Support of Laboratories' Quality Assurance

Presenter: Raluca Iavetz

Food analysis is performed to ensure product quality and integrity as well as safe consumption. Reporting incorrect results may cause economic damages and/or health issues. Matrix reference materials are very important in food analysis to assess and demonstrate the quality of analytical data. These materials resemble the routine samples being tested, but in addition, contains known analytes with documented property values, uncertainties and metrological traceability. There is a need for matrix reference materials in food for development and validation of analytical methods and to provide quality control for routine analysis. NMIA has recently expanded the number of analytes for trace metals in prawn CRM, previously certified for mercury only and is in the process to release a new pesticide in tomato material. These materials were either incurred or fortified with various analytes and characterised using high accuracy methods such as isotope dilution mass spectrometry (IDMS).

To assess analytical laboratories performance the matrix reference materials were used as test samples in NMI PT studies. Examples of difficult analytes and the importance of using matrix matched reference material when available will be presented.

How to establish the quality and safety management systems for the novel food - key points of QC/QA and food allergen control

Presenter: Dr. Liang Qu

New processing technology, synthetic biotechnology, and microbial fermentation technology are constantly developing new types of food to the market. For a novel food, its raw materials and manufacturing process are different from traditional food that brings the challenges in terms of food safety and food quality control.

Key steps to establish the quality and safety management systems for the novel food were discussed in this report. These steps include: 1) Set of Quality and safety management policy and Objectives; 2) Quality management procedure; 3) Risk assessment and preventive control measures; 4) Food Allergen Control System; 5) Internal audit and management review etc. Challenges in establishing a novel food quality management system were also introduced in this report.

Improving Laboratory Quality Using Proficiency Testing

Presenter: Luminita Antin

Proficiency testing (PT) plays a pivotal role in ensuring and enhancing the ongoing quality of laboratory services. Numerous factors can impact the quality of a laboratory's measurement results including the testing environment, sample pre-treatment, extraction efficiency, equipment, and data-processing, among others. Considering all these external factors, PT is an important external quality control tool, assessing each step of the measurement process and identifying areas that need correction. Today, my presentation will explore how PT participation outcomes can be used to improve laboratory quality.

PT is an objective method of evaluating the performance of laboratory against pre-established criteria. Laboratories participating in PT programs receive homogeneous and stable blind samples; they are instructed to use their normal test method upon the sample and to report single results with an associated uncertainty. Performance is evaluated based on the accuracy and precision of reported results, utilizing z-scores and En-scores. This presentation emphasizes the benefits of PT, such as identifying systematic errors, unrealistic estimates of uncertainty, training needs, or incorrect reporting of results. Examples from PT studies conducted by the National Measurement Institute Australia for per-fluorinated compounds (PFAS), pesticides, and inorganic contaminants in food will be showcased today.

Proficiency testing nurtures a culture of continuous improvement within laboratories, encouraging personnel to rectify errors and refine analytical techniques. It proves invaluable information for assessing and maintaining laboratory competence while facilitating compliance with regulatory standards.

Session 8b

Learning about the new PerkinElmer GC2400 system: features and applications

Presenter: Dr Robert Fusetto

Smart connectivity, simplified operations, and sustainable design come together to create complete, efficient workflow solutions for gas chromatography. The GC 2400 Platform is backed by a portfolio of separation chemistries and solutions that offer labs an efficient workflow experience – bringing the same smart technology we use in everyday life into the lab environment.

Maximize GC productivity and increase automation of lab operations with easy-to use SimplicityChrom™ Chromatography Data System (CDS) Software. It enables the integration of every step in the GC workflow, from instrument control to data processing.

Status and Challenges in Food Safety in the Hospitality Industry in the Philippines

Presenter: Glenn Angelo M. Alindog

Since the ratification of Philippine Republic Act 10611 (Food Safety Act of 2013), there has been gradual acceptance and appreciation of the essence of food safety in the country. However, there are evident challenges in implementation particularly in food safety standards and methods. Accordingly, inconsistent measures can lead to serious threats to health and the community.

The status and challenges in food safety in select accommodation establishments in the Philippines come from the following factors: support from top management; food safety team composition and turnover; relevant staff training and engagement; food handling controls (purchasing, receiving and storage); food premises; and pest management.

Proficiency Testing Program for Meat Authenticity in Malaysia

Presenter: Li Hui Ling

[1,2*]Li Hui Ling, [1]Mohd Sukri Hassan, [1]Che Wan Zanariah Che Wan Ngah.

1 Faculty of Science and Technology, University Sains Islam Malaysia, Bandar Baru Nilai, 71800 Nilai, Negeri Sembilan
2Chemical Metrology Division, Department of Chemistry Malaysia, Jalan Sultan, 46661 Petaling Jaya, Selangor

Malaysia is a country with a diverse population, including Muslims, Buddhists, and Hindus. Muslims adhering to Halal dietary laws are prohibited from consuming pork, and some Buddhists and Hindus avoid beef due to significant religious implications, causing distress and undermining individuals' faith. As a result, meat authenticity holds crucial importance in Malaysia due to its religious and cultural significance. Additionally, Malaysia exports a substantial number of halal-certified products, including meat, to various countries. Questioning the authenticity of these products can damage Malaysia's reputation as a reliable supplier of Halal products and disrupt international trade relationships. For quality assurance, accredited laboratories are required to conduct the analysis. The most common ISO accreditation for testing laboratories is ISO 17025. Fulfilling the requirements of this ISO involves participation in Proficiency Testing (PT) schemes. PT is one of the essential elements of quality assurance. The definition of PT is to evaluate participant performance against pre-established criteria

through interlaboratory comparisons to determine laboratory performance. It also provides valuable information on the performance of the participating laboratory and the competence of the analytical personnel in managing the laboratory. The Department of Chemistry Malaysia PT Provider (MyKIMIA PTP) organized the PT program in 2006 and obtained the accreditation of MS ISO 17043 in 2017. One of the PT schemes was Meat Authentication, which comprised two sub-schemes: FODNA and HALALTEST. The primary materials used in the PT were chicken meat and beef, deliberately contaminated with pork, goat, duck, buffalo, sheep, and other meats. The test materials were freeze-dried and required reconstitution by the participating laboratories. Referring to the latest scheme conducted in April 2023, the PT material was prepared from beef (65%) and purposefully contaminated with chicken meat (8%), sheep (22.5%), and pork (4.5%). Twelve laboratories participated. The commonly used methods included conventional polymerase chain reaction (PCR) and real-time PCR, with a range of PCR cycles from 35 to 45. The sample weights used varied from less than 0.05g to 10g, all of which achieved a 100% satisfactory performance.

Collaborative Study of Iodine Analysis by Inductively Coupled Plasma Mass Spectrometry in Iodized and Non-Iodized Seasoning Sauces

Presenter: Associate Professor Kunchit Judprasong (PhD)

Kunchit Judprasong[1]*, Juntima Photi[1], Premmin Srisakda[1], Sueppong Gowachirapant[1], Jutharat Supanuwat[2]

[1]Institute of Nutrition, Mahidol University, Salaya, Phuthamonthon, Nakhon Pathom 73170 Thailand. [2]Bureau of Nutrition, Department of Health, Ministry of Public Health, Nonthaburi 11000 Thailand.

Two rounds of collaborative studies were conducted to evaluate the suitability of a method for the determination of iodine in fish sauce, seasoning sauce, and soy sauce. The tetramethylammonium hydroxide (TMAH) solution was used for alkaline extraction followed by the determination of iodine by inductively coupled plasma-mass spectrometry (ICP-MS). Eight participating laboratories were requested for hands-on training and to analyze iodine by ICP-MS. The first round of collaborative study was organized for iodized seasoning sauce, iodized soy sauce, and non-fortified fish sauce. The results were evaluated against the reference laboratory (ETH, Switzerland), and results were obtained from the group of participants. Excellent agreement (100%) was found between the mean and SD after the removal outlier from the collaborative trial (4.81±0.11, 2.10±0.16, and 0.27±0.04 mg I/kg, respectively), and the evaluating results of all laboratories have stayed within $|z\text{-score}| \leq 2$, indicating good satisfactory results of the method. Reproducibility standard deviations (s_R) were 7.3%, 7.7%, and 14.3%, respectively. After the technical report of the first round, the second collaborative study was asked for testing again for fortified fish sauce, non-fortified seasoning sauce, non-fortified soy sauce. Good agreement (87.5%) was found between the mean and SD after the removal outlier from the second collaborative study (2.18±0.17, 0.088±0.016, and 0.032±0.009 mg I/kg, respectively) and the evaluating results of most laboratories have stayed within $|z\text{-score}| \leq 2$. Reproducibility standard deviations (s_R) were 7.9%, 17.7%, and 27.6%, respectively. Based on the statistical evaluation of the results it was concluded that the ICP-MS method is suitable for iodine analysis in foods.

POSTER PITCH

Dr. Carol Vicki Tadros

Environmental Scientist - Australian Nuclear Science and Technology Organisation

Dr. Carol Tadros is an Environmental Scientist at ANSTO with over 20 years of experience. She uses her knowledge of chemistry, statistics, and mathematics to gain a deeper understanding of the environment and solve real-world problems. Carol is part of ANSTO's food provenance team and is currently combining various data analytics and machine learning techniques with chemical fingerprinting to develop methods for traceability and geographical authentication. Carol also administers ANSTO's database of reference fingerprints to ensure brand authenticity, help safeguard industries against biosecurity risks, and reduce incorrect labelling and selling of premium food products.

Development of a geographical fingerprint using nuclear techniques to support country of origin labelling for Kakadu plum

Carol V. Tadros[1], Debashish Mazumder[1], Jagoda Crawford[1], Patricia S. Gadd[1], Paul Saeki[2]

[1]ANSTO, Lucas Heights, 2234 NSW, Australia.
[2]Northern Australia Aboriginal Kakadu Plum Alliance (NAAPKA), Darwin, Australia

Kakadu plum is a high-value native fruit that is endemic to Australia and holds cultural and economic importance. With its market value predicted to reach AU$3.5 million by 2025, a Geographical Indication (GI) country of origin label may protect First Nations enterprises as the industry continues to expand in both domestic and international markets. Here, we investigate the potential of leveraging ANSTO's provenance technology to trace food back to its geographical source for indigenous certification. Authentic Kakadu Plum samples (n= 443) from 21 regions across the Kimberley region of Western Australia and Northern Territory were analysed for 30 mineral elements using ITRAX. The elemental data were used to build fingerprints to develop a pattern recognition classification model that predicts the origin of each sample with high level of accuracy. Our research demonstrates the effectiveness of ANSTO's provenance technology for geographical traceability and is a significant step towards establishing a geographical fingerprint label for the Kakadu plum industry.

Wenan Cai

PhD candidate – University of Melbourne

I am a PhD candidate at the School of Agriculture, Food and Ecosystem Sciences, Faculty of Sciences, University of Melbourne (Parkville). Currently I am under the supervision of Dr. Senaka Ranadheera, and Dr. Kristy and Prof. Said as co-supervisors. My PhD program aims to investigate the protection effects of cocoa powders on the probiotic when added into chocolate, and the beneficial effects of the functional chocolate to human beings. This program provides possibility for the development of functional chocolate products in the future. Before my PhD, I completed master's education in Food Sciences at the University of Melbourne, and then worked as a Microbiology Analyst in a third-party Food Safety Control Agency for one year.

Beneficial effects of cocoa powders and dark chocolate in protecting the Gram-negative probiotic *Escherichia coli* Nissle 1917

Probiotics are known as the live microorganisms which when administered in adequate amounts confer a health benefit on the host. Probiotic viability is affected by many factors, including the carrier food, processing, storage, and harsh gastrointestinal conditions. In recent years, chocolate has been used as an attractive probiotic carrier to protect probiotics in various conditions. However, extra strategies are needed to maintain the survivability of probiotics in chocolate at a sufficient level (> 10^6 CFU g^{-1}) throughout processing, storage, and consumption. Encapsulation of probiotics has been found to be a promising approach. In previous studies, cocoa powder – an essential component of chocolate – has been reported to efficiently encapsulate and protect Gram-positive probiotics such as *Lactobacillus* and *Bifidobacterium*. However, Gram-negative probiotics have not been widely tested. In this study, *Escherichia coli* Nissle 1917 (EcN), a typical Gram-negative probiotic strain, was encapsulated using various cocoa powder formulations and incorporated into the chocolate. The encapsulation efficiency, heat resistance, viability during storage, *in vitro* gastrointestinal digestion and colonic fermentation were evaluated. Gram-positive strain *Lactobacillus rhamnosus* GG (LGG) was used for comparison. Encapsulation in the combination of cocoa powder and sucrose showed the highest satisfactory efficiency for both strains. As a result, good storage stabilities of cocoa-powder-encapsulated strains were achieved when they were added to dark chocolate (70% cocoa) during storage at both 4°C and room temperature for 30 days. On the other hand, both the encapsulated probiotic strains were well protected during the *in vitro* gastrointestinal digestion.

Karla Heric

PhD Candidate – Victoria University

Karla Heric is an industry PhD (iPhD) candidate at Victoria University, CSIRO, and South East Water working with collaborators across these three institutions to reduce plastic waste. Her current research focuses on the microbial degradation of microplastics in wastewater treatment. Through studying the microbial community and microplastic content of biosolids, as well as the breakdown of microplastics using microbes, she hopes to provide insight to industry professionals that will lead to greater environmental conservation. She is primarily focused on applying microbiology techniques to real-world problems and previously investigated the use of bacterial probiotics to increase thermal tolerance of coral algae (Symbiodiniaceae) and published her findings in Frontiers of Ecology and Evolution.

A novel solution to plastic pollution: Microbial degradation of microplastics in wastewater treatment

Plastic pollution damages habitats, destructs ecosystems, and threatens human and animal health. Microplastics (plastics smaller than 5 mm) are found in wastewater and fertilisers made from a wastewater treatment by-product called biosolids. This study proposes a novel approach to wastewater microplastic degradation: using microbes to break down microplastics, particularly microplastics within biosolids. Whilst microbes such as bacteria and fungi have demonstrated the ability to break down plastics, their ability to degrade microplastics in a wastewater treatment setting has not yet been elucidated. Additionally, the microbiome and microplastic content of biosolids from wastewater treatment plants in Melbourne has not been explored. To decipher the plausibility of microbial degradation of microplastics in wastewater treatment, the microbial community within biosolids will be studied using metagenomics. In addition, biosolids microplastic content will be analysed using Fournier transform infrared spectroscopy, and microbial microplastic degradation will be assessed using select plastic-degrading microbes and biosolids in bioreactors.

Evonne Shuan Wong

Student – Monash University

I was born in Malaysia but grew up in the beautiful country of Brunei Darussalam. Brunei Darussalam's vibrant culture and peaceful scenery made for a wonderful life.

My academic journey led me to Taylor's University in Malaysia, where I pursued a Bachelor's degree in Biomedical Science. This educational chapter was a transformative experience, igniting my fascination with the intricate workings of the human body and the world of scientific discovery.

Driven by a hunger for knowledge and a passion for sustainable food production, I ventured to Monash University. Currently, I am immersed in the pursuit of a Master's degree in Food Science and Agribusiness. This academic endeavour not only aligns with my love for science but also nurtures my interest in the complex and evolving world of food production and agriculture.

Aside from academics, I like travelling and always seeking for new adventures and cultural experiences. I also adore creating and producing handcrafted goods, so I have a creative side. These interests complement my scholarly efforts by adding a colourful dimension to my life.

Analysis of coffee bean volatiles using GC×GC–MS and GC–NPD with headspace solid-phase microextraction

Coffee beans, the seeds of the Coffea plant, possess a fascinating aroma profile characterised by a myriad of volatile organic compounds generated through the roasting process, contributing to the distinctive sensory experience of coffee. Coffee beans (Arabica; Honduras) were roasted using a time-temperature profile linked to four prevalent stages in coffee roasting: under-roast, light, medium, and over-roast. They were then taken for volatile odour assessment. Volatile compounds were identified using headspace solid-phase microextraction (SPME) with gas chromatography-mass spectrometry (GC–MS), and GC-nitrogen phosphorus detector (GC–NPD) was used for nitrogen-specific volatile compound profiles. The samples were also examined using comprehensive two-dimensional GC-mass spectrometry (GC×GC–MS), a technique that significantly improves the separation and identification of volatile compounds. GC–NPD analysis revealed a notable increase in the abundance of nitrogen compounds, particularly pyrazines, when roasting duration was extended. A total of 111 volatile chemicals were detected in the coffee samples such as furans, aldehyde, ketones, alcohols, acids, pyrazine, pyrrole and thiols, with several of them being acknowledged as important aroma compounds in coffee. The primary process responsible for their creation was the Maillard reaction. During various roasting stages, the formation of specific volatile compounds imparts distinct aroma characteristics to coffee; for instance, the generation of methyl pyrazine during under-roasting results in nutty and cocoa aromas, 3-ethylpyridine formation in light roast contributes to tobacco and oakmoss aromas, 5-acetyldihydro-2(3H)-furanone formed during medium roast yields sour and fermented notes, and 2-methylphenol production during over-roasting imparts woody and leather-like aromas. This research confirms that the use of chemical analysis in combination with gas chromatography and especially GC×GC technology is valuable for evaluating the quality of flavour.

Julia Hillebrand

Student – Monash University

After graduating from school, I did a year of voluntary service in Tanzania in the field of culture and education with "Forward Step Organization". Subsequently, I completed my bachelor's degree in chemistry at the University of Münster, Germany. I have continued my academic journey and am currently pursuing a master's degree, also at the University of Münster, since 2022. As part of my Master's, I am engaged in research at Monash University in Clayton, Victoria in a research group led by Philip Marriott in the field of analytical chemistry. During my master's studies in Germany, I gained professional experience by working as an analytical chemist at "E-Lyte Innovations".

Improved separation and resolution using headspace SPME with comprehensive two-dimensional GC–MS for analysis of hop (*Humulus lupulus L.)*

Julia Hillebrand, Glaucimar A. P. Resende, Michelle Amaral and Philip J. Marriott

School of Chemistry, Monash University, Clayton, Victoria

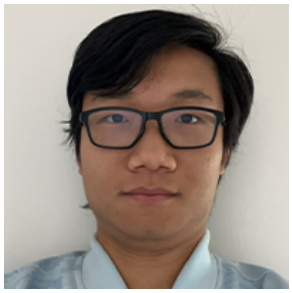
Hop (*Humulus lupulus L.)* is one of the main ingredients of modern beer. In this contribution, we present a headspace solid phase microextraction (HS-SPME) comprehensive two-dimensional GC (GC×GC) method with mass spectrometric (MS) detection for the analysis of hops.

For many centuries, beer has been considered not only a culturally acceptable beverage in various regions worldwide, but also has positive effects on the body when consumed in moderation. As indicated by the literature, the consumption of a small amount per day can be beneficial in combating diseases such as coronary heart disease. Moreover, beer contains certain B vitamins, minerals, antioxidants and possibly fibre, which can contribute to a balanced diet. The essential oils of hop are responsible for its characteristic aroma and bitter taste. For this reason, the chemical composition of various hop varieties is of interest, and may be investigated to draw conclusions about the aroma profile and flavour of beer.

In recent years, gas chromatography (GC) combined with MS has become the method of choice for volatile organic compound (VOC) and thus hop analysis. However, due to the wide diversity of different hop varieties and the complexity of the aroma profile, not all components in hop could be elucidated by using GC–MS thus far. Our approach combines HS-SPME, a green sample preparation approach, with high resolution GC based on GC×GC technology to elucidate the chemical composition of hop headspace. The comprehensive 2D-separation, in contrast to 1D-GC, improves the separation, total peak capacity, and increases detectability of components (translating to improved MS matching) and therefore enables to expand the knowledge about the components of hop. Optimisation of the analytical method (extraction and separation), reliability of sample-to-sample comparison via the GC×GC 2D plot, and principles of structure-retention and the chemical structure map provided by GC×GC will be highlighted.

Yuesong Wu

Student – Monash University



I am an international student currently studying at Monash University, I am finishing my Honours year this year with Prof. Philip Marriott Being my supervisor this year and a third-year summer project before. Some outcome of that summer project was presented on the poster I am going to present for the ICFA conference.

I am interested in natural science, such as physics, chemistry, biology, etc. This strong interest had led me towards a career as a researcher. I also enjoy natural scenery, and this is why I chose to study in Melbourne, a forest-like city with lots of well-constructed bike trails and wetlands. Cycling is my favourite exercise, if you see me lightning-fast Saturday morning on the beach road or pedalling uphill towards sky high, don't forget to lower your car window and say hi.

Natural Pyrethrin GC and GC×GC Analysis: On-Column Transformation & Retention Indices

Natural pyrethrins are obtained from the chrysanthemum flower – Chrysanthemum cinerariifolium – and are a series of natural insecticides, formed from a rethrolone alcohol (cinerolone, jasmolone, or pyrethrolone), and chrysanthemic acid for type I pyrethrins, or pyrethric acid for type II pyrethrins. Type I pyrethrins are present in nearly equivalent concentrations and up to about threefold more than type II pyrethrins, with a natural variation among plants. GC should be the standard method to analyse pyrethrins, and is suited to CI, CII, JI and JII, but at elevated T (e.g., > 200 ^{o}C), PI and PII undergo irreversible thermal rearrangement to iPI and iPII. This can occur in the GC injector, but also can be seen as a 'BRIDGE' arising from conversion of PI→iPI and PII→iPII on the column. Whilst little iPI and iPII naturally occur in the plant extract, splitless injection at usual injector temperatures produces appreciable amounts of these. In addition, higher final elution temperatures used for GC programme led to on-column transformation. Hence the analytical procedures need to be well controlled if reliable assays are to be generated. We have investigated GC analysis of pyrethrins, calculated retention indices on different column phases, and demonstrate the unusual GC×GC results for these compounds.

Similar behaviour also arises for certain fungicides, such as iprodione, with on-column and injector-based degradation occurring.

Ernest Chuku

PhD Candidate – University of Tasmania

Ernest is a PhD scholar at the Institute for Marine and Antarctic Studies (IMAS), University of Tasmania, Australia, conducting research on the biology, ecology and sustainable production of Pacific oysters in collaboration with the Australian Seafood Industries and the Australian Nuclear Science and Technology Organisation. He additionally works on the handfish conservation project under the SMRCA at IMAS and doubles as a Laboratory Technician at Marine Culture Pty., one of Tasmania's leading Pacific oyster producers. He has a Master of Philosophy in Aquaculture and a Bachelor of Science in Fisheries and Aquatic Sciences, both from the University of Cape Coast, Ghana. Ernest's professional/academic roles over the past 11 years have been in aquaculture, fisheries and sustainable marine resource management. He is keen for research exchange in the areas of sustainable marine food production.

A novel application of nuclear techniques for characterising Pacific oyster *Crassostrea gigas* (Thunberg, 1793) for aquaculture production

Ernest Obeng Chuku [1, 2, *], Debashish Mazumder [2], Patricia Gadd [2], Jagoda Crawford [2], Gregory Smith [1], Steven Rust [1], Andrew Trotter [1]

[1]*Institute for Marine and Antarctic Studies (IMAS), University of Tasmania, Private Bag 49, Hobart, TAS, 7001, Australia*
[2]*Australian Nuclear Science and Technology Organisation, New Illawarra Rd, Lucas Heights 2234, New South Wales, Australia*
*Corresponding author's email: ernest.chuku@utas.edu.au

Abstract

The Pacific oyster (*Crassostrea gigas*) is increasingly providing a source of healthy nutrition in Australia, the Pacific region, and globally. As demand increases amidst climate uncertainties, there is a need for consistent development of a resilient oyster with improved quality to enhance marketability and sustain the industry. Subsequent to our earlier study, which revealed the quality indicators along the *C. gigas* aquaculture supply chain, we leverage the application of nuclear analysis techniques to investigate the contributions of environmental (oyster leases) and biological signatures for the development of an industry-preferred oyster. We used a rapid micro-X-ray fluorescence (uXRF) scanning through ITRAX Scanner for elemental profiling and the Isotope Ratio Mass Spectrometer (IRMS) for stable C and N isotope analyses to determine the contribution of sedimentary and dietary sources to *C. gigas* growth and development under variable environmental and biological conditions. My presentation will include preliminary results from the analysis of the data. The findings suggest that nuclear analysis is a useful tool for the selection of oysters with the best traits for aquaculture. This advanced characterisation represents an essential step in our longer-term goal of developing phenotyping tools to select shell traits in selective breeding programs.

Keywords: Nuclear, Pacific oyster, Marine food production, micro-X-ray fluorescence, Isotope Ratio Mass Spectrometry

LIST OF DELEGATES

Name	Organisation
Åsa Jämting	National Measurement Institute
Aayushi Shah	National Measurement Institute
Abhijit Paul	National Measurement Institute
Ajith Subramanian	Agilent Technologies
Alexandra Cristina Olarte Guasca	National Measurement Institute
Alex Mustakov	CSIRO
Ami Sharma	Ministry of Agriculture and Waterways
Analisa Mathrick	Envirolab Services
Andi Ichzan	PT. TUV NORD INDONESIA
Andreas Hofmann	Max Rubner-Institut
Andreas Lopata	James Cook University
Annalee Morrison	National Measurement Institute
Barry Sun	BVAQ
Ben Macleod	LECO Australia
Bill Wei	National Measurement Institute
Bruce Chen	Symbio Laboratories
Bruce Warrington	National Measurement Institute
Candida Showler	Agrifood Technology
Carol Tadros	ANSTO
Cathy Mcauley	CSIRO
Chloe Stuart	Food Standards Australia New Zealand
Christine Rose	Kinvara Scientific
Danny Slee	National Measurement Institute
David Swinden	NuFarm
Dean Clarke	National Measurement Institute
Debashish Mazumder	ANSTO
Deni Taleski	National Measurement Institute
Devika Kodituwakku	National Measurement Institute
Diane Wilkinson	Therapeutic Goods Administration (TGA)
Dianne Hillsley	National Measurement Institute
Dimmi Wickramasinghe	National Measurement Institute
Edwin Pang	RMIT University
Elizabeth Bolte	ACS Laboratories
Emma Haidar	r-Biopharm
Ernest Chuku	AINSE & University of Tasmania
Felice Abhayawickrema	National Measurement Institute
Garry Wrede	Rowe Scientific Pty Ltd
Gavin Gu	BVAQ
Gavin Rose	Kinvara Scientific
George Dabos	National Measurement Institute
Glenn Angelo Alindog	Intertek Philippines
Hang Bui	National Measurement Institute
Hao Nguyen	National Measurement Institute
Harshani Pathinayake	National Measurement Institute
Heather Patsiouras	Waters Corporation
Hema Matampally	National Measurement Institute

Hui Ling Li	Universiti Sains Islam Malaysia
Imesh Wickramathilaka	ALSTA
Jaco De Kock	NATA
Jaimee-Lee Hesse	Symbio Laboratories
James Hoang	National Measurement Institute
James Roberts	National Measurement Institute
Jasmine Lacis-Lee	Allergen Bureau / BVAQ
Jason Lu	National Measurement Institute
Jason Tye-Din	WEHI
Jayanta Das	Romer Labs
Jenny Bruce	National Measurement Institute
Jenny Xu	National Measurement Institute
Jeremy Martens	AMAL Analytical Pty Ltd
Jessica French	APVMA
Jim Tsiotinas	Agilent Technologies
Joanna Gambetta	CSIRO
Joanna Murone	ACS Laboratories
John Nagy	Department of Agriculture, Fisheries and Forestry
John Nie	National Measurement Institute
John Odontiadis	ACS Laboratories
John Orbell	Victoria University
Jon Richards	National Measurement Institute
Julia Hillebrand	Monash University
Julia Vu	National Measurement Institute
Julian Hales	National Measurement Institute
Karen Duong	Merck Group
Karla Heric	Victoria University, CSIRO
Katie Chambers	National Measurement Institute
Keith Henderson	Food Standards Australia New Zealand
Kenneth Dods	SAGE Consulting
Kunchit Judprasong	Institute of Nutrition, Mahidol University (INMU)
Lawrence Wong	1AAQC Pty Ltd
Leah Macdonald	APVMA
Liam Greenwood	Food Standards Australia New Zealand
Liang Qu	Wuhu Institute of Technology
Liau Yong Wee	Romer Labs Singapore Pte Ltd
Lindsay Swinden	NATA
Lisa Sherry	ELISA Systems
Luminita Antin	National Measurement Institute
Lynette Hillen	Merck Group
Maddy Robertson	National Measurement Institute
Mango Fees	Rowe Scientific Pty Ltd
Manjree Agarwal	ChemCentre
Manpreet Kalsi	BVAQ
Maresa Heath	Agriculture Victoria
Maris Findesien	Agilent Technologies
Maria Aussielita Lit	ASTS Analytical Solutions Testing and Services
Mariel Keaney	Macquarie University
Matthew Keily	Symbio Laboratories

Megen Krupa	National Measurement Institute
Michael Vercoe	International Accreditation New Zealand
Michelangelo Anastassiades	CVUA Stuttgart, EURL-SRM, Germany
Michelle Mendoza	Marinova Pty Ltd
Munifa Puente	National Measurement Institute
Nanju Alice Lee	UNSW
Narelle Harvie	PM Separations
Naveen Rayala	National Measurement Institute
Neil Shepherd	NATA
Nina Welti	CSIRO
Nora Dekempitiya	National Measurement Institute
Paul Saeki	NAAKPA
Permal Deo	University of South Australia
Peter Lam	Shimadzu
Phillip Marriott	Monash University
Prisca Dharmawi	Agrifood Technology
Pulasthi Serasinghe	RMIT University
Rajash Sasivilasam	BVAQ
Raluca Iavetz	National Measurement Institute
Rebecca Duncan	National Measurement Institute
Reece O'Brien	The Federation of Victorian Traditional Owner Corporations (FVTOC)
Richard Newton	ELISA Systems
Roberto Fusetto	Perkin Elmer
Rujuta Damie	Agrifood Technology
Ross Pearson	MPI
Rujuta Damle	Agrifood Technologies
Ryan Floyd	Symbio Laboratories
Sam Chan	National Measurement Institute
Sam English	Food Standards Australia New Zealand
Sam Mallard	ASC
Saman Buddhadasa	National Measurement Institute
Samuel Godefroy	Universite Laval, Canada
Sandy Famulari	ACS Laboratories
Shaw Feng Ong	Perkin Elmer
Shiva de Silva	National Measurement Institute
Shuan Wong	School of Chemistry, Monash University
Sinipata Vaaivaka	OMIC Australia
Sm Yassir Arafat	LECO Australia
Soumi Paul Mukhopadhyay	NSW Department of Primary Industries
Stewart Jones	Asia Pacific Food Analysis Network (APFAN)
Stuart Sawyer	Modern Olives Laboratory Services
Sujana Bhandari	National Measurement Institute
Sunny Ye	National Measurement Institute
Susan McCarthy	Sanitarium Health Foods
Susan Morris	Ministry for Primary Industries
Tamyka Schroeter	PM Separations
Tania Casimaty	Marinova Pty Ltd
Tania Tatnell	ACS Laboratories
Tanya Paige	RMIT University

Thu Nguyen	OMIC Australia
Tim Reddan	National Measurement Institute
Titus Kalayil	Agrifood Technology
To Huong Le	NATA
Todor Vasiljevic	Victoria University
Tom Yeager	VIctoria University
Tran Tang	Department of Agriculture, Fisheries and Forestry
Trong Le	National Measurement Institute
Troy Gosetti	Neogen
Victor Wong	UNSW
Vincent Pettigrove	RMIT University
Weeraya Karnpanit	Western Sydney University
Wenan Cai	The University of Melbourne
Yuesong Wu	Monash University

ORGANISING COMMITTEE

Organisations

National Association of Testing Authorities (NATA)

National Measurement Institute (NMI) - Department of Industry, Science, and Resources

Australian Nuclear Science and Technology Organisation (ANSTO)

Northern Australia Aboriginal Kakadu Plum Alliance (NAAKPA)

Asia Pacific Food Analysis Network (APFAN)

ACS Laboratories (ACS)

Victoria University

RMIT University

James Cook University

Members

Neil Shepherd (Chair)	NATA
James Roberts	NMI (Honorary Fellow)
Gavin Rose	Consultant
Dr. Saman Buddhadasa	NMI
Jenny Bruce	NMI
Stewart Jones	APFAN
Vince Murone	ACS Laboratories
Paul Saeki	NAAKPA
Dr. Lindsay Swinden	Consultant
Dr. Debashish Mazumder	ANSTO
Prof. John Orbell	Victoria University
Assoc. Prof. Thomas Yeager	Victoria University
Prof. Eddie Pang	RMIT University (Honorary Fellow)
Prof. Andreas Lopata	James Cook University
Luminita Antin	NMI
Raluca Iavetz	NMI
Dean Clarke	NMI
Abhijit Paul	NMI

Dr. Alexandra Olarte Guasca	NMI
John Nie	NMI
Megan Krupa	NMI
Julia Vu	NMI
Tim Reddan	NMI
Katie Chambers	NMI
Annalee Morrison	NMI
Deni Taleski	NMI