

Good Fermentations Take Time

A Masterclass brought to you by the AIFST; Seedlab Tasmania; FermenTasmania and the Centre for Food Safety and Innovation, Tasmanian Institute of Agriculture.

Date: Tuesday 28th February 2023

Venue: The Tramsheds, Launceston OR Virtual via Zoom

Note: all times are AEDT

Time	Topic	Speaker
11.00 – 11.15	Welcome and Introductions	Dr Hazel MacTavish-West, Seedlab Tasmania
11.15 – 12.30	Session 1: Fermenting the Science	
11.15 – 11.40	Keeping Fermentations safe	Prof Tom Ross, CFSI, UTas
11.40 – 12.05	Unique cultures and more	Dr Belinda Chapman, Quantal Bioscience
12.05 – 12.30	A testing case study	Dr Julie Martyn, Artisa
12.30 – 1.00	Lunch and Networking	
1.00 – 2.10	Session 2: Case Studies in Creativity	
1.00 – 1.20	Meru Foods	Chris de Bono
1.20 – 1.40	Sanyou Baijiu	Ian Sypkes
1.40 – 2.00	Bread Architect	Chris Stafferton
2.00 – 2.10	Q & A panel	Session speakers
2.10 – 2.30	Networking Break	
2.30 – 4.00	Session 3: Growing the Fermentation Ecosystem	
2.30 – 2.50	Fermentation equipment	Dr Belinda Chapman, Quantal Bioscience, Sydney
2.50 – 3.10	CFSI and TestLab	Dr Samantha Sawyer, UTas
3.10 – 3.30	Topic to be confirmed	Dr Matthew Fielding, UTas
3.30 – 3.50	FermenTasmania	Kim Seagram, AM, Chair and CoFounder of FermenTasmania
3.50 – 4.00	Q & A panel	Session speakers
4.00 – 4.30	Fermentation testing and talking	
4.30	EVENT CLOSE	

Our speakers



Session 1: Fermenting the Science

Prof Tom Ross, CFSI, UTas.

Tom is a food microbiologist, specialising in mathematical modelling of the microbial ecology of foods. From basic scientific research Tom and his colleagues develop mathematical models and risk-based decision-support systems that are now widely used in the food industry and by government to improve food safety and food preservation. Tom has written more than 160 scientific papers and book chapters on the mathematical modelling of microbial behaviour in foods, with particular emphasis on the application of predictive microbiology and quantitative risk assessment, including for shelf-life prediction.

Historically, fermentation has been employed to preserve foods, to ensure that the bounty of Spring and Summer was available when fresh foods were not available for harvest. But the methods of fermentations developed empirically, i.e., by trial and error, and potentially there were many failures and sicknesses and deaths from improperly fermented foods and beverages. Modern science

has given us the knowledge to make great fermented products in a way that is safe for consumers of those products. Nonetheless, failures can still occur if the 'rules' aren't followed. This session will introduce the science of safe and successful fermentations.

Dr Belinda Chapman, Quantal Bioscience, Sydney

Belinda is an applied research microbiologist with more than 25 years' experience across the food, health, and environment sectors, in industry and government. Belinda is co-founder and Director of Quantal Bioscience, a microbiology research laboratory offering a wide range of research, consulting, process development and specialist testing services, and of FermCo, a fermentation facility offering co-manufacturing, both located in Sydney. Belinda is also an affiliate of both the Universities of Sydney and Tasmania.

The multitude of fermentations is exceeded only by the multitude of microorganisms driving them. Some fermentations are all about the one special strain that makes it all possible - be it bacterial, yeast or mould. Here too, it could be all about provenance, if that special strain is local to your unique fermentation environment. Other fermentations are unique because of the multitude of microorganisms responsible for them, which in some cases may be more than you imagine. In this talk, let's expand our view to the broad range of food industry related fermentations that are out there, and to the unique assemblages of microorganisms that drive them, and how new technologies can help fermenters capture the value of the one and the many

Dr Julie Martyn, Artisa plant-based cheese

Julie's career spans 30+ years in academic research in a variety of fields - from horticulture through to biomedical and clinical research. In all that time she has been a passionate foodie and a vegetarian, becoming vegan eight years ago. In 2016 she decided it was time to step away from her research career and move to Tasmania to follow (a) her husband and (b) her vegan food dream. Becoming a plant-based cheesemaker ticked all the right boxes for her, and so the story of Artisa began.

This presentation will cover Artisa's journey in establishing the process for fermenting their plant-based cashew cheeses – the very limited history in this field, some of the limitations and some thoughts for the future.

Session 2: Case Studies in Creativity

Chris de Bono, Meru Foods

Chris de Bono is the Managing Director at Meru Foods – a Tasmanian-based food manufacturing business that he co-founded with Meagan de Bono. Meru Foods currently produces miso and associated condiments under two brands, Meru Miso, and Umami Pantry. These are both distributed nationally to retailers, food service customers and other food manufacturers. The Umami Pantry brand is also represented in Singapore as of January 2021.

Traditional fermentation is often thought of in terms of beer, wine, spirits, and we occasionally turn our thoughts to cheese, yoghurt, salami, sourdough and other well-known fermented foods and beverages. There is a renaissance occurring in the world of traditional fermentation. Ancient methods that have been long forgotten are being resurrected and old methods are being applied in new ways to create new foods. The science behind fermented foods is being reimagined and explored from different angles. Join Chris as he takes us on a whirlwind tour of global fermentation creativity and how this helped inspire his own creativity in Meru Foods.

Ian Sypkes, Sanyou Baijiu

Sanyou is the first solid state fermentation and distillation baijiu distillery outside of China. Ian will speak about the long journey that leads to innovation in fermentation and why Tasmania is the place to do it. You will hear about the processes involved in Baijiu making (and why no one else is doing it), the journey from idea to bottle, a bit about the people who have helped along the way and what comes next.

Chris Stafferton, BreadArchitect

When medical conditions forced Chris and his youngest daughter into gluten free diets in early 2006, he was appalled with the bread substitutes that were available. Never one to shrink from a challenge, Chris began to develop bread without gluten that is good to eat, satisfying and nutritious. As a pioneer in the field of sourdough bread prepared with gluten free ingredients Chris published 'Promise & Fulfillment: formulas for real bread without gluten' in July 2019. P&F showcases a wide range of bread prepared with many different natural ferments alongside, the now conventional, baker's yeast. Amongst the natural ferments are Chris's 'bee barm' and his take on the Italian tradition of solid-state sourdough, Lievito Madre. The development of solid-state starters prepared with spontaneously fermented, single flour cultures has opened new areas of development for breads made without gluten, including his range of no-fuss sourdough kits due to be launched in 2023, under the label 'Bread Worth Sharing.

It can't be done. Chris will discuss development and use of spontaneous sourdough cultures in bread without gluten. Along with some comments on myths and methods about preparing type 1 sourdough cultures the presentation will include a brief discussion of a range of single flour 'wet' starters and the introduction of solid-state starters. This will include reference to some of the fascinating properties of solid-state starters.

Session 3: Growing the Fermentation Ecosystem

Dr Belinda Chapman, Quantal Bioscience

Let's face it - once you get past the equivalent of the plastic container on the kitchen bench stage (we've all been there) one of the coolest things about fermentation is the chance to buy and use some shiny (but not always new) kit! Between our research lab, Quantal Bioscience, and our co-manufacturing facility, FermCo, we work our way from 250 mL shake flasks to 2.5 L to 2,500 L fermenters. Do you know your pH from your dissolved oxygen probe? How are you keeping the microbes that you love happy, warm, and fed? And how are you killing off your nemeses? Is that your feedstock tank or your caustic tank that you're connecting to? Focussing on liquid fermentations, we'll take you on a virtual tour that will hopefully demystify a few things and inform and inspire you in your own kitting out or scaling up journey.

Dr Samantha Sawyer, CFI and CFSI, UTas

Sam is a lecturer and researcher in food science at UTAS, specialising in digitalisation of food quality. She has a broad background in chemistry, microbiology, and sensory science, with a strong focus on industry-facing research. She has worked in industry and academia on industrial biotechnology, plant extractives, fermentation, and synthetic biology. She is a keen advocate for diversity in STEM, for value capture to enhance regional development (particularly among food start-ups and SMEs), and for helping build resilience to the effects of climate change.

Technology is an enabler. It can accelerate food innovation, new product development, assist root cause analysis, and much more. In this talk, we will introduce the "Integrity of Food" TestLab and the CFSI at UTAS which has been using advanced technologies to measure food quality instrumentally. Technology can take the subjectivity, variability, and cost out of human sensory panels. While it cannot fully replace consumer panels, which can answer important questions around likeness and preference, it can help minimise batch-to-batch variability, investigate the effects of raw ingredient substitution and blending to consistency. For the fun stuff, to take fermentations to the next level, it's about manipulating your fermentations and knowing what that does so they develop the flavours and sensory characteristics you would want them to have.

Dr Matthew Fielding, University College, UTas

Matthew is a Teaching Fellow in Fermentation at the University of Tasmania (UTAS). While finishing his PhD in Ecology at UTAS, he developed a thirst for fermentation science and co-founded Science Made Beerable, a project highlighting the science behind beer through a series of accessible content and events. Matthew has a passion for effective science communication, curriculum co-design through industry collaboration and ensuring regional communities have access to STEM.

Growth within the fermentation sector has seen individuals hoping to extend their ability and knowledge to build careers and businesses within the industry. At University College, UTAS, we have co-designed applied science courses with industry to build a network of skilled individuals to work in and grow the Australasian fermentation industry. These offerings include hands-on practical assessment tasks and work placements within local businesses, often resulting in employment

within industry for the students. Recently, we also developed the ‘Science of Brewing Operations’ short course in partnership with the Institute of Brewing and Distilling (IBD) and Ferment Tasmania. This Australian-first collaborative offering allows participants to attain the most widely recognised brewing qualification in the world, the ‘General Certificate in Brewing’, accompanied with extended learning, continuous teacher support, and a face-to-face industry-led workshop.

Kim Seagram, AM, Chair and CoFounder of Ferment Tasmania

Kim is a serial entrepreneur with her husband Rod Ascuri and many community members developing and running numerous hospitality and tourism businesses in Tasmania as well as a vineyard and distillery. Her work with the Vineyards Association of Tasmania helped build the Tasmanian wine brand and drove the development of Wine Tasmania. She helped found Harvest Launceston, Tasmania’s Community Farmers Market and more currently Ferment Tasmania, to build a fermentation hub incubator as an economic development driver for the State. Kim received an Order of Australia (AM) in 2020 for her service to Business and Tourism in Tasmania.

Fermentation Transforms produce, people, and places. Kim Seagram will share progress of the fermentation hub incubator, what it means for Tasmania and Australia and all the incredible work done to date.