

food australia

MARCH/APRIL 2017



How ADM
is Growing to Feed
Australia's Food
Business

INSIDE

DISRUPTING DAIRY
AUSTRALIA'S FIRST SMART DRINK
FOOD TRENDS: SEAWEED
WHEN ALTERNATIVE FACTS TRUMP EVIDENCE-BASED POLICY



Feeding your Food Business

CONTENTS

MARCH/APRIL 2017

regulars

- 4 Food for Thought
- 6 By the Numbers
- 7 Your Institute
- 12 The Pulse
- 47 Palate

THE GRIST

- 18 "Post-truth" postulates and their Application to Food Regulatory Policy

There are uncomfortable parallels to the new political paradigm as alternative facts and opinion gain traction over evidence-based policy

20 Changing the Code

Proposal and application highlights 2016-17

FARM TO FORK

22 Keeping our Finger on the Pulse

The phenomenal success of the international year of pulses

INDUSTRY INNOVATORS

27 Born Pure

Australia's first high pressure processed baby food range hopes to tap into the growing market for nutritional food and help with fruit and vegetable wastage

28 Shine Brighter

The pioneer of Australia's first "smart drink" talks about developing a mind-boosting beverage using all natural products, the rush to market and giving back to the community

YOUNG & HUNGRY

32 2017 Student Product Development Competition

50th Anniversary Convention volunteers + AIFST Summer School + 2017 AIFST Student Awards

FOOD FILES

36 Plant Power: Kelp is the New Kale

Could the latest superfood save our lives and the planet?

39 A National Approach to Food Safety Certification

The move towards a national approach will be piloted in the baked goods sector

40 The Good, the Bad and the Toxic

Does it make any difference what oil you fry your hot chips in? + sweet taste + labelling sustainability + a new measure for food preference

FUTURE FOOD

42 Disrupting Dairy

Can increased scientific knowledge around the complexity of components in milk lead to novel, healthier dairy products for the future?

46 Developing Osmosis Food Technology

46 Would You Eat 3D Printed Meat?



6



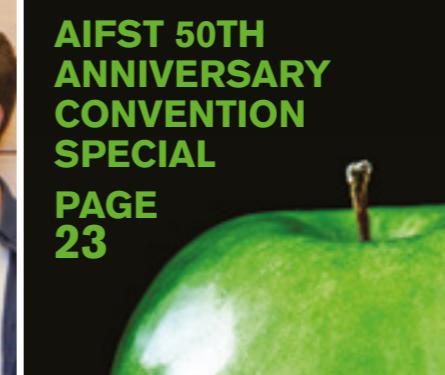
18



22



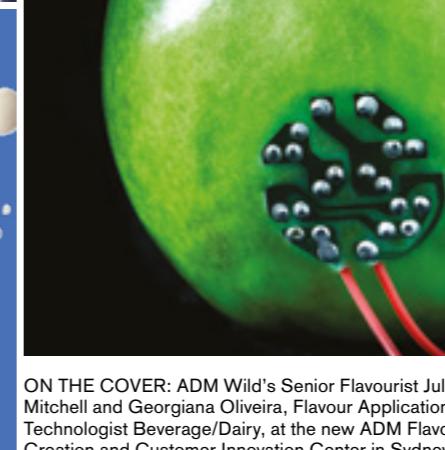
28



AIFST 50TH
ANNIVERSARY
CONVENTION
SPECIAL
PAGE
23



42



ON THE COVER: ADM Wild's Senior Flavourist Julie Mitchell and Georgiana Oliveira, Flavour Application Technologist Beverage/Dairy, at the new ADM Flavour Creation and Customer Innovation Center in Sydney.

Last call for 2017 membership renewal

THE AIFST WOULDN'T BE CELEBRATING 50 YEARS WITHOUT YOUR SUPPORT!

To keep your membership active, please contact the Membership Services Team who would be delighted to assist.

Email aifst@aifst.com.au or phone 02 9394 8650.

Want to get even more out of your membership during 2017? Contact us to discuss opportunities in 2017!



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PRINTING CORRECTION

Due to a printing error, Taura Natural Ingredients' advertisement on page 25 of the January/February issue of *food australia* magazine was incomplete. Taura's complete advertisement appears on page 5 in this issue.

FOOD FOR THOUGHT

As summer ends and the new year period is now a distant memory, 2017 has certainly started with a bang. I have had great opportunities to meet with members both old and new over the past few months and as our 50th Anniversary year gets into full swing I am excited about the year ahead, both for AIFST and the Australian food industry.

In February, more than 40 students attended the annual AIFST Summer School at Western Sydney University and were treated to a key line-up of food industry speakers, peer networking opportunities, opportunities to build communication and presentation skills, and industry tours. Read more about the Summer School on page 35.

Also in February, AIFST hosted a Meet and Greet Sundowner in WA and our QLD members and guests enjoyed a Nutrition for Optimal Health Session followed by a wine and cheese evening. Both events were well supported by members keen to hear the latest news from AIFST as well as a chance to network with industry peers.

Having attended the inaugural Future Food Day 2017 in February hosted by Brisbane Marketing, it is clear innovation continues to be a key focus for the industry, especially how we better fast-track NPD and truly disrupt the market. The annual AIFST Innovation Masterclass provides a great chance to hear from the tried and tested firsthand. Don't miss our Innovation Masterclass in Sydney on 22 March 2017, more information on page 10.

Registrations will soon open for the premier event on the 2017 food industry calendar! The historic AIFST 50th Anniversary Convention and 50th Anniversary Gala Dinner will be held in Sydney from 17–18 July 2017.

Focusing on the **Future of Food**, the Convention will bring together the latest and cutting-edge in science, technology and innovation, which will drive our food industry for the next 50 years. Co-located with **foodpro**, this event is a major highlight in 2017. See page 23 for more information or visit the AIFST website – <https://www.aifst.asn.au>.

With innovation front and centre on the agenda, it is great to see the recent investments in the Australian food industry including the opening of ADM's new Sydney-based facilities – see page 30. In addition, we explore in more detail the growing trend of seaweed as a plant-based food offering on page 36. Of course, flavour and simplicity are key drivers of innovation for all consumers – just ask Taura (page 5)!

I hope you enjoy this issue of *food australia* and I look forward to seeing you at our next event!

GEORGIE ALEY
AIFST CEO



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[visit www.auditedmedia.org.au](http://www.auditedmedia.org.au)

Plain



JUST ADD
TAURA



THE RISE OF VEGAN, GLUTEN-FREE AND KOMBUCHA

Fancy a vegan steak with a gluten-free beer? It appears you're not alone.

Over the past few years, the number of veggie and vegan foods available in Australia has soared.

According to Mintel Global New Products Database (GNPD), between 2014 and 2016 there was a 92 per cent increase in the number of food products launched in Australia carrying a vegan claim, and an eight per cent increase in the number of products launched carrying a vegetarian claim.

Australians have become more mindful in recent years of the amount and frequency of their meat-eating habits. Although we are still one of the largest meat-eating populations globally, health and environmental concerns together with cost have changed Australians' attitudes when it comes to meat consumption.

And it's not just the BBQ that's getting a health kick, bottle shops are also showcasing an increasing number of alcoholic drinks with healthy attributes. Beer consumption is continuing on a long-term downward trend in Australia as consumers drink less alcohol generally, challenging brands to look for new ways to boost market value.

While meat and regular alcoholic drinks may be off the menu, the hottest drink trend – kombucha – is well and truly on. Australia played host to the second highest number of kombucha drink launches globally in 2016, just behind the USA. Kombucha is proving to be far more than a fad and its popularity is gradually spreading amongst health-conscious consumers globally.

Let's crunch the numbers...



AIFST 50th Anniversary Awards

Applications are open for the 2017 AIFST Awards! Visit <https://www.aifst.asn.au> for all award guidelines and nomination forms.

NOMINATIONS CLOSE 13 APRIL 2017.

Awards will be presented at the AIFST 50th Anniversary Convention.

AIFST PRESIDENT'S AWARD

The AIFST President's Award recognises and acknowledges an individual or an organisation that has made an outstanding contribution to advancing the Institute.

AIFST JACK KEFFORD BEST PAPER AWARD

Recognises the contribution to food science and technology by members who publish research and technical papers in honour of Jack Kefford.

AIFST KEITH FARRER AWARD OF MERIT

Acknowledges members' achievements within the food industry in the areas of science, technology, research, industry and education, and their contributions to advancing the Institute in honour of Keith Farrer.

AIFST BRUCE CHANDLER BOOK PRIZE

Awarded to AIFST members who have published a book that has made a great contribution to the literature on food in honour of Bruce Chandler.

AIFST FOOD INNOVATION AWARD

Acknowledges a significant new development in a process, product, ingredient, equipment or packaging that has had successful commercial application in any section of the Australian food industry.

For the list of awards for young members (students and young professionals), see page 32.

For further information phone 02 9394 8650 or email aifst@aifst.com.au or visit the AIFST website at <https://www.aifst.asn.au>.

AIFST 50 YEARS YOUNG

1967-1987: GROWTH AND EVOLUTION OF AIFST

THE LAUNCH OF AIFST

AIFST was officially incorporated in 1967 following the move by members to establish an Australian-based Institute separate from the US-based Institute of Food Technologists (IFT). AIFST was structured at the time into two Branches of the Institute, a Northern and Southern. Soon after in 1968, Queensland established their own Branch, leaving NSW as the remainder of the Northern Branch, ultimately leading to the establishment of the NSW Branch. In 1969 a Branch in South Australia was launched however Western Australia did not follow suit until 1985. The Tasmanian Branch was constituted soon after in 1987 and the previous Southern Branch was now known as the Victorian Branch of AIFST.

Regular Branch activities were the lifeblood of the Institute, including the hosting of industry conventions, presentations from local and visiting speakers, factory tours, student meetings, and social gatherings with special interest groups developed such as Food Microbiology and Cook Chill. Branches also communicated directly with members of AIFST via newsletters providing members with industry information. *The Tuckerbox* was launched by the NSW Branch, with Victoria publishing *The Bulletin*. From 1985, when the Western Australian Branch was launched, the *Cornucopia* newsletter was launched, and from 1987, *Bass Traits* in Tasmania. The newsletters served as a key communication tool at a time prior to the internet and before the establishment of AIFST as a truly national organisation.

During the period 1967 to 1987, many groups stemming from specific interests within AIFST were established. The first special interest group was initiated in 1967 in NSW and called the Food and *The Food and Beverage Flavour Group* under the chairmanship of Jack Kefford (President 1971-1973).

THE IMPORTANCE OF CONVENTIONS

The importance of conventions was recognised at the first meeting of the Northern and Southern Branches in Wagga, 1951 prior to the incorporation of AIFST in 1967. AIFST was inaugurated at the first Convention held in Shepparton, Victoria in 1967, signalling the start of a new era of the Institute as its own entity within Australia.

AIFST has been involved in international affairs since its inception. In the late 1970s several food research projects were started between Australia and Southeast Asia to sponsor technical cooperation between the countries of the Association of South East Asian Nations (ASEAN). From the 1970s, AIFST also hosted joint conventions with NZIFST with great popularity and success. Building on the Institute's relationship with ASEAN, a joint Convention was held in Singapore in 1982 supported by the AIFST, the Malaysian Institute of Food Technology (MIFT) and the Singapore Institute of Food Science and Technology (SIFTST).

ZIPPER'S Push

WE TALK TO FORMER AIFST PRESIDENT TONY ZIPPER

What have been your main positions in the Australian food industry?

I am still working full time, mostly in product development and have a background in practical development for food and pharmaceutical products, nutrition and food labelling – flavours, colours and fragrances – working out what is legal and what is not. I've been Technical Secretary of the Food Technology Association of Australia for 27 years, and a member for 45 years, lectured at Monash University and assisted with food courses for TAFE.

What do you see as your main achievements?

I developed the flavour of SOLO! I have long been preparing submissions to Food Standards Australia New Zealand, industry associations and of course, President of the AIFST from 1987 to 1989.

Can you tell us anything about the history of AIFST, particularly between the periods of 1967-1987?

AIFST was originally very small and the original men involved such as Keith Farrer, Jack Kefford and Peter Seale were very influential. I joined AIFST as a Young Member in 1969 and wrote the by-laws for the Young Members award – now known as the AIFST Malcolm Bird Award. I was Chairman of the Southern Branch from 1982-1983. The branches didn't have a lot to do with each other except at conventions which were always fantastic. You go to meet so many people, the stands were terrific, speakers great and I made friends for life. There were plenty of social events and activities including the Wine and Cheese Evening and formal dinners.

What were the highlights of your time as AIFST President?

I actively achieved things, including creating a connection with Asia. 1982 was "Zipper's push" towards allowing industry people to understand the potential of Asia and encouraging businesses to expand – we hosted the 1982 Convention in Singapore, which became known as Food Conference 1982.

Angus Falia was the first recipient of the President's Award, which was one of my initiatives, in 1987 and my mentor Frank Townsend received the Award of Merit in 1988. Judy Fairbrother was the Secretary of the Institute and I could not have been President without her support.

How many Conventions have you attended?

In the 1970s I went to every convention, a few in the 1980s, but not really since due to work and other commitments.



More than 500 people attended the 20th AIFST anniversary Convention in 1987 in Albury. Mungabareena was the event of the year with overflowing rooms, we weren't expecting the numbers!

How has AIFST helped you in your career and personal development?

Being President and able to meet so many people in the industry – it really comes down to the people. I tried to contribute, I think I have, and I have got a lot out of it.

What do you believe the next 50 years will look like for the changing Australian food industry?

Nutrition has come into its own – nutrition labelling and microbiology has developed

so much. I feel that due to often short-term exaggerated claims, some enjoyment has been taken out of food. Moderation of serve sizes and the negativity associated with healthy and not healthy food needs to change. Variety, moderation and enjoyment should go hand in hand.

Tony Zipper was the AIFST President 1987-1989. He is a consultant at FoodLegal law firm (54 years) and Professional Food & Pharmaceutical Services (12 years). [@](#)

AIFST MEMBER EVENTS

Keep an eye on the AIFST event section of the website for upcoming member events.

AIFST TOOLBOX TALK

5 APRIL 2017

10AM-1PM, NEWINGTON, SYDNEY

Register online: <https://www.aifst.asn.au/>

With microbiological criteria a key part of product specification, this AIFST Toolbox Talk is imperative for those working in the regulatory, manufacturing, quality assurance and research fields.

The workshop will be reviewing the FSANZ *Compendium of Microbiological Criteria for Foods* released in October 2016. Attendees will come away from the day with a better understanding of the purpose and application for the Compendium, what the implications are for the food industry, and supplier requirements from a microbiological perspective.

PRESENTERS INCLUDE:

- ◆ Patricia Blenman, Senior Food Scientist (Microbiology), Food Standards Australia New Zealand (FSANZ)
- ◆ Craig Shadbolt, Manager – Food Incident Response & Complaints, NSW Food Authority [@](#)

AIFST MEET AND GREET SUNDOWNER

More than 40 people attended the AIFST WA Sundowner in February, which was a great opportunity for food industry professionals to come together to catch up with colleagues and friends and meet with AIFST Chairman Peter Schutz, CEO Georgie Aley, and members of our WA Committee to discuss updates from the Institute and areas of interest for members in WA. [@](#)



AIFST CEO Georgie Aley and WA Community of Interest Committee Member and local business owner Lyn Bentley; AIFST Chair Peter Schutz and WA Community of Interest Committee Member Adel Yousif; AIFST Chair Peter Schutz with AIFST member Catherine Lech and guest Bahvna Chuttur.

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AIFST NUTRITION FOR OPTIMAL HEALTH SESSION

Professor Mike Gidley and Dr Tim O'Hare led AIFST QLD members through the changing landscape of nutritional guidelines from around the world and outlined the development of tailored healthy food products and how they can be applied to deliver measurable health benefits to certain lifestyle diseases.

The AIFST hosted the evening with support from the Queensland Alliance for Agriculture and Food Innovation (QAAFI), a collaboration between the Queensland government and the University of Queensland that focuses on the challenges facing the Australian agriculture and food industry.

Young Professionals and QLD Committee Member Oliver Meldrum who chaired the evening said: "Food is more than simply the number of calories in a meal or what nutrients one particular fruit may possess. We wanted to bring together AIFST members and world leaders in nutrition research to discuss how the health of individuals and indeed populations can be supported through making informed decisions about the power of a well-balanced diet for a long a healthy life." [①](#)



AIFST member and presenter Prof. Mike Gidley from University of Queensland; AIFST Young Professionals and QLD Communities of Interest Committee Member Oliver Meldrum and presenter Dr Tim O'Hare from University of Queensland.

FOOD ALLERGEN MANAGEMENT SYMPOSIUM 2017 & SECOND ASIA PACIFIC FOOD ALLERGEN MANAGEMENT WORKSHOP

21 - 24 MAY 2017, SYDNEY AUSTRALIA
AUSTRALIAN NATIONAL MARITIME MUSEUM, DARLING HARBOUR

Global harmonisation of food allergy management – collaboration, innovation, science and communication.

Registrations and abstract submissions are now open for Food Allergen Management Symposium (FAMS2017). To register for FAMS2017, submit an abstract, find out more about the program and speakers, or learn about sponsor and exhibition opportunities – visit [FAMS2017.com.au](#) now!

FAMS2017 provides a unique opportunity for food industry, researchers, dieticians, clinicians and consumer groups to come together to address the needs of the food allergic consumer. In bringing together a diverse mix of key stakeholders, the FAMS2017 program will allow information sharing, new learnings and stimulate collaborative and innovative approaches to the future harmonisation of food allergen management.

Who should attend?

- Food companies
- Analytical services
- Clinicians and dieticians
- Food Scientists and technologists
- Regulatory agencies

ABSTRACT SUBMISSION ENDS - 14th April 2017 (11:59pm AEST)
REGISTER NOW - Early bird registration closes 31st March 2017 (11:59pm AEST)

INNOVATION MASTERCLASS 2017 LAST CHANCE TO BOOK!!



9AM-6PM WEDNESDAY, 22 MARCH 2017

Level 4, Christie Conference Centre,
100 Walker Street, North Sydney

REGISTER ONLINE NOW AT: [HTTPS://WWW.AIFST.ASN.AU](https://www.aifst.asn.au)

"A sustaining innovation makes better products that you can sell for better profits to your best customers." Clayton Christensen, author of *The Innovator's Dilemma*.

Love it or loathe it, Uber has completely transformed the way millions of people travel from Point A to Point B. Is your business or work practice set up to be responsive and able to facilitate the modern consumer's expectation for speed and efficiency? Do you feel equipped to apply innovative approaches to existing business challenges?

Take part in the 2017 Innovation Masterclass to enhance or further develop your skills in these critical areas. Working directly with food, agribusiness and manufacturing industry leaders, you will have opportunities to engage directly as well as network with other sector colleagues.

For corporate bookings, contact aifst@aifst.com.au to secure a group discount.

SPEAKER HIGHLIGHTS

STEVE CHAPMAN – CEO & CO-FOUNDER, SHINE+ DRINK

Steve Chapman started his career at PwC but realised he was far more entrepreneur than accountant and left to launch his first start-up, a social-commerce platform that was featured as one of Apple's top lifestyle apps. He was featured in *The Australian* and *BRW* and recognised as one of Australia's Top 25 Entrepreneurs under 25 by StartupSmart in 2013. Steve launched shine* in 2016 as Australia's first focus drink. Steve will share his experiences during the Masterclass on how to market products in the current environment.

FOOD FRAUD: CHALLENGES AND OPPORTUNITIES

Karen Constable – Principal, Food Fraud Advisors

Karen Constable has an honours degree in Food Science from UNSW and over 20 years' experience in food manufacturing, quality assurance, food product development and food safety. The AIFST is also proud to recognise Karen's expertise through her professional membership of the Institute. Karen will discuss consultancy services and downloadable tools that can help the food industry understand and combat fraudulent adulteration, substitution and misrepresentation of food, beverages, nutritional supplements, sports supplements, ingredients and animal feed.

NEXT GEN TRACEABILITY: OZIRIS

Al Jawhari – Chief Technology Officer with Beston Global Food Company.

Al Jawhari is a food and beverage industry expert. He holds a Bachelor Degree with Honours in Aeronautical/Mechanical Engineering and has over 20 years' experience in creating customer-focused and industry-specific commercial, off-the-shelf software products for food enterprises. Learn from a recognised industry expert how to better approach quality, compliance and traceability across your supplier operations.

PROTECTING YOUR BRAND DURING A CRISIS: MAINTAINING BRAND CREDIBILITY

Professor Joffre Swait – University of South Australia

Acknowledged as a global expert in choice set formation and a leading scholar in choice modelling research, Professor Swait received his PhD in 1984 from the Massachusetts Institute of Technology, specialising in modelling discrete choice behaviour, particularly with respect to choice set formation. He is also a respected consultant and director at the Institute for Choice. Consider the impact a product recall would have on your company and take the opportunity to reflect on what corporate response could be mapped out in case of crisis. [②](#)

SPONSORS

AIFST would like to acknowledge our 2017 Innovation Masterclass Partners – Clarivate Analytics and XInova.



AIFST acknowledges the support of the Australian Food and Grocery Council for their support of our skill and capability building program.





industry bites

NEW PEST MANAGEMENT SERVICES STANDARD FOR FOOD INDUSTRY

HACCP Australia has released a new "world's best practice standard" for pest management services in the food industry. The new standard meets international best practice and will contribute to reducing food safety incidents. It can be used to ensure a consistently high standard of service, performance and outcomes in pest control at food handling facilities. The standard was developed by expert food technologists at HACCP Australia, together with a review committee. It is available free-of-charge for food businesses and contractors on the HACCP website.

CSIRO GRAPHENE BREAKTHROUGH WITH SOYBEANS

The world's strongest material, graphene, is a thin carbon material with high conductivity so it can be used in small electronics, computers, solar panels and other devices. Traditionally grown in a highly-controlled environment with explosive compressed grasses, it requires long hours of operation at high temperatures and extensive vacuum processing.

CSIRO scientists have now developed "GraphAir" technology, which eliminates the need for a highly controlled environment. GraphAir transforms soybean oil into graphene films in a single step. With heat, soybean oil breaks into a range of carbon-building units that are essential for creating graphene. The study also included testing other types of oil, including those left from cooking and barbecues.

CHANGE TO COUNTRY OF ORIGIN LABELLING (CoOL)

The Australian Government amended the new CoOL, changing the label requirements for priority foods that are packed in Australia. If these foods are grown, produced or made in a single overseas country, this must now be stated on their label. Previously this was only required if the product contained no Australian ingredients. These goods are also now exempt from "varying Australian content" labelling, which requires batch-by-batch information of the Australian content of certain products to be provided to consumers upon request.

SA FOUNDATION GETS \$1.25M GRANT TO EXPAND NATIVE FOODS INDUSTRY

Not-for-profit Orana Foundation will receive \$1.25 million from the SA government to invest in growth and development of the cultivation of native foods. The funding will contribute to an online

database, the establishment of an R&D facility called Australian Food Culture Enterprise and the creation of an innovation and enterprise hub.

Founder and board director Jock Zonfrillo has been funding Orana and working with around 30 Indigenous communities to promote the use and knowledge of native foods. With the extra funding, the depth and number of communities reached will increase. The flagship Restaurant Orana is recognised for its use of diverse native ingredients and has been a positive step to encourage people to take these foods seriously.

BAKER MCKENZIE LAUNCHES FOOD LAW GUIDE 2017 EDITION

Tariffs, quotas and other traditional trade barriers are gradually declining with the growth in free trade agreements. As the regional market gains strength in this sector, the *Asia Pacific Food Law Guide* offers key insights on food laws in 11 jurisdictions across Asia Pacific.

The guide is an easy-to-search online summary of food laws, which aims to assist food businesses that wish to enter and compete in the ever-evolving Asia Pacific market. It covers the following topics:

- + Local language and mandatory labelling requirements.
- + Country of origin labelling.
- + Mandatory warnings.
- + Product registration.
- + Import permit and clearance requirements.
- + Changes to local laws and regulations.

Compare and contrast the food laws across Asia Pacific in an interactive platform that lets you export and download the content in readable format. To access a copy of the guide visit <http://apacfoodlawguide.bakermckenzie.com/>.

NEW AUSTRALIAN ORGANIC RESEARCH CENTRE TO BE ESTABLISHED

Southern Cross University and the NSW Department of Primary industries (DPI) are opening an Organics Research Centre in the Northern Rivers area of NSW. Two million dollars will be contributed by DPI and the University to build a world-leading facility with broad interests. The Centre will build on Australia's reputation for food safety, security and export to key markets worldwide.

2016/17 FOOD MANUFACTURING INDUSTRY GUIDE TO SAFETY AVAILABLE

Food Standards Australia New Zealand (FSANZ) and Australian Food Microbiology and Pro-Visual Publishing have published the *Manufacturing Industry Guide to Safety*. It includes current health and safety topics as well as augmented reality capabilities: FSANZ product recall procedures; machine access, cleaning and deactivation safety; sanitisation and hygiene; and dust in the food environment.

The Guide is free to everyone within the food industry. Call 02 8272 2611 for your copy.

NESTLÉ TO CUT SUGAR BUT NOT TASTE IN NEW SCIENCE BREAKTHROUGH

Responding to consumers' health demands, Nestlé has found a way to significantly cut the sugar content in its chocolates without altering the taste. Nestlé food scientists have structured sugar differently so that sweetness is maximised using only "natural ingredients". Total sugar quantities will be reduced by up to 40 per cent, with products beginning to be developed from 2018.

CSIRO TO SPEND \$200M ON AUSSIE INNOVATION

The CSIRO Innovation Fund – a \$200 million fund to commercialise early stage innovations from CSIRO, universities and other publicly-funded research bodies – will support co-investment in new spin-out and start-up companies, and SMEs engaged in the translation of research generated in the publicly-funded research sector. Established as part of the Australian government's National Innovation and Science Agenda, the fund will comprise a commitment of \$70 million in government funding, \$30 million revenue from CSIRO's WLAN (or WiFi as it is commonly known) program and additional private sector investment, with a target total value of \$200 million.

NSW FOOD AUTHORITY FOOD LABELLING HUB

The NSW Food Authority is helping consumers and industry navigate the often overwhelming world of food labels with an online, interactive food labelling hub. This resource will assist consumers in making informed choices about food and find information essential to food labelling compliance quickly and easily. The labelling hub aims to be a one-stop-shop resource ➤



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for both consumers and industry and is designed to be mobile and tablet friendly. One feature of the hub is an interactive 3D virtual cereal box that visually guides people through the type of information you might expect to see on food packaging.

NON-DAIRY IS NOT "MILK" SAYS DAIRY CONNECT

Australian dairy industry advocacy group Dairy Connect has called for a truth in labelling "crackdown" on processed plant liquids sold to retail consumers as milks. Non-dairy milks marketed nationally include soy, cashew, almond, oat, hemp, rice and coconut extracts. Dairy Connect CEO Shaughn Morgan says use of the word "milk" could confuse consumers — and non-dairy products lack the nutritional and health benefits delivered by fresh milk from everyday dairy cows. A similar request is currently before the US Food and Drug Administration, which has been asked to enforce its own definition of "milk".

THROW A SHRIMP ON THE BARBIE FOR SUSTAINABLE SEAFOOD DAY 2017

Four out of five Australian households (85 per cent) purchase seafood on a regular basis, and seafood supplies one billion people with their main source of protein. For generations seafood has been of cultural significance throughout the world from Scandinavia to Asia to Europe and Australia. Now the benefits of eating seafood for health and environmental sustainability are additional purchase motivators. Sustainable Seafood Day 2017, an annual event hosted by the Marine Stewardship Council (MSC) to celebrate certified fisheries, brands, retailers, chefs, celebrities, restaurants and other organisations that support MSC's mission, takes place on Friday, 31 March. ☺

EXECUTIVES ON THE MOVE

The Hon. Arthur Sinodinos, AO was appointed the new Minister for Innovation as Greg Hunt takes on the health portfolio.

Simplot CEO Terry O'Brien will take over as chairman of Clean Seas Tuna in August 2017.

Murray Goulburn Co-operative Co Limited (MG) has announced the appointment of Ari Mervis as its new CEO and Managing Director.

Australian vegetable industry body AUSVEG has appointed James Whiteside as its new CEO.

KPMG Australia has appointed Robert Poole as a Partner focused on the agribusiness sector within its fast-growing management consulting business.

Givaudan Australia has appointed a new Commercial Director, Gary Crawford.

Bellamy has appointed Andrew Cohen as Acting CEO.

Discovery Ag has appointed Alicia Garden as its first CEO.

Australian Meat Processor Corporation (AMPC) has appointed Peter Rizzo as its new CEO.



RIP PETER FREDERICK HOWGATE, OBE

Peter was a seafood safety specialist and expert in sensory assessment of fishery products, quality and quality assurance of fishery products, post-harvest handling and processing of fish.

Peter played a crucial role in the development of the Australian seafood industry, leading research and development projects in fish processing technology and ultimately specialising in quality assurance of fish and fishery products.

Peter's research activities included: development of methods for measurement of quality by sensory, chemical and physical methods; measurement of storage lives of chilled, frozen, and pre-packed products; study of sensory properties of fish and fishery products and the effects of storage and processing on sensory properties; and investigation of tainting of fish by pollutants in the aquatic environment. He also advised national and international bodies on regulations concerning the quality assurance of fishery products, official inspection of fish products, quality objectives, inspecting and testing consignments of fish, inspecting factories, and training personnel in assessment of quality of fish.

He was a member of the GESAMP Working Group on Evaluation of the Hazards of Substances Carried by Ships from 1986 until 1996, and a member of the Working Group on the Review of the Impact of Oil in the Marine Environment. Peter's role was to advise on the effects of pollutants, including petroleum, on commercial fisheries, particularly impacts on the eating quality of fish and shellfish.

Peter was honoured with the award of an Officer of the Order of the British Empire (OBE) in the New Year's Honours List in 1990. In later years, Peter consulted for UN agencies in Africa, South America and the Far East. Most recently Peter created FishTechDB, an online bibliographical database of topics related to fish technology.

The International Association of Fish Inspectors has created the Peter Howgate Award. Visit: www.peterhowgateaward.com. Entries close 31 March 2017.

Thank you to Roy Palmer for sharing this obituary. ☺



RIP SALMONELLA SUE

Sue was one of several formidable and influential Australian women microbiologists of her generation who played leading roles in transforming the profession of food microbiology in this country.

Friends and colleagues of Sue Dixon were saddened to hear of her passing in August 2016 after a short illness.

Sue was born on 10 January 1928 in Malvern, Adelaide. After graduating from Unley High School, she commenced her career in microbiology as a laboratory assistant cleaning test tubes at the Institute of Medical and Veterinary Science (IMVS). Sue was awarded a cadetship by the IMVS to study at Adelaide University where she graduated with a BSc in 1949. From 1949 to 1952 Sue worked as a bacteriologist at the IMVS and then resigned to start a family. After rejoining the IMVS in 1960, Sue assumed responsibility for the National Salmonella Reference Centre established by her mentor and good friend, the eminent Dr Nancy Atkinson. From 1967 until her retirement in 1983, Sue was the head of the Salmonella Reference Laboratory (SRL) and Food Hygiene Laboratory at the IMVS.

Sue's contemporaries included Margaret Dick (Kraft Foods, Melbourne), Jenny Taplin (Microbiological Diagnostic Unit [MDU] Melbourne University), Dr Barbara Keogh (CSIRO Dairy Research Laboratories, Melbourne), Professor Nancy Millis (Melbourne University) and Dr Phyllis Rountree (Royal Prince Alfred Hospital, Sydney).

In 1977, Sue and her colleague Jenny Taplin at MDU identified infant formula as the likely cause of a widespread national outbreak of infant gastroenteritis from *Salmonella bredeney*. It was through Sue's forensic and innovative approach to microbiological analysis of foods that the source was ultimately confirmed and traced to a contaminated milk powder ingredient – something no other Australian food testing laboratory was able to achieve.

Her work in this area greatly influenced future approaches to investigations of outbreaks of food-borne disease and the methods adopted by regulatory authorities and the Australian dairy industry to prevent *Salmonella* contamination of dried milk products. This development was especially important in meeting food safety requirements for valuable export markets for Australian dried milk products. Due to the national media attention, Sue became widely reported as "Salmonella Sue"! The discovery in 1977 of *S. bredeney* in infant formula and the detection around the same time of *S. adelaide* in calcium



caseinate in a range of dried dairy based food products such as invalid diet supplements and slimming diets, highlighted the importance of a national *Salmonella* typing system. This led to a collaboration of the SRL, MDU, the Commonwealth Department of Health and the Australian Society for Microbiology (ASM) to establish a National *Salmonella* Surveillance Scheme (NSSS). Sue played a key role in the development of the NSSS, which has been a major tool in the epidemiological investigations of salmonellosis and early warning to health authorities of food-borne disease from *Salmonella*. ►

Industry save the **dates**

Sue was an active member of the ASM where she served on the Membership Committee from 1979 to 1981 and the working party to investigate the establishment of a Fellowship category (FASM) from 1982 to 1983. She was also President of the South Australian Branch of ASM from 1979 to 1981. In 1983 Sue was elected to Honorary Life Membership of ASM.

Sue was also active in the AIFST. In 1974 she participated in the inaugural AIFST/CSIRO/UNSW Specialist Course for the Food Industry: Food-borne Microorganisms of Public Health Significance, where with good humour and diplomacy she taught the teachers some basics in food microbiological techniques. For subsequent courses (1976 and 1979) Sue co-authored with George Davey chapters in Food-borne Microorganisms of Public Health Significance (the "Green Book") on serological techniques for the identification of *Salmonella* species.

Prior to the establishment of Food Standards Australia New Zealand (FSANZ) and its predecessor organisation the National Food Authority (NFA), microbiological specifications for foods were developed by the National Health and Medical Research

Council (NH&MRC), Food Microbiology Sub-committee. Sue served on this committee from around 1979 to 1983.

Sue played a significant role in helping both Australian government and industry food microbiological testing laboratories improve testing methodologies and performance. She was a member of Standards Australia Committee FT/4 Methods for the Microbiological Analysis of Foods from around 1976 to 1983, and a member of the National Association of Testing Authorities (NATA) Biological Testing Advisory Committee from 1982 to 1987.

As well as the important part Sue played in developing national microbiological food standards, improving laboratory testing methodologies and procedures, assisting in the epidemiological investigations of food-borne disease and surveillance of *Salmonella*, Sue was a role model and mentor to many young aspiring food microbiologists. She was always willing to offer her guidance and wisdom with humour and empathy. Sue is sadly missed.

Thank you to George Davey for sharing this obituary. ☺



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 › Preservatives
 › Mycotoxins
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 › DAFF Analysis
 › Sugar Profiles
 › Meat Speciation
 › Meat Content



NATIONAL

- 17 MARCH 2017**
FIAL – IP and Brand Protection, Ballina
- 21 MARCH 2017**
FIAL – Market diversification, Dandenong
- 21 MARCH 2017**
FIAL – E-commerce Readiness, Mornington Peninsula
- 28 MARCH 2017**
Quality Associates – TACCP & VACCP Systems, Perth
- 29 MARCH 2017**
FIAL – Are you Ready for Export? Launceston
- 29 MARCH 2017**
CSIRO – Divide and Concentrate – Separation and concentration processing for functional food ingredients and products, Werribee VIC
- 30 MARCH 2017**
Quality Associates – TACCP & VACCP Systems, Melbourne
- 31 MARCH 2017**
Quality Associates – Refresher HACCP, Melbourne
- 3 APRIL 2017**
AFGC – Product Information Form Review Workshop Auckland
- 3 APRIL 2017**
Future in Foodservice 2017, Sydney
- 4 APRIL 2017**
Quality Associates – TACCP & VACCP Systems, Brisbane
- 5 APRIL 2017**
Quality Associates – Refresher HACCP, Brisbane

INTERNATIONAL

- 3-4 APRIL 2017**
The 4th Microbiome R&D and Business Collaboration Forum: Amsterdam, The Netherlands
- 10-11 APRIL 2017**
The 4th Plant Genomics & Gene Editing Congress: Asia Hong Kong
- 19-21 APRIL 2017**
Food & Beverage Innovation Forum 2017 Shanghai
- 10-11 MAY 2017**
Food Integrity 2017 Parma, Italy
- 22-24 MAY 2017**
World Food & Nutrition Congress Las Vegas, Nevada, USA
- 22-24 MAY 2017**
7th Annual Food Sure Safety & Quality Summit Amsterdam, Netherlands
- 5-7 JUNE**
6th International Conference on Food Safety & Regulatory Measures Milan, Italy
- 25-28 JUNE 2017**
Institute of Food Technologists Annual Meeting Las Vegas, Nevada
- 4-6 JULY 2017**
NZIFST Annual Conference Nelson, NZ

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“Post-truth” Postulates and their Application to Food Regulatory Policy

THERE ARE UNCOMFORTABLE PARALLELS TO THE NEW POLITICAL PARADIGM AS ALTERNATIVE FACTS AND OPINION GAIN TRACTION OVER EVIDENCE-BASED POLICY.

WORDS BY GEOFFREY ANNISON PhD
AUSTRALIAN FOOD AND GROCERY COUNCIL

“Post-truth”: Beyond or superseding the importance of truth; usually in a pejorative sense, uncaring of factual accuracy.

As 2016 drew to a close, many commented on the paradigm shift away from the predictable to the unpredictable in voting outcomes in the UK, and USA and even in Australia. This “post-truth” movement of voters was characterised by rejection of leaders proposing sensible, but staid, policy options in favour of those proposing untried and more radical options.

As these events played out on the world stage, similar debates were being held closer to home, and specifically on the campus of the University of Sydney. Co-hosted by Sydney Law School and the Charles Perkins Centre in November 2016, a Food Governance conference with a focus on food-specific law and regulation “considered how other legislative and policy regimes impede or facilitate access to a nutritious, equitable, and sustainable food supply, including economic, trade, and intellectual property law and policy”.

To my dismay, but not to my surprise, an overwhelming theme running both through the formal proceedings and discussion in the breaks, was the shortcomings of the food supply and the industries responsible for it. Now neither I, nor my employer the Australian Food and Grocery Council (AFGC), are naïve to the many challenges facing the food industry including the diet and health nexus, sustainability of production systems, and the global challenge of feeding the burgeoning world population.

Just occasionally, however, it would be pleasant to receive some recognition that, at least most Australians, have reliable access to safe, affordable foods from which healthy diets can be constructed. I did smile at one of the conference conveners who in wrapping up a session relayed an interesting juxtaposition of concepts declaring the “food system to be broken” and then almost immediately told delegates that “lunch will be served on the fourth floor”.

The 2016 “post-truth” postulates applied to food regulatory policy were not, unfortunately, confined only to the ivory towers of academia. No sooner had conference delegates dispersed, the ANZ Ministerial Forum on Food Regulation (FoFR) released the communiqué from their 25 November 2016 meeting which informed us that FoFR has determined that work on Recommendation 12 of the Food Labelling (Blewett) Review should continue.

This Recommendation relates to more extensive labelling of added fats and sugars than is required by the current provisions of the Food Standards Code (FSC). FoFR came to this decision despite a detailed technical evaluation of the recommendation by Food Standards Australia New Zealand (FSANZ), which has taken the best part of five years already and concluded unequivocally that there was no justification for the extra labelling based on public health and safety, or nutrition reasons. Not only that, the additional costs on industry to change labels (again) and change ingredient sourcing practices was noted by FSANZ. In short – no real benefit, only real costs!

“...more worrying is their inability to clearly distinguish between ingredient labelling, nutrition labelling, and environmental issues labelling.”

So how did FoFR come to this decision? It’s hard to believe that they acted independently of their bureaucratic advisors who should have been supporting the FSANZ line. Rather it is more likely that the briefings they received strayed from good regulatory policy and the evidence base. The “anti-sugar” mantra has clearly gained traction among the health policy bureaucrats, but perhaps more worrying is their inability to clearly distinguish between ingredient labelling, nutrition labelling, and environmental issues labelling. When it comes to palm oil labelling (the issue driving the added fats labelling), the activists had deliberately conflated the issues to gain traction (out of a concern for rainforest habitat destruction), but the jurisdictions’ bureaucrats should be expert enough, and committed enough to sensible policy, to keep them separate and advise their ministers accordingly. But it seems not.

Interestingly, while FoFR, bureaucrats and regulators have been dreaming up ways to further push the disconnect between regulatory policy and science-based regulation, Standard 1.2.7 Nutrition, Health and Related Claims has been languishing. It is now four years since Gazettal, and one year since the end of the transition period. Far from ushering in a new period of innovation in the food industry (as promised by FSANZ), and a host on new better products able to better promote and protect good health, the self-substantiation of claims system is now clearly broken. No jurisdiction, to the AFGC’s knowledge, has checked any of the claims on the FSANZ notified food:health relationships register for compliance. And FSANZ’s assessment of the basket of so-called EU claims has floundered, apparently as FSANZ’s approach to substantiation is “legislated” to be different from the EU approach.

As if FSANZ’s woeful record in approving health claims was not enough to demonstrate that Standard 1.2.7 is in disrepair, you can imagine the AFGC’s surprise when we were informed by letter in late 2016 that FSANZ is unable to assess two-step health claims.

To clarify, because admittedly we were bemused in trying to understand this, FSANZ apparently can assess a food:health relationship; and they can assess a food:biomarker relationship, but they cannot assess a biomarker:health relationship under Standard 1.2.7. For example, consider the following claims:

- 1) “Higher phytosterols intake is associated with lower serum LDL cholesterol levels” – yes, FSANZ can assess this claim.
- 2) “Higher phytosterols intake is associated with lower heart disease risk” – yes, FSANZ can assess this claim.
- 3) “Lower serum LDL cholesterol is associated with lower heart disease risk” – no, FSANZ cannot assess this claim.

Interestingly, although evidence is strong for 1) and 3) there is, as yet, no substantial body of evidence from studies linking phytosterol intake directly with lower heart disease risk – ie claim 2). In Europe phytosterol containing foods therefore make a two-step claim – ie claims 1) and 3) combined.

Even more interesting is that FSANZ has separately concluded the evidence supporting dietary phytosterols being effective in reducing serum LDL cholesterol is strong, and they recognise the link with heart disease risk. Indeed, FSANZ itself has recently conducted a systematic review that confirms their view regarding the efficacy of phytosterols in reducing serum LDL cholesterol levels. Within that review FSANZ states: “Reductions in total and low density lipoprotein (LDL) cholesterol are considered to be a beneficial health effect due to elevated levels of these blood lipids being risk factors for coronary heart disease”.

So, although FSANZ can recognise, and presumably assess biomarker:disease relationships, they cannot formally do so as part of assessments for changing the FSC under Standard 1.2.7.

To get back to the “post-truth” issue and turning again to the FoFR communiqué, a sharp eye will have spotted that the ministers have asked FSANZ to prepare a technical evaluation of “synthetic” foods. We wish the FSANZ good luck with that one! The concept, and any sensible technically-based boundary around what is, and is not within scope, risks falling victim to misinformation and half-truths as many to the debate seek to push anything not “natural” being artificial, processed and synthetic. And wait for the anti-food industry doomsayers to claim that health and safety issues abound in all these industry practices.

Of course, the well-established principle of “nature identical” seems to have been lost in the most recent debates. But it will come to the fore again when just how many food components are “synthetic” comes to light in the FSANZ technical evaluation.

The AFGC will continue to support the primacy of evidence over the “post-truth” doctrines that are seeping insidiously into the food regulatory policy space. Hopefully the majority of readers of this magazine will do so as well. To not do so clears the path for opinion to surpass fact as the major driver of public policy and regulation. A most frightening future for the “post-truth” world. ☺

References for this article can be found on the AIFST website: <https://www.aifst.asn.au>.

CHANGING THE CODE

PROPOSAL AND APPLICATION HIGHLIGHTS IN 2016–17.

WORDS BY FOOD STANDARDS AUSTRALIA NEW ZEALAND (FSANZ)

After a busy year in 2016, FSANZ closed the first quarter of 2017 with important progress made on a number of proposals and applications to amend the Australia New Zealand Food Standards Code.

In October, several draft variations to the Code were approved by the FSANZ Board, including one to extend the use of propionates as anti-microbial preservatives in processed meat products. These preservatives are expected to limit microbial growth, in particular Listeria monocytogenes in processed meat, poultry and game products. FSANZ undertook a risk assessment, which found no health or safety concerns regarding the extension of the use of propionates as anti-microbial preservatives in processed meat products. Information about A1113 Extension of the use of Propionates in Processed Meat is available on our website.

Also approved in October was an application to irradiate blueberries and raspberries for phytosanitary purposes. Permitting the irradiation of these fruits will allow increased domestic and international trade as there are rigorous requirements in place for an appropriate and efficacious treatment for fruit fly for quarantine purposes. The application sought the same dose range (150 Gy to 1 kGy) and conditions (including mandatory labelling) as those already prescribed in the Code for tropical fruits, persimmons, tomatoes and capsicums and a range of other fruits and vegetables. FSANZ determined the consumption of irradiated fruits and vegetables as safe and nutritionally adequate for Australian and New Zealand consumers. You can read more about the application A1115 – Irradiation of Blueberries & Raspberries on our website.

Finally for October, the Board re-affirmed its decision on a draft variation to the application A1090 – Voluntary Addition of Vitamin D to Breakfast Cereal, following a review requested by the Australia and New Zealand Ministerial Forum on Food Regulation (Forum). After a consultation and review process, FSANZ was satisfied that the approved draft variation would deliver a benefit in terms of a public health outcome and for industry.

In December, several more applications received Board endorsement, including one seeking to extend the permission in the Code for a food additive, L-cysteine monohydrochloride, to treat peeled and/or cut avocados and bananas. L-Cysteine, an amino acid, occurs widely in dietary proteins and is useful for controlling enzymatic browning and so extending shelf life. It was already a permitted food additive for root and tuber vegetables (peeled, cut or both peeled and cut), but previously not for fruits.

FSANZ's risk assessment concluded that there would be no public health or safety concerns associated with the proposed extension, and created a new sub subcategory of 4.1.3.3 (Avocados and bananas) to add to the table with a permission for L-cysteine monohydrochloride to be used as a food additive in this category. You can read more about A1117 – Extension of Use of L-cysteine as a Food Additive on our website.

Finally, an application for the sale and use of food derived from a genetically modified (GM) potato line, which has reduced acrylamide potential and reduced browning (blackspot bruising), received Board approval. The application sought permission for food derived from potato line E12, the tubers of which are genetically

modified to show less browning when they are bruised, cut or damaged, and to produce less acrylamide when they are cooked at high temperatures. FSANZ identified no potential public health and safety concerns in relation to food derived from line E12, with it considered to be as safe for human consumption as food derived from conventional potato cultivars. You can find more information about A1128 – Food derived from reduced Acrylamide Potential & Browning Potato Line E12 on our website.

As we move into the second quarter of the year, more proposals and applications await consideration. These include an application to expand the definition of steviol glycosides for use as an intense sweetener, an application to permit the addition of an alternative DHA-rich algal oil for infant formula products, and an application to permit the use of a new enzyme, oryzin as a processing aid.

FSANZ also recently released the *Compendium of Microbiological Criteria for Food* – a compilation of process hygiene criteria for some food commodities and microbiological guideline criteria used for ready-to-eat foods.

Microbiological criteria support decision making about a food or process based on microbiological testing. Criteria that are applied to determine the safety of food safety criteria are included in the Food Standards Code.

The Compendium replaces the *Guidelines for the Microbiological Examination of Ready-to-Eat Foods and User Guide to Standard 1.6.1—Microbiological Limits for Food*. Read the Compendium at [www.foodstandards.gov.au/compendium.](http://www.foodstandards.gov.au/compendium/)

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KEEPING OUR FINGER ON THE PULSE

THE PHENOMENAL SUCCESS OF THE INTERNATIONAL YEAR OF PULSES.

WORDS BY ALEXANDRA LOCKE

GRAINS & LEGUMES NUTRITION COUNCIL

A recent analysis of research has revealed

that two out of three Australians simply don't think to include pulses and legumes in their diet. With 2016 being deemed the peak of the fashionable paddock-to-plate movement – a trend which prioritises local ingredients and whole foods – it seemed only fitting that the United Nations named 2016 as the International Year of Pulses (IYP): a year dedicated to raising public awareness of the humble pulse.

One key objective of IYP was to heighten public awareness of the nutritional benefits of pulses as part of a sustainable agricultural system, moving towards global food security and nutrition. This message has been supported by both the Grains & Legumes Nutrition Council (GLNC) and Pulse Australia, who played key roles in the promotion of pulses to both industry and consumer audiences. Because of these communications, pulses are now having their moment in the limelight with many celebrity chefs and foodie influencers adopting their use as a staple ingredient in everyday and high-end cuisine.

Moving into 2017, the true impact of IYP is just being revealed – IYP's influence has been felt on a global scale. It's clear that the hard work that went into planning this momentous year has been worthwhile, raising awareness of pulses and their benefits for both health and the environment. 2016 saw a 51 per cent increase in media mentions of pulses in Australia in comparison to 2015, which has helped communicate these messages to a global audience of over four billion – a significant achievement given the initial aim was to reach 30-40 million people.

On the back of a record-breaking crop in 2016, raised awareness of pulses presents opportunities to add wider value to Australian pulse crops. Processors and retailers have seen the benefit too, specifically via an increase in canned pulse sales with total pulses seeing growth in both value and volume over the last 12 months in Australia,

up 0.3 per cent to a total value of \$58.3m and 7.9 per cent to a total of 20 million kg.

A key problem those involved in the pulse industry consistently face – whether grower, manufacturer or retailer – and which IYP succeeded in addressing, is public perception that pulses can be difficult to prepare and are limited in both flavour and usability. Pulse advocate and celebrity chef, Simon Bryant, used IYP's momentum to help change this consumer perception with key activities throughout the year including recipe development and demonstrations to help communicate the versatility of pulses.

Alongside growing consumer awareness, manufacturers are now taking advantage of this momentum by looking for increasingly innovative ways to include legumes into their products. Think mung bean spreads as a low allergen alternative to nut butters, and a range of roasted chickpeas and fava beans as an alternative to traditional snack products. Many other producers have also incorporated pulses into snack bars, crackers and energy bites. Clearly opportunities abound for those willing to think outside the box.

While IYP is now officially over, foundations have been set in place to ensure this momentum is continued. Global Pulse Day, an annual celebration on 18 January 2018, will help maintain public awareness, alongside the continued efforts of all those invested in IYP. The results of 2016 have demonstrated the success that an initiative such as this can have on improving health, sustainability and food diversity on a global scale.

The future looks bright to ensure that pulses become an integral and sustainable part of our food chain. ☺

References for this article can be found on the AIFST website:
<https://www.aifst.asn.au>.

THE FUTURE OF FOOD

AIFST 50th Anniversary Convention

17-18 JULY 2017

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This year the theme is aptly ***The Future of Food***, with a prestigious line-up of speakers including Bega Cheese Executive Director, Barry Irvin, and CSIRO Chief Executive, Larry Marshall, confirmed to address delegates. Sessions will cover the consumer of the future, future technologies and innovations advancing the food industry, managing emerging threats and vulnerabilities, navigating the export and regulatory market, and insights into current scientific research that will underpin the next 50 years of the Australian food industry. Key sessions will include food safety, packaging, sensory, nutrition and more! ➤

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Science – Managing Emerging Threats and Vulnerabilities; Sensory – the Future Palate; Food Safety.

Future People and Capabilities – Student Product Development Competition; Sensory – Taste the Future; Malcolm Bird and Sensory Award Presentations.

Export – Asian Insights; Navigating the Export Market

JR Vickery Address – Executive Chairman of Bega Cheese, Barry Irvin.

Government Panel – Effective Government Policy to Underpin the Innovation Agenda in the Food Industry.

Industry Roundtable – Financing Innovation and Growth in the Australian Food Industry.

Young Professionals in Food Networking Breakfast – For AIFST members aged 30 years and under.

AIFST Fellows Breakfast – A great opportunity for our Institute Fellows to network and meet newly appointed Fellows.



HOW TO REGISTER FOR THE CONVENTION

Registrations to attend the AIFST 50th Anniversary Convention will open shortly. All FULL Convention Registrations include a ticket to the Wine and Cheese Tasting Sensation and the AIFST 50th Anniversary Gala Dinner.

AIFST will advise members via email as soon as registration is open.

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To discuss ways your organisation would like to participate in the AIFST 50th Anniversary Convention, contact AIFST today on 02 9394 8650 or via aifst@aifst.com.au

CALL FOR POSTER PRESENTATIONS

If you would like to present a poster on your latest research at the AIFST 50th Anniversary Convention submit via aifst@aifst.com.au by midnight on Monday, 15 May 2017.

SPEAKER HIGHLIGHTS



Barry Irvin, AM, Executive Chairman, Bega Cheese

Barry Irvin has extensive experience in the dairy industry and has been Chairman of Bega Cheese since 2000. Barry's leadership has seen Bega Cheese grow from a small regional dairy company to one of the largest dairy companies in Australia, supplying a large range of dairy products in Australia and around the world.

Barry's depth of knowledge of the industry includes a significant understanding of the issues affecting Australian dairy farmers, the key investments required to meet changing consumer needs and the management of long-term customer relationships.

Barry was awarded the NAB Agribusiness Leader of the Year in 2009 and the Rabobank Leadership Award for 2011. Barry is very aware of the importance of social responsibility; he has been Chairman of Giant Steps, an organisation providing services to children and young adults with autism since 2002. In 2008 Barry was awarded a Member of the Order of Australia for contributions to children with disability and the Australia dairy industry.

Barry is Deputy Chairman of Capitol Chilled Foods Australia; Chairman of Giant Steps (Sydney) and Director of the Gardiner Foundation.

More information on Poster Presentations can be found at <https://aifst.asn.au>. To be eligible for a poster presentation, at least one of the authors must be registered to attend the Convention.

Don't forget there is a prize for the Best Poster and Runner Up!

AIFST 50TH ANNIVERSARY GALA DINNER TUESDAY, 18 JULY 2017 DOLTONE HOUSE, JONES BAY WHARF, SYDNEY

AIFST looks forward to welcoming members old and new to celebrate the 50th year of AIFST. This formal sit-down dinner will be a fantastic opportunity to catch-up with new and old industry colleagues.

The 50th Anniversary Dinner will be held at Doltone House, a unique heritage venue located on a restored finger wharf at Jones Bay, Pyrmont. The evening will honour the past 50 years of AIFST and celebrate the next 50 years. Gala Dinner tickets will be available as part of full Convention Registration tickets, as well as available for individual purchase.



Dr Larry Marshall, Chief Executive, CSIRO

Dr Larry Marshall is Chief Executive of CSIRO, Australia's national science agency and innovation catalyst. For almost a century, CSIRO has translated excellent science into profound impact for the benefit of all Australians and the world. This impact has come in the form of WiFi, plastic banknotes, extended wear contact lenses and insect repellent, just to name a few.

Larry is a scientist, technology innovator and business leader with a wealth of experience in creating new value and impact with science. He was born in Sydney and received his PhD in physics at Macquarie University then left Australia in 1988 to begin his career in the United States.

Prior to joining CSIRO, Larry had 25 years' experience as an international technology entrepreneur. He has over 100 peer reviewed publications and conference papers, holds 20 patents and has founded six successful US companies in biotechnology, photonics, telecommunications and semiconductors.

He has been a passionate supporter of Australian innovation since the 1990s, and has helped both sides of government to improve Australia's innovation performance, including giving up his career in the US to take up the leadership of CSIRO, which he believes is the fulcrum to pivot Australia's economy. ▶

WINE AND CHEESE TASTING SENSATION MONDAY, 17 JULY 2017, ICC

The ever-popular Wine and Cheese Tasting Sensation remains a key part of the social program of the AIFST 50th Anniversary Convention. Supported by partner AJ Park, this year's event will not disappoint. AIFST is working closely with the ICC team to bring delegates a unique food tasting experience.

ICC's philosophy of creating world class cuisine through the selection of locally and ethically sourced fresh, seasonal and, where possible, heritage produce will be on full display at this year's Wine and Cheese Tasting Sensation.

The Wine and Cheese Tasting Sensation is included in all Full Convention Packages and any one-day Convention Registrations purchased for Monday, 17 July 2017.

PARTNER:



LARGEST EVER foodpro!



foodpro 2017 returns to Sydney for its 50th year – co-located with AIFST's 50th Anniversary Convention at ICC

When: 16–19 July 2017

Opening Hours: Sun: 11am–5pm; Mon & Tue: 10am–5pm;
Wed: 10am–3pm

Registration: Register online for FREE ENTRY at foodproexh.com/science using promo code SCIENCE. Please be advised all AIFST Convention Delegates receive access to foodpro as part of their Convention registration.

foodpro, Australasia's iconic food manufacturing event, returns for its 50th year in 2017 to the new world-class International Convention Centre from 16–19 July.

Since it first ran in 1967, foodpro has played an important role in the growth of the food processing, manufacturing and packaging industries and has contributed to the development and significance of the industry to Australia.

foodpro 2017 – set to be the largest ever staged – provides a unique opportunity to connect, network and do business with industry peers. The event will showcase products and innovations from specialist suppliers around Australia and the world that are relevant to all aspects of the food manufacturing industry including: meat and seafood; value-add processing; beverages; dairy; fresh food; and shelf foods.

AIFST HUMANITARIAN FOOD SCIENCE AND TECHNOLOGY SYMPOSIUM WEDNESDAY, 19 JULY 2017, ICC

AIFST will host a Humanitarian Food Science and Technology Symposium, following the AIFST Convention. The Symposium is supported by CSIRO and other organisations including The University of New South Wales and the Global Alliance for Improved Nutrition (GAIN).

This unique Symposium will bring together a number of experts from Australia and around the world to discuss issues related to humanitarian and emergency feeding. Following an overview of the situation, a number of case studies on innovations in product formulation and processing will be presented, followed by presentations on new perspectives in Humanitarian Food Science and Technology. The Symposium will conclude with a facilitated panel discussion where challenges, opportunities and gaps in knowledge will be identified.

The Symposium will benefit those working in humanitarian and emergency activities in NGOs, governments, academia, research institutes and the private sector and will also provide networking opportunities.

Registration is available via the AIFST website and can be purchased as an additional event option on all Convention registrations.

PARTNERS:



INDUSTRY INNOVATORS

Born Pure

AUSTRALIA'S FIRST HIGH PRESSURE PROCESSED BABY FOOD RANGE HOPES TO TAP INTO THE GROWING MARKET FOR NUTRITIONAL FOOD AND HELP WITH FRUIT AND VEGETABLE WASTAGE.

Fresh Produce Alliance, based in Manjimup, WA launched its baby food range as a way of using fruit and vegetable produce that did not meet fresh market specifications. It is a unique way of giving farmers the opportunity to sell produce that would otherwise have been disposed of.

High pressure processing (HPP) uses a method of cold pasteurisation and intense pressure to kill bacteria and preserve food, without disfiguring or bruising the fruit. Using HPP saves nutrients that would otherwise be killed during the preservation process, extending the shelf life without affecting the nutritional value of the food. While some ingredients such as sweet potato need to be cooked first, this is balanced out by a number of raw fruit ingredients used in the product.

AIFST asks Fresh Produce Alliance's managing director, Jenny Franceschi, about the concept.

Where did the idea for better utilisation of fruit and vegetable produce come from?

Our main aim was to increase return on investment (ROI) to growers and the best way to do that was to be able to sell all their produce. Considering 30 per cent of horticulture across the board doesn't leave the farm gate, we felt that finding a value-added home for that produce would help support our farmers.

We are taking products from the farmers that they are not able to sell or market. In being able to market, add value and sell the product for them, we get returns for the farmer on something that would otherwise not leave the farm gate. We're also taking lower grade fruit off the market, therefore increasing growers' return on investment.

What is involved in the HPP for sterilisation process?

How is it unique?

High Pressure Processing (HPP) is a cold pasteurisation technique by which products, already sealed in their final package, are introduced into a vessel and subjected to a high level of isostatic pressure (300–600 MPa/43,500–87,000 psi) transmitted by water.

Pressures above 400 MPa/58,000 psi at cold (+ 4°C to 10°C) or ambient temperature inactivate the vegetative flora (bacteria, virus, yeasts, moulds and parasites) present in food, extending the product's shelf life and guaranteeing food safety.



How High Pressure is HPP?

More pressure than the Mariana Trench but less than diamond synthesis

HPP respects the sensorial and nutritional properties of food, because of the absence of heat treatment, and maintains its original freshness throughout the shelf-life.

How long did it take from concept to market reality?

Three years from realising that there was a problem that needed to be addressed, to doing research, finding out ways to address the problem and taking action.

What difficulties have you faced along the way?

There are always challenges with every major project – from bureaucratic red tape to compliance issues, building deregulation and compliance, and finding the right equipment. We had to be open to the fact that HPP is a new technology and there was a lot to learn! With the right mindset and people on our team we have overcome all of these challenges.

What is your business strategy moving forward?

We are building up for a soft start into Australian retail and into the Asian market. We are developing the systems from an R&D based company to commercialisation and being able to produce volume, and we will ramp that up as we build the brand and overcome any issues with the cool chain management overseas.

Have you had international interest in the process/products?

Yes – our main interest has been from Japan, Singapore and Malaysia to date, and there are contracts in the pipeline from the Philippines.

When are the products hitting shelves?

We've had issues with distribution in Australia but we are talking to a major supermarket chain who are interested in running the product and working towards a soft start with them soon. We are currently going through compliance, as everyone does, to get into a large corporate structure. With HPP being such a new technology, we are having to educate both the stockists and the consumers about the benefits of it along the way! ☺

For more information visit:

<http://www.bornpure.com.au/baby-foods>.

shine⁺ Brighter

THE PIONEER OF AUSTRALIA'S FIRST "SMART DRINK", STEVE CHAPMAN, TALKS TO AIFST ABOUT DEVELOPING A MIND-BOOSTING BEVERAGE USING ALL NATURAL PRODUCTS, THE RUSH TO MARKET AND GIVING BACK TO THE COMMUNITY.

Where did your idea for shine⁺ come from?

The initial idea for shine⁺ was created out of conversations that Dr Sam Prince and I had back in mid-2015. We noticed there was no drink on the market that used evidence-based ingredients shown to improve mental function. Mental fatigue is a universal and well-known problem that no-one had solved in a ready-to-drink beverage field. We also knew there was a growing discontent with energy drinks and sports drinks due to the high volumes of caffeine, sugars or artificial fillers.

Can you sum up in one sentence what is so special about shine⁺?

shine⁺ is pioneering a new category of beverages as Australia's first "smart drink".

You describe shine⁺ as a "nootropic" drink. Can you explain what that is?

Nootropics are compounds (ingredients/substances) that have been shown to either improve mental function, memory recall or learning capabilities with no adverse side effects. There are a number of natural nootropics that have been used for centuries in certain Eastern cultures, and other synthetic nootropics that have been developed in labs more recently. shine⁺ contains only those natural nootropics found in botanicals and plants.

How can you justify the science behind the concept?

We formulated our beverage based on clinical research of each ingredient. We rely on peer-reviewed research conducted by experts in the field. We are looking to conduct a substantial clinical review of shine⁺ in the future, however it's currently cost-prohibitive for a startup.

How long did it take you from concept to market?

We started developing the concept full time in February 2016 and we launched to market on 1 July 2016, so it took around five months.

What difficulties did you face along the way?

A lot! We had a number of meetings with potential suppliers/partners who were shocked when we said we wanted to launch in June that year. They kept asking, "June 2017, right?"

So there was a big challenge in motivating and convincing our suppliers to help us on our mission to market and to speed through requests, trials and orders.



What are the most unique aspects of your manufacturing process?

We have a number of unique aspects to our drink, which added to the difficulties and the road to market. Our drink is filled into a small, 110ml glass bottle with a small neck. This meant there was almost no-one who had the appropriate equipment to fill our bottles. Sourcing our small glass bottle was also a big challenge as it's a unique design not commonly found.

What kind of commercial success have you had so far?

Thankfully, all our hard work has been met with reward. We sold out our opening stock in 48 hours online (it was supposed to last at least one month). Since then, we have been trying to keep up with demand. We rolled out nationally in Zambrero (150 outlets) and in the majority of Harris Farm stores in January 2017.

We donate one day of drinking water to a person in need for every bottle of shine⁺ sold through our Shine4Water program, and we are very proud of the fact we've already donated over 80,000 days of clean drinking water.

Love the Shine4Water concept – is this being well received?

Our customers love the fact that by purchasing a drink that helps them shine, it also helps people in need and gives them the ability to shine. Our mission statement, which our internal team loves and our customers appreciate, is "As we let our own light shine, we consciously empower our community to do the same". We are on track to hit our goal of donating one million days of clean drinking water in 2017.



What is your business strategy moving forward?

Online and digital marketing has been a big success for us. We've gained a very large following on social media via our relationship with a number of selected social media influencers. We will continue investing in our digital-first approach to increase brand awareness and sales. Furthermore, we plan on partnering with a number of select retail chains that fit our demographic and align well with our brand to grow our distribution channels organically.

As my mentor Sam Prince often says, "Let the market wrap its ambitions around you and let your customers lead you where to go instead of trying to force your own ambitions on the market". We've been lucky enough to find true fans and raving customers early-on, so we are constantly listening to them for guidance on future direction and strategy. In saying that, we've certainly got some exciting things in the pipeline.

WHAT'S IN shine⁺?

Green Tea Contains the amino acid L-Theanine, which improves reaction speed and attention and reduces the jittery effects commonly associated with caffeine.

Turmeric Contains curcumin, which has potent anti-inflammatory and antioxidant properties and is associated with ameliorating age-related decline in cognition.

Ginkgo Biloba Improves memory, increases blood flow to the brain and improves circulation.

Siberian Ginseng An adaptogen that enhances a person's ability to tolerate mental and physical stress and helps combat fatigue.

Caffeine A stimulant that can reduce subjective feelings of fatigue, improve reaction speed and improve attention.

Vitamin B6 Important in the conversion of L-DOPA into dopamine, a key neurotransmitter essential to optimal brain function.

Vitamin B12 Plays a vital role in helping maintain normal levels of the amino acid homocysteine.

Have you had international interest in the product? Are there international competitors with a similar product?

We are speaking to a number of people internationally and looking heavily towards the US and Asia. We are pioneering the "smart drinks" category globally and there is only a handful of other small players in the space. We are looking to be the global market leader from the start. Hopefully this is an opportunity where Australia can lead the way. ☺

Steve Chapman is the CEO of shine⁺. For further information visit: <https://shinedrink.com/>.



The Rise of Food Culture and ADM's

Expanding Portfolio of Solutions

HOW ADM IS GROWING TO FEED AUSTRALIA'S FOOD BUSINESS

Food and drink culture is evolving in front of our eyes not only for us mere humans but our pets and livestock too.

Gone are the days of innovation and haute culture only being available for a few. If you just stand back for a second and take a look at the current marketplace it is very apparent in everything you do. For instance, who in their right mind would eat food out of a truck? What about juice? When did grocery stores start installing refrigerated units for juice right next to your produce? What about booze? Do you remember a time when you thought an infusion was unique? Or when your vodka aisle was not inspired by a candy store? When did craft beer become more exciting than imports and craft imports more exciting than that? When did pets and livestock worry about gluten-free, organic or free from artificial colours, to name a few? Where and when did authenticity come into our vocabulary?

We see lot of change, but a few key elements that continue to crop up are: infusions, authentic, unexpected, craft. At the same time, the influence and power our chefs possess has never been greater. Chefs have not only become celebrities but influencers. Food network has propelled

chefs to fame. People are listening, watching and reading more about food than ever. Chefs are driving some of the major food trends particularly local produce, wellbeing and of course sustainability.

With this changing landscape for food and beverage manufacturers, ADM has been strengthening the offering in food ingredients and we've made several strategic acquisitions and investments as well as divestments. You may recognise ADM in ANZ from our existing range of Soy Proteins (Isolate, Concentrates, Soy Flour, TVP, and TVC), Corn Sweeteners (Crystalline Fructose, Corn Syrup and Citric Acid), Edible Beans, Fats and Oils, Corn Specialties (Fibersol®2, Xanthan Gum and Sorbitol), our extensive range of Lecithins, Vitamin E, Tocopherols, and Phytosterols as well as our Animal Nutrition portfolio. With our strategic acquisitions, we are building up our unique position to become the food, nutrition and beverage manufacturers complete ingredient

solutions provider of choice, with additions that globally fit well with the changing trends and the rise of food culture.

In late 2014, we purchased WILD Flavors GmbH, one of the world's leading suppliers of natural ingredients to the

food and beverage industry. The WILD product portfolio centres on full flavour and ingredient solutions (known as flavour systems), fruit juice concentrates and blends. WILD also brings a broad range of natural flavours and extracts, mint oils and flavours, colours from natural sources, sweetening systems, seasonings, specialty ingredients, taste modifiers and fermentation technologies. A portfolio that fits so well with the food, beverage, complementary medicines and animal nutrition trends in ANZ.

We have made several additional acquisitions to further build up our unique position. In October 2014, ADM purchased Specialty Commodities Inc. (SCI), a leading originator, processor and distributor of healthy ingredients, including nuts, fruits, seeds, legumes and ancient grains with its corporate headquarters in Fargo, North Dakota and two processing facilities in California. We believe that with the rise of authenticity, this portfolio will offer solutions for the marketplace. In late 2015, ADM announced the purchase of Eatem Foods Company, a leading developer and producer of premium traditional, natural and organic savoury flavour systems based out of Vineland, New Jersey, USA.

With our strategic acquisitions, we are building up our unique position to become the food, nutrition and beverage manufacturers complete ingredient solutions provider of choice.



Earlier in 2016, we also announced the purchase of a majority stake in Harvest Innovations, to further expand ADM's Plant Protein, Organic Ingredient Portfolio. With the Organic market in ANZ at about one per cent of total food consumption, it's still significantly behind the USA, where the organic market equaled 6.56 per cent of the conventional market, or Germany's which equaled 5.13 per cent of their conventional market.

As you may know, we exited the cocoa business as of October 2015. In turn we have been investing in our support structure in Australia and New Zealand to enable us to offer the market the full capabilities of our unique flavours and specialty ingredients portfolio. We have made key new appointments across our Sales, Marketing, Flavour Creation, Regulatory, Application and Supply Chain teams.

We are thrilled that we are celebrating the opening of our brand new purpose-built commercial operations, flavour creation and customer innovation centre in North Ryde, Sydney. It features our unique broad portfolio of ingredients for both human and animal food and nutrition.

During the opening festivities, we will showcase a range of products and concepts utilising our exciting new flavours and specialty ingredients portfolio that can help our customers wow consumers with on-trend products. ☺

To learn more, contact us at ADM:
Sydney +61 2 93872255, Auckland +64 9 575 9765, www.adm.com

PHOTO ABOVE — From left to right: Fabian Barcelo, Mandy Kerr, Tom Kotsonis, Laura Khouri, Sergiu Nogarotto, Dave de Fretes, Bram van Hulsen, Georgiana Oliveira, Julie Mitchell, Brenda Bruton, Vlad Blazek, Jeanine Kavanagh, Sabine Stoll, Khoon Low, Belinda Chu, John McLeish, Mert Karabelli, Dash Kana, Shadrach Tata. Photo by Mark Jezeric.

ARE YOU YOUNG AND HUNGRY?

AIFST supports students with a variety of programs and by providing a network to connect with food industry professionals, giving students the opportunity to gain a better insight into career opportunities available in the food industry:

- AIFST student members can network with peers and participate in the activities organised by the Young Professionals Community of Interest, or nominate to sit on one of AIFST's other Communities of Interest.
- Looking for work in the food industry? Why not email us your CV and we will place it on the AIFST website under Positions Available/Wanted.
- Nominate to be a volunteer at the AIFST 50th Anniversary Convention in July 2017. This is a unique opportunity to listen to and network with leading industry speakers.

For more information visit:
<https://www.aifst.asn.au> or
call the Membership Services Team on 02 9394 8650.

2017 STUDENT PRODUCT DEVELOPMENT COMPETITION

FUTURE PROOFING OUR FOOD

Win a \$10,000 cash prize for your team supported by the Retail Food Group (RFG) – Australia's largest Multifood franchise operator – along with a unique work placement opportunity in RFG's world-class product development team!

Want to experience a "real life" new product development project and gain exposure to industry experts, peers and future employees within the food industry? Then the 2017 **Student Product Development Competition (SPDC)** is a unique opportunity for you!

For more than 14 years the SPDC has attracted entries from leading educational institutions across Australia, with previous entrants and winning team members going on to find fulfilling careers within the Australian and global food industries.

This year's theme **Future Proofing our Food** is based around sustainability in food as a key and growing area of interest among consumers. Interest is driving market demand both locally and overseas and reports show that shoppers and consumers want to know as much as they can about what they're eating. The industry, and its customers, are seeking out foods that are not only flavourful, but also minimally impact the environment.

SPDC is open to two entrant categories – an Undergraduate category and a Postgraduate category. In each of these two categories, three finalist teams will be selected to present their products at the AIFST **50th Anniversary Convention** in Sydney from 17–18 July 2017.



AIFST 2016 SPDC winners Naomi Cutler and Charlize Snyman with SPDC Partners' Bram Van Hulsen (ADM), Genevieve Bateman (Department of Industry, Innovation and Science) and Peter Meek (Chobani).

Thank you to our 2017 SPDC Partners:



SPDC WHAT YOU NEED TO DO

Develop a food product that uses product development techniques, raw materials, ingredients, processing methods, packaging or distribution methods that contribute to one or more of the following:

- Protecting and conserving the environment.
 - Improving public health.
 - Giving rise to better human communities.
 - Protecting animal welfare.
- KEY DATES:**
- Initial entry submission due: **3 April 2017**
 - Finalist team selection announced: **18 April 2017**
 - Proof of concept submission due: **6 June 2017**
 - Finalist written proposals submission: **3 July 2017**
 - AIFST 50th Annual Convention: **17-18 July 2017**

The **2017 Entrant Handbook** is available on the AIFST website: <https://www.aifst.asn.au>

AN EXCEPTIONAL OPPORTUNITY!

2016 saw a record number of applicants for SPDC with an extremely high calibre of product ideas and new formats for incorporating pulses as the base of products in recognition of the United Nations International Year of Pulses in 2016.

This year SPDC finalists again have the opportunity to win a \$10,000 cash prize for their team supported by the Retail Food Group (RFG) – Australia's largest multifood franchise operator – along with a unique work placement opportunity in RFG's world-class product development team!*

*RFG is the owner and operator of brands including Crust, Gourmet Pizza, Michel's Patisserie, Brumby's Bakery and Donut King. RFG is proud to support Australia's young and inspiring talent coming through educational institutions that offer courses in the food industry and looks forward to reviewing their innovative products! [f](#)

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REF:101 Offer expires 30 June 2016 or until stocks last. Prices do not include GST.



2016 AIFST Young Members Malcolm Bird Commemorative Award Winner
Jessica Tan, with AIFST CEO Georgie Aley.



2016 AIFST Sensory Award Winner Julia Low,
with Jodie Hill from Sensory Solutions.



2016 AIFST Convention Student Volunteers



STUDENTS ENJOY 2017 AIFST SUMMER SCHOOL

More than 40 students attended the 2017 AIFST Summer School held from 1-2 February 2017 at the Western Sydney University Hawkesbury Campus.

The AIFST Summer School provides our early career members with an opportunity to network with their peers, hear from industry leaders, build their communication and presentation skills, hear updates on their peers' latest research, and participate in industry tours.

Thank you to AIFST members Prof. Vijay Jayasena and Dr Rosalie Durham from Western Sydney University for their assistance in hosting the 2017 AIFST Summer School. Thank you also to AIFST members who presented, including: Prof. Martin Cole, Prof. John Ashton, Ruth Muller, Prof. Chris Blanchard and Jodie Hill. ☺

HURRY! ENTER THE 2017 AIFST AWARDS NOW! VISIT [HTTPS://WWW.AIFST.ASN.AU](https://www.aifst.asn.au) FOR ALL AWARD GUIDELINES AND NOMINATION FORMS OR PHONE 02 9394 8650. ALL NOMINATIONS CLOSE ON 13 APRIL 2017.

AIFST supports students with a variety of programs and by providing a network to connect with food industry professionals, giving students the opportunity to gain a better insight into career opportunities available in the food industry. A number of awards will be presented specifically for students at the AIFST 50th Anniversary Convention in 2017.

AIFST YOUNG MEMBERS MALCOLM BIRD COMMEMORATIVE AWARD

This award is for young AIFST members who demonstrate academic achievement, leadership and integrity in their profession. It is named in honour of Malcolm Bird, the fifth AIFST president who always showed an active concern for the welfare of young members.

The subject of the award entry, abstract and subsequent paper and oral presentation can be on any topic relating to food science and/or technology.

This award is open to all current financial members of AIFST who are under 30 years of age at 30 June 2017. Nominees must have been a financial member of AIFST for a minimum of 12 months prior to the closing date for nominations. ☺

AIFST JACK KEFFORD BEST PAPER AWARD

This award recognises the contribution to food science and technology of members of the Institute who publish research and technical papers.

The Award is named in honour of Jack Kefford who made an enormous contribution to the science and technology of food as Officer-in-Charge of the CSIRO Food Research Laboratory, Assistant Chief of the CSIRO Division of Food Research, as a scientist of international repute, and as AIFST president (1971-73).

This award is open to all current financial members of AIFST. Nominees must have been a financial member of AIFST for a minimum of 12 months prior to the closing date for nominations. ☺

AIFST SENSORY AWARD

This award is for AIFST young professional members including students who demonstrate academic achievement, interest, enthusiasm and integrity in sensory research. The AIFST Sensory Award is sponsored by Sensory Solutions and named in honour of Anthony (Tony) Williams.

Dr Tony Williams was one of the pioneers of the sensory research industry in the United Kingdom and a world authority in sensory and consumer science. Tony's enthusiasm and passion helped establish sensory research in Australia and launch Sensory Solutions in 1996.

The AIFST Sensory Award provides the opportunity for young members to demonstrate their interest and passion for sensory research with the submission of a unique, short paper on a sensory related topic of their choosing and interest. The submission should be unique and not include a republished piece of work or a previously published paper, but may include a revised or rewritten component of a sensory thesis that has been specifically prepared for this award.

This award is open to all current financial members of AIFST who are under 35 years of age at 30 June 2017. Nominees must have been a financial member of AIFST for a minimum of 12 months prior to the closing date for nominations. ☺

50TH ANNIVERSARY CONVENTION VOLUNTEERS

AIFST is currently seeking student volunteers to assist at the 50th Anniversary Convention at the new International Convention Centre (ICC) in Sydney from 17–18 July 2017.

This is a fantastic opportunity to be involved with AIFST's 50-year celebrations and ***The Future of Food***. Volunteering gives you an incredible opportunity to assist the Institute at this prestigious event and opportunities to network with industry professionals.

Interested? Simply email aifst@aifst.com.au with your name and contact details – phone and email address – and we will ensure you are listed as interested in volunteering and be in touch with further information over the coming months. Please note, priority will be given to AIFST student members who apply. ☺



THE UNIVERSITY OF
SYDNEY

ARC ITTC

Food Safety in Fresh Produce PhD Scholarships

Food Safety in the Fresh Produce Industry

An exciting research training opportunity with industry experience built into the program. Four full time ARC ITTC Scholarships to commence in 2017.



Research Areas

- Development of rapid food safety diagnostics
- Risk modelling
- Microbial and protozoan contamination in soil and water
- Identification of new indicator organisms for potential contamination

Eligibility and Stipend

Must be eligible to enrol in PhD at the University of Sydney. Scholarship up to 3.5 years. Stipend is \$31,298 pa tax free.

For more details on projects contact Professor Robyn McConchie at robyn.mcconchie@sydney.edu.au



Australian Government
Australian Research Council

PLANT POWER KELP IS THE NEW KALE

WORDS BY SARAH HYLAND
AIFST

Eating more plants and less meat is becoming more popular than ever and is set to grow in 2017. Globally, food trend analysts are predicting a continued rise in consumer preference for natural, simple and flexible diets that satisfy our need for functional health benefits, value for money, address our concerns about animal welfare and the environmental impact of food production in all parts of the world. The broadening of our diet to include more plant-based foods meets these ever-heightening consumer needs.

Over the past few years, the number of vegetarian and vegan foods available in Australia has soared. According to Mintel's Global New Products Database, between 2014 and 2016 there was a 92 per cent increase in the number of food products launched in Australia carrying a vegan claim, and an 8 per cent increase in the number of products launched carrying a vegetarian claim.

Clearly, many Australian consumers have a growing appetite for meat-free foods. In fact, one in seven (14 per cent) said that they avoided or intended to avoid red meat in 2016.

Indeed, many global research firms such as Technavio and Mintel predict that various segments of the vegan industry – including egg replacer, plant-based meat, packaged goods and restaurant options – will grow substantially in coming years as consumers continue to demand these kinds of healthier, more ethical and environmentally friendly options.

ENTER SEAWEED – STEPPING OFF THE SUSHI TRAIN

Seaweed, an algae which many Australians only experience as something slippery and gross brushing against their legs during a swim at the beach, is set to become the next superfood. While sushi is one of the fastest-growing food markets in the west, seaweed has established a foothold as a hero ingredient in snack foods in the US and, to a smaller degree, Europe. The uptake of seaweed in snacks has been piqued by the growth in appeal and familiarity of another famous leafy green – kale.

Seaweed has an even more impressive resume than kale in terms of natural health, being high in minerals (calcium and iodine) and antioxidants, a source of omega 3, protein and fibre, low in fat and sodium, and lactose and gluten-free. Seaweed is low in energy and one of the only natural, non-animal sources of vitamin B12. It has even been suggested that seaweed could be the answer to the Western world's obesity epidemic.

A study conducted by Newcastle University in the UK found that alginate, found in sea kelp (a type of seaweed), can suppress the digestion of fat in the gut. Published in the journal *Food Chemistry*, the study showed that a four-fold increase in one type of alginate boosted anti-fat absorption by 75 per cent. And then of course there are the millions of Japanese who regularly consume seaweed and have the highest life expectancy in the world. ▶

With its golden health halo, interesting organoleptic properties and exotic origins, the health conscious urban consumer has no problem buying into this exciting sensory and healthy experience at a premium price.

According to Mintel, seaweed-flavoured food and drink introductions soared by 76 per cent in North America between 2011 and 2015. At the same time in Europe, SeafoodSource reports that seaweed-flavoured food and drink product launches increased by 147 per cent. Enjoying this trend is London-based is Clearspring, which has sold sea vegetable products for more than 20 years and has experienced a significant surge in sales in the past 18 months thanks to growing awareness of its products in the UK and Europe. Two of its biggest sellers are the healthy, low-calorie, high-fibre snack Seaveg Crispies and its popular Kombu product.

As its popularity surges, seaweed products have become more diverse. For example, the innovative and award-winning Amsterdam-based company Seamore has seen good sales in Europe with its "I sea pasta" seaweed tagliatelle and its more recent launch of "I sea bacon", both of which have been available in Australia since November 2016.

FARM SEAWEED, SAVE THE WORLD?

In addition to its benefit for consumers' health, seaweed is also good for our environment and is one of the world's most sustainable crops. It doesn't need fertiliser or even water to thrive. In fact, it purifies water and sequesters carbon as it proliferates at amazing rates. Seaweed's footprint is negative.

A former commercial fisherman from Newfoundland, now operating out of Long Island Sound in the US, discovered seaweed as a crop after his shellfish farms were decimated by Hurricanes Irene and Sandy in 2011 and 2012. A pioneer in the field, Bren Smith has received extensive media coverage (*The New Yorker*, *The Washington Post*, a successful TED talk) for what he describes as 3D vertical farming, which is designed to restore the ocean as it harvests shellfish and seaweed. His most exciting development is the vertical farming of seaweed, as opposed to harvesting the wild plants along the shore.

Other countries are starting to take notice, with *The Irish Times* posing the headline: "Seaweed: the next big step for Irish food and farming?" The 16 November 2016 article goes on to state: "The proponents of sea-farming claim that a network of ocean farms covering just one per cent of the sea could provide enough shellfish, sea vegetables and sustainably-reared fish to feed the world."

WHAT'S ON OUR SHORES?

With more than 2000 varieties of seaweed in Australia and around a thousand species in Tasmanian waters alone, we are in a prime position to benefit from the trend. The South Australian Research and Development Institute (SARDI) notes that Australia imports about \$20 million in seaweed products each year and there exists potential for Australia to fill the local market as well as export some unique species that do not occur anywhere else in the world. ▶

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Australian business are getting on board the trend, with Kai Ho Tasmanian Sea Vegetables processing and marketing seaweeds sustainably harvested on the Tasmanian east and south coast. Its new product – the spectacular Red Lettuce – attracted the attention of *Delicious* judges for its taste and culinary visual appeal. The three-year-old business venture has developed a small range of edible seaweed products most of which is salted, frozen or dried for sale, but some is sold fresh.

Further west, trials are underway near Port Lincoln in South Australia to assess the potential of native seaweeds to be farmed and sold and to lead the way for a new Australian aquaculture industry. Four native species are being grown as part of the 12-month sea trial being held off Eyre Peninsula. Literature reviews and laboratory studies are being conducted to determine which native species could be suitable for farming – taking into account potential pest-like characteristics and environmental suitability.

Seaweed agriculture, farming, production and value adding is clearly a significant opportunity offering many advantages to both consumers and food producers alike. This opportunity is even more salient as our generation tackles the challenge to sustainably feed future generations. ¹

Sarah Hyland is the AIFST General Manager Industry Services.

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A NATIONAL APPROACH TO FOOD SAFETY CERTIFICATION

THE MOVE TOWARDS A NATIONAL APPROACH WILL BE PILOTED IN THE BAKED GOODS SECTOR.
WORDS BY FIONA FLEMING AUSTRALIAN FOOD AND GROCERY COUNCIL



In 2015 the Australian Food and Grocery Council (AFGC) conducted a scoping study to gather detailed information on the costs of auditing and their drivers, the value of auditing to the food industry, inefficiencies in the current auditing approaches and to canvas ideas for better ways of managing auditing across the sector.

Conducted in collaboration with Food Innovation Australia Ltd (FIAL), with funding from FIAL and AusIndustry, the study confirmed that food safety auditing in Australia and New Zealand places a substantial burden on the food industry because of the proliferation of proprietary and private standards. The study identified 36 auditing standards in addition to regulatory audits.

In July 2016, the AFGC initiated a follow-on project to pilot a new national approach to food safety certification in the baked goods sector with the aim to reduce the burden on industry resulting from multiple food safety audits against multiple food safety standards and schemes. The results will be made available for the benefit of the whole of the Australian food value chain.

This project is, once again, a partnership between FIAL and the AFGC with support from a number of state jurisdictions. It is being overseen by a Management Committee made up of representatives from a range of stakeholders including retailers (Aldi, Coles, Metcash and Woolworths), quick service restaurants, food service, food industry and certification bodies. A Baked Goods Reference Group has also been established with representatives from large companies and SMEs (small to medium enterprises) across a range of baked goods product types.

A key recommendation is the development of framework for a National Approach to Food Safety Certification (NAFSC). Initially this will focus on baked goods as a pilot to the approach, but will be expanded to other

categories in the future. The proposed National Approach to Food Safety Certification (NAFSC) for the baked goods sector comprises a Certification to a GFSI (Global Food Safety Initiative) Benchmark Standard and an Assessment against Category Guidance for nominated food safety elements.

This will pave the way for manufacturers to be audited against a single standard.

Core to the success of the NAFSC will be the recognition of equivalence of certification to a GFSI recognised food safety management scheme (FSMS) by key industry players across the Australian food supply chain. This will pave the way for manufacturers to be audited against a single standard (rather than many) with audit reports being accepted by downstream customers. The suitable base scheme standards currently proposed are: British Retail Consortium (BRC) Global Standard for Food Safety; International Featured Standards (IFS); Safe Quality Food (SQF) Standard, or Food Safety System Certification (FSSC) 22000.

The Management Committee and the Baked Goods Reference Group have identified requirements relevant to baked goods in addition to those required under the Base Scheme Standards – further guidance is required in relation to allergen management and labelling and foreign matter control. Failures in these two areas were responsible for several Australian food recalls in 2016 and are the highest contributors to consumer and customer complaints to retailers and manufacturers in the baked goods sector.

Guidance in relation to these two food safety elements was developed and trialled with the Baked Goods Reference Group early in 2017. It is anticipated that current industry guidance will form the basis for guidance on Allergen Management and Labelling, including the AFGC Food Industry Guide to Allergen Management and Labelling (www.agfc.org.au/our-expertise/agfc-supported-forums/the-allergen-forum/), and the VITAL® Best Practice Labelling Guide (allergenbureau.net/vital/). The AFGC Food Industry Guide to Allergen Management and Labelling will be updated as part of this project.

At this stage, no additional food safety elements have been identified for inclusion in the NAFSC for baked goods, but they may be added in the future in consultation with stakeholders and the Management Committee.

This proposed approach is based on the approach developed for the Harmonised Australian Retailers Fresh Produce Scheme (HARPS) project for fresh produce by Horticulture Innovation Australia. HARPS was launched in October 2016 (harpsonline.com.au/).

The aim of the NAFSC (and the HARPS scheme) is to reduce the considerable costs resulting from the adoption, maintenance and auditing of multiple systems by individual suppliers and manufacturers while retaining the focus, importance and value that audits provide in the production of safe, high quality products for consumers. The results of the pilot project are on track for completion in mid-2017 with a full report available in late 2017.

The AFGC welcomes feedback on the project and will provide updates as the project progresses.

For more information on this project, please visit the AFGC website (www.agfc.org.au/key-projects/food-safety-auditing-project/) or contact Fiona Fleming, Project Manager, on fiona.fleming@agfc.org.au. ²



THE GOOD, THE BAD AND THE TOXIC

DOES IT MATTER WHAT OIL YOU FRY YOUR CHIPS IN, DO SWEETENERS ALL TASTE THE SAME, HOW CAN YOU BEST COMMUNICATE SUSTAINABILITY TO CONSUMERS AND DOES PREFERENCE FOR SWEET FOOD DECREASE OR INCREASE AFTER EATING SAVOURY FOODS?

**WORDS BY DRs RUSSELL KEAST, GIE LIEM,
MEGAN THORNTON AND SARA CICERALE**
THE CENTRE FOR ADVANCED SENSORY SCIENCE,
DEAKIN UNIVERSITY

GET YOUR HOT CHIPS!

I don't know about you, but I absolutely love hot chips – I can pick up the smell from a mile off! Of course the aroma isn't just the potatoes at play. The fatty acids within the oil play an important part in what you perceive – the good, the bad and the toxic.

Researchers in Germany recently investigated the effect of different types of frying oils on potato chips, in particular the generation of aroma and toxic compounds. While previous research has covered both the odour and toxicity aspects of fried potatoes separately, these authors took a holistic approach to the effect of frying oil on fried food quality. In comparing safflower, rapeseed and coconut oils, the researchers wanted to identify which fatty acids in the oils were responsible for the "fried potato" odour. With extra virgin olive oil, linseed oil and frying fat, they measured carcinogenic compounds in chips fried at different intensities and temperatures.

To determine the main odourants, Gas Chromatography-Olfactometry was performed, and identified eight compounds including (E,E)-2,4-decadienal and (E,Z)-2,4-decadienal (deep fried odours), and methional (cooked potato). Standard Isotope Dilution Analysis (SIDA) determined their concentrations and Odour Activity Values (OAVs, a ratio of concentration to odour threshold). The concentration of linoleic acid in the oils was correlated with decadienal compounds quantities, which was also linked to sensory panel analysis.

In looking to food safety, toxicologically-relevant carcinogens acrolein, furan, acrylamide and glycidamide were measured using Static Headspace High Resolution GC-MS. There were no differences in acrolein content between oils, furan levels increased within increasing quantities of unsaturated fatty acids, and in both cases, furan and acrolein levels decreased with increased cooking cycles. In regards to acrylamide and glycidamide (an epoxidation product), linseed oil (with its high concentration of polyunsaturated fatty acids) produced the highest levels.

To provide the best flavour but minimise toxicants, the authors suggested lowering the frying temperature (which previous research shows reduces these toxicants). Unfortunately, reducing the frying temperature from 180°C to 140°C also reduced decadienal concentrations and, according to sensory panellists, changed the overall flavour.

SWEET AS!

Approximately 20+ compounds can activate sweet taste. Some such as sugars contain energy, others like sucralose are termed non-nutritive sweeteners (NNS) and provide no energy. It is widely established that there is one primary sweet taste receptor but it is also believed there are "taste" differences between sweet compounds. A comprehensive investigation of sweet taste function (threshold and intensity) in 60 participants across multiple caloric sweeteners (glucose, fructose, sucrose, erythritol) and NNS (sucralose and rebaudioside A) was performed at the Centre for Advanced Sensory Science at Deakin University. The aim was to assess if there is commonality in taste function across sweeteners.

Results showed that there were strong correlations between thresholds of all caloric sweeteners and between thresholds of the NNS. But threshold measurements between caloric sweeteners and NNS were weakly correlated indicating an independent mechanism between caloric sweeteners and NNS that may be linked with the brain's reward system. In contrast, there were strong correlations between the sweetness intensity ratings of caloric sweeteners and NNS, supporting commonality of sweet mechanism throughout the perceptual range. There was also large variation in sensitivity to sweet compounds between subjects – one person may find a sucrose solution to be very sweet while a second person may find the same solution weakly sweet.

AND THE

TOXIC

LABELLING SUSTAINABILITY

Most consumers buy their food products from large supermarket chains where marketing cues such as packaging and labelling have taken over the role of the knowledgeable shop owner. Nowadays, the main way food producers communicate to their consumers at point of purchase is through pack formats and front of pack labelling. For example, food producers can emphasise the sustainability of their products by having paper-looking packaging and front of pack logos that show some sort of sustainability certification. The former suggests that the packaging is sustainable, the latter suggests that the food product itself is produced in a sustainable manner. But how do these sustainability cues influence consumers' perception of product quality and naturalness?

When consumers are already told – by means of a certified logo – that a food is produced in a sustainable manner, does it then make a difference if the product is also presented in a sustainable-looking package? To answer these questions researchers asked 127 French consumers to judge products on their perceived quality and naturalness. Products varied in the way they were packaged (eg. recycled carton-looking packaging vs white plastic packaging) and whether they carried a sustainability logo.

As expected, the sustainable packaging as well as the sustainability logo increases consumers' perceived quality of the food products. Interestingly, there was no added effect of packages and logos. That is, when it is already signalled to consumers that a product is sustainable by means of a sustainability logo, the sustainability (or non-sustainability) of the pack does not influence consumers' overall quality and naturalness rating of the product. The authors concluded that sustainable-looking packaging might not be needed if there is already a sustainability logo present on front of pack.

But it could also be argued that the positive influence of the pack and logo cannot all be captured by questions about perceived quality and naturalness. The influence could be subtler, which requires hedonic and/or behavioural measurements. This emphasises the need for more implicit measures in sensory and consumer science that can predict what consumers will do in real life.

A NEW MEASURE OF FOOD PREFERENCE

Food preferences are largely influenced by the macronutrient content and taste of foods. However, such food preferences do not remain static and may vary depending on other factors such as sensory specific satiety (SSS).

Most recently, researchers from Wageningen University in the Netherlands developed and tested a food preference task to help predict food partiality considering SSS. The food preference task involved participants ranking groups of four food products by visual means according to how much they desired to consume those foods. Pictures of sweet and savoury food products from four categories: high-carbohydrate, high-fat, high-protein and low-energy were used. In the first test, 69 participants were asked to consume either a sweet or a savoury meal that were similar in macronutrient content. In the second test (at least one week post first test), the same participants were asked to consume the opposite of the first test meal. Before and after eating both meals, participants rated their appetite and completed the food preference task.

THE STUDY'S SIGNIFICANT FINDINGS SHOWED THAT PREFERENCE FOR SWEET FOOD DECREASED AFTER THE SWEET MEAL AND INCREASED AFTER THE SAVOURY MEAL.

Preference for protein-based food decreased to a greater degree after consuming the savoury meal than it did after consuming the sweet meal. Preference for carbohydrate and fat-based food decreased after the consumption of both the sweet and savoury meals. Preference for low-energy foods increased after both sweet and savoury meal consumption.

The food preference task proved to be an easy and quick tool for evaluating food preferences over a wide range of food categories at differing stages of meal consumption. It also provides further evidence for the importance of SSS with regards to appetite and food intake. 

References for this article can be found on the AIFST website: <https://www.aifst.asn.au>.



Can increased scientific knowledge around the complexity of components in milk lead to novel, healthier dairy products for the future?

WORDS BY JARED RAYNES
CSIRO

Milk is the complete food source for a growing neonate and is constantly adapting to the particular needs of the newborn. The complexity of milk is evident when one looks at how a mother's milk changes from colostrum, rich in immunological components such as antibodies, lactoferrin and leukocytes with a relatively low concentration of lactose, to late lactation milk (see Table 1 for an overview of the compositional changes of human breast milk compared to cows' milk and an example infant formula).

While this example is based upon human milk, cow's milk and all other mammalian milks also show dramatic differences in composition depending on factors such as feed type and amount, stage of lactation, season, drying off period and genetics. For example, research undertaken by CSIRO showed there was a seasonal and regional effect on the solid fat content of milk from cows in different regions of Australia. Similar findings for protein, fat and other milk components have also been found in New Zealand, where researchers found that the stage of lactation and seasonal variation play a role in milk composition.

SELECTIVE BREEDING FOR MILK COMPOSITION

The possibility of harnessing differences in milk composition has been ongoing since the introduction of selective breeding by Robert Bakewell around 1760. A recent example is A2 milk, sold by A2 Corporation in New Zealand since 2000. A2 milk is selected based on the presence of a genetic variant of the protein β -casein, which animal studies have shown may be easier to digest. Although the scientific evidence for differences in humans consuming A2 milk compared to "normal" milk (usually containing both A1 and A2 β -casein) is controversial, A2 milk does prove that it is possible to form herds of cows for a particular trait in milk through the use of genetic selection.

HOW CAN DIFFERENTIAL MILK COMPOSITION BE USED?

Milk producers and dairy manufacturers can potentially take production of novel milks and dairy foods to the next generation

by specifically targeting the natural variation in milk composition rather than conventional metrics such as total milk solids. CSIRO scientists have a good example of how this approach could work through the selection of milk with defined size ranges of milk fat globules (MFGs) and casein micelle (CM) sizes. Milk from cows known to produce large (4.49-5.38 μm) MFGs in combination with small CMs (164-168 nm) produced the firmest rennet curd (used to produce cheese), showing the potential to alter cheese yields and functionality through selection of milks from particular cows (see Figure1).

This is just one example of advanced compositional selection, but many more exist depending upon the purpose the milk will be used for. Farmers may soon be able to select not only the desired genetics of cows for certain traits, but also specific feeding regimes or diversion of milk to certain products based on season and lactation stage.

ENRICHING INFANT FORMULA

While the beneficial effects of human milk oligosaccharides (HMOs) are widely known, there is increasing evidence that protein linked oligosaccharides, called glycans, also play a beneficial role in infant brain and gut development.

To harness the benefits of glycans through the production of a new infant formula with increased concentrations, a farmer could – with a small investment in analytical measurements of milk from individual cows – increase the content of glycans in their base milk powder by targeting certain milk compositions. For example, a farmer could select cows producing milk with smaller casein micelles, using milk from late lactation, or by selecting cows producing the B variant of K-casein (in the same way as A2 milk). A farmer could potentially undertake the first two possibilities without changing the cows in the herd, although separation of different milks would be needed. The genetic selection of the B variant of K-casein would require the farmer to progressively introduce cows producing this variant through breeding selection. ►

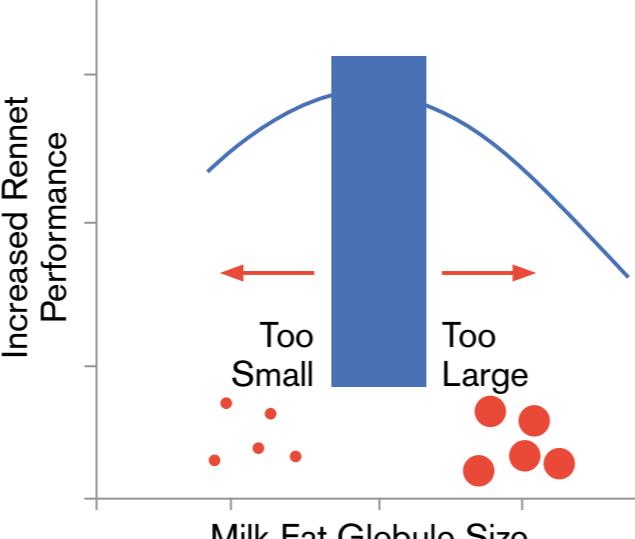
THE FUTURE FOR FARMERS

There are significant differences in the composition of milks upon a cow's genetics, season, feeding regime and stage of lactation. All of these factors can be potentially exploited to manipulate the composition of milk to attain desired functionalities and nutritional properties in dairy products. A farmer can gain much useful information about their cows and the milk they produce through detailed compositional analysis on top of the classical protein, fat and lactose content. This will give the farmer of the near future the potential to generate novel dairy products with a relatively small capital investment.

Dr Jared Raynes is a research scientist in the Dairy Team within the Food Structures group at CSIRO Agriculture & Food.

References for this article can be found on the AIFST website: www.aifst.asn.au.

HOW MILK COMPOSITION INFLUENCES RENNET PERFORMANCE

Figure 1: Model showing how the size of MFGs can influence the rennet performance (faster gelation, firmer curd) through the optimised fitting of MFGs inside the casein protein pore network. Adapted from Logan et al. (2015). 

Composition of human colostrum, transitional and mature milk, cows' milk and infant formula (per dL).

NUTRIENT	COLOSTRUM	TRANSITIONAL HUMAN MILK (DAY 10)	MATURE HUMAN MILK	COWS' MILK	INFANT FORMULA (60% WHEY, 40% CASEIN)
Energy (kcal) (kJ)	56 (235)	67 (280)	67 (280)	66 (275)	64 (269)
Protein (g)	2.0	1.5	1.3	3.3	1.4
Fat (g)	2.6	3.7	4.2	3.8	3.5
Carbohydrate (g)	6.6	6.9	7.0	4.8	6.8
Sodium (mg)	47	30	15	55	21
Calcium (mg)	28	25	35	120	48
Zinc (mg)	0.6	0.3	0.3	0.4	0.5
Iron (mg)	0.1	0.1	0.1	0.06	0.8
Retinol (µg)	115	85	60	35	60
Vitamin D (µg)	N	N	0.01	0.08	0.7
Vitamin C (mg)	7	6	4	1.8	9.6
Folate (µg)	2	3	5	6	11
Thiamin (mg)	trace	0.01	0.02	0.04	0.06
Riboflavin (mg)	0.03	0.03	0.03	0.07	0.13
Vitamin B12 (µg)	0.1	trace	trace	0.4	0.26

Data derived from multiple sources. N, significant quantities but no reliable information. Source: based on data from Morgan, (2006).

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Developing Osmosis Food Technology

The first commercial unit to develop forward osmosis technology for food applications in Australia was recently demonstrated at CSIRO's food innovation centre, as the collaboration is fast-tracked to meet the needs of the food industry and provide opportunities for current and new processes and products.

The collaboration brings together highly complementary expertise, technology, skills and assets in technology design, equipment manufacture and application knowledge, along with specialist process and product development knowledge.

The technology, based on osmotic pressure, does not use heat so concentrates are of higher functionality and quality. Aroma compounds and nutritional attributes, for example, are retained more than in evaporation.

The advantages in terms of energy and transport efficiency, high quality concentrates and product functionality also gives forward osmosis technology a bright future in the food industry. Forward osmosis costs significantly less to implement and operate than evaporation and has applications in beverages including fruit juices, dairy products, proteins, water treatment and applications where water is removed.

Preliminary estimates show the capital costs of forward osmosis can be less than 70 per cent and operating costs less than 60 per cent of evaporation, meaning it could be installed on-farm, not just in-factory, reducing transportation costs.

CSIRO expects that the dairy industry will be a key sector to benefit from the technology as they are heavy users of concentration as part of the conversion of milk to dried products. The technology could also lead dairy companies to new product development opportunities in functional dairy products for example. ☉



Porifera's Jennifer Klare showing off forward osmosis to industry at CSIRO's Food Innovation Centre. Photo courtesy of CSIRO.

THE ADVANTAGES OF FORWARD OSMOSIS

Benefits of forward osmosis over other concentration technologies, such as evaporation in the main and reverse osmosis, include:

- Forward osmosis doesn't use heat treatment, so product quality and functionality is better. Proteins aren't denatured, for example, and volatiles such as aromas, flavours and bioactives are retained, meaning better quality products in terms of nutritional profile, texture and sensory attributes.
- Forward osmosis operates at considerably less hydraulic pressure than evaporation so it uses less energy, and capital costs and operating costs can be significantly less than evaporation.
- Because there's no pressure applied, compared to reverse osmosis and other membrane systems there's significantly less fouling and cleaning is much easier, less costly and time-consuming.

WOULD YOU EAT 3D PRINTED MEAT?

The aged care sector and the Australian meat industry could be big beneficiaries of recent research into 3D printed foods by Meat & Livestock Australia (MLA).

The research shows 3D printing could offer an interesting solution for those in the meat industry seeking to add high value returns to cuts not normally offered at retail by developing a 3D printable "meat ink". While consumers continue to seek high quality premium steaks, roasts and chops, other red meat portions also contain the high protein and iron content and could be transformed into customised textures and formats using a food-safe 3D printer currently being developed for chocolates, pasta shells and carrot sticks.

MLA's research found that market acceptance of such a product would be high, and the potential added value of this transformational technology could radically change the red meat industry. In the aged care sector, there is high demand

for nutritious foods that are easy to chew, swallow and digest, with 3D printed foods offering a tastier and more nutrient-laden alternative to pureed foods. The idea is not completely novel, with 3D printed meat already on the menu in more than 1000 German nursing homes!

MLA is also exploring wider opportunities related to the preventative health and wellness mega trend and emerging diets as consumers begin to seek solutions that are "designed for me". This could result in 3D printed red meat products that cater for the nutritional needs of specific consumers, such as high iron products for active females.

As well as creating more value per carcass, 3D printing of red meat could also result in less waste per carcass and overall additional volume of meat sold. MLA is finalising details for a 3D printing conference in Australia in May 2017, including global speakers and demonstrations of the technology. ☉

Grub's Up!

With more than two billion people worldwide consuming around 2000 edible insect species, some of the more palatable alternatives to eat – crickets, grasshoppers, palm grubs, caterpillars, mealworms and even black soldier fly maggots – are set to infest the Australian food stage.

Insect-derived protein was a key ingredient in new products developed by final year Diploma of Food Science and Technology students at the William Angliss Institute in Melbourne for their end-of-year showcase. The winner and runner-up of the 2016 AIFST award for product most likely to succeed in the marketplace both used insect-derived proteins in their winning products, which included Critter Fritters – Mexican style sweet corn cricket fritters – and Bugsy Laksa – a laksa flavoured cricket-infused noodle dish!

Insects are deemed high in protein, on a level with a burger and a glass of milk. They may not look like much, but they actually have high fat, protein, vitamin, fibre and mineral content comparable to fish or livestock. Consuming insects as opposed to livestock is considered more environmentally friendly as insects require significantly less land and water than traditionally farmed animals. They also reproduce much more quickly. ☺

Researchers in Finland have developed a fascinating food process which turns mealworms and crickets into substitutes for meat. The method removes excess fat and increases protein content. Although the findings have yet to be published in a peer reviewed journal, the methodology uses fine fractioning, which enables the use of small amounts of the outer shell of insects for one type of food and other coarser texture for other types of food. Suggested use for the mealworms and crickets is as the raw materials for meatballs and falafel.



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¹ McAlloon, C.J., et al., The changing face of cardiovascular disease 2000-2012: An analysis of the world health organisation global health estimates data. Int J Cardiol, 2016. 224: p. 256-264.

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