Government Chemist

Government Chemist Conference 2023

Safe food for tomorrow's world - food security in challenging global conditions

20 - 21 June 2023
Royal Society of Chemistry
Burlington House

Department for Science, Innovation & Technology

Department for Environment Food & Rural Affairs

Food Standards Agency

Food Standards Scotland
For safe food and healthy eating

Government Chemist Conference 2023

Safe food for tomorrow's world – food security in challenging global conditions

The Government Chemist Conference takes place on 20-21 June 2023 at the Royal Society of Chemistry, London and online.

The backdrop for the conference is how current geo-political, environmental and economic conditions are creating escalating challenges for global food security. During the event, speakers will provide industrial, regulatory and academic perspectives on the current position and discuss how scientific and technological approaches can underpin effective solutions to these challenges.

The Government Chemist conference has been a regular event for the last twenty years. It provides an opportunity for communities in the fields of food safety, authenticity, security and sustainability to come together to discuss global threats and challenges, and to explore opportunities to ensure food security for tomorrow's world.

Government Chemist Conference 2023

AGENDA

20 June

Session 1- Drivers for a resilient official food control system (Chair- Lucy Foster, Defra)

09:45	Registration & coffee
10:30	Chair's Introduction
10:35	Welcome address by **Julian Braybrook, LGC**
10:50	Can we have it all? Is it possible to create a secure food system that produces enough calories, sequesters carbon and restores biodiversity?- **Henry Dimbleby MBE**
11:20	Referee cases outcomes- **Paul Hancock, LGC**
11:50	Implications/opportunities- what next for food regulation in the UK - **Jessica Burt, Food Law Group**
12:15	**Lunch**

Session 2- Authentic and safe food (Chair- Helen Pain, RSC)

13:30	Interactive session jointly organised by NFCU and SFCIU: Information Sharing- Food Crime
14:30	Chair's introduction
14:35	Alternative proteins: emerging food authenticity implications- **Rosario Romero, Fera**
15:00	Safe and Authentic Food: What it means today for consumers and regulators- **Geoff Ogle, FSS**
15:25	**Break**
15:45	Ready to regulate- a strategy to regulate the future food system- **Sam Faulkner, FSA**
16:10	Positive outcomes from government funding in OCL infrastructure support- **Jane White** and **Jon Griffin, APA**
16:35	Panel session- what does green mean? How do labs, industry and academia comply with requirements for sustainability?- **Anne Horan (RSC), David Humble (ASA), John Lee (Agilent) and Louise Manning (Lincoln University)**
17:15	Conference close and drinks
19:15	Conference dinner

Department for Science, Innovation & Technology

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AGENDA

21 June

Session 3- New and emerging technologies (Chair- Sterling Crew, IFST)

09:15	Registration & coffee
09:45	Chair's introduction
09:50	Transforming the UK food system through the appliance of science- **Guy Poppy CB, UKRI/BBSRC**
10:20	Overview of FAO report: Thinking about the future of food safety- **Vittorio Fattori, FAO**
10:45	The Genetic Technology (Precision Breeding) Act- **Chris Stockdale (FSA) and Michael Ellis (Defra)**
11:10	**Break**
11:30	Cultivated meat: an emerging novel food industry- **Petra Hanga, Quest Meat**
11:55	Mapping the world's soya production to protect our rainforests- **Brian Quinn, Queen's University Belfast**
12:20	**Lunch**

Session 4- Solutions to challenges in food production (Chair- Simon Branch, Herbalife)

13:30	Chair's introduction
13:35	The challenge of food production today- **Andrew Clark, NFU**
14:00	Traceability of genome edited products in the food supply chain- **Malcolm Burns, LGC**
14:25	Macro and microalgae as alternative food sources- **Michele Stanley, SAMS**
14:50	**Break**
15:10	What is vertical farming and what are the considerations when applying it in a real world scenario- **Romy Wilkin, Jones Food Company**
15:35	Emerging climate-related food safety risks and how to evaluate them - **Louise Manning, University of Lincoln**
16:00	Closing remarks
16:10	Conference close

Department for Science, Innovation & Technology

Department for Environment Food & Rural Affairs

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Tuesday 20 June 2023 – Session 1: Drivers for a resilient official food control system

Session Chair – Dr Lucy Foster, Agri-food Science Lead, Innovation, GM and Genetic Resources, Defra

Dr Lucy Foster began her government career as a scientist at the Ministry of Agriculture, Fisheries and Food in 1998 working on food labelling and standards. She joined the Food Standards Agency in 2000. She moved to the Department for Food, Environment and Rural Affairs in 2009 where she is currently joint Head of Science for agri-food and farming and responsible for a broad portfolio of strategic research, evidence and analysis underpinning agriculture and food policy; alongside science policy responsibilities covering GM, genetic resources and agri-food innovation.

Gained throughout her Civil Service career, she has considerable experience across a wide range of food issues from both a science and policy perspective including food chain systems, food technology, microbiological foodborne disease, food hygiene, nutrition, food additives and food compositional and labelling standards.

She is a food scientist by training and gained research experience at Unilever (Colworth) and the Institute of Food Research, Norwich. Her PhD specialised in food composition and analysis. She is also a fellow of the Institute of Food Science and Technology.

Welcome and introduction – Dr Julian Braybrook, Government Chemist

Dr Julian Braybrook is Director of Measurement Science for the National Measurement Laboratory at LGC and Government Chemist, where he is responsible for the science strategy and partnership development of the associated metrology and regulatory analysis programmes, in support of the UK National Measurement System.

Since joining LGC in 1988, Julian has carried out a variety of roles delivering and managing national and European analytical research innovation and exploitation and contract service solutions, for a variety of chemical and biotechnology applications and across both the public and private sectors. He holds several national, European and international positions informing standards generation and application, as well as government and commercial policy and practise.

Julian has a degree in chemistry from the University of London and a PhD from the University of Cambridge for research into novel contrast agents for magnetic resonance spectroscopy and imaging. He has an honorary DSc from Kingston University London for his contributions to chemistry. He is a Chartered Chemist, Fellow of the Royal Society of Chemistry (CChem FRSC)

Keynote lecture

Can we have it all? Is it possible to create a secure food system that produces enough calories, sequesters carbon and restores biodiversity – Henry Dimbleby MBE

Abstract

Ensuring a supply of food that is safe, healthy and sustainably produced, while always a challenge, has been increasingly becoming a critical issue. During this keynote address, Henry Dimbleby will discuss how current and future security and environmental issues impact on the global food system and the direct consequences on the safety and health of the population. He will cover the factors leading to the current situation, likely future challenges and will highlight areas where action is required to produce solutions for better outcomes. In doing so, Henry will establish the over-arching framework for the remaining conference presentations and discussions.

Speaker biography

Henry Dimbleby was given the role of lead non-executive board member of the Department for Environment, Food and Rural Affairs in March 2018. In June 2019 the Environment Secretary appointed him to lead the National Food Strategy, which he published in July 2021.

Henry co-founded the Leon restaurant chain (2004). He was a co-founder of the Sustainable Restaurant Association (2009), the charity Chefs in Schools (2018) and co-authored The School Food Plan (2013), which set out actions to transform what children eat in schools and how they learn about food.

Henry previously worked as a Strategy Consultant at Bain & Company (1995-2002) where he advised businesses on strategy, performance improvement and organisational design. Before that he worked as a journalist on The Daily Telegraph and a chef at the Michelin-starred Four Seasons Inn on the Park

Overview of recent referee cases – Paul Hancock, Referee Analyst, LGC

Abstract

Following an introduction to the referee process, a review of recent referee cases will be given. With sampling activities by enforcement bodies returning to pre-Covid levels, the variety in technical complexity of referee cases received remains. Cases resolved include genetically modified rice from China, materials and articles in contact with food, and pesticides in a variety of foods.

Speaker biography

Paul Hancock joined the Government Chemist programme in July 2020 as Head of the Office of the Government Chemist, Referee Analyst and Nominated Officer.

Paul has 26 years' experience of enforcement analytical chemistry, including 11 years' experience as a public and agriculture analyst and 8 years as head of an official control laboratory. Prior to this Paul worked in environmental analysis and coal utilisation research, and has recent experience of the animal feed industry.

His technical areas of expertise include high level interpretative skills in food safety and standards, general analytical chemistry and associated issues; working knowledge of ISO/IEC 17025 (UKAS) quality issues, ISO 9000 lead auditor qualified and he is a specialist in food law application (labelling, allergens, health claims, composition, additives, GMOs, contaminants, consumer complaints).

Paul has also served on the Association of Public Analysts' training committee for over 20 years, including as secretary and currently as APA Training Officer. He has also used his experience to successfully mentor a number of candidates through the MChemA examination process.

Implications/opportunities on EU revocation bill (sunset bill) – what next for food regulation in the UK – Jessica Burt, Associate (Food Law)

Abstract

This presentation will take a look at likely regulatory divergences between UK and EU and what areas of the food sector may be most affected. The talk will take into account the current moving situation and will explore any possible timescales and practical impact of enacted legislation.

Speaker biography

Jessica specialises in food product regulatory and product liability issues, dealing with contentious and non-contentious matters. She has a Masters in Food Law with distinction, is a board member of the Food Law Group and is a qualified mediator. Jessica has broad experience; from advising on food regulatory matters such as labelling, advertising and marketing, including the making of voluntary claims and claims substantiation. Further experience includes risk assessment, food safety, crisis management and product liability. She has published articles on legal developments in the sector in a number of journals, has been quoted in 'The Grocer' and is recommended by Chambers for Food Product Liability.

Interactive session jointly organised by National Food Crime Unit (NFCU) and Scottish Food Crime and Incident Unit (SFCIU): Information Sharing - Food Crime

During this session, the Food Standards Agency's (FSA) NFCU and the Food Standards Scotland (FSS) SFCIU will present and facilitate a session aimed at understanding the strengths and weaknesses of the current system for reporting incidents and sharing information. The session will include a very short presentation from both units, followed by group discussions and final summary.

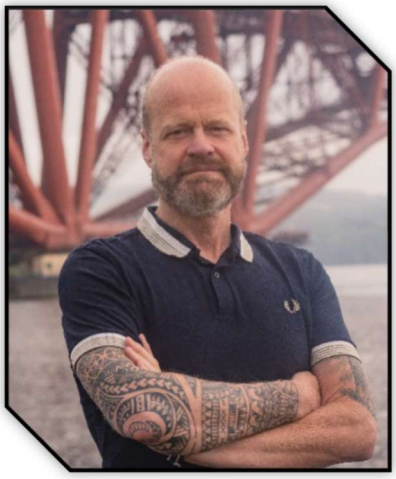
SFCIU - Head, Ron McNaughton

Ron was initially a consultant for FSS and became the Head of the SFCIU in 2016 after being asked to build a food crime capability by the Chief Executive.

A former Senior Police Officer in Scotland, he retired from the Police in 2015, after 30 years' service. During this period, he served in a number of operational policing roles. For the last five years of his police service, he was specifically involved in leading the investigation into serious and organised crime as Force Authorising Officer and Head of Intelligence for Tayside Police. In that role he was responsible for all force covert activity.

Latterly Ron worked within the Police Service of Scotland's intelligence function and performed the role of Intelligence Commander for the Ryder Cup at Gleneagles.

SFCIU - Head of Crime Operations, Gordon Mitchell



Gordon started his career in the Scottish Police Service working predominantly in crime management roles including the Scottish Drugs Enforcement Agency and the CID before retiring as Area Commander in Police Scotland.

Since then he was contracted by the Scottish Government to independently investigate and report findings in relation to long term complex workplace investigations.

As Head of Crime Operations he leads a team of analysts, intelligence staff and investigators reporting food crime on behalf of Food Standards Scotland.

NFCU – Head of Analysis and Futures, Giles Champan

Giles Chapman is Head of Analysis and Futures in the Food Standards Agency's National Food Crime Unit (NFCU). He joined the Unit shortly after its inception in 2015, following a career in intelligence analysis within policing, addressing many aspects of serious and organised crime. His responsibilities within NFCU have included ensuring delivery of the Unit's Food Crime Strategic Assessments, EU Exit preparedness and the Unit's work to secure further investigative powers, alongside membership of international working groups and also the NFCU's annual participation in Europol's Operation OPSON. He lives in London.

Tuesday 20 June 2023 – Session 2: Authentic and safe food

Session chair – Dr Helen Pain CSci CChem FRSC, Chief Executive, Royal Society of Chemistry

Helen joined the Royal Society of Chemistry after completing a degree and PhD in Chemistry. She is a Chartered Chemist and a Chartered Scientist. At the RSC, she has led many of its strategic functions becoming Deputy CEO in 2015. Helen is a champion for the profession and has commissioned bold campaigns such as Breaking the Barriers and work to support Technicians. In 2018, Helen was appointed Chair of the Science Council, a UK organisation for the advancement of the science profession. She took up the role of Acting CEO of the Royal Society of Chemistry in January 2020 and was appointed Chief Executive in June 2021.

Alternative proteins: emerging food authenticity implications – Dr Rosario Romero, Science Lead, Fera

Abstract

The world's population is projected to reach 9.7 billion in 2050 and ensuring that everyone has access to safe and nutritious food whilst protecting natural resources represents a serious challenge. Alternative sources of proteins are thought to be among the most promising innovations that may play a crucial role in tackling the challenge as part of a wider range of measures including management of dietary demands, boosting the use of traditional legumes, reducing waste and supporting circularity. The interest in alternative proteins has been increasing in recent years and this trend is expected to continue. Animal welfare, health and sustainability are key drivers of this behaviour. Technological advances are enabling the acceleration of innovations, and a plethora of alternative proteins products are being developed.

Many of these new products will require pre-market regulatory approval, for which their quality and safety must be evidenced. Governments around the world are reviewing their regulatory frameworks to ensure that new products are accommodated whilst safeguarding industry and consumer's interests. With the introduction of novel ingredients and products and the increasing complexity of the food supply chain, there will be emerging risks to consider, not only regarding safety but also food authenticity and fraud. Some of the food authenticity issues associated with alternative sources of protein will be discussed, as well as the role of current analytical testing capability in supporting product authentication in this sector.

Speaker biography

Rosario is a Science Lead in the Food Business Unit at Fera Science Ltd. She has a background in cell biology, protein biochemistry and drug discovery. For the last 12 years she has worked at Fera developing methods for food safety and authenticity, including proteomic approaches for meat speciation and allergen detection and molecular diagnostics of microbial pathogens in the agri-food sector. She is a member of two European expert standardisation committees in the areas of food authenticity and liquid chromatography/mass spectrometry methods. Her current focus is novel foods and alternative proteins, developing an evidence base to support industry and government through scientific R&D projects and desk-based studies.

Safe and Authentic Food: What it means today for consumers and regulators – Geoff Ogle, Food Standards Scotland

Abstract

Food security is an issue which is impacting on every part of the world, and in taking steps to create a more sustainable and resilient supply chain for our population, it is critical that the systems we have in place to safeguard food safety and authenticity are able to keep pace with the challenges we are facing. As the national food body for Scotland, FSS's key priority is consumer protection, and science, evidence and data plays a vital role in enabling us to understand how on-going geo-political, environmental and economic pressures are impacting on the values of our population around safe and authentic food, and how we need to adapt as a regulator to ensure our system of controls is able to align with the shifting landscape. This presentation outlines some of the key challenges we are facing, and the action FSS is taking to ensure we continue to deliver our vision for a safe, healthy and sustainable food environment that benefits and protects the health and well-being of everyone in Scotland.

Speaker biography

Geoff was appointed the first Chief Executive of the new food body, Food Standards Scotland, which came into effect on 1 April 2015. This followed his appointment as Acting Director for the Food Standards Agency (FSA) in Scotland on 2 June 2014. Before doing so, Geoff was Portfolio Director responsible for improving FSA's approach to programme management.

Geoff joined the FSA in December 2008 and worked in field operations until January 2013 responsible for compliance and enforcement of all FSA approved premises. He moved from that role to become the senior investigating officer for the horsemeat incident. Geoff became the interim FSA Director for Wales from May 2013 until February 2014 where he gained valuable experience working in a Devolved Government setting. Geoff has also undertaken a strategic review of the FSA's approach to SMEs and was lead reviewer for the focus on enforcement review of OFSTED Early Years Inspection.

Prior to the FSA, Geoff worked in the Department of Work and Pensions for over 20 years, as Head of the International Pension Centre in charge of the largest of the centres with 2.2 million customers and a spend of over £2bn a year. While in DWP Geoff did a range of posts including operational delivery, policy development and programme management. He was also Private Secretary to the Child Support Agency Chief Executive Officer from 1997 to 2000.

Ready to regulate - a strategy to regulate the future food system – Sam Faulkner Deputy Director for Strategy, Food Standards Agency

Abstract

The global food system has seen substantial shocks over the last few years, but these seem to be the new normal. So, how do we continue to keep consumers safe in a food system that is reacting and responding to these…whilst still looking to the future?

Last year the FSA published its new strategy that will make sure it continues to deliver 'food you can trust', by focusing making sure food is safe, is what it says it is and also healthier and more sustainable over the next five years. It is achieving this through a new flexible approach that means it can react and respond to the new challenges, but also continue to develop so it can evolve and be ready to regulate the future food system.

Speaker biography

Sam is the Deputy Director for Strategy at the FSA. Having been at the FSA since 2018, he takes a long term view across the food system, developing the FSA's approach to meeting the challenges that we face in the coming years and ensuring that we can continue to protect consumers and maintain the UK's high standards for food safety and standards. Sam works across Government and the food system to continue to ensure that the FSA can deliver food we can trust.

Sam oversaw the development and publishing of the FSA's 5 year Strategy in 2022 and underlying multi-year delivery plan. He leads the FSA's Retained EU Law Programme, looking to deliver on the opportunities that the FSA has to develop a more proportionate and UK focused food regulatory regime.

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Positive outcomes from government funding in Official Control Laboratory (OCL) infrastructure support – Joint talk by Jane White and Jon Griffin, APA

Abstract

In this joint talk Jane and Jon will look at how OCL infrastructure is supported in Scotland, England and Wales. Food Standards Scotland is working with the four Public Analyst laboratories in Scotland to maintain capability and resilience. A paper has been presented to the FSS board on the vulnerability of the current delivery model with an aim to establish a more sustainable model for the future.

There are currently five OCLs operating in England and Wales. For many years, the existence of the OCLs was left to market forces which meant many have closed. To ensure resilience, and a future for the service, the Food Standards Agency are now providing grant funding for equipment, research, training, and sampling to ensure competency is maintained.

Speaker biography – Jane White

Jane studied physical sciences at Robert Gordon University in Aberdeen. She then worked with a building consultancy within the area of contaminated land reclamation before joining Glasgow Scientific Services in 1992.

Jane obtained her MChemA in 2000 and went on to be appointed as Public Analyst to 16 Scottish Local Authorities. She is also part of a team that provides remote and on site scientific support to Scottish Fire and Rescue.

Speaker biography – Jon Griffiths

Jon graduated from Robert Gordon's Institute of Technology (now Robert Gordon University), Aberdeen in 1988 having obtained an honours degree in physical sciences majoring in chemistry. He joined Kent County Council in 1988 as a Graduate Scientist where he carried out classical and instrumental analysis of foods, agricultural samples, waters and consumer goods. Jon completed the MChemA qualification in 2002 and was then appointed as a Public Analyst. Since then he has continued in the role of Senior Public Analyst, Technical Manager and Analytical Services Manager at Kent Scientific Services, West Malling, Kent.

In 2015 he was elected President of The Association of Public Analysts. He now chairs the Association of Public Analysts (APA) Educational Trust Committee and sits on both the Programme Expert Group for LGC and the National Agriculture Panel.

Panel session: What does green mean? How do laboratories, industry and academia comply with requirements for sustainability – Anne Horan (RSC), David Humber (ASA), John Lee (Agilent) and Louise Manning (University of Lincoln)

During this panel session, the speakers will provide an introductory presentation on their perspective of how sustainability goals are achieved in their sector. After the presentations, the audience will have the opportunity to put questions to the panel.

Dr Anne Horan, Senior Programme Manager at the Royal Society of Chemistry

Abstract

As the environmental sustainability of research has come into the spotlight more, members of the Royal Society of Chemistry wanted to get a picture of the current situation for scientists and their organisations: How much are people thinking about the environmental impacts of their research? What changes are they making? What is preventing them from taking action and what do they think would help them to do more?

To start to answer these questions, this short presentation will share some of the key findings from our "Sustainable laboratories" report based on the views and experiences of scientists about how to conduct research in a more environmentally sustainable way without compromising aspects like research safety, quality and impact. The presentation will also share what we heard about the concrete actions that people are taking, as well as their perspectives on barriers and opportunities to drive forward lab sustainability in the chemical sciences.

Panellist biography

Anne Horan is a Senior Programme Manager at the Royal Society of Chemistry where she leads a team that work with the RSC's scientific communities and a national body comprising of the Heads of Chemistry Departments in the UK and Ireland. A recent focus of her role has included the establishment of a new science and innovation advisory forum at the RSC, activities to enable collaboration between researchers in the chemical sciences and towards environmentally sustainable research. Anne joined the RSC in 2010 and has a PhD in organic chemistry from Trinity College Dublin, Ireland.

John Lee, Agilent

Abstract

I've recently returned to direct sales (across most major industries and with a focus on LC, GC and MS portfolio) and have discovered an increased focus from customers wanting to know what Agilent is doing to improve the sustainability of instruments both in terms of the resources they use, but also how easy we are making it for customers themselves to optimize how their resources are deployed, according to changing needs over the course of time. Customers are now even interested in the packaging when a system arrives and its disposal when a newer technology is required. We have strategies around responsible disposal but also through removal without disposal, through refurbishment of older models for resale and hence enhancement of

their working lifetime. Since making a new instrument has a significant environmental impact, this strategy of prolonging lifetimes of systems can have a major contribution to reducing environmental impacts. Indeed, importantly Agilent's refurbishment strategy is very popular with certain of our customers, so it is a perfect storm.

Panellist biography

John has a degree in applied chemistry from Kingston University and has spent a career working for manufacturers of analytical equipment from chromatography and mass spectrometry, to molecular and atomic spectroscopy. During that time, he has worked in sales and marketing positions as well as running a development team focussed on developing new workflows for increased productivity in food laboratories.

David Humber, Senior Executive (Complaints Department), Advertising Standards Authority (ASA)

Abstract

David will be providing a very general overview of the ASA Environment Code rules and how those might be applied in the context of sustainability claims for food related advertising.

Panellist biography

David has been working in the Complaints department at the ASA since 2011, first as a Complaints Executive and as a Senior Complaints Executive since 2017. He is currently one of the project managers on our Climate Change and the Environment (CCE) project, focussing on areas concerning waste and food.

Louise Manning, Professor of Sustainable Agri-food Systems, University of Lincoln

Professor Louise will be a speaker in Session 4 of the conference. Her biography and background are included in that section.

Wednesday 21 June 2023 – Session 3: New and emerging technologies

Session chair – Sterling Crew, President of the Institute of Food Science and Technology

Sterling has over 35 years' experience of working in the food industry in the fields of food safety, governance, compliance, horizon scanning, sustainability and innovation. He started his career in government before a successful track history in retailing with Marks and Spencer and Tesco. He has also worked in the branded environment for Coca - Cola and Disney and as a Technical Director at the manufacturers Peter Black and Kolak Snack Foods. With experience as a regulator, retailer and manufacturer he has a unique perspective on the development of the global food sector.

He is currently the President of the Institute of Food Science and Technology and Chair of the Advisory Board of the Food Authenticity Network.

Keynote lecture

Transforming the UK food system through the appliance of science – Professor Guy Poppy CB FMedSci, UKRI, BBSRC, University of Southampton,

Abstract

Food systems need to be transformed to help ensure human and planetary health. Over the past decade we have increasingly recognised that the food supply chain operates within a more complex system which affects and is affected by food. Some of the greatest challenges facing planetary health (e.g. climate change, biodiversity loss) and human health (e.g. triple burden of malnutrition, zoonotic pandemics) have a significant “food factor” and we need to respond with pace and system scale.

The UK launched a £47.5 million strategic priority fund programme in 2019 to Transform the UK food system (TUKFS) for healthier people and a healthier environment. This ground-breaking programme has brought together almost 40 universities and institutes with more than 200 private and public sector organisations to fulfil the programme aims.

Alongside the Transforming food system SPF, UKRI spends more than £200 million per year on food-related research. Emerging thinking on food systems research will be discussed alongside the TUKFS programme, with a focus on the role of research and innovation across the food system.

Speaker biography

Professor Guy Poppy served as the FSA’s Chief Scientific Adviser from 2014 to 2020. He was appointed Companion of the Order of Bath (CB) in the Queen’s Birthday Honours 2021 and made a fellow of the Academy of Medical Sciences in 2022.

Professor Poppy has significant research experience in food systems and food security and has advised governments around the world on these issues. He has published over 100 peer-reviewed papers including a number of highly cited articles on risk assessment, risk analysis and risk communication.

A graduate of Imperial College and Oxford University, Professor Poppy previously worked at Rothamsted Research, becoming Principal Scientific Officer. He left in 2001 to join the University of Southampton. As the FSA’s Chief Scientific Adviser, Professor Poppy provided expert scientific advice to the UK government and played a critical role in helping to understand how scientific developments would shape the work of the FSA.

From July 2022 he has been the Deputy Executive Chair of BBSRC focused on strategy and external engagement within BBSRC and UKRI and engagement with Stakeholders of the Biosciences.

Food Safety Foresight: FAO's perspective on emerging issues – Vittorio Fattori, PhD, Food Safety Officer, FAO

Abstract

The global agrifood system is a complex and fast evolving space with new food safety issues emerging due to a number of drivers. Foresight facilitates the proactive identification of these drivers as well as related trends, within and outside agrifood systems, that have implications for food safety and therefore also for consumer health, national economy and international trade. Early identification and evaluation of emerging issues promote strategic planning and preparedness to take advantage of new opportunities and address challenges in food safety.

This presentation will provide an overview of major global drivers and trends by describing their food safety implications including climate change, changing consumer behaviour and dietary patterns, new food sources and production systems, technological advances, circular economy, among others.

Speaker biography

Dr Fattori is a Food Safety Officer in the Food Systems and Food Safety Division of FAO, where he is working both coordinating the foresight programme on emerging food safety issues, and providing scientific advice. In particular, some of his focus areas include: evaluating how new trends, and drivers of change can affect food safety in order to proactively respond to risks as well as optimize opportunities; working in the Secretariat of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) to provide scientific advice to the Codex Alimentarius, FAO Members and other UN Agencies (e.g. WFP) on food additives, contaminants and residue of veterinary drugs in food; providing technical guidance on food safety regulatory issues – including emerging issues. Before joining FAO, Vittorio Fattori has worked in research laboratories both in academia and private sector in the UK, Japan, and the USA. His research activities have focused on the assessment of food safety risks posed by some contaminants and pesticides. He also spent some time in Africa, where the work in a rural community has further impressed upon him the need for guidance and support concerning food safety and public health.

The UK Government Genetic Technology (Precision Breeding) Act Presentation – Chris Stockdale, Head of Genetic Technology Policy, FSA and Mike Ellis, Evidence Specialist for Genetic Technology Policy, Defra

Abstract

The Department for Food, Environment and Rural Affairs (DEFRA) aims to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it. Precision breeding technologies have great potential to help us meet our central mission by contributing to delivery of the 25 Year Environment Plan, by helping us adapt to the impacts of climate change, and by enhancing the sustainability and resilience of agricultural systems.

The presentation will provide an outline of the rationale for changes to the regulation of genetic technologies in England, as well as an overview of the key legislative changes, their scope, and next steps for precision breeding regulation.

The Food Standards Agency (FSA) is an independent government department working as a regulator to protect public health and consumers' wider interests in relation to food in England, Wales and Northern Ireland. Our work protects people's health and supports the UK economy and trade by ensuring food has a strong reputation for safety and authenticity in the UK and abroad.

The presentation will cover the FSA's role within the Precision Breeding Act. It will demonstrate a regulatory framework for precision bred organisms integrating a two-tiered authorisation process. This also includes a public register to demonstrate our commitment to transparency and developing an enforcement regime to ensure businesses comply with the regulations appropriately. We will also be expanding on our current position on traceability regarding the detection of PBOs.

Speaker biography – Chris Stockdale

Chris Stockdale is the Head of Genetic Technology Policy at the Food Standards Agency. His policy remit covers the use of genetically modified organisms and precision bred organisms in food and feed. Working with Defra officials and Ministers, Chris led the FSA's contributions on the passage of the Genetic Technology (Precision Breeding) Act through Parliament. Chris is also leading the FSA's plans for the future regulatory framework for precision bred food and feed, working with the Advisory Committee on Novel Foods and Processes to ensure that policy is underpinned by the best available scientific evidence and advice.

Chris has a strong background in food safety, having previously worked on the implementation and delivery of the FSA's new UK risk analysis process for regulated products, including GMOs, feed additives and novel foods. This work was instrumental in ensuring the FSA is capable of executing new

responsibilities that have been inherited following the UK's exit from the EU. Prior to joining the FSA, Chris worked as an enforcement officer at Felixstowe Port Health Authority (The UK's largest Port Health Authority), where he specialised in delivering a wide range of official controls and implementing surveillance sampling programmes to assist with monitoring of imports of food and feed.

Speaker biography – Mike Ellis

Mike is an evidence specialist and policy official within the Genetic Technology Regulation & Policy team in DEFRA. Mike worked closely with the Advisory Committee on Releases to the Environment (ACRE) to translate scientific advice into policy instructions for the technical clauses in the Genetic Technology Act. He is now leading on policy drafting for several technical provisions that are being developed under Secondary Legislation falling out of the Genetic Technology Act. His experience in using molecular biology techniques, including genome editing, to delineate molecular pathways in human glioblastoma cell lines provides him with a strong foundation with which to do this.

Cultivated Meat: An Emerging Novel Food and Industry – Petra Hanga, CSO, Quest Meat Ltd

Abstract

The world's population is continuously increasing and is expected to reach 10 billion people by 2050. The current animal agriculture practices are not sustainable and have many concerns related to animal welfare, overcrowding, irresponsible use of antibiotics contributing to the antibiotic resistance global challenge, deforestation and biodiversity loss, significant use of natural resources and significant production of greenhouse gas emissions contributing to climate change.

There is an increased need for sustainable, protein rich food sources to support the rapidly growing population, while overcoming the detrimental effects of current animal agriculture practices. Cellular agriculture is an emerging area with potential to achieve this. Lab-grown foods include, plant-based proteins (commercially available), acellular products based on recombinant proteins (e.g. milk, cheese) that are produced by cells through fermentation, animal cell culture products (e.g. cultivated meat) and non-animal cell culture products (e.g. Quorn, mycoprotein).

Animal cell culture products like cultivated meat are still in the stage of concept with only one product that has received regulatory approval for commercialisation in Singapore and more recently two additional products receiving the green light for safety from the FDA in US.

This presentation will focus on cultivated meat and will present the state of this emerging industry and the newest developments in this space.

Speaker biography

Dr Petra Hanga is the co-founder and Chief Scientific Officer of Quest Meat Ltd, a start-up based in Birmingham founded in August 2021. Its mission is to accelerate the cultivated meat industry by creating low-cost, food safe ingredients and bioprocessing tools for the industry. Petra is also an Assistant Professor in Biochemical Engineering – Cellular Agriculture at University College London. Dr Hanga holds a BEng in Biochemical Engineering and a PhD in Regenerative Medicine. She has over fourteen years of hands-on experience in bioprocess development for manufacturing cells for different applications including cultivated meat since 2019. To date, she has received funding from EPSRC, BBSRC, Innovate UK, EU Horizon2020 and The Good Food Institute (US). Petra sits on numerous committees including Industrial Biotechnology Leadership Forum (IBLF), ESACT-UK and BESIG IChemE, and she is the winner of the inaugural ESACT-UK Chris Hewitt Rising Star Award.

Mapping the world's soya production to protect our rainforests – Brian Quinn, Queen's University Belfast

Abstract

Over the last few years, the Amazon rainforest has suffered massive destruction to facilitate agricultural production, especially soya. Brazil has arisen to be the world's leading soya producer, eclipsing the US in 2019, due to the influx of agricultural land and market demand. Consumers and businesses who do not want to support this rainforest destruction have had few analytical tools to determine soya authenticity, so we have developed a method to determine the country of origin of soybeans.

We developed this untargeted workflow using our standard method by analysing soya samples using three platforms, GC/MS/SPME for volatiles, LC/QToF for extractables, and ICP/MS for elements. After 10-15% of our collected soya samples were analysed, we built metabolomic models to evaluate the data, and in this case, the ICP/MS platform was determined to produce the best separation amongst countries of soya origin. To analyse soya using ICP/MS, 100 mg samples are digested using a microwave after addition of nitric acid and hydrogen peroxide, diluted to 20 mL, and added to the ICP/MS. Forty-seven elements are quantitated and log base 10 transformed, before building the statistical models. An unsupervised principal component analysis model (PCA) was built first to determine if any separation amongst country groups existed, before supervised models were constructed. Because the PCA showed separation, we built an orthogonal partial least squares discriminant analysis model for the ICP/MS soya data that can determine the country of origin of those in the model to 97.4% accuracy.

Speaker biography

Brian has over 30 years of experience working with agrochemicals, pharmaceuticals, veterinary drugs, and environmental contaminants in laboratory and field studies. Throughout his career, Brian has used many instrument platforms to analyse samples including GC/MS/MS, LC/Orbitrap, LC/MS/MS, and LC/QToF. The first 10 years of his career concentrated on agrochemical research, before he moved on to endocrine disruptors, chemical ecology of plants and insects, medical device manufacturing with related pharmaceutical production, and finally food security at Queen's University Belfast. Brian is an author on numerous refereed publications from different scientific fields, and has participated in multiple collaborations with industry, universities, and governments on both small- and large-scale projects.

Wednesday 21 June 2023 – Session 4: Solutions to challenges in food production

Session Chair – Dr Simon Branch, Herbalife Nutrition

Simon obtained a degree in biology and chemistry and a PhD entitled “Arsenic Speciation in Food”, supervised by Prof Sir Les Ebdon. In 1990 he joined RHM Technology as a Senior Analytical Chemist, progressing through roles of increasing responsibility until ultimately becoming the Head of the Innovation and Improvement Department in 2005, a role he continued after Premier Foods acquired RHM.

In 2010 he joined the McCormick Corporation as EMEA R&D Director, responsible for multisite Product and Process Development teams, creating new products for both retail and industrial customers.

For the last five years he has been with Herbalife Nutrition where he leads R&D and Science for EMEA and India. Research interests of his teams include enhancing the sustainability of Herbalife’s products, evaluating alternative plant protein sources and identifying scientifically proven novel ingredients. During 30 years in FMCG he has maintained a keen interest in the role of the consumer, and how essential listening to them is, when developing and updating products.

Dr Branch is a Non-Executive Director of Campden BRI, a past NED of Sedex and an advisor on the UK Government Chemist Programme Expert Group.

The Challenge of food production today – Dr Andrew Clark, Director of Policy, National Farmers' Union

Abstract

Andrew will provide a perspective on farming which is experiencing a period of unprecedented change – perhaps an overused term in recent times, but one that is felt strongly by the nation's farmers. Following the UK's decision to leave the EU, farm policies that have been defined in Brussels for almost 50years are being replaced. Covid and the invasion of Ukraine has amplified a concern about the nation's food security. Rampant energy and food price inflation has damaged food producers' confidence to grow food and increased the risk of food fraud. And faming's environmental footprint whether in terms of greenhouse gases or water pollution has come under intense scrutiny. It is in this context that investment in and access to innovative technology is ever more vital to ensure that UK's farms remain a trusted source of affordable high-quality food.

Speaker biography

Andrew Clark joined NFU in January 1993. He is the NFU's Director of Policy managing the NFU's multi-disciplinary commodity, policy, Brexit, and BTB teams in Stoneleigh and Brussels. Previously at NFU he has held roles including as Head of Policy and Chief Environment Adviser with special interest in wildlife, public access and rural development policy. For 4 years Andrew was Hertfordshire County Council's Landscape Officer where he led its conservation grant programme. Andrew lives with his family in Worcestershire where he grew up on a hop and fruit farm. He is a Chartered Landscape Architect.

Traceability of genome edited products in the food supply chain - Status and challenges – Dr Malcolm Burns, Head of the GMO analytical Unit and Principal Scientist, LGC

Abstract

Genome editing can facilitate addition, removal, or alteration of DNA sequences at specific locations in the genome. These alterations can vary from single nucleotide variations (SNVs), to deletions and insertions of many base pairs. In 2018, the European Court of Justice ruled that products of genome editing should be regarded as Genetically Modified Organisms (GMOs) and fall under the pre-existing legislation for detection and labelling of GMOs. Since this period, the UK has left the European Union and passed the Genetic Technology (Precision Breeding) Act in March 2023, excluding some genome edited organisms from the regulatory definition of a GMO.

Products resulting from genome editing, being subject to different classifications under separate regulatory regimes, may provide several analytical challenges to ensure full traceability. This presentation will provide a general introduction to the scope and application of genome edited foods, as well as an overview exploring some of the issues for the development of methods for the detection of these. Key topics inclusive of terminology, technical detection of small sequence alterations, the need to establish the origin of the genetic change, and dependency on reference materials and databases, will be touched upon, alongside other analytical challenges.

Significant challenges remain for agreeing an infrastructure for the detection of genome edited products, but key to exploring these issues further is our continued development and understanding of new molecular biology-based approaches, coupled with agreement on best measurement practice guidance.

Speaker biography

Dr Malcolm Burns is the Head of the GMO analytical Unit and Principal Scientist, based at LGC in Teddington (UK). Malcolm has over 25 years' post-doctoral experience in the use of molecular biology approaches for food authenticity testing and is an internationally recognised expert on the identification and quantitation of genetically modified organisms in food products. He is also the manager for the UK National Reference Laboratory for GMOs in Food and Feed.

He has extensive experience in developing and validating methods for DNA analysis both at national and international level. Malcolm leads a team of specialist food scientists at LGC and has published over 70 peer reviewed papers and EU/UK guidance notes on food authenticity, GMO quantification, method validation and estimation of measurement uncertainty.

Malcolm works as a consultant adviser for branches of the UK Government with respect to best practice measurement guidance on food analysis, and on international projects aimed at standardising results in the bioanalytical community. He provides regular presentations at national and international level, and is a member of a number of international working groups and expert advisory committees related to metrology and food authenticity testing.

Macro and Microalgae as alternative food sources – Michelle Stanley, Associate Director for Science, Enterprise and Innovation, Scottish Association for Marine Science (SAMS)

Abstract

Although they have both been eaten for centuries there is increasing interest in both macroalgae (seaweeds) and microalgae as alternative sources of protein and added health benefits. This talk will give an introduction to everything algal and where they are potentially heading in helping us meet the increasing demands for alternative proteins sources and added health benefits.

Speaker biography

Professor Michele Stanley, based at the Scottish Association for Marine Science in Oban, is the Associate Director for Science, Enterprise and Innovation as well as an active research scientist. She has been involved in applied research of both seaweeds and microalgae for the last 27 years. This has covered everything from their cultivation, their biochemical makeup through to what you can actually do with them and their biobanking.

What is vertical farming and what are the considerations when applying it in a real world scenario – Romy Wilkin, Head of Sales, Jones Food Company

Speaker biography

Romy is the Head of Sales at Jones Food Company, a vertical farm business that has been operational since 2018, delivering crops at scale to the UK market. Since joining she has been leading on business development, building the brand and has been at the vanguard of JFC's journey to successfully becoming a B Corp in 2023.

Prior to Jones Food Company, Romy worked in sales roles across several FMCG businesses including PROPERCORN, Mars Wrigley and Fever-Tree.

Emerging climate-related food safety risks and how to evaluate them – Louise Manning, Professor of Sustainable Agri-food Systems, University of Lincoln

Abstract

Consumers expect the food they purchase to be high quality and to be safe. Assuring food security means there must be sufficient, affordable, safe food that is accessible for all. Some emerging questions are: How will climate change trends and incidents affect food safety risk? What strategies will the food sector need to adopt now and in the future, in terms of supply chain mapping and risk assessment to address these risks. Predicted temperature change resulting in droughts, landslides, and floods will impact on plants, fish, shellfish and other animals. Adverse weather conditions can also lead to increased stress on livestock and plants, pest infestation, mould growth or bacterial growth in crop production. More humid conditions increase the risk of mould or fungal contamination of cereal and grains, for example *Fusarium, Aspergillus, and Penicillium* and the associated toxins that are produced. Forest fires can be a potential source of airborne dioxins and polyaromatic hydrocarbons (PAH), leading to soil and groundwater contamination. The role of laboratories in the prevention and detection of emerging food safety hazards is essential including the validation of test methods and laboratory competencies to undertake testing programmes.

Speaker biography

Louise Manning is Professor of Sustainable Agri-food Systems at the Lincoln Institute for Agri-food Technology, University of Lincoln. Louise has worked for over 35 years undertaking consultancy and research to inform strategy, policy, business productivity and efficiency and personal development in the agri-food sector. Her expertise lies in food integrity including food safety and quality, food crime, food waste management, food governance, business ethics, supply chain digitalisation, social and corporate responsibility. Louise brings a strong background in developing professional development programmes and executive education, applied research, and promoting innovation. She has published over 100 peer-reviewed papers and also written and edited multiple books and book chapters. Her recent work focuses specifically on traceability, transparency, ethical use of data and technology and the increasing digitisation of food supply.

Exhibitors information

CAMS - UK

CAMS-UK, the Community for Analytical Measurement Science, brings together industry and academia to develop analytical measurement science through research and training. It is a membership based network which is funded through a combination of membership fees, Research Council grants and Analytical Chemistry Trust Fund support.

www.cams-uk.co.uk

Food Authenticity Network

The Food Authenticity Network is a one-stop-shop for anyone involved in food authenticity testing, food fraud prevention and supply chain integrity, and as such, will be of interest to scientists, the food industry, government, academia, enforcers and consumers alike. With all the relevant material together in one place it is much easier to access curated information and disseminate it to the community whilst also helping facilitate communication and understanding between those working in the area through the discussion fora.

www.foodauthenticity.global

IFST: Institute of Food Science & Technology

Institute of Food Science & Technology (IFST) is the leading professional body for those involved in all aspects of food science and technology and provides evidence-based knowledge resources to support our members and the public understanding of these subjects.

Our members are based in business, research, education and government; across the food sector from agriculture to manufacture, retail and foodservice. Members are individuals who benefit from knowledge resources, our professional and social network, and career and professional development opportunities including events and conferences and our online community.

We uphold standards of professionalism in food science and technology by independently certifying members knowledge and skills through professional registers and accreditation schemes that are widely recognised and valued throughout the sector.

IFST works for food technical professionals to develop their knowledge, community and career progression.

www.ifst.org/

LGC ASSURE – AXIO

Proficiency testing (PT) is a key requirement for accreditation to both ISO/IEC 17025 and ISO 15189. For the past 40 years, LGC AXIO Proficiency Testing been leveraging our technical expertise and influence to drive the future of PT and quality assurance. We currently provide programmes with localised support across a global network - to over 13,000 laboratories in more than 165 countries. AXIO Proficiency Testing, LGC's trusted experts in proficiency testing, operate programmes and schemes across the food, beverage, environmental, clinical, pharmaceutical, consumer safety, forensic and petroleum sectors - giving you confidence in your results and helping you to achieve regulatory and accreditation requirements.

www.lgcstandards.com/AXIO

Royal Society of Chemistry

Whether studying the chemistry of life, or developing the advanced science behind modern technology, chemical scientists use their expertise to improve our health, our environment and our daily lives.

The Royal Society of Chemistry is a professional body and a not-for-profit publisher that connects scientists with each other and society as a whole, so they can do their best work and make discoveries and innovation happen.

We publish new research. We develop, recognise and celebrate professional capabilities. We bring people together to spark new ideas and new partnerships. We support teachers to inspire future generations of scientists. And we speak up to influence the people making decisions that affect us all.

The Royal Society of Chemistry is a catalyst for the chemistry that enriches our world.

www.rsc.org

RSC Interest Group – Food

The Food Group is one of the Royal Society of Chemistry's many Interest Groups, member driven groups which exist to benefit RSC's members and the wider chemical science community, in line with the Royal Society of Chemistry's strategy and charter.

The aims of the food group are to promote the role of chemistry in food and enable transfer and sharing of information and networking between academia and the food industry. This includes analytical, biochemical, chemical, physical, nutritional and toxicological aspects of food and food ingredients and the composition and relationships between structure and functionality throughout the entire food chain in a way to enhance sustainability and food and nutrition security. We also aim to:

- foster an awareness of the importance of chemistry in the food chain
- encourage interactions between scientists and technologists engaged in food research and development
- help transfer such scientific research from ideas to applications.

www.gov.uk/governmentchemist

For further information, contact:
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