



Science Innovation Showcase

10 - 12 December 2024

Executive Summary

Science for the Future

With an overarching theme of 'Science for the Future,' the focus for the 2024 Science Innovation Showcase included substantive new food and nutrition research and updates from regulatory officials. The Showcase featured invited sessions with public sector leadership and included presentations highlighting work from the next generation of scientists.

In this science focused event, attendees had the opportunity to engage in dialogue and discussion on the data, the technology and science being applied across the food and beverage ecosystem.

We are proud to have presentations from:

- American Heart Association
- Center for Science in the Public Interest
- Health Canada
- US Department of Agriculture
- US Food & Drug Administration



2024 Science Innovation Showcase by the Numbers

3

Afternoons of dialogue and exchange in the virtual event

18

Presenters from Government, Industry, Academia and other Non-Profit Organizations

7

Invited Sessions designed to address topics of value to innovators

45%

Government

30%

Industry

25%

Academia and Non-Profits

4

Innovation Sessions based on submitted abstracts - with scientists from US, Canada, UK and United Arab Emirates

Tri-Partite Representation at Event

To learn more about our work to support positive change in the food and beverage ecosystem – and to join us – please contact:



Introduction

Scientists, researchers, and innovators took part in IAFNS 2024 Science Innovation Showcase on December 10-12. The food industry, regulatory agencies, government scientists, post-docs and graduate students and NGOs, gathered for the virtual event featuring animated takes on substantive food safety and nutrition topics. The program centered around the theme of 'Science for the Future,' including new regulatory efforts related to food policy, AI in discovery, science and misinformation and dry-sanitation techniques.

Please find below a recap of the presenters' main points.

Health Canada: Division 24/25 Modernization

Health Canada seeks feedback on its plan for new compositional requirements for infant foods and medical-diet foods. These foods are regulated under Divisions 24 and 25 of the Food & Drug Regulations in Canada. Health Canada has proposed compositional requirements for infant formula, medical foods for young kids, infant cereals and fruit purees, gluten-free foods and formulated nutritional foods. These standards have not been updated since the 1970s. The presentation focused on current thinking and updates on how to deal with shortages and obstacles to innovation as Health Canada develops draft regulations. The new plans may include risk profiles, more informative labels, and pre-market authorization for some ingredients. The rules are slated to be published in 2026 in *Canada Gazette*.

Dino Covone (Health Canada)

Science Information, Disinformation & Chemophobia

Why do people reject science even when hungry for truth? Even those who "believe in science" are subject to echo chambers shaped by feelings, biases and influencers, eclipsing evidence. Fearmongering erodes the capacity of scientists and health professionals to break through the noise and communicate. Broadening support for evidence-based science communication in multiple arenas is critical. With outbreaks of preventable diseases, refusal of evidence-based medical interventions, and propagation of

pseudoscience by prominent "personalities," clarity is needed now more than ever. Misinformation has medical, environmental, economic and public health consequences. Social media and "clickbait" lead to sensationalism. Boosting qualified experts, podcasts, media outlets and sources of reliable information as IAFNS does is key.

Andrea Love (Immunologic)

Health Canada: Food Regulatory Innovation Agenda

Canada's Food Regulatory Innovation Agenda is committed to creating more modern and agile food regulations to keep pace with science, maintain health and safety, and better communicate with Canadians. Canada is incrementally re-designing food regulations, including modernizing the regulatory framework for official food methods to reflect evolving science. These changes—which may include over 300 new food compositional standards—are meant to improve trade and commerce, safe use of food additives, renew microbial criteria and official analytical methods. Health Canada is using an "Incorporation by Reference" approach to enhance timeliness of amendments. Proposed amendments include changes to protein methods and acceptance of the Protein Digestibility Corrected Amino Acid Score (PDCAAS) as well as other measures..

Dino Covone (Health Canada)

Digitizing Transparency: How Food Labeling for E-commerce Can Support Healthy and Safe Choices

Many of today's labeling laws and rules were set before online shopping. As a result, the same nutrition, ingredient and allergen information on packages in stores is not always available online. This has consequences for those with food allergies or special medical diets. Information access for online shoppers and opportunities to address gaps through regulatory action or new legislation is important. The goal of such changes would be to level the playing field for industry players and update label laws that have fallen behind online shopping practices. The

Mobilizing Government, Industry, and Academia to drive, fund, and lead actionable science in support of public health.

Food Labeling Modernization Act of 2023, would have maximized transparency by requiring that online labels are the same as what appears in grocery stores, legislation that may be re-introduced in 2025

Eva Greenthal
(Center for Science in the Public Interest)

What is New with USDA Global Branded Food Products Database?

The USDA Global Branded Food Products Database (GBFPD) is the result of a Public-Private Partnership. Information in the GBFPD comes from a number of food industry data providers, and these organizations are responsible for the data. USDA supports the GBFPD by standardizing the presentation of the data and making it publicly accessible through Food Data Central, a major repository of food information. The presentation highlighted the work of the partnership on multi-column data validation and other branded attribution efforts. USDA and the partnership continue to innovate by accepting live microbes data into the GBFPD as well as other innovative foods.

Kyle McKillop (US Department of Agriculture)

US FDA: Food Chemical Safety, Dietary Supplements & Innovation

The FDA ensures exposure to chemicals in food is safe and has a robust chemical assessment and regulation program. This includes chemicals authorized for use in and with foods during food packaging, processing, or other handling. The safety standard, '*reasonable certainty of no harm*,' is the same for ALL substances add or used with food. This applies to GRAS, Food Contact Substances and additives. FDA oversight also applies to contaminants that enter the food supply through growing or processing. Under the Human Foods Program, US FDA leverages scientific expertise to deliver a systematic approach to chemical evaluation. This involves post-market food chemical review and regulation.

Kristi Muldoon-Jacobs
(US Food & Drug Administration)

IAFNS Scientific Committees:

AI Illuminates a GI-Gentle Fiber Source with Bioactive Benefits

Dietary fiber is key to gut health, yet is acknowledged as a short-fall nutrient in most Western diets. An AI-illuminated dietary fiber source with novel bioactives was tested for providing superior relief compared to other dietary fibers. The study assessed changes in digestive comfort. The study demonstrated that a practical dose of bioactive-rich fiber from hemp hull is well-tolerated, provides superior digestive comfort relative to both placebo and inulin fiber, and can aid in reaching total fiber intake goals. Brightseed's Forager AI tool won awards for identifying novel compounds. Leveraging its proprietary model of human health, the firm can "quadrangulate" data to identify potential bioactives from multiple sources in one case discovering a bioactive in 3 months instead of the more typical 3 years.

Swati Kalgaonkar (Brightseed)

US FDA: Update on Nutrition Programs

The US FDA empowers consumers to build healthy and nutritious diets. The U.S. faces an ever-growing epidemic of preventable diet-related diseases like hypertension, diabetes and obesity. The vision for the FDA's new Human Foods Program is that food can be a vehicle for wellness. The FDA supports a National Strategy to end hunger and increase healthy eating and physical activity by 2030, so fewer consumers experience diet-related diseases. The FDA's nutrition initiatives include the following: providing information and labeling; promoting a healthier food supply; and communicating, educating and engaging. Priority initiatives include: goals for sodium reduction in 163 categories of food; finalizing and updating the definition of the nutrient content claim "healthy" to help consumers adhere to healthy dietary patterns; and developing a standardized front-of-package nutrition labeling system.

Robin McKinnon
(US Food & Drug Administration)

Carbohydrates • Cognitive Health • Dietary Lipids • Gut Health • Low- and No-Calorie Sweeteners • Protein • Sodium • Caffeine • Food and Chemical Safety • Food Microbiology • Food Packaging Safety and Sustainability • Scientific Integrity

Perspective: Key Considerations When Developing and Publishing Dietary Interventions for Human Clinical Trials

Low-adherence and even attrition can impact studies and affect their statistical power. In some clinical trials, 30-50% exhibit low-adherence over a 12-week trial and attrition can reach rates of 20-49%. Ensuring that dietary options are satisfying, culturally appropriate, practical and flexible is key. Tailoring studies and carefully tracking demographics, social and environmental factors may require researchers with diverse skillsets. Researchers should publish minute details of their studies to ease clinical trial replicability. Including standard recipes with clear measures will enhance adherence, facilitate clinical application and encourage open access.

Kristin Hicks-Roof (National Pork Board)

FTIR Spectral Analysis of Plant Proteins and Correlation with Functional Properties

FTIR Spectra can be useful in assessing plant proteins like soy, mung bean and pea proteins. Fourier Transform Infrared Spectroscopy is an analytical technique used to identify organic, polymeric and, in some cases, inorganic materials. After collecting FTIR data, scientists used principal component and regression analysis to extract data patterns more efficiently. Researchers developed a model using correlation with functional properties which performed well as rapid tools for plant protein quality assessment, underscoring the value of FTIR methods.

Janvi Patel (Univ. of Massachusetts - Amherst)

The Periodic Table of Food Initiative (PTFI): Mapping Food Quality of the Planet's Edible Biodiversity

A new effort is studying what's in the food we eat at the biomolecular level that shapes food quality. Understanding how food composition varies with ecosystems, traditional knowledge and agricultural practices is key. The new Periodic Table of Food Initia-

tive (PTFI) endeavors to bridge science and action by providing standardized tools, data, and training to map food quality of the planet's edible biodiversity. By gaining a deeper understanding of what's in food, researchers hope to empower decision-makers to more effectively manage food and health systems. This includes biodiversity loss, climate change, food insecurity, and diet-related chronic diseases.

Selena Ahmed (American Heart Association)

UPDATE Trial: Investigating the Effects of Ultra-Processed Versus Minimally-Processed Diets Following UK Dietary Guidance on Health Outcomes

The UK Eatwell Guide (UK EWG) offers public guidance for a healthy diet but does not address ultra-processed foods (UPF). Whether a healthy diet can largely consist of UPF is unclear. The UPDATE study is a 2x2 cross-over, randomized controlled trial similar to one carried out in the U.S. Fifty-five adults with overweight/obesity will receive an 8-week UPF diet and an 8-week minimally processed food (MPF) diet—both following UK EWG recommendations—in random order. Percent weight change between UPF and MPF diets from baseline to week 8 is the main measure. Secondary outcomes are changes in body composition, cardiometabolic risk factors, appetite regulation, brain MRI functional resting-state connectivity, sleep quality, physical activity, well-being and other behaviors.

Samuel Dicken (University College London)

Tempano Sub-Cryogenic Disinfection Technology for Food Producers

Sub-cryogenic, hand-held “guns” can be used on food production lines for disinfection to inactivate pathogens. The hand-carried units use low-temperatures for disinfection and are low-water devices suitable for dry products like spices and flours. Being chemical free enhances the process and removes any risks posed by chlorine or other chemicals conventionally used for disinfecting production lines, reducing food waste and extending shelf-life.

Pat Arroyo (Caligo Ltd)

Mobilizing Government, Industry, and Academia to drive, fund, and lead actionable science in support of public health.

Using the Show, Do, Apply Model in Hybrid Sanitation Programming

A research team developed a new “show, do, apply” model to capture multiple sanitation approaches to food safety. With support from the National Institute of Food & Agriculture, the team of scientists from North Carolina State University, the University of Massachusetts and others created the model for hybrid sanitation approaches. The researchers are developing a corresponding course that will be available for training in cleaning surfaces linked to processes for both dry and wet sanitation.

Christina Allingham
(University of Massachusetts Amherst)

Innovative Temperature and Time Tracking Solution to Enhance Food Safety Compliance in Catering

Tracking the precise time and temperature for foods cooked for large-scale catering events addresses food safety, regulatory and transparency goals. By logging time and temperature, food workers and managers are able to ensure safety for protein and rice dishes often made for events. Catering operators can use this approach to bolster food safety and enterprise goals and reduce the incidence of foodborne illness by systematically tracking times and temperatures of foods on prep tables.

Fadi Saad (ADNH Catering)

A Simulation Model to Quantify the Efficacy of Dry-Cleaning Interventions on a Contaminated Milk Powder Line

Certain foods like flours and milk powders benefit from a “dry” food production environment. The use of water to clean facilities is contraindicated because of the risk of nurturing pathogens. A simulation model to assess the effectiveness of dry-cleaning methods on a powder production line was crafted. Wiping, scraping and brushing techniques are not as well understood as they could be. Using Monte Carlo simulations the researchers found that dry-cleaning techniques pose fewer risks than water-based strategies.

Devin Daeschel (Cornell University)

Sustainability and Food Mileage from Harvest to Retail Display in Packaging

Packaging is critical for delivering safe, nutritious and sustainable foods. The role and impact of plastics and paper packaging continue to evolve as the world transitions to a food systems approach. This presentation addressed a variety of topics related to the safety of microplastics, PFAS chemistries, bio-based feedstocks, recycled packaging components, metals and polymers. The concentrations of PFAS compounds in food packaging paper appear to be trending downward according to daily laboratory runs. The risks posed by chemicals and consumer demand for sustainable packaging were discussed as part of the emerging future for packaging.

Keith Vorst (Iowa State University)

Reflections on the 2024 Science Innovation Showcase

The IAFNS 2024 Science Innovation Showcase demonstrated how **bringing Government, Industry, and Academia together catalyzes the creation of scientific knowledge**. With diverse topics covered - from emerging regulatory issues to cutting edge science - the primacy of science to drive innovation was highlighted.

To deliver on the promise of a vibrant future for the food and beverage ecosystem, requires that we transcend conventional barriers between disciplines and sectors. As an organization dedicated to collaboration and **inspired to bring together thinkers and doers in unconventional ways**, IAFNS launched the Science Innovation Showcase in 2021 to deliver on this promise.

Across the food and beverage ecosystem, innovation fuels our ability to thrive even as the world around us changes. **We need the best possible science to make the best possible decisions for the best possible future. We can not do this on our own. We can only do this together.**

➔ IAFNS is proud to provide connections, support collaborations, and catalyze the science that matters - in support of public health.