FFI Report

Food Fraud Prevention through IAFP PDGs: Strategy, Science, and Future Directions

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Reviewers: Shared with the IAFP Food Fraud PDG for comments through a Google Drive shared document, plus an expanded distribution through LinkedIn blog post, PDG meeting announcements.

Note: As of July 2025, the current Chair of the IAFP Food Fraud PDG recommended that this report be published on the Food Fraud Prevention Academy website. They thought this would enable broader distribution.

Audio Summary (from NotebookLM) (16 minutes): https://bit.ly/IafpFFpdgSurvey

ABSTRACT

- *This project researched the International Association for Food Protection's (IAFP) Professional Development Group (PDG) on Food Fraud (FF-PDG) and its role in combating food fraud through a prevention-focused approach. Authored by John W. Spink, a former chair of the FF-PDG, the primary document proposes a path forward for the group, emphasizing the need to bridge the gap between management systems and analytical chemistry in food fraud prevention. It outlines a survey conducted among PDG members and the broader food industry, revealing a strong desire for increased activity, a resource library, and webinars focused on best practices for prevention and efficient countermeasures. The appended abstracts further support the concept of diagnosing vulnerabilities and selecting appropriate scientific methods to address food fraud effectively.*

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Keywords: food fraud, economically motivated adulteration, IAFP 2025 insights, supply chain integrity, food authenticity, risk-based prevention, food crime

This document was created as a thought-starter to review the mission and direction of the International Association for Food Protection (IAFP) Professional Development Group (PDG) on Food Fraud (FF-PDG). This was discussed at the annual PDG meeting and then continuously reviewed until finalized. This was submitted in this long form to the Journal of Food Protection, but was determined to be out of scope.

INTRODUCTION

This section will present an understanding of the evolving threat of food fraud. Food fraud is intentional deception for economic gain involving food. For compliance requirements, food fraud types extend beyond adulterant-substances to include stolen goods, diversion, tampering, misbranding or mislabeling, and intellectual property rights counterfeiting. Additionally, the compliance extends to the types of products beyond incoming raw materials, encompassing any incoming goods, work-in-progress, and manufacturing, as well as outgoing goods, including disposal, contract manufacturing, and technology transfer. It also addresses unauthorized and illegal market channels. Food fraud has been a significant and urgent focus for both the industry and government, particularly since the melamine contamination in food around 2007 and the horsemeat scandal in beef in 2012. After those global incidents that caused widespread public health and economic harm, leadership activity was sparked by organizations such as the Global Food Safety Initiative (GFSI) and the UK Department for the Environment and Rural Affairs (DEFRA). GFSI created the first nearly universally required food fraud prevention standard and certification within its food safety management system. DEFRA followed up on the Elliott Review to form the UK National Food Crime Unit. Further activities included the European Union funding of the Food Authenticity Network. These activities took place concurrently with other leadership initiatives, including those conducted by the IAFP, the Institute of Food Technologists (IFT), the US Pharmacopeia (USP), the Association of Official Analytical Chemists (AOAC), the International Life Sciences Institute (ILSI), and others.

The *research justification* for this work is to explore the role of technical science associations in preventing food fraud. This question is addressed through the IAFP Professional Development Group on Food Fraud Prevention application.

BACKGROUND

This section presents the regulatory context and the science behind food fraud prevention. Since January 2018, the Global Food Safety Initiative (GFSI) benchmark has required food fraud prevention to be addressed in a food safety management system – this is not optional and cannot be in a separate anti-fraud system. The GFSI benchmark serves as the foundation for the most widely recognized food safety management system standards, including BRCGS/BRC, FSSC 22000, IFS, SQF, and others. The GSFI membership is nearly universal at the end of the food supply chain, such as food manufacturing and retailing. Also, approximately 65% of the world's food trade is comprised of GFSI members. To conduct food commerce, it is often a requirement to be GFSI compliant. As a result of this effort, there has been a methodical growth in the adoption and evolution of food fraud prevention. Once the most basic, not optional, requirements are implemented, a natural lull occurs before further innovation and expanded implementation can take place. From the perspective of standards and test methods, specific tests are often implemented to detect particular types of fraudulent acts.

Since a human adversary conducts the action and is the root cause, social science and criminology theories are best suited to explain the system's weaknesses and optimal prevention countermeasures and control systems. From criminology theory, the focus is first on detecting the problem to identify where it is occurring. Once identified, specific actions can deter the “motivated offender” or prevent an incident. And then, after considering the overall system's weaknesses, there can be efficient actions that prevent them. The overall focus on vulnerabilities is most efficient since fraud acts vary. The question should not be “what is the next melamine (crime act)?” but should be “how can we reduce the system weaknesses that enabled melamine to be illegally substituted without detection (reduce the crime opportunity)?”

The food fraud prevention strategies are maturing to include more formal and rigorous policies and management systems. The natural evolution is for food fraud prevention to continue evolving from an ad hoc response to a single event to an ongoing and proactive set of activities that conduct hazard identification and reduce system weaknesses (e.g., consider quality management and HACCP-type systems).

While there has been an increase in the amount and type of scholarly food fraud-related research published, progress has been made mainly in sections such as new test methods, reviews of incidents, ways to assess an aspect of the problem, or overall business management systems. There has been little work connecting these activities in areas such as the fraud prevention contribution of a countermeasure or control system, or the sampling and implementation of test methods. This lack of interconnection has led to inefficiency or a lack of implementation. The goal is not to reinvent the wheel, but to efficiently understand the problem and treatments to implement systems that effectively prevent food fraud. “The goal is not to catch food fraud; the goal is to prevent food fraud from occurring in the first place.”

Mission of IAFP and PDGs

There is a need to coordinate strategies to align scholars, industry, and governments across activities such as management, scientific testing, and enforcement. As compliance requirements become more clearly understood, there will be a more efficient identification of research needs and the provision of support services. It is a good time for organizations such as the International Association for Food Protection (IAFP) to review their optimal role.

- ***The IAFP's mission*** is "To provide food safety professionals worldwide with a forum to exchange information on protecting the food supply." The membership, publications, and meetings serve "educators, government officials, microbiologists, food industry executives, and quality control professionals" who focus on "growing, storing, transporting, processing, and preparing all types of foods."
- ***The Food Fraud PDG's overall mission*** is: "To serve as a multidisciplinary forum for open discussion and exchange of information among collegiate, regulatory, and industry regarding the challenges associated with the developing area of food fraud, including food safety and economic implications."

Combining these two missions, the PDG-FF's focus is "let's get to the science." Enterprise-level risk tolerance and risk assessments are unique to each stakeholder and are more directly addressed in management systems. Analytical chemistry technology can be modified to answer almost any clearly defined and thoroughly researched question.

LITERATURE SEARCH

[This information was previously publicly presented at a 2022 FF-PDG meeting.]

This section will present a content analysis of articles published in the IAFP Scopus-listed journals of the Journal of Food Protection (JFP) or Food Protection Trends (FPT) in 2021. This is a review of Food Fraud-Related Articles in IAFP Journals that were published in the Journal of Food Protection (JFP) or Food Protection Trends (FPT) in 2021. The Scopus database was used for the searches. Both journals were identified in the Scopus database as peer-reviewed (both were confirmed to have results in Scopus) (Table 1).

Table 1 Details of Scopus Database Results for JFP and FPT

Source Title	Scopus Cite Score	Rank in Field by Total Journals	Average Publications per Year (2021-2024)	Percent of Articles Cited in another Scopus Journal (all time)
Journal of Food Protection	4.7	141/404 in Food Science	203	79%
Food Protection Trends	1.2	506/687 in Public Health	32	47%

Searched on keywords that appeared in the Title, Abstract, or Keywords: food fraud, food authentici* (to cover authenticity, authenticity, and authentication), food integrity, and economically motivated adulteration. Each article was only counted in one category, even if multiple keywords were identified within it. It was verified several times that there were only two results (Table 2). (See the appendix for the abstract and keywords of each article.)

Table 2: Table of Results for Articles with Food Fraud-Related Keywords in IAFP Published Journal of Food Protection or Food Protection Trends.

Term	Articles in JFS	Avg JFS articles per year (2021-2024)	Articles in FPT	Avg FPT articles per year (2021-2024)
Food Fraud	1		0	
Food Authenti*	0		0	
Food Integrity	0		0	
Economically Motivated Adulteration	1		0	
TOTAL	2	203	0	32

SURVEY RESULTS

[This information was previously publicly presented at a 2022 FF-PDG meeting.]

This section presents the 2021 Food Fraud PDG survey, including insights and opportunities. A survey was conducted in 2021 to receive feedback from the PDG on Food Fraud Prevention and the food industry for presentation at the 2022 annual meeting. The methods, results, and discussion will be presented in future work.

Method

The IAPF Food Fraud PDG developed a survey instrument. The survey was posted on the PDG website and distributed via email to registered members. The link to the study was also included in LinkedIn posts by the then-PDG Chair, who announced the annual PDG meeting.

Results

A top-line summary of the results includes:

- Membership: 40% are not members of the PDG, and 26% are active members.
- 57% said the FF PDG should be more active (10% said a lot more active)-- none said less active or that it should end/ close
- 92% recommend providing a library of resources and hosting webinars, as well as additional meetings.
- As for content areas, there was interest in understanding and implementing prevention best practices and then helping to define the most efficient countermeasures and control systems (including analytical tests, including food authenticity).
- The need for general outreach encompassed companies, academics, regulators, and law enforcement.

The raw survey results are presented here:

Q1. How active are you in the PDG?

Answer Choices	Responses
Not a member of the PDG	40%
A new member of the PDG (this is my first meeting)	14%
Member but no activity (did not attend other PDG meetings)	14%
Member and attended previous annual PDG meetings	4%
Member and attended previous annual PDG meetings, plus other activities such as webinars	26%
All other items plus held a leadership role (of any kind)	2%

Q2. How long have you been a member of this PDG?

Answer Choices	Responses
Not a member of the PDG	41%
New (up to 1 year)	27%
2 to 4 years	25%
More than 4 years	0%
More than 4 years as a founding member	6%

Q3. Should this Food Fraud Professional Development Group (PDG) ____?

Answer Choices	Responses
End/ Close	0%
Be less active	0%
Be about just as active	33%
Be more active	57%
Be a lot more active	10%

Q4. What purpose should the PDG serve (check all that apply)

Answer Choices	Responses
Develop content for annual IAFP meetings (symposia and roundtables)	73%
Provide a resource library on food fraud and prevention-related best practices and topics	92%
Host webinars on food fraud and prevention topics throughout the year	92%
Hold virtual meetings as venues for discussion and networking throughout the year	65%
Other (please specify)	8%

Q5. What PDG action or activity has been most helpful or interesting for you?

Answered	40
Skipped	11

Q5. Summary Takeaway

The PDG's most valued assets are webinars, training resources, and community-based knowledge sharing, while blockchain and data-driven approaches are emerging areas of interest. Many respondents are new or inactive members, suggesting a potential opportunity for onboarding and engagement strategies. There is also a clear appetite for practical guidance, case studies, and reference tools to combat food fraud more effectively.

A word cloud summarizes the key concepts (Figure 2).

Figure 1 Word Cloud Result from Question 5 (Created by ChatGPT)

Q6. What is the biggest need or opportunity that this PDG could address?

Answered	42
Skipped	9

Q6. Summary Takeaway

The PDG's most significant opportunity is to support the need for global coordination, education, and regulatory engagement in food fraud prevention. Key priorities included mentorship, harmonization of standards, awareness-building, and support for industry compliance. Participants emphasized the importance of information sharing, case studies, and practical guidance while advocating for increased outreach, international collaboration, and tools to identify, detect, and prevent fraud within complex supply chains.

Q7. What other comments or statements would you like to provide?

Answered	36
Skipped	15

Q7. Summary Takeaway

Respondents emphasized the importance of global collaboration, intelligence sharing, and holistic supply chain oversight to combat food fraud effectively. They called for more webinars, stronger partnerships with initiatives such as the Food Authenticity Network, and improved outreach to trade associations. Suggestions included enhancing PDG visibility, clarifying member engagement, and maintaining a distinct focus on food defense while promoting worldwide incident tracking and expert guidance.

Q8. My general job responsibilities include (pick one)?

Answer Choices	Responses
Corporate management, enterprise-wide decisions	41%
Division or unit management, business decisions	9%
Operation or function management, such as leadership of the food safety or supplier quality assurance group	38%
Employee or staff to one of the listed supervisors	3%
Not applicable	6%
Prefer not to answer	3%

Q9. My general type of work includes (select one)?

Answer Choices	Responses
Management of people or processes	24%
Marketing/ Sales/ New Product development	18%
Strategy/ risk management/ business analysis	41%
Operations/ manufacturing/ logistics	3%
Laboratory/ authenticity testing	9%
Not applicable	6%
Prefer not to answer	0%

DISCUSSION

[This information was previously publicly presented at a 2022 FF-PDG meeting.]

This section will present bridging analytical testing and prevention management systems. The most significant gap for the PDG in Food Fraud Prevention is connecting management systems concepts with analytical chemistry. Specifically, the most efficient role of the IAFP PDG on Food Fraud Prevention is to help:

1) **Understand the problem** (who, what, where, when, why, and how the incident occurred) and then

2) **Explain the analytical and sampling method for implementation** (who, what, where, when, why, and how of what to test, how to sample, where to test, how often to test, where to test, and how often).
3) ***Explain the contribution to prevention*** by refining the contribution to detection, and then to deterrence, with an overall focus on prevention. The goal is not to catch food fraud, but rather to prevent it from occurring in the first place.

There are several paths for the FFP-PDG to align with the overall IAFP goals and industry-wide strategic needs. A key is to define the needs of the stakeholders and their specific roles (Table 3).

- **Stakeholders**:
  - **Food Companies**: entities who act in support of quality control for their products and services. E.g., a food producer.
  - **Suppliers**: entities who provide products or services for consumers. E.g., a laboratory or provider of laboratory equipment or consumables.
- **Roles**:
  - **Manager**: oversees the activity, such as managing a consumer. For example, a Food Integrity Manager is accountable for ensuring food fraud compliance and is responsible for implementing the food fraud prevention strategy.
  - **Research & Development**: creates and modifies countermeasures and control systems. E.g., a director of laboratory services who receives testing specifications from the food fraud prevention team or a supplier sales representative.
  - **Operations**: the entity that conducts the countermeasures and control systems. E.g., a laboratory analyst or a supplier sales representative.

Table 3: Presentation of Stakeholders and Roles for the IAPF PDG for Food Fraud Prevention

		Stakeholder	
		Food company	Supplier
Roles	Manager	Understand the overall food fraud prevention compliance requirements and strategy to create a budget and plan that optimizes operations, including capital expenditures.	Understand the food company's needs ***to direct R&D and market development, creating products and services that are both*** needed and economical to deliver.
	R&D	Understand the strategic needs ***to develop products and services more precisely and accurately***.	Beyond just developing the products and services that "Operations" (the sales reps) ask for, help refine the optimal delivery [See Food company x R&D]
	Operations	Understand the basic food fraud prevention topic and needs ***to create a general understanding***.	Understand the general and strategic subject ***to effectively sell to the food company*** [See Food company x Manager]

Survey Conclusion

Based on these stakeholders and roles, in relation to the aim and scope of the IAFP association and the associated journals, these are the findings:

- Upon reviewing the IAFP annual conference agenda (July 2022) and the articles published in IAFP journals, it appears that IAFP focuses on microbiological and chemical contamination that lead to food safety problems.
- Food fraud is one of the many root causes of food safety problems, making it essential for the IAFP mission to focus on improving food safety.
- There appear to be two roles of the IAFP Professional Development Group structure: to serve as a resource for educating on basic concepts and to organize future IAFP conference and publication activities. For the PDG on Food Fraud Prevention:
    - First, to establish a resource library of education and training for testing and authenticity experts – or for technical managers who are not tasked with broader food fraud prevention strategy management or implementation
    - Second, after the resources are provided, they can support more traditional IAPF activities, such as testing and authenticity.

CONCLUSION

After reviewing the scope of the food fraud problem, the focus on prevention, and the current state of requirements and activities, there seems to be an important role that can be uniquely addressed by a group such as the International Association for Food Protection through a Professional Development Group, such as that has been convened to address food fraud. A first step is to further clarify the unmet need before examining specifications or methods. More standardized procedures, such as "understand the problem," "explain the analytical sampling method for implementation," and "explain the contribution to prevention." When these types of questions are clarified, then methods can be developed. The next step is for the FF-PDG leadership to review this with the broader IAFP leadership.

/End of Main Body of Manuscript/

APPENDICES

Appendix: Details of the Journal Search Results

[This information was previously publicly presented at a 2022 FF-PDG meeting.]

These are the details of the two journal articles published in JFS or FPT in 2021, as listed in the Scopus database.

The research justification for both articles was to develop a test method for a specific question from a stakeholder.

Article 1 of 2:

Title: Assessment of butter adulteration practices and associated food safety issues along the supply chain in traditional communities in the central highlands and southwest midlands of Ethiopia

Authors: Gemechu, A.T., Tola, Y.B., Dejenie, T.K., ... Aleka, F.B., Ejeta, T.T.

Source Title: Journal of Food Protection, 84(5), pp. 885–895, 2021

Citations: 10

Abstract:

Butter adulteration practices and their health risks were assessed along the supply chains in the central highlands and southwestern midlands of Ethiopia. A purposive sampling technique was used to select 1,101 respondents. Based on the results of the cross-sectional study, the fatty acid profiles of butter samples collected from retailers' shops were investigated to determine the extent of adulteration and to understand the risks to food safety. The assessment revealed that an average of 94% of respondents were aware of butter adulteration practices. The common butter adulterants identified include different brands of hydrogenated vegetable oils, Irish potato puree, banana pulps, melted tallow, wheat and maize dough, and buttermilk, as well as water. The practice of adulteration significantly differed (P, 0.05) along the supply chain and increased from farm markets to the retail shops. **Economically motivated adulteration** is the main cause and resulted in up to 50% of butter spoilage. There were significant differences among the fatty acid profiles of pure butter; retailers' butter; pure butter intentionally adulterated with hydrogenated oil, potato puree, and banana pulp; and pure hydrogenated oil. The presence of methyl oleate, gondoic acid, and eicosadienoic acid in the retailers' butter might result from adulteration with hydrogenated oils and banana pulps. The study showed the presence of multiple-stage adulteration along the supply chain that could endanger the safety and quality of local butter. Policymakers and regulatory bodies in the area can use the information to improve the safety and quality of local butter along the supply chain.

Author Keywords: Adulteration; Butter; Ethiopia; **Food authentication**; **Food fraud**; Supply chain

[NOTE: There is an inconsistent use of the food fraud-related terms. Adulteration is used in the title and keywords, economically motivated adulteration is in the abstract but not the keywords, and food fraud is in the keywords and not the abstract. Thus, the focus of the article's research justification is to develop a test method for a specific question from a stakeholder.]

Article 2 of 2:

Title: Wild or farmed gilthead seabream (sparus aurata)? How to distinguish between them by two-dimensional gel electrophoresis

Authors:

GUGLIELMETTI, C., BRUSADORE, S., SCIUTO, S., ... ACUTIS, P.L., MAZZA, M.

Journal of Food Protection, 84(4), pp. 692–696,2021

Citations: 8

Abstract:

Because the world's wild fish stocks are limited and the market demand is increasing, fish farming has become an alternative food source and a way to reduce costs for consumers. The sale of farmed as wild fish is a fraudulent practice; it is, therefore, important to find new and alternative tools that can help in the fight against **fraud** to protect consumers and to ensure food traceability. The proteomic profiles of farmed and wild fish differ. With this study we wanted to identify liver protein markers via two-dimensional electrophoresis that would allow us to distinguish wild from farmed gilthead seabream. The liver samples from 32 gilthead seabream, wild and farmed, were stored at 808C before protein extraction. The samples were subjected to two-dimensional electrophoresis to detect qualitative and quantitative differences. Proteomic analysis showed a protein spot (molecular weight of ~34 kDa and isoelectric point of ~6.9) only in the samples from the wild gilthead seabream; liquid chromatography-tandem mass spectrometry identified the spot as ubiquitin. Ubiquitin could be a valid marker to differentiate wild from farmed gilthead seabream; it could be used to ensure continuous monitoring throughout the entire commercial chain and to fight commercial **fraud**.

Author Keywords: 2D-electrophoresis; Farmed; **Food fraud**; Gilthead seabream; Ubiquitin; Wild

[NOTE: No food fraud-related terms are used in the title. Two mentions of fighting fraud were in the abstract. Food fraud was listed as a keyword. Thus, the focus of the article's research justification is to develop a test method for a specific question from a stakeholder.]

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Appendix: Abstracts for articles that address the role of science & technology in food fraud prevention.

[This information was previously publicly presented at a 2022 FF-PDG meeting.]

Food Fraud and Adulteration: Where We Stand Today, John Spink, Food Fraud Initiative, Michigan State University, East Lansing, Michigan, USA., Encyclopedia of Food Chemistry, 10.1016/B978-0-12-814026-0.21784-8

ABSTRACT: Finally, the concepts of defining the term, exploring the scope of the problem, considering crime prevention about the public-private partnership lead to an efficient and effective consideration of how to address the problem. Addressing the problem includes identifying vulnerabilities, conducting an assessment, and then considering the optimal role of food science and technology. Think about a sick person visiting a medical doctor. Overall there is a process for "diagnosis," then consider a series of possible "treatments," and each treatment considers a "prognosis" (Fig. 5). The diagnosis is similar to considering vulnerabilities. The treatments are countermeasures or control systems, which include "do nothing." Finally, each diagnosis-treatment option should consider a prognosis or result of the effort. For example, if fraud is occurring at 1% to 5% of the finished good, then there is no need for a treatment that reduces the sensitivity from 1 part per thousand to 1 part per million (Figure 2).

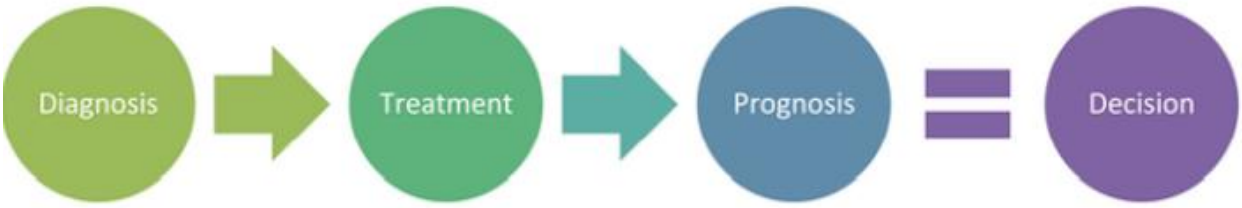

Figure 2: Continuum of Diagnosis, Treatment, Prognosis, and the Decision

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Chapter: Food Fraud Prevention – Selecting the Right Test, Method, and Sampling Plan, Book: DNA Techniques to Verify Food Authenticity, Author: John Spink, 2018, https://books.rsc.org/books/edited-volume/758/chapter-abstract/480620/Food-Fraud-Prevention-Selecting-the-Right-Test?redirectedFrom=fulltext

ABSTRACT: By focusing on the root-cause, then very direct and holistic countermeasures and control systems can be identified and very precisely applied. By focusing on the precise hot product and hot spot, there can be an effective selection of the right test, method, and sampling plan.

Conclusion: The starting point for selecting a test, method, sampling plan, and test frequency is first to consider all types of fraud since the fraudsters will adapt to new or changing opportunities. Second, a detailed diagnosis of the problem is essential to identify precisely where and how the fraud is occurring. That focus on the hot products and hotspots will inform the decision of the optimal countermeasure. By starting with a focus on the problem then the development and selection of authentication tests can be optimized. It is fortunate that there are many supply chain and criminology theories and methods that can help select the right test.

Appendix: IAFP PDG FF Webinars during the Survey Period

[This information was previously publicly presented at a 2022 FF-PDG meeting.]

Webinars that were conducted and posted on the PDG web portal:

- Understanding Tech Traceability: How it Reduces Food Fraud (and Other) Risks, May 13, 2021
- Handling Food Fraud in e-Commerce - Food Fraud Series Part 5 of 5, Jun 27, 2019
- Emerging Food Categories - Food Fraud Series Part 4 of 5, Jun 11, 2019
- Understanding Types of Food Fraud Risk - Food Fraud Series Part 3 of 5, May 28, 2019
- Challenges Identified with Food Fraud Implementation - Part 2 of 5: Risk Mitigation Strategies, Apr 2, 2019
- Challenges Identified with Food Fraud Implementation - Part 1 of 5: A Strategic Approach to Operationalize Food Fraud Mitigation, Feb 20, 2019

Appendix: Review of Full-Page Advertisers in the IAFP 2024 Annual Conference Program

[This information was previously publicly presented at a 2022 FF-PDG meeting. ChatGPT was used in 2025 to provide a more detailed analysis of each advertisement and a summary of the call to action.]

The advertisements in the IAFP 2024 Program Book collectively emphasize the advancement of food safety through innovative technologies, diagnostics, and laboratory services. Their primary objectives focus on enhancing efficiency, accuracy, and reliability in microbial and allergen testing, often through the use of automation and digital data management. Overall, the sponsors aim to position their brands as essential partners in creating safer food systems, from farm to fork.

Here's a breakdown of the companies and key messages featured in the document:

1. Romer Labs
    - Promotes the AgraVision Pro Reader for allergen testing.

- Emphasizes automation, data management, and error reduction.

2. Mérieux NutriSciences
   - Tagline: *"Transforming Scientific Expertise into Action"*
   - Highlights their farm-to-fork solutions for food safety and sustainability.
3. Hygiena
   - Identified as global leaders in food safety and diagnostics.
   - Showcases booth location (#519) at IAFP 2024.
4. Bio-Rad
   - Slogan: *"Think Food Safety. Think Bio-Rad."*
   - Highlights complete, modular food safety testing systems (Booth 433).
5. Eurofins
   - Promotes better testing via microbiological specifications in food.
   - Directs viewers to download a white paper on the subject.
6. Hardy Diagnostics
   - Focus on CompactDry, a solution for microbial testing with a 24-hour turnaround.
   - AOAC PTM certified; emphasizes convenience and accuracy.
7. NomadX
   - Minimalist black ad with a sleek food scanning device.
   - Core message: *"Swipe. Scan. Eat. Live."*
8. Microbiology International
   - Showcases MediaBox and automated media-prep systems.
   - Booths #321 & #322. Emphasizes OEM manufacturing.
9. IFC
   - Focused on pest management with the clever tagline: *"A Different AppROACH"*
   - Highlights biological and habitat-driven strategies for pest control.
10. bioMérieux
    - Promotes the xPRO Program, aiming to "Challenge the Status Quo" in molecular diagnostics.

Appendix: Updated 2025 Review of IAFP Annual Conference Fraud-related Presentations

Search the IAFP 2025 Conference Abstract document for keywords: food fraud, food authenti*, food integrity, and economically motivated adulteration.

Of the over 1,000 sessions, roundtables, or posters, there was one session, one roundtable, and two posters.

Review of the Overall Scope of the IAFP 2025 Annual Conference (From ChatGPT)

The IAFP 2025 Abstract Book served as a resource for reviewing the overall scope and general topics of the Annual Conference. The conference addresses a wide range of pressing topics, including foodborne pathogens, food safety culture, regulatory changes, risk assessment models, traceability, climate-related safety impacts, pet and animal food safety, innovations in sanitation

and detection methods, artificial intelligence applications, and global food protection strategies. Notable themes include climate resilience, the integration of AI and genomics in food safety, updated regulations for allergens and labeling, as well as sustainability in sanitation and packaging. The content is structured to support professionals in public health, supply chain management, food manufacturing, academia, and regulatory affairs with the latest insights and best practices.

The "global food protection strategies" featured in the IAFP 2025 Abstract Book extend well beyond microbial testing. They encompass comprehensive risk-based approaches that integrate food safety, quality management systems, regulatory alignment, capacity building in low- and middle-income countries, and One Health frameworks. Topics include improving food hygiene in informal markets, enhancing regulatory systems, addressing chemical and viral hazards, and developing sustainable sanitation and surveillance infrastructures.

Review of Food Fraud-related Conference Sessions (From ChatGPT)

The IAFP 2025 Annual Conference showcases cutting-edge advancements in food fraud prevention and safety, highlighted across multiple sessions.

S15: Cutting Through the Hype: Real-World Benefits of AI in Food Safety explores how Artificial Intelligence (AI)—including Machine Learning (ML) and Generative AI (GenAI)—is revolutionizing food safety and fraud prevention. The symposium discusses AI's role in predictive risk modeling, outbreak investigation, and environmental monitoring, with a focus on regulator-industry collaboration.

RT21: Combating Food Fraud: Leveraging Innovation, Traceability, and AI for a Safer Global Food Supply is a roundtable addressing technologies such as DNA metabarcoding, Nuclear Magnetic Resonance (NMR), and isotopic testing. These tools are reshaping detection strategies and traceability efforts, supported by business collaboration and best practices in supply chain auditing.

RT19: Trusted Data Sharing: Collective Learning for Food Safety Insights highlights data-sharing platforms, such as the FDA's DASHboard and GreenLink. Panelists share how cross-sector data integration improves fraud detection, rulemaking, and predictive modeling, while also addressing issues like bias and digital inequality.

In the poster session, P2-43 introduces a novel CRISPR/Cas12a-based assay for authenticating Pacific oysters. At the same time, P2-44 reveals a 70% adulteration rate in Ghanaian groundnut paste and powdered pepper, emphasizing the need for consumer education and market surveillance.

These sessions collectively inform risk management by showcasing predictive tools (AI, data sharing, and fraud detection technologies) and offering actionable guidance on traceability, auditing, and collaboration. They support smarter resource allocation by highlighting high-risk areas, emerging threats, and cost-effective technologies, thereby prioritizing regulatory and operational interventions.

Scope and Focus: Food Fraud Sessions vs. Overall Conference (From ChatGPT)

The food fraud sessions—S15, RT19, RT21, P2-43, and P2-44—present a specialized yet forward-looking subset of IAFP 2025. These sessions focus on emerging technologies (e.g., AI, CRISPR/Cas12a, isotopic and DNA testing), supply chain integrity, and cross-sector data collaboration. They directly address risk management and resource allocation by proposing predictive methods to anticipate fraud, target high-risk areas, and implement efficient regulatory responses. Their strong emphasis on real-world applications, such as auditing practices, consumer education, and traceability innovations, marks them as highly strategic for operational decision-making.

In contrast, the overall conference is broader in scope. The majority of abstracts across the 1,000+ entries emphasize microbial food safety, pathogen detection (e.g., Salmonella, Listeria), environmental monitoring, food processing technologies, and regulatory compliance. Many sessions explore traditional food safety pillars such as hygiene, sanitation, lab testing, and risk communication. While some abstracts (especially those under "Data Analytics," "Risk Assessment," and "Traceability") intersect conceptually with food fraud prevention, they often stop short of targeting economically motivated adulteration or intentional deception as core objectives.

Alignment and Integration with the Broader IAFP Aim, Scope, and Mission

While food fraud is a recognized topic at IAFP 2025, it represents a minority theme compared to the heavy focus on microbial risks and outbreak prevention. Only four identifiable sessions explicitly focus on food fraud, and these are primarily grouped under the Data Management, Risk Analysis, and Food Fraud PDGs. This limited footprint suggests that food fraud prevention remains a niche topic within the broader food safety community, possibly due to its complexity and interdisciplinary demands (e.g., chemistry, criminology, trade policy).

That said, the food fraud sessions demonstrate a progressive and strategic orientation, emphasizing predictive analytics, shared intelligence, and technological solutions. These align with IAFP's forward-looking goals, but the integration is not yet systematic. There is a risk that food fraud prevention could remain siloed unless more general sessions incorporate fraud vulnerability assessments, traceability failures, or fraud risk communication into broader food protection frameworks.

Review of Food Fraud-related Conference Events for 2025

Session (S15): CUTTING THROUGH THE HYPE: REAL-WORLD BENEFITS OF AI IN FOOD SAFETY

Primary Author: James Doyle, Creme Global

Persons: James Doyle, Creme Global, Brendan Ring, Creme Global, Carrie Rigdon, Association of Food & Drug Officials, David Monk, Amani Babekir, Ecolab Mark Moorman, Food and Drug Administration, Sarah Murphy, FDA Session

Type: Short Symposium - 1.5 hours Session

Summary: Artificial Intelligence (AI) is poised to transform the global food sector by enhancing regulatory compliance, industry operations, and food safety outcomes. This session will highlight the transformative potential of AI technologies—including Machine Learning (ML), Generative AI (GenAI), and Open AI systems—across the supply chain. Participants will explore how these tools will revolutionize food safety by addressing critical challenges, optimizing processes, and fostering collaboration between industry and regulators. The session will showcase how regulators plan to leverage data-driven AI models like ML and rule-based systems to target compliance, predict risks, and identify high-risk products with greater precision. It will also examine the expanding role of GenAI in simulating complex scenarios and generating innovative solutions for food safety management. AI systems, enabled by cross-functional collaboration and data sharing, will be presented as key drivers in mitigating global food safety risks. Real-world case studies will illustrate how AI plays a pivotal role in environmental monitoring, inspections, and outbreak investigations, helping organizations refine safety protocols and anticipate emerging threats. Applications of AI will demonstrate how these technologies support predictive modeling to address challenges such as PFAS contamination, fraud prevention, and supply chain disruptions, ultimately improving food safety and resilience. Attendees will learn how AI tools—ranging from ML to GenAI—will be applied at various supply chain stages to enhance decision-making, achieve compliance, and safeguard food integrity. The session will provide actionable guidance on overcoming implementation challenges and fostering collaboration between regulators and industry. Participants will leave with strategies to adopt cutting-edge AI solutions that will strengthen food safety systems and drive global food protection efforts.

Primary PDG Sponsor: Data Management and Analytics PDG

Secondary PDG Sponsor: Modelling and Risk Analysis PDG 24 Primary Topic Area: Data Management and Analytics

Secondary Topic Area: Microbial Modelling and Risk Analysis, Additional Topic Area (Optional): Food Safety Culture

Keywords: Data, Modeling, Outbreak, Public Health, Risk Assessment, Risk Management

Round Table (RT21): COMBATTING FOOD FRAUD: LEVERAGING INNOVATION, TRACEABILITY, AND AI FOR A SAFER GLOBAL FOOD SUPPLY

Primary Author: James Doyle, Creme Global

Persons: James Doyle, Creme Global Angela Anandappa, Alliance for Advanced Sanitation Sharmeen Khan, Opssmart Global Fernando Avelleyra, Wal-Mart Stores, Inc. Maryam Blythe, Mars Inc. Katie Zammit, Cargill Cronan McNamara, Creme Vijay Krishna, Glanbia Performance Nutrition

Session Type: Roundtable - 1.5 hours

Session Summary: This session will explore cutting-edge strategies and emerging technologies to address food fraud in today's complex supply chains. As incidents like the fipronil egg contamination and the horsemeat scandal demonstrate, food fraud is not only a financial risk but also a critical concern for food safety. With food fraud on the rise globally, panelists will discuss how advancements such as DNA metabarcoding, Nuclear Magnetic Resonance (NMR), and isotopic testing are reshaping fraud detection by offering more precise and proactive solutions. The session will explore how pilot programs utilizing isotopic testing to verify product origin could serve as a critical model for businesses to leverage scientific methods and enhance traceability, thereby preventing fraud at the source. Additionally, the use of NMR will be highlighted for its ability to detect adulteration in products where DNA analysis may be ineffective, thereby ensuring food safety and authenticity. An example of collaboration between companies will be shared, showcasing how businesses can work together to address food fraud challenges, exchange insights, and explore practical best practices that could contribute to a stronger, more resilient global food supply chain. Beyond technological advancements, the session will emphasize the critical importance of supply chain auditing and the need for regulatory compliance to prevent fraud at multiple stages. A strong collaboration between food businesses, regulatory agencies, and third-party labs is essential for staying ahead of fraud risks. Consumer education will also be explored as an important tool to empower individuals to recognize fraudulent products, thus driving demand for greater transparency and accountability. Attendees will gain actionable insights into how businesses can integrate these technologies, strengthen their fraud prevention strategies, and ultimately usher in the era of Food Fraud 2.0, where predictive intelligence and proactive measures define the future of food safety.

Primary PDG Sponsor: Food Fraud PDG 123

Secondary PDG Sponsor: Data Management and Analytics PDG Primary Topic Area: Food Fraud

Secondary Topic Area: Data Management and Analytics

Keywords: Modeling, Risk Analysis, Risk Management

Round Table (RT19): TRUSTED DATA SHARING: COLLECTIVE LEARNING FOR FOOD SAFETY INSIGHTS

Primary Author: Nathan Anderson, U.S. Food and Drug Administration

Persons: Nathan Anderson, U.S. Food and Drug Administration; James Doyle, Creme Global

Carrie Rigdon, Association of Food & Drug Officials; De Ann Davis, Western Growers Association; Dr. Shelby Hollenbeck, FMI; Martin Hahn, Hogan Lovells; Saskia van Ruth, University College Dublin; Clare Narrod, USDA

Session Type: Roundtable - 1.5 hours

Session Summary: Data sharing is proving to be a highly effective and efficient tool across the food supply chain, bridging knowledge gaps and providing critical insights into food safety, food fraud, and food integrity. Collaboration between industry, global trade organizations, and regulators is gaining traction, accelerating our collective understanding of key challenges that would be difficult to address using isolated data. The benefits of shared data include optimizing resources, improving productivity, enhancing transparency, building trust, enabling benchmarking, providing early warnings, and informing rulemaking. Additionally, data sharing supports predictive modelling to detect food fraud and protect food integrity. This roundtable will explore business benefits gained from platforms like GreenLink®, the FDA Food Safety Data Analytics Sharing Hub (DASHboard), the Food Industry Intelligence Network (FIIN), and contributions to FSIS regulatory analysis. Panelists representing academia, law, regulatory, and global trade organizations will share real-world examples and discuss overcoming barriers, the concept of shared value, how the rewards outweigh the risks, and how data insights have improved food safety, mitigated supply chain risks, and strengthened fraud prevention efforts. Additionally, speakers will address possible mechanisms to reduce bias in decisions derived from diverse datasets and how data sharing helps address the digital divide.

Primary PDG Sponsor: Data Management and Analytics PDG

Secondary PDG Sponsor: Food Fraud PDG

Primary Topic Area: Data Management and Analytics

Secondary Topic Area: Food Fraud

Keywords: Data, Produce, Seafood

Poster Session 2: P2-43: ENSURING SEAFOOD SAFETY: A NOVEL RECOMBINASE AIDED AMPLIFICATION (RAA) COUPLED WITH CRISPR/CAS12A FOR AUTHENTICATION OF COMMERCIALLY IMPORTANT PACIFIC OYSTER

Primary Author: Gururaj Moorthy, Prince of Songkla University

Persons: Gururaj Moorthy, Prince of Songkla University, Soottawat Benjakul, Prince of Songkla University, Jirakrit Saetang, Prince of Songkla University

Presentation type/Format: Technical

Category: Food Fraud

Abstract: Introduction: Seafood fraud, including species substitution and mislabeling, has become a widespread problem in the global seafood market. This practice not only undermines consumer trust but also has severe economic and ecological implications, which ultimately compromise seafood safety and traceability. Purpose: With half of global oyster consumption, Pacific oyster (Crassostrea gigas) of its native range from Japan and northeast Asia holds considerable and commercial importance in the seafood industry. However, they are susceptible to fraudulent practices by substitution with other lower-valued Crassostrea species due to relatively similar

appearances. Therefore, efficient and accurate identification techniques for oyster species must be developed to ensure precise labeling and prevent fraudulent activities. Methods: In this study, a species-specific RAA (recombinase-aided amplification) assay targeting the COI gene of Pacific oyster was developed and coupled with the CRISPR/Cas12a system to generate a fluorescent signal detectable by handheld blue LED light. Results: The developed RAA assay provided accurate results at 40°C for 25 min, followed by CRISPR/Cas12a digestion at 37°C for 40 min. The combination of RAA CRISPR/Cas12a showed high specificity with no cross-reactivity against two non targeted Crassostrea oysters and demonstrated greater sensitivity up to DNA concentration 10-5 ng/reaction. The developed assay also showed greater sensitivity in cooked Pacific oysters for in-house validation using boiling, steaming, frying, and canning at different time intervals. Further validation with commercial oyster products revealed 6.7% mislabeling. Significance: In conclusion, the RAA coupled with CRISPR/Cas12a presents a promising solution to the issue of seafood fraud. Their speed, precision, user friendliness, and cost-effectiveness make them valuable tools for ensuring the 794 integrity and safety of the seafood supply chain. Award Application: Developing Scientist Award

Poster Session 2: P2-44: PREVALENCE OF ADULTERATION OF GROUNDNUT PASTE AND POWDERED PEPPER SOLD AT MARKETS IN THE GREATER ACCRA REGION OF GHANA

Primary Author: Bennett Dzandu, University of Ghana

Persons: Bennett Dzandu, University of Ghana, Raphael Kpodo, University of Ghana, Esther Sakyi-Dawson, University of Ghana

Presentation type/Format: Poster

Category: Food Fraud

Abstract: Introduction: Food is a basic need. However, food products are prone to adulteration with cheaper ingredients or materials. Food adulteration is done intentionally or unintentionally. Purpose: This research investigated consumer knowledge, perception, and prevalence of food adulteration (in groundnut paste and powdered pepper) and identified the impact of adulterants on the quality of these food products. Methods: A cross-sectional survey involving 398 participants was conducted using a structured questionnaire to collect information on consumer knowledge and perceptions of food adulteration. A total of 30 samples of groundnut paste and 30 samples of ground pepper were collected from six (6) markets in the Greater Accra region of Ghana. Various standard techniques including FT-IR were used to investigate adulteration levels in these food products. Different analytical techniques were also used to determine the effect of adulteration on the physico chemical properties of the products (groundnut paste and powdered pepper). Results: The survey found that consumer awareness and knowledge of food adulteration was very low (11%). In general, the prevalence of food adulteration with groundnut paste and powdered pepper was about 70%, with most market samples showing high evidence of additive substitution (from the FTIR spectral analysis). Also, adulteration affected the physicochemical properties of the groundnut paste and powdered pepper. Significance: Intensive public education about food adulteration and its effects on health is recommended so consumers become aware of these

fraudulent activities and are more cautious when purchasing certain food products. Market surveillance of food products and enforcement of food regulation laws should be carried out regularly so that fake food products can be removed from the market and the culprits punished. Ultimately, this will protect the public from the adverse consequences of consuming adulterated food and protect their health.

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