Inside Laboratory Management

A PUBLICATION OF AOAC INTERNATIONAL

JANUARY/FEBRUARY 2024

AOAC INTERNATIONAL

In Food & Agriculture, We Set the Standard

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AOAC MIDYEAR MEETING

Empowering the Scientific Community

March 4–7, 2024

Stay in the forefront of emerging food safety challenges and the new science to meet these challenges. The AOAC INTERNATIONAL Midyear Meeting and Analytical Solutions Forum (ASF) empower the scientific community to take the lead on addressing global and emerging issues.

- Add your voice to ASF on next steps for key emerging issues and technologies and analytical solutions to support food safety science
- Learn about new science, health concerns, and regulations around hot topics in food safety and security
- Broaden your analytical horizons with a comprehensive look at food safety applications using emerging technologies
- Discover components of and develop a better understanding of AOAC technical validation requirements and processes
- Get the latest expert updates on AOAC activities, including core science and stakeholder programs, analytical communities, and Sections
- And more

For more information and how to register, visit:

aoac.org/2024-midyear-meeting/

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JANUARY/FEBRUARY 2024

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AOAC INTERNATIONAL
In Food & Agriculture, We Set the Standard

Exciting Opportunities for 2024

The year is off to a strong start, and there are no signs of slowing. In addition to AOAC's core scientific programs, new areas are being launched, including ethylene oxide residues in foods (*see* page 5 of this issue), milk fat globule membrane protein in infant formula and adult nutritionals (*see* page 7 of this issue), *Legionella* in water, and end-user guidance for gluten and food allergen test kits. AOAC also started formation of a new program focused on novel foods from alternative protein sources, with amino acid analysis as the first priority project identified by stakeholders. Other initiatives are also under development.

In January/February 2024, AOAC revisited the mission, vision, and strategic goals from 2023 to reflect the organization's accomplishments in recent years and to prepare for new challenges and opportunities on the horizon. The Board of Directors approved the 2024 business plan to support the goals of the strategic plan. As the need for analytical excellence and scientific collaboration continues to increase, so does the importance and contributions of AOAC. We are fortunate to be part of an organization whose mission is to "advance food safety and product integrity through standards, validated test methods, and laboratory quality programs." I predict 2024 will be a great year.

An essential component of this success is you. All the board members, staff, and your fellow members need your passion and expertise. I invite anyone interested in further involvement in AOAC to contact staff and learn about all the incredible benefits, both professional and personal, of volunteering. We can't wait to show you just how rewarding it can be.

I am looking forward to the upcoming 14th Annual AOAC Midyear Meeting in Gaithersburg, Maryland, USA, March 4–7, 2024 (*see* pages 3 and 4 of this issue), not only for the engaging scientific discussions but to also network with colleagues and friends. I am excited to work with all of you whose contributions make our organization the success that it is.

If you haven't experienced an AOAC meeting before, the Midyear Meeting is a valuable opportunity to engage, interact with peers, and learn more about the important work and processes of AOAC in advancing food safety and public health. This year's keynote speaker, **Denise Eblen,** assistant administrator for the Office of Public Health Science at the U.S. Department of Agriculture's Food Safety and Inspection Service, will share perspectives and priorities on the agency's food safety initiatives.

Among the many highlights of the Midyear Meeting include the AOAC Analytical Solutions Forum (ASF), which serves to spark innovation, inspire new ideas, and set the stage to advance these ideas into potential AOAC projects to address current and emerging issues most impacting AOAC stakeholders. In addition, attendees will learn about AOAC programs and projects on cannabis, infant formula and adult nutritionals, botanical ingredients and dietary supplements, gluten and food allergens, novel foods from alternative protein sources, and much more. This year's Midyear Meeting features four in-person training courses focused on the new AOAC accreditation guidelines for laboratories (*see* page 8 of this issue), gluten and food allergens validation guidelines, and methods validation.

Be sure to register today and stay at the forefront of new food safety challenges and the latest science to meet them. AOAC looks forward to seeing you in March 2024.

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2024 AOAC Midyear Meeting and Analytical Solutions Forum Preview

Stay at the forefront of new food safety challenges and the best science to meet them. The AOAC INTERNATIONAL Midyear Meeting and Analytical Solutions Forum (ASF), on March 4–7, 2024, in Gaithersburg, Maryland, USA, empower the scientific community to take the lead on addressing global and emerging issues.

Through focused presentations, stakeholder and community meetings, and training courses, work with global leaders from government, industry, and academia to:

- Add your voice to ASF on next steps for key emerging issues and technologies and analytical solutions to support the science of food safety and integrity
- Discover the latest science, analytical challenges, and regulations around dietary supplements, infant formula, cannabis, novel foods, and natural colors, among other hot topics
- Learn about AOAC initiatives, including core and integrated science programs and projects
- Gain knowledge and insight on accreditation requirements and methods validation
- And more

Emerging Challenges Impacting Food Safety and Public Health

ASF introduces emerging challenges that impact food safety and security and public health, as well as potential barriers to international trade. Serving as an idea incubator and horizon-scanning tool, ASF illustrates AOAC's mission and global renown for developing consensus analytical performance standards and validating *Official Methods of Analysis*℠ for foods and feeds that are essential components in promoting public health and protecting the environment.

Kicking off the ASF session on March 4, 2024, keynote speaker **Denise Eblen** (*see* sidebar), assistant administrator for the Office of Public Health Science (OPHS) at the U.S. Department of Agriculture-Food Safety and Inspection Service (USDA-FSIS), will share perspectives and priorities on the agency's food safety initiatives and how AOAC can play a role in providing analytical solutions to help ensure food safety and public health.

ASF brings to light emerging analytical challenges from around the globe. The AOAC Midyear Meeting will highlight sessions on novel foods from alternative protein sources, per- and polyfluoroalkyl substances (PFAS), and ethylene oxide—emerging topics previously introduced and examined in ASF, which have resulted in new AOAC programs and activities.

Stakeholder Meetings

AOAC continues to make significant advances, resulting in voluntary consensus-based standards, *Official Methods*℠, and other tools in AOAC's suite of analytical solutions to address issues most impacting stakeholders. The 2024 Midyear Meeting features stakeholder meetings in the areas of:

- Infant formula and adult nutritionals
- Cannabis
- Botanical ingredients and dietary supplements

(Continued on page 5)

Denise Eblen of USDA-FSIS to Keynote Midyear Meeting

Denise Eblen

AOAC announces **Denise R. Eblen,** assistant administrator for the Office of Public Health Science (OPHS) at the U.S. Department of Agriculture-Food Safety and Inspection Service (USDA-FSIS), as the keynote speaker for the 14th Annual AOAC Midyear Meeting. Her address, "Perspectives and Priorities on Food Safety Initiatives at USDA-FSIS," will be delivered on March 4, 2024, kicking off the AOAC Analytical Solutions Forum session.

Eblen first joined FSIS in 2001 as the agency's first Food Safety Fellow and rose to become OPHS' acting deputy assistant administrator in 2013. In her current role since May 2018, she has led OPHS to provide expertise in scientific analysis, including oversight of FSIS laboratories and testing of regulatory samples, risk assessment, and outbreak investigation and response. Her team provides recommendations on all matters involving public health and related sciences at FSIS.

In 2015, Eblen joined USDA's National Institute of Food and Agriculture (NIFA) as a deputy director. In this capacity, she led NIFA's Institute of Food Safety and Nutrition, which supports research, education and extension activities in food safety, food quality, nutrition, and obesity. Prior to this, she was a research associate at the USDA's Agricultural Research Service, where she studied the safety of produce.

Eblen holds a Bachelor of Science Degree in Human Nutrition from the University of Ulster at Coleraine in Northern Ireland, a Master of Science Degree in Food Science from Queen's University, Belfast, in Northern Ireland, and a Ph.D. in Food Safety Microbiology from the University of Ulster at Jordanstown, Northern Ireland. ■

AOAC Midyear Meeting Schedule at-a-Glance

Stay at the forefront of new food safety challenges and the state-of-the art science to meet them at the 2024 AOAC INTERNATIONAL Midyear Meeting and Analytical Solutions Forum in Gaithersburg, Maryland, USA, on March 4-7, 2024. All events are available in-person and virtually, except for training courses and receptions, which are in-person only. Events will not be recorded and will not be available after the Midyear Meeting.

For more information and to register, visit https://www.aoac.org/2024-midyear-meeting/. ■

MONDAY, MARCH 4, 2024

8:30 AM–12:30 PM EST	Training Course: 2024 AOAC Accreditation Guidelines for Laboratories (ALACC)—Chemistry and Microbiology
10:30 AM–12:30 PM EST	Board of Directors Meeting
2:00 PM–2:45 PM EST	Keynote Address by Denise Eblen, U.S. Department of Agriculture-Food Safety and Inspection Service
3:00 PM–5:00 PM EST	Analytical Solutions Forum (ASF)
5:00 PM–6:00 PM EST	Networking Reception

TUESDAY, MARCH 5, 2024

8:30 AM–11:30 AM EST	Training Course: 2024 AOAC Accreditation Guidelines for Laboratories (ALACC)—Cannabis Analysis Annex
	Stakeholder Program on Infant Formula and Adult Nutritionals (SPIFAN) Meeting
	Stakeholder Program on Agent Detection Assays (SPADA) Meeting
1:00 PM–5:00 PM EST	AOAC Nutrient Methods: SPIFAN and Other Methods for Nutrient Analysis
	Cannabis Analytical Science Program (CASP) Meeting
5:00 PM–6:00 PM EST	Networking Reception, sponsored by Abbott Nutrition

WEDNESDAY, MARCH 6, 2024

8:30 AM–11:30 AM EST	AOAC Contaminants Projects and Methods: PFAS and Ethylene Oxide Initiatives, Emerging Issues, and Highlights of AOAC Methods
	AOAC Microbiology Projects and Methods: Analytical International Methods and Standards (AIMS) Program, Emerging Issues, and Highlights of AOAC Methods
9:45 AM–10:15 AM EST	Coffee Break, sponsored by Waters Corp.
1:00 PM–3:30 PM EST	Botanical Ingredients and Dietary Supplement Integrity (BIDSI) Program Meeting
	Performance Tested Methods℠ (PTM) Program Workshop
4:00 PM–5:00 PM EST	Contaminants Community Meeting
	Microbiology Community Meeting
5:00 PM–6:00 PM EST	Networking Reception

THURSDAY, MARCH 7, 2024

8:30 AM–10:30 AM EST	Metals Initiative Meeting
8:30 AM–11:30 AM EST	Training Course: Gluten and Food Allergens (GFA) Validation Guidelines
	Novel Foods Program Meeting
10:30 AM–11:30 AM EST	Metals Community Meeting
1:00 PM–2:00 PM EST	Non-Targeted Testing and Data Analysis
	Agricultural Materials Methods Meeting
1:00 PM–2:30 PM EST	GFA Program Meeting
2:30 PM–3:30 PM EST	Color Additives Community Meeting
	GFA Community Meeting
	Agricultural Materials Community Meeting

FRIDAY, MARCH 8, 2024

8:30 AM–3:30 PM EST	Training Course: Method Validation (AOAC Headquarters, Rockville, Maryland, USA)

AOAC MIDYEAR
March 4–7, 2024 • Gaithersburg, MD

AOAC Launches Project to Develop Standards for Analysis of Ethylene Oxide Residues

On January 9, 2024, AOAC launched the Working Group on Ethylene Oxide Residues, co-chaired by **Luis Georges Quintelas** (SQUALI) and **Lukas Vaclavik** (Eurofins Scientific), to develop a voluntary consensus standard(s) for analysis of ethylene oxide residues (ethylene oxide and 2-chloroethanol) in oil seeds and nuts; dried herbs and spices; food additives; dietary supplement products and ingredients; dried fruits and vegetables; and spice, flavor, and herbal extracts.

Introduced through the AOAC Analytical Science Forum, ethylene oxide is an emerging topic that was identified as priority, resulting in a new AOAC project supported by an advisory panel representing the food, dietary supplement, technology provider, and testing lab industries (*see* sidebar). The working group is developing AOAC *Standard Method Performance Requirements* (SMPRs®) based on objectives and priorities established by the advisory panel.

Main commodities include spices, nuts, oil seeds, dried fruits and vegetables, and dried herbs and botanicals.

Analytical Challenges and Testing Landscape

Ethylene oxide is a colorless, flammable, and highly reactive gaseous substance historically used in the food industry as a fumigant because of its capability to disinfect without the use of

(Continued on page 6)

2024 Midyear Meeting and Analytical Solutions Forum Preview

Continued from page 3

- Glutens and food allergens
- Biothreat detection
- Nutrients
- Novel foods
- Contaminants (PFAS, ethylene oxide)
- Agricultural materials
- Microbial pathogen detection

Training Courses

This year's Midyear Meeting features four in-person AOAC training courses focused on chemistry/microbiology and the new cannabis analysis appendixin the AOAC accreditation guidelines for laboratories to be published by March 2024; gluten and food allergens methods validation; and a newly updated course on method validation. All training courses will be held at the new Midyear Meeting venue, DoubleTree by Hilton Washington, DC North Hotel in Gaithersburg, Maryland, USA, except for the updated course on method validation, which will be held at AOAC headquarters in Rockville, Maryland, USA. Additional fees are required for training course registrations.

In addition, a workshop will be held to familiarize attendees with the AOAC *Performance Tested Methods*℠ Program, which has been expanded in scope to include all user-based methods with a proprietary component, such as test kits, equipment/device, columns/cartridges, software, etc.

Networking Opportunities

In addition to a full schedule of meetings and training, the AOAC Midyear Meeting will offer three networking receptions, which are good opportunities to make valuable connections and share or generate new and exciting ideas to advance science. AOAC thanks **Abbott Nutrition** for sponsoring one of the receptions and **Waters Corp.** for sponsoring a coffee break.

Register Today (in-person with virtual option)

While in-person attendance is encouraged for the optimal meeting experience, AOAC is also providing a virtual option (except for training courses and receptions) for maximum participation for members and stakeholders to be involved in advancing analytical science.

Don't miss out on being a part of AOAC's important work on which the food safety testing community relies. For more information and to register, visit https://www.aoac.org/2024-midyear-meeting/. ■

Sponsorship Opportunities

Interested in sponsoring an event at the AOAC INTERNATIONAL Midyear Meeting in Gaithersburg, Maryland, USA, on March 4-7, 2024? AOAC has created sponsorships that offer visibility and engagement opportunities for its partners. Your support will not only contribute to the success of the Midyear Meeting but also make a positive impact on the scientific community that AOAC serves.

To view details regarding sponsorship opportunities and associated benefits, visit https://www.aoac.org/2024-midyear-meeting/2024-midyear-meeting-sponsorship-opportunities/. ■

AOAC Launches Project to Develop Standards for Analysis of Ethylene Oxide Residues

Continued from page 5

heat treatment; high diffusivity and strong penetrating properties; control of bacteria, fungi, and viruses, and effectiveness in dry food commodities. Main commodities include spices, nuts, oil seeds, dried fruits and vegetables, and dried herbs and botanicals. However, use of ethylene oxide has been discontinued in most parts of the world due to its highly toxic nature. The International Agency for Research on Cancer (IARC) classifies it as a group I carcinogen (carcinogenic to humans).

Maximum residue levels (MRLs) vary for different commodities, and regulations differ among countries. Use of ethylene oxide as a fumigant has been banned in the European Union since 1991.

Some methods are available, such as direct, conversion, and chromatographic separation and detection, but are limited in scope. Analytical challenges include analyte volatility, matrix complexity, sensitivity, and selectivity, among others.

Toward Consensus

Prior to launching the new project, AOAC conducted an interest survey focused on target matrix categories and main challenges related to analysis.

In developing draft SMPRs, the working group reached consensus that methods are needed for determination of ethylene oxide and its marker residue 2-chloroethanol (analyzed and reported as a sum expressed as ethylene oxide) with limits of quantitation (LOQs) meeting EU and other global regulations in the following targeted matrices: oil seeds and nuts; dried herbs and spices; spice, flavor, and herbal extracts; food additives; dietary supplement products and ingredients; and dried fruits and vegetables.

As recommended by the working group, methods using chromatographic separation with mass spectrometric detection are preferred but, ultimately, it is open to the method developer(s).

The working group is continuing to flesh out the draft SMPR.

Next Steps

After working group consensus, the draft standard will be posted on the AOAC website for public comment. All comments will be reviewed and reconciled, if necessary, by AOAC and working group chairs. It is anticipated that the draft SMPR will be posted for public comment in summer 2024 and reviewed for possible approval in the fall. Once approved, AOAC will issue a call for methods and experts and the standard will be published in the *Official Methods of Analysis*℠ compendium.

Standards developed and adopted by the working group will drive support of regulatory compliance and provide the analytical basis for development of new testing methods. ■

Thank You

AOAC thanks the following Ethylene Oxide Working Group contributors:

Agilent Technologies

Eurofins Europe

Herbalife

Medallion Labs/General Mills

Nestlé

NOW Foods

Shimadzu Analytical (India) Pvt Ltd ■

AOAC SPIFAN Launches Working Group on MFGM Protein

On January 10, 2024, the AOAC Stakeholder Program on Infant Formula and Adult Nutritionals (SPIFAN) introduced a new working group to begin standards development activities for milk fat globule membrane (MFGM) protein, chaired by **Caroline Thum** of AgResearch with **Martine van Gool** of FrieslandCampina serving as AOAC science advisor.

van Gool provided an overview of the nutrient, regulatory landscape, and analytical challenges. Identified as an area of opportunity during the AOAC Annual Meeting in August 2023, MFGM is a complex structure that surrounds the fat globules in milk. It is composed of a trilayer membrane that contains proteins, lipids, and carbohydrates. MFGM plays a crucial role in stabilizing the fat globules in milk and preventing them from coalescing. Some health benefits include cognitive development, natural immunity, and endurance/physical activity, among others. van Gool reported that infant formula manufacturers are increasingly adding MFGM as an ingredient in products for nutritional purposes. However, legislation for ingredient label claim varies.

The working group recommended that analytical methods are needed for determination of MFGM proteins concentration in all forms of milk and milk products, such as infant formula, adult nutritional formula, and their respective ingredients.

The draft AOAC *Standard Method Performance Requirements* (SMPRs®) define MFGM protein as the sum of the 12 more concentrated proteins generally recognized as part of processed bovine milk: adipophilin, butyrophilin, mucin 1, xanthine dehydrogenase/oxidase, fatty acid transporter, periodic acid Schiff III, lactadherin, fatty acid-binding protein, breast-related cancer antigens 1/2, proteose peptone 3 or glycosylation-dependent cell adhesion molecule, glycoprotein 2, and polymeric immunoglobulin receptor.

Standards development activities for MFGM protein will continue throughout winter/spring 2024 to flesh out details. Draft SMPRs will then be posted on the AOAC website for an open public comment period. All comments received will be reconciled by AOAC and the working group chair, if necessary. It is anticipated that draft SMPRs will be reviewed for possible approval in summer 2024. If successful, AOAC will issue calls for methods and experts and the standard will be published in the *Official Methods of Analysis*℠ compendium.

For more information on SPIFAN, visit https://www.aoac.org/scientific-solutions/spifan/. ■

MFGM plays a crucial role in stabilizing the fat globules in milk and preventing them from coalescing. Some health benefits include cognitive development, natural immunity, and endurance/physical activity.

AOAC Cannabis/Hemp Dried Flower PT Now Accredited

The AOAC Laboratory Proficiency Testing Program (LPTP) offered in both cannabis and hemp dried flower/biomass matrices have been added to the program's scope of accreditation by A2LA. These programs provide ready to analyze samples in an actual hemp or cannabis matrix, with no spiking required by the participating laboratory. Samples are for the analyses of cannabinoids, terpenes, moisture, water activity, heavy metals, pesticides, and mycotoxins (the latter two are accredited for hemp but still in the process for cannabis matrix).

Don't miss out on the next live round being shipped in March 2024. Contact AOAC staff at Cannabis_PT@aoac.org to enroll or to learn about the additional programs for oils, edibles, or the microbiological contaminants pilot round shipping March 4, 2024.

Setting Up Your Lab's PT for 2024?

See what sets AOAC LPTP apart and join the many other laboratories, including federal regulatory, state reference, international regulatory, and industry, that benefit from participating to demonstrate analytical proficiency.

AOAC PT programs use actual food, environmental, and cannabis and hemp matrices. By testing samples that are like routine samples, laboratories can reduce a variety of risks.

Learn more about the programs offered by visiting the AOAC PT page at https://www.aoac.org/scientific-solutions/proficiency-testing/ or AOAC PT Cannabis and Hemp Program page at https://www.aoac.org/scientific-solutions/cannabis-hemp-pt-program/. ■

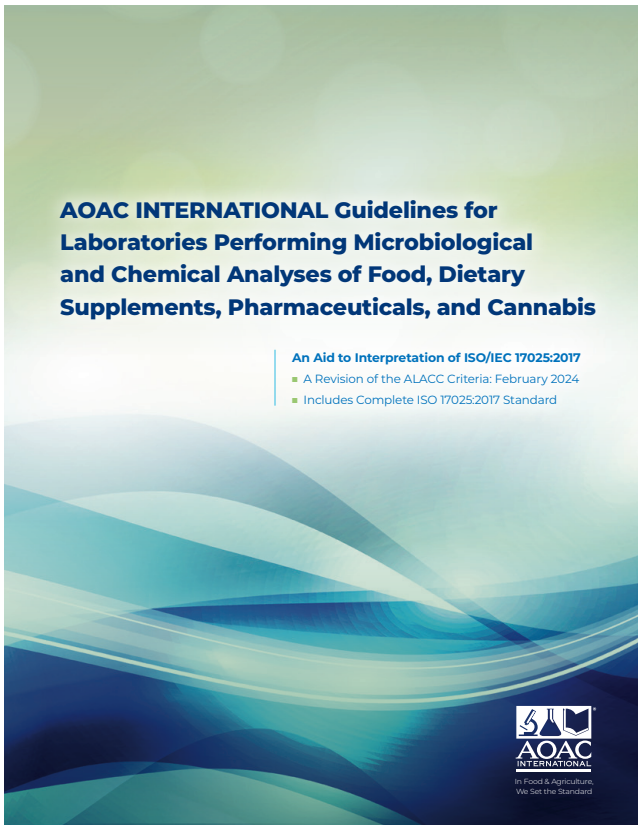
AOAC ALACC Guidelines for Labs Revised to Include Cannabis Appendix and More

AOAC announces release of the new *AOAC INTERNATIONAL Guidelines for Laboratories Performing Microbiological and Chemical Analyses of Food, Dietary Supplements, Pharmaceuticals, and Cannabis.* The new printing of the AOAC Analytical Laboratory Accreditation Criteria Committee (ALACC) guidelines includes—for the first time—an appendix for cannabis, which is invaluable to accredited laboratories and laboratories seeking accreditation for cannabis and hemp testing.

In response to feedback from stakeholders of the AOAC Cannabis Analytical Science Program (CASP), ALACC collaborated with the American Council of Independent Laboratories (ACIL) to develop an appendix specific to cannabis and hemp testing laboratories. In addition to the new appendix, guidance on performing cannabis analysis is included throughout the guideline.

The accrediting bodies A2LA, ANAB, and PJLA also worked on the ALACC revision. The guidelines—last revised in 2018—provide accredited laboratories with valuable direction on how best to implement ISO 17025:2017. The document is intended to provide guidance consistent with regulatory bodies having jurisdiction over food, pharmaceuticals, dietary supplements, and cannabis.

Stay tuned for information on how to order. ■



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Editor-in-Chief: Xu-Liang Cao, PhD

SCAN ME

Why publish with the *Journal of AOAC INTERNATIONAL*?

The *Journal of AOAC INTERNATIONAL* publishes in the fields of chemical, biological, and toxicological analytical chemistry for the purpose of showcasing the most precise, accurate, and sensitive methods for analysis of foods, food additives, supplements and contaminants, cosmetics, drugs, toxins, hazardous substances, pesticides, feeds, fertilizers, and the environment.

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- **Option to publish open access**

The journal is divided into the following 10 sections:

- Animal Food, Pet Food, and Plant Nutrient Methods
- Drug Formulations
- Environmental Chemical Contaminants
- Food Chemical Contaminants
- Food Authenticity/Food Fraud, Food Allergens
- Human Nutrient Methods
- Microbiological Methods
- Natural Products
- Sampling
- Statistical Analysis and Chemometrics

AOAC Reorganizes North American Sections

In an effort to foster increased support, participation, and engagement, AOAC reorganized the 10 AOAC Sections in North America (Central, Midwest, Mid-Atlantic, Southern, Mid-Canada, Pacific Northwest, Pacific Southwest, Southern California, New York, and Northeast) into five regional Sections: Pacific, Atlantic, Midwest, Southern, and Mid-Canada. The reorganization was approved by the AOAC Board of Directors in December 2023 based on a recommendation from the Committee on Sections to reorganize North American Sections as satellites overseeing activities and needs in their region.

"The goal is to revitalize regional activities and create a more sustainable model," said **Erin Crowley,** Q Laboratories, co-chair of the AOAC Committee on Sections with **Erik Konings,** Nestlé. "AOAC Sections are critical partners in helping the Association identify emerging analytical challenges from around the globe. Engagement of Sections in standards development and methods alignment activities are key to sustainable membership and strategic growth."

With the reorganization, AOAC INTERNATIONAL now has 15 Sections connecting analytical communities in the United States and worldwide, representing five continents and more than 120 countries:

North America

Atlantic Section: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia

Mutual recognition of Canadian provinces: New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec (website coming soon, in the meantime visit https://www.aoac.org/membership/sections/)

Mid-Canada Section: Province of Manitoba (http://midcanadaaoac.org/home)

Midwest Section: Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, South Dakota, West Virginia, and Wisconsin

Mutual recognition of Canadian provinces: Manitoba and Saskatchewan (http://www.mwaoac.org)

Pacific Section: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming

Mutual recognition of Canadian provinces: Alberta and British Columbia (http://www.pswaoaci.org)

Southern Section: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas (www.ssaoac.org)

Asia and Asia-Pacific

China Section: People's Republic of China and Hong Kong (www.aoacgc.com/en/)

India Section: India (http://aoac-india.org)

Japan Section: Japan (https://www.aoacijs.org)

> "The goal is to revitalize regional activities and create a more sustainable model."
>
> — ERIN CROWLEY, Q LABORATORIES

Southeast Asia Section: Brunei, Burma (Myanmar), Cambodia, Timor-Leste, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, and Vietnam (https://aoac-sea.org)

Taiwan Section: Taiwan and Penhu, Kimmen, and Matsu regions (http://www.aoac.org.tw)

Europe

Europe Section: All European countries except Belgium, Netherlands, and Luxembourg (http://www.aoaceurope.com)

Lowlands Section: Belgium, Luxembourg, and The Netherlands (http://www.aoaclowlands.nl)

Central and South America

Latin American–Caribbean Section: Central America, Mexico, South America, and the Caribbean islands (www.aoaclatina.com)

Middle East and Africa

Arab Section: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestinian Territories, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen (aoacarab.org)

Africa Section: Algeria*, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros*, Congo (Brazzaville), Congo (Democratic Republic), Côte d'Ivoire, Djibouti*, Equatorial Guinea, Egypt*, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya*, Madagascar, Malawi, Mali, Mauritania*, Mauritius, Morocco*, Mozambique, Namibia, Niger, Nigeria, Réunion, Rwanda, Saharawi Arab Democratic Republic, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, Somalia*, Sudan*, South Sudan, Swaziland, Tanzania, Togo, Tunisia*, Uganda, Zambia, and Zimbabwe (https://aoac-africa.org) (*shared countries with the AOAC Arab Section)

Get Involved

AOAC Sections bridge gaps in communications and exchange with international organizations and provide regional constituents with opportunities to share information and find common solutions to common analytical problems. For more information on AOAC Sections, visit https://www.aoac.org/membership/sections/. ■

Stawick Named AOAC RI Senior Director

On January 9, 2024, AOAC INTERNATIONAL Deputy Executive Director and Chief Science Officer **Kate Mastovska** announced that **Brad Stawick**—who has an extensive background and education in biology, food science, and business administration—has been named senior director of the AOAC Research Institute (RI). In this capacity, he serves as AOAC's lead in promoting and conducting activities to help develop, improve, and validate alternative testing methods across all RI programs.

Throughout his career, Stawick has worked for multiple global and national contract laboratory providers, where he served in senior management roles

Brad Stawick

in operations and quality, specializing in food, environmental, agriculture, and life sciences. Most recently, he has been managing his own consulting business, Stawick Laboratory Management, where he provided all aspects of guidance and support to clients in the testing industry, including method validation, collaborative studies, laboratory assessments, ISO standard accreditation, training materials, and more.

As senior director of the RI, Stawick is responsible for managing the *Performance Tested Methods*℠ (PTM) Program, which provides an independent, third-party review and certification for proprietary test methods. The RI also conducts rapid response validation projects to address emerging issues. He hopes to help grow AOAC's reputation as a leader in providing innovative analytical solutions for detection of microbiological food safety and quality targets, as well as nutritional and residue compounds, that are simple, accurate, fast, and reliable as possible to help the food, beverage, and agricultural industries ensure quality and safety of products. Stawick is most eager to identify existing, as well as emerging, opportunities in which AOAC can provide science-based solutions for food safety.

"I'm excited about all the opportunities out there for AOAC," he says. "There's much to be done in food safety, for example, and I hope to be able to identify activities that are useful and relevant to AOAC and its stakeholders. As the industry looks for better results faster, reliance on independent review of these solutions will continue to grow."

Recently, Stawick reviewed and provided technical expertise on the new *AOAC INTERNATIONAL Guidelines for Laboratories Performing Microbiological and Chemical Analyses of*

(Continued on page 13)

Call for Nominations: 2024 Section of the Year Award

AOAC INTERNATIONAL is seeking nominations for the 2024 Section of the Year Award, which honors an AOAC regional Section for its exceptional contributions to the Association. The annual award recognizes the role a Section plays in advancing analytical excellence in the areas of food safety, food integrity, and public health. Sections bring together members, organizations, and experts dedicated to developing and validating standards, methods, and technologies that are of relevance in the region and thereby help to achieve AOAC's vision, mission, and goals.

Selection Criteria

An active AOAC Section may be considered for this award based on criteria in one of the following four areas:

- Activities (e.g., network/collaboration with national/regional regulatory authorities; webinars, training, learning resources; standards development activities)
- Communications (e.g., website, newsletter, mailing list)
- Recruitment and engagement (membership recruitment and retention program for Section and/or AOAC members)
- Community service (contributions to communities through one major service project or a series of smaller projects)

Nomination Process

All AOAC Sections are eligible for the award. Members may nominate a Section by **March 31, 2024,** and Sections may nominate themselves by **April 15, 2024.** When a nomination is received, AOAC staff will forward an application to the nominated Section leadership to complete based on the award selection criteria and return with all supporting documents to AOAC headquarters by **April 29, 2024**.

For more information on the AOAC Section of the Year Award and/or to submit a nomination, visit https://www.aoac.org/membership/awards/aoac-international-section-of-the-year-award/. ■

IN REMEMBRANCE:

Robert LaBudde, May 1947–January 2024

Robert LaBudde

Robert LaBudde, a Fellow of AOAC and a longtime member of the AOAC Committee on Statistics, passed away in January 2024. He was 76 years old.

"Robert was a friend and mentor to everyone on the Stats Committee," said **Paul Wehling,** ChemStats Consulting. "His long tenure on the committee and the large breadth of technical material that he developed for AOAC made him our principal theoretical statistical advisor. But he wasn't just a theoretician. He was also great at working with scientists on experimental designs and developing software and workbooks for AOAC validation statistics. His work was always grounded in the user's needs and in providing a workable solution for scientists. His unique perspective on technical issues will be sorely missed by our committee, as well as his wry sense of humor."

Sharon Brunelle, technical consultant for AOAC, who worked with LaBudde on numerous validation protocols and guideline documents, added, "Robert was dedicated to upholding high scientific standards and was the backbone of the AOAC Committee on Statistics. He will be greatly missed."

In 1979, LaBudde founded and served as president of Least Cost Formulations, Ltd., providing services for mathematical software development and software and technical consulting solutions to the food industry in the areas of product formulation, quality assurance, and food safety. He was also an instructor for Statistics.com, an online learning institution specializing in statistics, analytics, and data science.

LaBudde was an adjunct professor of statistics at Old Dominion University from 2012 to 2017. He also served on the faculties of the University of Wisconsin (Chemistry, Computer Science), Massachusetts Institute of Technology (Applied Mathematics), and North Carolina State University (Food Science).

Since joining in 1990, LaBudde was a highly active member of AOAC INTERNATIONAL. He served as an associate referee and statistical advisor and was a member of several groups, including Committee on Statistics, International Stakeholder Panel on Alternative Methods (ISPAM), Stakeholder Program on Infant Formula and Adult Nutritionals (SPIFAN), Stakeholder Program on Agent Detection Assays (SPADA), Expert Review Panel on Botanical Identification Methods, Methods Committee on Microbiology, Methods Committee on Biological Threat Agents, and Methods Committee on Antimicrobial Efficacy Testing.

LaBudde was integral to the development of statistical methodology for method validation studies for microbial and chemical analytes. He reviewed method validation study protocols and results and contributed to development of guidelines for probability of detection statistical model (Appendix H of the *Official Methods of Analysis*℠ compendium; OMA), biological threat agents (Appendix I of OMA), microbiology for food and environmental surfaces (Appendix J of OMA), and dietary supplements and botanicals (Appendix K of OMA). His work is also published in the *Journal of AOAC INTERNATIONAL.* In addition, LaBudde wrote over 100 Technical Reports on statistical approaches related to specific topics of importance to AOAC and contributed a series of articles concerning statistics-related issues relevant to the activities of AOAC in *Inside Laboratory Management* from 2018 to 2021.

"He relished finding concrete answers based in statistical theory to seemingly simple experimental questions," Brunelle said.

LaBudde was a recipient of the AOAC Advisor of the Year Award (2007), AOAC Community Volunteer of the Year Award (2011), AOAC Technical Advisor of the Year Award (2012 and 2013), AOAC Achievement in Scientific and Technical Excellence Award (2012), and Fellow of AOAC Award (2017) for his many contributions.

Outside of AOAC, LaBudde served on the Scientific Affairs Committee of the American Meat Institute, National Advisory Committee for Microbiological Criteria in Foods, and ISO TC 34/SC 16/WG 5 Committee on Qualitative Statistics.

He published numerous research articles in refereed journals, books, and book chapters; held several patents; and provided consulting services to hundreds of manufacturing companies.

LaBudde earned a B.S. degree in Chemistry and Mathematics from the University of Michigan and M.S. and PhD degrees in Chemistry from the University of Wisconsin. ■

Official Methods℠ for Fluoride and Sulfite Published in *J. AOAC Int.*

Be sure to check out the January/February 2024 issue of the *Journal of AOAC INTERNATIONAL* for First Action methods for fluoride in milk, soy, and water-based products and sulfite in shrimps.

In "Quantification of Total Sulfite in Shrimps by BIOFISH 300 SUL Method: First Action **2021.09,**" by **Jone Garate, Arrate Jaureguibeitia, Roberto Gonzalez, Itziar Ortiz de Zarate,** and **Sandra Salleres** [*J. AOAC Int.* **107**(1), 93(2024), https://doi.org/10.1093/jaoacint/qsad114], the authors describe a study to evaluate the analytical performance and reliability of the BIOFISH 300 SUL, a simple, fast, and accurate method, as an alternative to AOAC *Official Method*℠ **990.28** for the quantification of total sulfites in shrimp.

In the method, submitted by Biolan Microbiosensores S.L., sulfite is extracted from the solid matrix in an aqueous solution and subsequently quantified by BIOFISH 300 SUL in less than 3 minutes. Comparative studies between BIOFISH 300 SUL and *Official Method*℠ **990.28** were conducted for naturally contaminated and spiked samples of raw and boiled shrimp with sulfite levels covering the 7–150 mg/kg range to determine linearity, recovery, repeatability, intermediate reproducibility, and accuracy.

Results showed that the BIOFISH 300 SUL method demonstrated high accuracy and precision for the range of quantification (7–150 mg/kg). The method is fast and easy to use.

In the paper, "Fluoride Determination in Milk, Soy, and Water-Based Products Using Ion-Selective Electrode and Direct Measurement Technique: Single-Laboratory Validation, First Action **2022.05,**" by **Renée M. Erney** and **Charles K. Blac**k [*J. AOAC Int.* **107**(1), 103(2024), https://doi.org/10.1093/jaoacint/qsad004], the authors describe a single-laboratory validation (SLV) of a fluoride ion-selective electrode (F-ISE) method developed by Abbott Nutrition.

Five powder samples, including infant and adult nutritional products made from milk, whey, or soy, containing intact, partially hydrolyzed, or hydrolyzed proteins, were reconstituted, and hydrochloric acid was added to dissolve and release any bound fluoride. Sodium citrate buffer was added to complex any interfering ions and adjust pH and ionic strength. Samples were analyzed in duplicate over 6 days using F-ISE.

Results showed that the method is fit-for-purpose, with results acceptably meeting AOAC SMPR 2014.016 for Fluoride in Infant and Adult/Pediatric Nutritional Formula. Data generated during the SLV show that the F-ISE method is easy to perform and cost effective.

AOAC members receive complimentary access to *J. AOAC Int.* To access articles, visit the Oxford University Press website at https://academic.oup.com/jaoac. ■

AOAC members receive complimentary access to *J. AOAC Int.* To access articles, visit the Oxford University Press website at https://academic.oup.com/jaoac.

Stawick Named AOAC RI Senior Director

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Food, Dietary Supplements, Pharmaceuticals, and Cannabis, developed by the AOAC Analytical Laboratory Accreditation Criteria Committee (ALACC).

Stawick has been a member of AOAC for over 20 years and regularly served as an active volunteer. He received a Fellow of AOAC award in 2018.

"Brad has been a longtime member of AOAC and served in volunteer roles on the Official Methods Board, Technical Division for Laboratory Management (TDLM), and ALACC," said Mastovska. "We are thrilled to have him join our team and use his extensive food testing and quality control experience to lead the AOAC Research Institute programs."

Stawick has also volunteered extensively for A2LA, an AOAC partner, as a Lead Assessor and on various committees and American Council of Independent Laboratories (ACIL). He is a Certified Food Scientist and a member of the Institute of Food Technologists (IFT) and International Association for Food Protection (IAFP).

He holds a Master of Science in Food Science, Master of Business Administration, and Bachelor of Science degree in Biology.

Stawick takes over for **Scott Coates,** who retired at the end of 2023 after more than 30 years of service to the Association. ■

J. AOAC Int. Call for Papers

AOAC invites scientific papers for the *Journal of AOAC INTERNATIONAL,* a peer-reviewed scholarly publication of analytical chemistry and microbiology.

Chemistry and Microbiology

J. AOAC Int. publishes investigations of food safety (chemical and microbiological) issues, e.g., occurrence of chemical contaminants at levels that could impact regulatory decisions. The Journal does not publish results from routine analysis or surveys with chemical residue levels of no regulatory concern.

J. AOAC Int. also publishes reviews, symposium presentations, invited special sections which focus on methodology, nutritional, health and safety, and regulatory aspects of chemical and microbiological contaminants in food and environment and major and minor components of food.

Focused Topics and/or Guest Editor Collections

J. AOAC Int. is seeking papers for the following focused topics and/or guest editor collections:

Human Pathogen Detection, Identification, and Characterization for Food Safety and Outbreak Investigation: Recalls and outbreaks caused by microbial contamination in foods frequently appear in the news, such as the recent *Salmonella* outbreak associated with cantaloupes. Although culture methods are still the gold standards, more and more, molecular methods are used as preliminary screening or official detection and identification protocols for foodborne microbial pathogens. Powerful whole genome sequencing technology is increasingly used for identification and characterization of foodborne pathogens. Data on resistances to environmental stresses, virulent factors/genes, and antimicrobial resistance of pathogens provide useful information for developing prevention and control strategies for microbial contamination of foods. AOAC welcomes all research and reviews related to these fields.

Food Fraud Identification: Food fraud is becoming an important issue for consumers. In the past, it has been difficult to determine whether the genus/species composition in foods accurately reflects label claims. Recent advances in omics methodologies make it possible to now identify the presence of foreign DNA in food samples. However, identification of certain contaminating foods requires specific DNA targets. In addition, quantification can be challenging when dealing with complex mixtures of food sources.

Ready to Submit?

Refer to the instructions to authors at https://academic.oup.com/jaoac/pages/General_Instructions for more detailed information on manuscript requirements. To submit a manuscript, visit the *J. AOAC Int.* submission site at https://mc.manuscriptcentral.com/aoac_jaoac.

For more information on *J. AOAC Int.,* visit https://www.aoac.org/journal-of-aoac-international/. ■

New Login to Submit Research

Log in to ScholarOne with Web of Science (WoS) login credentials to any ScholarOne journal. With the launch of WoS login, the ORCID option to sign in will be sunsetting. However, using the ORCID account as an authentication method for the WoS account is an available alternative. Simply click the "Connect your ORCID" button when registering or signing in to your WoS account.

This WoS option on journal sites offers a Single Sign on Option (SSO) solution for end users. This login is similar to other social logins one would use elsewhere (e.g., Google or Facebook), utilizing the Web of Science's free account as the point of authentication. Try out the new SSO https://mc.manuscriptcentral.com/aoac_jaoac and submit your research today. ■

Exciting Opportunities for 2024

Continued from page 2

Speaking of the Midyear Meeting, this year's meeting marks 5 years since the inception of the AOAC Cannabis Analytical Science Program (CASP). AOAC launched CASP in March 2019 to provide a forum where the science of hemp and cannabis analysis can be examined and for development of consensus-based standards. The initiative has resulted in several AOAC *Standard Method Performance Requirements* (SMPRs®), new and revised *Official Methods℠,* standard guidance, and more. AOAC celebrates CASP's 5-year anniversary on page 18 of this issue.

Finally, it's never too early to start thinking about the AOAC Annual Meeting in Baltimore, Maryland, USA, on August 23–29, 2024. AOAC INTERNATIONAL is proud to announce **Michelle Colgrave,** deputy director (Impact) at CSIRO Agriculture and Food (Brisbane, Australia) and professor of Food and Agricultural Proteomics at Edith Cowan University (Joondalup, Australia), as the recipient of the 2024 Harvey W. Wiley Award, the Association's highest honor for lifetime scientific achievement (*see* page 16 of this issue). Colgrave will deliver the Wiley Award Address at this year's Annual Meeting.

There's a lot of important and good work going on at AOAC. It's an exciting time to be a member. ■

—Mary Kay Krogull
President
MaryKay.Krogull@ft.eurofinsus.com

Nominations Open for AOAC Student Awards

Nominations are open for student awards to be given at the 138th AOAC Annual Meeting and Exposition, August 23–29, 2024, in Baltimore, Maryland, USA.

Deadline for submissions is **March 29, 2024.** Previous student award winners in these categories are not eligible for further awards.

AOAC INTERNATIONAL/Eurofins Foundation "Testing for Life" Student Award

This AOAC Award, supported by contributions from the Eurofins Foundation, is designed to encourage student researchers who are advancing basic or applied science in analytical or molecular testing for food safety, food security, food defense, food authenticity, or health and environmental protection.

To learn more and apply, visit https://www.aoac.org/membership/awards/eurofins-foundation-aoac-testing-for-life-student-award/.

AOAC INTERNATIONAL/Herbalife Scholarship

This student scholarship, supported by contributions from Herbalife, is designed to encourage student researchers who are advancing analytical or molecular (DNA) testing.

To learn more and apply, visit https://www.aoac.org/membership/awards/aoac-herbalife-student-scholarship/.

Technical Division on Reference Materials (TDRM) Award

The AOAC INTERNATIONAL Inés Cereijo TDRM Award is offered annually to both undergraduate and graduate students at any college or university to support students promoting awareness of the need for method performance evaluation early in a chemist's career, through the use of reference materials.

For more information, visit https://www.aoac.org/resources/tdrm-student-award-policy/. To apply, visit https://form.jotform.com/232744842999171. ■

Michelle Colgrave Wins 2024 Wiley Award

This year's Harvey W. Wiley award goes to an Australian researcher (and rugby coach) who a magazine once dubbed a "protein detective."

The Wiley Award is AOAC INTERNATIONAL's highest scientific honor, given annually for lifetime achievement in analytical science. This year's winner, professor **Michelle Colgrave,** has worked with labs on both sides of the Australian continent to analyze proteins in foods, looking for both "bad" proteins like allergens and "good" ones that might be beneficial to health.

Like many Wiley winners, she came to analytical chemistry through a back door. As a child, she dreamed of a legal career, first as a lawyer, then, perhaps inspired by TV shows akin to CSI, as a forensic scientist. But she says, "there weren't any jobs in forensic science."

Inspired by "a really great science teacher" at her high school in New South Wales, she focused on science, then found analytical chemistry, which, with its regulatory relevance and scientific detective work, seemed the perfect blend of her two prior earlier interests. She also spent her last two years of high school at an agricultural boarding school—basically a conventional school with a farm where students could take agriculture classes, the perfect background to become a science-oriented food researcher.

At university, and later as a postdoc, she refined these interests into proteomics, which, broadly defined, is the study of the entire suite of proteins in a cell. But as an analytical chemist, Colgrave focused on measuring these proteins via mass spectrometry—with, of course, a strong focus on agriculture and food.

That led to a job in Brisbane with CSIRO (Commonwealth Scientific and Industrial Research Organization; Australia's national science agency), where she has risen to deputy director for Science Impact in the Agriculture and Food Division. "I've been with them now for 17 years," she says. While working at CSIRO, in 2018, she received a random-looking email—"one of those I would normally delete without reading," she says. It came from Edith Cowan University, on the opposite side of the continent in Perth, and asked her if she wanted to be a 'Professor of Beer.'

Michelle Colgrave

That was just odd enough to intrigue her. Enough so that she ultimately took the job, though she changed the title to Professor of Food and Agricultural Proteomics, "because it's slightly more professional. But my unofficial title is 'Professor of Beer'."

What drew her to the job wasn't beer, per se. It was the proteomics of beer. Specifically, gluten, which is contained in the barley used to make beer, a concern for people with celiac disease. But how much gluten makes it into the beer, and how can it be measured? Do tests used to measure gluten in other products work with beer? Those were the questions that led her to accept a post that required repeated five-hour flights back-and-forth between Brisbane and Perth.

Meanwhile, she was also expanding her interests from gluten to the search for allergens and antinutritionals in a wide range of foods. (Antinutritionals are compounds that aren't technically allergens but can interfere with digestion or nutrient absorption.)

The gold standard for testing for them, she says, is LC-MS, but much of her work goes into determining whether simpler, less expensive methods like ELISA antibody tests can work in complex food matrixes for which they weren't initially developed. In the case of beer, for instance, there are test kits that work fine on barley, but do they work in a matrix that's been fermented by yeast and includes complex polyphenols from hops?

Beer, she adds, is relatively simple because it contains only these ingredients plus water. Processed foods not only come from a much wider range of sources but also have added sugars, fats, flavorings, and other ingredients that might interfere with testing.

The first step, Colgrave says, is to look for allergens or antinutritionals with LC-MS.

When she first started doing so, she says, it was a tedious process because there might be thousands or even tens of thousands of other proteins from which the target protein needed to be separated. But today, that's not necessary. All that's needed is to extract all the proteins, break them into pieces, and inject the resulting peptide stew into the LC-MS. Bioinformatics and fast computing can then find the peptide fingerprints of any proteins of interest that might be there. "It's computational power and the speed of the instruments that have allowed this sort of breakthrough," she says.

Once the protein of interest has been measured by LC-MS, she says, simpler tests, like antibody tests, can be compared to the LC-MS results. "Our goal is to say, 'Antibody kits work under these circumstances, but if you've processed it in a certain way, if you ferment it, then you need to change the method.'"

In addition to known allergens and antinutritionals, Colgrave's team is looking for previously unknown allergens in foods that have not been

well studied, such as insect protein and algae, both of which are gaining traction in Western diets. Insects are of particular concern because they are taxonomically related to crustaceans like shrimp and lobster, which means that people with seafood allergies might need to be wary of them.

Finding out if there is a risk, she says, begins by comparing their genomes to those of closely related species, looking not just for known problem proteins, but for genes that might code for something similar. The next step is using LC-MS to determine if the protein of concern is actually present. "Just because it's in a genome doesn't mean it's in the proteome and therefore the food," she says. If it is there and not already a known allergen, the protein can then be tested against serum from people allergic to its analog to see if it truly is of concern.

Recently, Colgrave has started using the same technique to look for "good" proteins in novel foods—ones that are known to be health enhancing by helping to lower blood pressure, improve cardiovascular heath, or even facilitate cognitive development. "That's the last piece of the puzzle our research focuses on," she says.

As an example, she cites lupins—a legume known in North America mostly as a showy mountain wildflower, but whose lentil-like seeds have been eaten (in some varieties) for more than 4,000 years in other parts of the world, all the way back to ancient Egypt. Lupin is a great crop, Colgrave says, because it is a nitrogen fixer that can regenerate soil and can grow well on arid lands. But it also has allergens. "We need to select lines that have lower allergen content and focus on the beneficial molecules," she says. (And nobody should eat wild lupin seeds unless they are an expert because they can be toxic.)

Her choice for the topic of the Wiley Award Symposium this year in her honor at AOAC INTERNATIONAL's Annual Meeting, August 23–29 in Baltimore, Maryland, USA, reinforces her forward-looking approach to life. "I'd like to talk about the role of LC-MS with novel proteins," she says, referencing efforts to "brew" foodstuffs, such as mushroom mycelia in vats, rather than producing them "the normal way." Because why rest on your laurels when you have a chance to push your specialty another step further into the future?

As for rugby? Colgrave played it for "15 years or so," all the way from childhood to university to the Queensland state team. Then she shifted to refereeing, which she did at the national level. "I guess that was my highest achievement," she says.

Now, she coaches, though she still finds time to be actively involved in a range of sports. That includes "a bit" of CrossFit and a two-week snowboarding vacation in Japan, from which she returned just in time to be interviewed for this article. So, watch out: this Wiley winner doesn't like to sit still—both physically and scientifically. ■

—Richard A. Lovett
Contributing Writer
ralovett@aol.com

AOAC CASP Celebrates 5 Years

This year marks 5 years of successful collaboration to bridge gaps in methodologies in the regulatory framework and provide analytical solutions accomplished through consensus by the AOAC Cannabis Analytical Science Program (CASP). Since its inception in March 2019, the CASP initiative has resulted in advances in standards, *Official Methods*℠, and other tools in AOAC's suite of analytical solutions urgently needed by the cannabis and hemp community (*see* sidebar). AOAC CASP and its working groups also continue to make a significant impact on state, federal, and international regulations. ▸

"At the time, no globally recognized standards and methods existed for validating the safety, potency, and label claims of cannabis products available to consumers," said AOAC Executive Director **David B. Schmidt.** "With varying regulations and evolving cannabis analysis, there is still much technical and regulatory uncertainty. CASP is a valuable forum for all the organizations working on analysis of cannabis and hemp to come together and get some efficiency in working toward regulatory clarity."

Key to the success of the program is the engagement of the CASP analytical community, comprising government, academic, and private sector laboratories and organizations. Their expertise and participation are integral on the advisory panel (*see* sidebar), working groups, and as part of the larger stakeholder body to ensure that efforts are relevant, timely, and meet the needs of the community.

Here, AOAC celebrates CASP's 5 years of accomplishments in paving the way for standardized and reliable analytical solutions to ensure safer products.

New Industry Brings Challenges and Opportunities

In the late 2010s as the cannabis industry began to grow exponentially, a need for standardized methods and guidance was apparent. The U.S. cannabis industry's projected market sales are now estimated to exceed US $50 billion by 2028 (https://www.forbes.com/sites/irisdorbian/2023/02/15/despite-some-stumbles-total-sales-in-us-cannabis-market-could-soar-to-507-billion-by-2028-says-top-researcher/?sh=75a7f20a164d; Forbes, February 15, 2023).

(Continued on page 20)

CASP Accomplishments

As of date, in support of CASP activities, AOAC has adopted the following *Standard Method Performance Requirements* (SMPRs®), *Official Methods℠*, matrix extensions, and standard guidance, with more on the horizon (*Note:* The below includes cannabis-related AOAC standards and *Official Methods℠* developed and approved as AOAC was establishing CASP.):

AOAC SMPRs®

- 2017.001 Cannabinoids in Cannabis Concentrates
- 2017.002 Cannabinoids in Dried Plant Materials
- 2017.019 Cannabinoids in Chocolate
- 2018.011 Pesticides in Cannabis
- 2019.001 Detection of *Aspergillus* in Cannabis and Cannabis Products
- 2019.002 Identification and Quantitation of Selected Residual Solvents in Dried Cannabis Materials
- 2019.003 Quantitation of Cannabinoids in Plant Materials of Hemp (Low THC Varieties *Cannabis* spp.)
- 2020.001 Determination of Heavy Metals in a Variety of Cannabis and Cannabis-Derived Products
- 2020.002 Detection of *Salmonella* species in Cannabis and Cannabis Products
- 2020.012 Detection of Shiga Toxin-Producing *Escherichia coli* in Cannabis and Cannabis Products
- 2020.013 Mycotoxin Screening Technique in Cannabis Plant Material and Cannabis Derivatives
- 2021.009 Viable Yeast and Mold Count Enumeration in Cannabis and Cannabis Products
- 2021.010 Quantitative Analysis of Mycotoxins in Cannabis Biomass and Cannabis-Derived Products
- 2022.001 Quantitation of Cannabinoids in Beverages
- 2023.001 Pesticides in Cannabis-Containing Beverages
- 2023.005 Heavy Metals in Cannabis-Containing Beverages

AOAC *Official Methods℠*

- **997.02** Yeast and Mold Counts in Foods and Dried Cannabis Flower (Matrix extension)
- **2002.11** Detection and Quantification of Yeasts and Molds in Foods and Dried Cannabis Flower (Matrix extension)
- **2014.05** Enumeration of Yeast and Mold in Foods, Select Surfaces, and Dried Cannabis Flower (Matrix extension)
- **2018.02** Enumeration of Yeast and Mold in Select Foods and Dried Cannabis Flower (Matrix extension)
- **2018.10** Cannabinoid in Dried Flowers and Oil (First Action)
- **2018.11** Quantitation of Cannabinoids in Cannabis Dried Plant Materials, Concentrates, Oils, and Hemp (First Action; matrix extension and addition of procedure for sample dry-weight determination)
- **2021.03** Heavy Metals in a Variety of Cannabis and Cannabis-Derived Products (First Action)

Standard Guidance

- "Clarification of Testing Materials"
- "Laboratory Guidance—Drying Field-Fresh Hemp Plant Samples in Preparation for Determination of Total THC on a Dry Weight Basis" ■

In the absence of a federal framework of regulations for cannabis, states either have their own laws and regulations or no regulations yet to consider individually developed testing requirements. Producers and manufacturers scramble to meet expectations for quality and regulatory compliance. This is particularly critical in the lab as businesses strive not just to establish credibility with consumers, but also to meet the numerous requirements of the U.S. Food and Drug Administration's Food Safety Modernization Act (FSMA) of 2011 and the rigorous cannabinoid testing standards for hemp specified in the U.S. Department of Agriculture's (USDA) Agriculture Improvement Act of 2018 (commonly known as the 'Farm Bill'). Passage of the 2018 Farm Bill impacts regulatory agencies with challenges for oversight of hemp.

With cannabis and hemp showing up in an ever-expanding array of consumable products like beverages, brownies, butter, chews, cookies, gummies, honey, edible oils, and more,

industry urgently needs reliable, validated, fit-for-purpose methods demonstrating accuracy and precision, specific for each matrix.

Some challenges in quality testing of cannabis and hemp under U.S. regulations include complexity of sample matrices; lack of standard test methods, proficiency testing, and reference materials; myriad finished products; and labeling (food, drug, or supplement), among others.

Prior to CASP, AOAC had begun work on cannabis in 2017 on an ad hoc basis. Then, in conjunction with the AOAC Midyear Meeting in March 2019, AOAC launched CASP to provide a forum where the science of hemp and

Cannabis/Hemp-Related PTMs

- Applied Food Diagnostics, Inc. 022001 Simultaneous Multiplex Real-Time PCR (SIMUL-qPCR) Top 7 STEC Assay Collection
- Applied Food Diagnostics, Inc. 042001 Simultaneous Multiplex Real-Time PCR (SIMUL-qPCR) Salmonella Assay
- Applied Food Diagnostics, Inc. 122202 Simultaneous Multiplex Real-Time PCR (SIMUL-qPCR) Salmonella & STEC with GFP Assay
- Bio-Rad 010803 iQ-Check Salmonella II Real-Time PCR Test Kit v4
- Bio-Rad 032104 iQ-Check Aspergillus
- Bio-Rad 121203 iQ-Check STEC VirX & iQ-Check STEC SerO
- bioMérieux, s.a. 041001 TEMPO Yeast & Mold
- bioMérieux, s.a. 050801 TEMPO EB (Enterobacteriaceae)
- bioMérieux, s.a. 060702 TEMPO CC (Coliform Count)
- bioMérieux, s.a. 080603 TEMOP EC (E. coli) Test
- bioMérieux, s.a. 121204 TEMPO AC (Aerobic Count)
- bioMérieux, s.a. 121802 GENE-UP Salmonella 2 (SLM 2)
- bioMérieux, s.a. 121806 GENE-UP EHEC Series
- Invisible Sentinel 022103 GENE-UP Aspergillus PRO
- Invisible Sentinel 092101 GENE-UP PRO STEC
- Clear Scientific Corp. 082301 Clear Micro SalSTEC MPlex
- Clear Scientific Corp. 082302 Clear Micro Aspergilly MPlex
- Hygiena 091301 BAX System Real-Time PCR Assay Suite for Detecting non-0157:H7 STEC
- Hygiena 102003 BAX System Real-Time PCR Assay for E. coli 0157:H7 Exact
- Medicinal Genomics 022202 PathoSEEK 5-Color Aspergillus Multiplex Assay Using SenSATIVAx Extraction
- Medicinal Genomics 082102 PathoSEEK Salmonella & STEC E. coli Multiplex Assay Using SenSATIVAx Extraction
- Neogen 010302 Soleris NF-Coliform
- Neogen 051301 Soleris Direct Yeast & Mold
- Neogen 071203 Soleris NF-TVC
- Neogen 071902 Molecular Detection Assay 2-STEC Gene Screen (MDA2-STXEAE)
- Neogen 071903 Molecular Detection Assay 2-STEC Gene Screen (MDA2-STX)
- Neogen 091501 Molecular Detection Assay 2-Salmonella (MDA2-SAL)
- Neogen 121301 Petrifilm® Rapid Yeast and Mold
- Neogen 121901 Soleris Enterobacteriaceae Vial
- PathogenDx 012201 DetectX Combined
- PathogenDx 072105 QuantX Fungal One Step
- Shimadzu 092002 CompactDry YMR ■

cannabis analysis can be examined and for the development and maintenance of cannabis standards and methods. Consensus-driven standards and methods promote accuracy in label potency claims and address public safety issues, such as pathogens and residual solvents. AOAC received trademark registration for the "CASP" brand on November 5, 2019.

"The launch of CASP represented a major commitment by AOAC and the laboratory community to use analytical science to promote public health," Schmidt said.

Standards Development Activities

Based on priorities identified by the advisory panel, three working groups were initially formed to develop *Standard Method Performance Requirements* (SMPRs®):

- Chemical Contaminants
- Cannabinoids in Consumables
- Microbial Contaminants

Approved during the 133rd AOAC Annual Meeting in September 2019, the first CASP SMPRs guide method development for quantitation of cannabinoids in plant materials of hemp (low THC varieties *Cannabis* spp.), identification and quantitation of selected residual solvents in dried cannabis materials, and detection of *Aspergillus* in cannabis and cannabis products.

"For AOAC, the CASP SMPRs were the first to be voted on electronically in real-time during the CASP meeting," said **Deborah McKenzie,** deputy assistant executive director and chief standards officer, AOAC.

To date, CASP deliberations have resulted in 12 AOAC SMPRs covering:

- *Aspergillus*
- *Salmonella* species
- Shiga toxin-producing *Escherichia coli*
- Viable yeast and mold count enumeration
- Cannabinoids
- Residual solvents
- Heavy metals
- Mycotoxins
- Pesticides
- Cannabis plant material and cannabis derivatives
- Hemp plant materials
- Dried cannabis materials
- Cannabis and cannabis-derived products
- Cannabis-containing beverages
- Cannabis biomass

Another SMPR for detection and enumeration of *Listeria monocytogenes* in cannabis-infused edibles is on the way.

Each of these SMPRs are impactful to the industry as state regulatory commissions begin to adopt them, establishing AOAC SMPRs and methods as requirements for compliance laboratories.

AOAC SMPRs are used by method developers to develop candidate methods that are fit-for-purpose and perform as expected. AOAC expert review panels (ERPs) use SMPRs to evaluate methods to meet AOAC's high standards and community needs. These AOAC-adopted methods result in reliable data to support effective compliance-driven quality control of products and enhance public health.

USDA References AOAC Standard in U.S. Domestic Hemp Production Program

AOAC further showcased its role as an industry leader when AOAC SMPRs for measuring cannabinoids in hemp were referenced in the U.S. Farm Bill implementation regulations. USDA's Domestic Hemp Production Program (https://www.ams.usda.gov/rules-regulations/hemp) specifies use of AOAC SMPR 2019.003 Quantitation of Cannabinoids in Plant Materials of Hemp (Low THC Varieties *Cannabis* spp.), one of the first three standards approved by CASP, in its testing guidelines for laboratories.

"Referencing AOAC in this ruling shows the impact of AOAC standards development and consensus-building processes in promoting public health and ensuring consumer confidence in product integrity," Schmidt said.

Validation Guidelines

Dry Weight

Developed by the Working Group on Cannabinoids in Consumables, the document "Validation Guideline for Laboratories on Drying Field-Fresh Hemp Plant Samples in Preparation for Determination of Total THC on a Dry-Weight Basis" aims to provide guidance for laboratories in developing standard operating procedures for processing

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hemp plant materials received fresh from the field to obtain a moisture content appropriate for grinding when preparing samples for determining total THC on a dry-weight basis, for example, when using AOAC *Official Method*℠ **2018.11** or other appropriate methods.

Microbiology

Draft validation guidelines have also been developed to provide comprehensive technical guidance for conducting microbiological methods validation studies for analysis of cannabis and cannabis-derived products. "AOAC INTERNATIONAL Guidelines for Validation of Microbiological Methods for Cannabis and Cannabis Products" was posted for public comment and is awaiting community consensus.

Methods Activities

ERPs for CASP have advanced much needed methods to ensure safer products are reaching consumers, with adoption of a First Action method for heavy metals in cannabis and matrix extensions to include hemp and cannabis flower.

A milestone for CASP was the extension of *Official Method*℠ **2018.11** for cannabinoids in Cannabis plant materials, concentrates, and oils in April 2020 to include hemp. With this adoption, laboratories were now able to evaluate hemp for THC on a dry-weight basis, as described in USDA's Final Rule governing the production of hemp under the 2018 Farm Bill. A fundamental requirement of USDA's Domestic Hemp Production Program is testing for THC levels.

> **"Referencing AOAC in this ruling shows the impact of AOAC standards development and consensus-building processes in promoting public health and ensuring consumer confidence in product integrity."**
>
> **— AOAC EXECUTIVE DIRECTOR DAVID B. SCHMIDT**

Beyond Standards and Methods

Training and Education

Training and education are needed in the rapidly growing cannabis and hemp sector. AOAC formed a CASP working group to examine development of education and training courses to bring laboratories testing hemp and cannabis up to date on best practices, such as fundamentals of method validation, chemistry and microbiology methodology and control, and laboratory accreditation requirements and processes.

The first installment of the virtual educational seminar sessions highlighted the cannabis and hemp testing ecosystem that supports a market estimated, at the time, to approach $24 billion by 2025. Additional cannabis science laboratory training courses focused on setting up a cannabis laboratory and testing for heavy metals and microbial and chemical contaminants. All the webinars were highly successful with an average attendance in the mid-200s.

Proficiency Testing

With proficiency testing (PT) identified as another opportunity, a CASP working group was formed to examine and reach consensus on technical requirements needed to develop a comprehensive PT program. The AOAC Laboratory Proficiency Testing Program (LPTP) launched the Cannabis/Hemp PT Program in 2022. AOAC partnered with test material provider Signature Science, LLC to provide cannabis and hemp test samples that arrive ready to analyze (no spiking required). Importantly, it is the only PT program offering actual >0.3% (low, medium, and high THC) cannabis as a matrix that can be shipped across state lines. The AOAC PT program helps hemp and cannabis testing laboratories achieve the highest levels of product safety, testing quality, and regulatory compliance using relevant, like routine, matrices. The programs, which include

cannabinoids, terpenes, moisture, water activity, heavy metals, pesticides, and mycotoxins for hemp and cannabinoids, terpenes, moisture, water activity, and heavy metals for cannabis, are now ISO 17043 accredited and have been added to the AOAC LPTP's scope of accreditation. In addition, development began in 2023 for PT programs regarding microbiological contaminants, potency/concentration and contaminants for edible matrices, and chemical contaminants in oils and edibles.

And More

Along the way, CASP has been involved in additional activities critical to its relevance to the cannabis industry, including:

- Hosting training course on AOAC standards development and conformity assessment processes, exclusively for members of the Cannabis Regulators Association (CANNRA)
- Collaborating with organizations to host webinars
- Contributing to external stakeholder panels
- Participating in conferences
- Providing interview in the March 2023 issue of *Wiley Analytical Science Magazine*

Related Initiatives

Rapid Response for Enumeration of Yeasts and Molds in Cannabis

In response to a need for methods for enumeration of total yeast and mold organisms in cannabis flower, AOAC implemented a project in December 2020 to develop technical requirements, evaluate, and certify method performance through the AOAC Research Institute's Emergency Response Validation option. At the time, no AOAC-certified methods for yeast and mold enumeration in cannabis products were available. AOAC's accelerated certification program speeded up availability of validated methods, allowing for a matrix extension to cannabis flower to ensure safer products reach consumers. Eight methods were approved.

Simultaneously, through a separate but coordinated activity, the AOAC CASP Working Group on Microbial Contaminants developed an SMPR to establish acceptance criteria for methods validation for viable total yeast and mold count enumeration.

CASP has made significant impact within the cannabis sector. Gaps still exist and regulators and compliance laboratories look to AOAC for continued guidance.

Cannabis/Hemp-Related PTMs

As of date, more than 30 AOAC Research Institute *Performance Tested Methods*℠ (PTM) for microbiology have been certified for cannabis/hemp (*see* sidebar). These methods were evaluated against AOAC SMPRs developed and approved by CASP and are used by labs and referenced by state regulators.

New Cannabis Appendix for ALACC

Based on feedback from CASP stakeholders, the AOAC Analytical Laboratory Accreditation Criteria Committee (ALACC) collaborated with the American Council of Independent Laboratories (ACIL) to develop an appendix specific to cannabis and hemp testing laboratories—a first. The new appendix is included in the new revision of the AOAC guidelines, *AOAC INTERNATIONAL Guidelines for Laboratories Performing Microbiological and Chemical Analyses of Food, Dietary Supplements, Pharmaceuticals, and Cannabis—An Aid to the Interpretation of ISO/IEC 17025:2017,* which was approved in January 2024.

The new appendix will be invaluable to accredited laboratories and laboratories seeking accreditation for cannabis and hemp testing.

Lessons Learned and New Concepts

Whenever a project covers uncharted territory, new, often unan-

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AOAC CASP Advisory Panel

AOAC thanks the 2024 CASP Advisory Panel members for supporting development of standards for hemp and cannabis methods:

Pioneer
Deibel BioScience

Partner
Eurofins Scientific
Millipore Sigma
Modern Canna

Affiliate
ADDIUM
Association of Food and Drug Officials
HORIBA Scientific
Hygiena
Medicinal Genomics
PSI Labs
R-Biopharm Rhone
Restek
SPEX, an Antylia Scientific Company

Government Members
Colorado Department of Public Health
Illinois Department of Agriculture
Maryland Department of Agriculture
Nevada Cannabis Compliance Board ■

ticipated, challenges arise. AOAC is learning a great deal as the program advances and provides solutions to keep the momentum going.

Matrix-Centric Approach

Starting in November 2020, CASP activities shifted toward a matrix-centric approach, for example, gummies, instead of an analyte-centric focus as in previous standards development activities. This move offers more consistency and uniformity across working groups.

In line with this concept, AOAC merged the Cannabinoids in Consumables and Chemical Contaminants working groups into the CASP Product-Centric Working Group. AOAC SMPR 2021.010 Quantitative Analysis of Mycotoxins in Cannabis Biomass and Cannabis-Derived Products was the first standard approved under the product-centric approach.

Pesticide Method 'Think Tank'

For SMPR 2018.011 Identification and Quantitation of Selected Pesticide Residues in Dried Cannabis Materials (developed prior to CASP), no methods have been submitted after several calls for methods. The lack of methods is likely due to the extensive list of compounds, different regulatory limits and requirements, changing regulatory landscape, and reporting rules.

In an effort to deliver fit-for-purpose methods and best practice guidance, CASP implemented a possible path forward through a Pesticide Method 'Think Tank,' a community-based, step-by-step mechanism for methods development.

Whenever a project covers uncharted territory, new, often unanticipated, challenges arise. AOAC is learning a great deal as the program advances and provides solutions to keep the momentum going.

The 'Think Tank' provides a forum for sharing expertise, knowledge, and best practices to draft methods; evaluating proposed methods by volunteer labs; validating optimized methods; and submitting methods for evaluation by an AOAC ERP. The first 'Think Tank' meeting was held on October 23, 2023, and two subgroups were established--one focusing on regulations and references and the other on method surveys. Updates from the Pesticide Method Think Tank subgroups will be shared in the CASP session at the AOAC Midyear Meeting.

CASP Leading the Way

The past 5 years have been a landmark time for AOAC in paving the way for standardized and reliable analytical solutions for regulators, industry, and consumers for hemp, cannabis, and cannabis-related ingredients/products. As analysis of cannabis and hemp evolves, AOAC continues to engage key stakeholders to advance CASP initiatives. Keeping the momentum going in 2024, more SMPRs, guidance, and methods are on the horizon, such as development of much needed guidance for sampling and sample preparation.

In related activities, AOAC LPTP is expanding to include more offerings for the Cannabis/Hemp PT Program. The Microbiology Contaminants PT Program will be offered in both matrices, hemp and cannabis (>0.3% low, medium, or high THC) dried flower/bud/plant part samples. Target organisms currently include *Aspergillus, E. coli* (STEC), *Salmonella, Listeria,* total aerobic count, coagulase-positive *Staphylococcus,* yeast and mold, coliforms, and bile-tolerant Gram-negative bacteria. A pilot round with hemp-only samples is planned for March 2024. Additional activities on the horizon include expanded chemistry programs when it comes to matrices (edibles and oils) and methods (residual solvents and foreign material).

With approval of the revised AOAC ALACC guidelines in January 2024, which includes a new appendix on cannabis, the document is being published by AOAC INTERNATIONAL and will be available by March 2024.

CASP has made significant impact within the cannabis sector. Gaps still exist and regulators and compliance laboratories look to AOAC for continued guidance. For more information on CASP, visit https://www.aoac.org/scientific-solutions/casp/. ■

Free Memberships for Students

For full-time students working toward an undergraduate or graduate degree in the areas of chemistry, microbiology, food science, or other related analytical science.

1 Network and Collaborate

Make valuable professional contacts and learn about careers in all areas of analytical sciences

2 Stay Current With Scientific Trends

Members get access to AOAC's bi-monthly magazine *Inside Laboratory Management*

3 Student Awards and Scholarships

Several student awards and scholarships are available for our Annual Meeting

AOAC INTERNATIONAL brings together government, industry, and academia to establish standard methods of analysis that ensure the safety and integrity of foods and other products that impact public health around the world.

aoac.org/students

Standards and Methods News

(Reflects new and ongoing standards and methods activities as of February 1, 2024.)

***AOAC* Standards Development Program**

AOAC INTERNATIONAL voluntary consensus standards are developed in accordance with the U.S. National Technology Transfer and Advancement Act (PL 104-113) and U.S. Office of Management and Budget Circular A-119. Standards activities are fully transparent and open. The Official Methods Board (OMB) accounts for balance and lack of dominance. Consensus is documented and processes are in place to ensure due process and the opportunity to present appeals. Resulting AOAC standards are published.

***Official Methods*℠ Program**

In spring 2011, the AOAC INTERNATIONAL Board of Directors approved a new process to Official First Action method status. This dynamic aligned approach incorporates AOAC standards development as an integral part of AOAC Official Methods℠ output. As part of this process, expert review panels (ERPs) adopt methods as Official First Action and remain intact to monitor the methods during the 2-year period between First and Final Action consideration. During this time, ERPs assess the performance of methods against the standards as adequate method reproducibility and other ERP- and stakeholder-based method criteria are demonstrated. ERPs must make a recommendation on method status to the OMB no later than 2 years after First Action status. The OMB will determine Final Action method status.

The AOAC Official Methods℠ Program is designed to provide needed evaluated methods that can be used with confidence by regulated industry, regulatory agencies, contract research organizations and testing laboratories, and academic institutions. Official Methods℠ undergo rigorous scientific scrutiny and demonstrate the highest level of confidence in a method.

Official Methods℠ are published in the Official Methods of Analysis of AOAC INTERNATIONAL and supporting manuscripts are published in the Journal of AOAC INTERNATIONAL.

Method submissions must include a manuscript in AOAC format. This format includes formatting of the method under consideration within the manuscript. Method authors will still be able to submit data files. These requirements are mandatory for methods being considered for either First Action or Final Action status. Examples may be found at www.aoac.org.

Official Actions and Changes in Status

Changes to standards and Official Methods℠ are documented. Notice of standards activities and changes in Official Methods status are listed.

Any interested party may submit comments in writing

***Performance Tested Methods*℠ Program**

The AOAC Performance Tested Methods℠ (PTM) Program began in 1992 and has evolved into a premier method certification program for proprietary methods. Methods certified as Performance Tested℠ were found to perform according to the manufacturer's documented claims and are used throughout the global market place and within the regulatory arena. The PTM Program offers certification as an endpoint for method evaluation or as an entry to method validation for programs requiring increased confidence and method reproducibility information. PTM certification includes licensing the method developer to use the Performance Tested℠ certification mark. PTM certifications undergo an annual or periodic review and renewal. PTM certificates in good standing are accessible on the AOAC website.

***Installation and Operational Qualification (Q^2)* Program**

The Installation and Operational Qualification (Q^2) validation program from the AOAC Research Institute is designed to offer an independent third-party review of instrument manufacturer-provided technical documents, including preinstallation, installation, operational, familiarization training, and preventative maintenance documentation for instrument system checklists and user manuals, providing a higher level of confidence for laboratories purchasing and installing new analytical equipment. The Q^2 Program is a certification of documents, not a certification or endorsement of instrument systems.

AOAC STANDARDS IN PROGRESS

Standards Launching or in Progress

[Working groups formed or under formation to draft proposed standards or SMPRs®.]

Analytical International Methods and Standards (AIMS) Program
Working Group on Nonculturable Organisms

Cannabis Analytical Science Program (CASP)
Working Group on Microbial Contaminants

Ethylene Oxide
Working Group on Ethylene Oxide Residues

Gluten and Food Allergen (GFA) Methods Program
Working Group on Food Allergens

Heavy Metals
Working Group on Heavy Metals in Foods

Natural Colors
Working Group on Color Additives from Natural Sources
Working Group on Microbial Contaminants in Color Additives from Natural Sources

Stakeholder Program on Agent Detection Assays (SPADA)
Working Group on NGS Detection Method Standards

Stakeholder Program on Infant Formula and Adult Nutritionals (SPIFAN)
Working Group on Milk Fat Globule Membrane (MFGM)

Draft Standards/Guidance Developed and Posted for Comment

[Draft standards/guidance developed by working groups and posted on the AOAC website for public comment for a minimum of 30 days. Draft standards/guidance are reviewed by the respective stakeholders for possible approval.]

"Guidance on Food Allergens Immunoassay Validation" (GFA)

SMPR® for Detection and/or Enumeration of *Listeria monocytogenes* in Cannabis-Infused Edibles (CASP)

Draft Standards Ready for Community Consensus

[Draft standards/guidance developed by working groups, reviewed by the respective stakeholders, and advanced to next step for possible consensus approval by wider community.]

"AOAC INTERNATIONAL Guidelines for Validation of Microbiological Methods for Cannabis and Cannabis Products" (CASP)

SMPR® for Determination of Trace Elemental Contaminants in Food and Beverages (Heavy Metals)

SMPR® for Detection of Multiple Biothreat Agent Organisms in Environmental Samples by Amplicon Sequencing (SPADA)

Standards Approved

[Voluntary consensus standards established and approved by AOAC stakeholders. Standards are published by AOAC INTERNATIONAL in the Official Methods of Analysis (OMA) online (https://academic.oup.com/aoac-publications/book/45491) and print products.]

AOAC SMPR® 2023.001 Pesticides in Cannabis-Containing Beverages (CASP)

AOAC SMPR® 2023.002 Pyrrolizidine Alkaloids in Teas, Herbal Infusions, Dried Herbs, Seed Spices, Honey, and Botanical Dietary Supplements and Ingredients (BIDSI)

AOAC SMPR® 2023.003 Per- and Polyfluoroalkyl Substances (PFAS) in Produce, Beverages, Dairy Products, Eggs, Seafood, Meat Products, and Feed (PFAS in Foods)

AOAC SMPR® 2023.004 Selected Residual Solvents in Color Additives from Crop-Based Sources (Color Additives from Natural Sources, Residual Solvents Subgroup)

AOAC SMPR® 2023.005 Heavy Metals in Cannabis-Containing Beverages (CASP)

AOAC SMPR® 2023.006 Vanillin, Ethyl Vanillin, Methyl Vanillin, and Coumarin in Infant Formulas and Their Ingredients (SPIFAN)

AOAC SMPR 2024.001 Selected Pesticides in Color Additives from Crop-Based Sources (Color Additives from Natural Sources, Pesticide Residues Subgroup)

Appendix T: "Standard Requirements for Nucleotide Sequences Used in Biothreat Agent Detection, Identification, and Quantification: Verified Next-Generation Sequences (VNGS)" (SPADA)

"Laboratory Guidance—Drying Field Fresh Hemp Plant Samples in Preparation for Determination of Total THC on a Dry Weight Basis" (CASP)

"Guidelines for Validation of Qualitative Gluten Methods, with Specific Examples of Lateral-Flow Devices" and Annexes A-D (GFA)

"Amplicon Sequencing Minimal Information (AsqMI): Quality and Reporting Guidelines for Actionable Calls in Biodefense Applications" (SPADA)

(Visit the AOAC website for issued Calls for Methods and Calls for Experts.)

AOAC METHODS IN PROGRESS

Methods to Be Reviewed by AOAC ERPs for *Official Methods℠* Status/Recommendation

[According to AOAC Bylaws, AOAC is to provide notification of candidate methods to be reviewed for Official Methods℠ status /recommendation.]

Methods Submitted for Modification

932.14 Solids in Syrups*

988.06 Specific Gravity of Beer and Wort

*Sole source submission proposed modification posted on AOAC website for comment and feedback for a minimum of 30 days.

Methods Submitted for Final Action Recommendation

2017.08 Total Sulfur in Fertilizer [*J. AOAC Int.* **97,** 731–735(2014)]

Methods Adopted as First Action *Official Methods℠*

[Fit-for-purpose methods reviewed and approved by an AOAC ERP based on (1) evaluation against SMPRs®, (2) appropriate studies conducted, and/or (3) AOAC technical requirements. Methods are sorted here according to broad scientific community areas. AOAC Official Methods℠ are published in the OMA print and online (https://academic.oup.com/aoac-publications/book/45491) products and the Journal of AOAC INTERNATIONAL.]

Acrylamide

2023.01 Acrylamide in Coffee, Cereals, Baby Food, Cocoa, Dry Pet Food, Potato Products, Vegetable Crisps, Biscuit, Tea, Nuts, and Spices (https://doi.org/10.1093/jaoacint/qsae007)

Method Modifications/Method Extensions Approved

[First Action Official Methods℠ approved by an AOAC ERP for modification or extension. AOAC Official Method℠ modifications and extensions are published in the OMA print and online (https://academic.oup.com/aoac-publications/book/45491) products.]

2011.06 Total Folates in Infant Formula and Adult Nutritionals (https://doi.org/10.5740/jaoacint.18-0114) (approved by ERP in November 2023)

2021.02 *Salmonella* species in a Broad Range of Foods and Selected Environmental Samples by SureTect™ *Salmonella* species PCR Assay (https://doi.org/10.1093/jaoacint/qsab122) (approved by ERP in November 2023)

2021.05 Detection of *Listeria monocytogenes* in a Broad Range of Foods and Selected Environmental Surfaces (https://doi.org/10.1093/jaoacint/qsac027) (approved by ERP in November 2023)

2021.06 Detection of *Listeria* species in a Broad Range of Foods and Selected Environmental Surfaces (https://doi.org/10.1093/jaoacint/qsac044) (approved by ERP in November 2023)

Methods Downselected for Final Action Consideration

[For SPIFAN, ERPs recommended that reproducibility be demonstrated for these First Action Official Methods℠ for consideration as Final Action status.]

2011.11 Vitamins D_2 and D_3 in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.CS2011_11)

2012.20 Choline in Infant Formula and Adult Nutritionals (http://dx.doi.org/10.5740/jaoacint.13-177)

2016.06 Fructans in Infant and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.16-0190)

Methods Recommended for Final Action Status

[First Action Official Methods℠ recommended by an ERP for a status change based on additional studies and/or method feedback.]

2005.02 Total Monomeric Anthocyanin Pigment Content of Fruit Juices, Beverages, Natural Colorants, and Wines

2008.03 Total Soy Isoflavones in Dietary Supplements, Supplement Ingredients, and Soy Foods

2011.03 *Salmonella* in a Variety of Food [*J. AOAC Int.* **94,** 1821(2011)] (recommended by ERP for Microbiology Methods for Food and Environmental Surfaces in June 2023)

2021.02 *Salmonella* species in a Broad Range of Foods and Selected Environmental Samples by SureTect™ *Salmonella* species PCR Assay (for manual workflow only) (https://doi.org/10.1093/jaoacint/qsab122) (approved by ERP in November 2023)

(Continued on page 28)

2021.05 Detection of *Listeria monocytogenes* in a Broad Range of Foods and Selected Environmental Surfaces (for manual workflow only) (https://doi.org/10.1093/jaoacint/qsac027) (approved by ERP in November 2023)

2021.06 Detection of *Listeria* species in a Broad Range of Foods and Selected Environmental Surfaces (for manual workflow only) (https://doi.org/10.1093/jaoacint/qsac044) (approved by ERP in November 2023)

Methods Adopted as Final Action *Official Methods℠*

[First Action Official Methods℠ recommended by an ERP and approved by the OMB for Final Action Official Methods℠ status. AOAC Final Action Official Methods℠ are published in the OMA print and online (https://academic.oup.com/aoac-publications/book/45491) products.]

2016.09 Quantitative Analysis of Aloins and Aloin-Emodin in Aloe Vera Raw Material and Finished Product (http://dx.doi.org/10.5740/jaoacint.16-0387) (approved in August 2023)

2016.16 Curcuminoids in Turmeric Roots and Supplements (http://dx.doi.org/10.5740/jaoacint.17-0111) (approved in August 2023)

2018.16 Sugar Profile in Food, Dietary Supplements, Pet Food, and Animal Feeds (https://doi.org/10.1093/jaoacint/qsad138)

2020.01 Lactose in Lactose-Free and Low-Lactose Milk, Milk Products, and Products Containing Dairy Ingredients (https://dx.doi.org/10.1093/jaoacint/qsaa080)

2020.04 Screening of 152 Veterinary Drug Residues in Animal Source Foods (https://dx.doi.org/10.1093/jaoacint/qsaa168) (approved in August 2023)

2021.01 β-Galactooligosaccharides (GOS) in Infant Formula and Adult Nutritionals (https://dx.doi.org/10.1093/jaoacint/qsab095)

2021.07 Bovine Lactoferrin in Infant Formula and Adult Nutritional Products (https://doi.org/10.1093/jaoacint/qsac066)

2021.09 Total Sulfites in Shrimp (https://doi.org/10.1093/jaoacint/qsad114) (approved in August 2023)

Methods for Which User Feedback Is Requested

[First Action Official Methods℠ under consideration for Final Action status. AOAC encourages method users to provide feedback regarding the use and performance of methods and submit any supporting documentation, such as a summary of the method's performance, data, or any additional comments regarding the method, along with a recommendation to promote the method to Final Action, repeal, or maintain the method's First Action status. To submit method feedback, email methodfeedback@aoac.org or visit www.aoac.org. AOAC Official Methods℠ are published in the OMA print and online (https://academic.oup.com/aoac-publications/book/45491) products and the Journal of AOAC INTERNATIONAL.]

997.02 Yeast and Mold Counts (matrix extension to dried cannabis flower; approved in August 2021)

2002.11 Detection and Quantification of Yeasts and Molds (matrix extension to dried cannabis flower; approved in August 2021)

2005.04 *Escherichia coli* 0157:H7 in Selected Foods

2005.05 Shiga Toxin Genes, from *E. coli* 0157:H7, in Selected Foods

2009.03 *Salmonella* in Foods and Environmental Surfaces

2012.03 Analytical Parameters of the Microplate-Based ORAC Pyrogallol Red Assay (http://dx.doi.org/10.5740/jaoacint.CS2012_03)

2012.04 Antioxidant Activity in Foods and Beverages by Reaction with 2,2'-Diphenyl- 1-Picrylhydrazyl (DPPH) (http://dx.doi.org/10.5740/jaoacint.CS2012_04)

2012.05 *Bacillus anthracis* Spores on Filters and in Liquid Suspensions Derived from Surface Swabbings

2012.06 RAZOR™ EX Anthrax Air Detection System (http://dx.doi.org/10.5740/jaoacint.CS2012-06)

2012.07 Whey Protein in Milk-Based Infant Formula (http://dx.doi.org/10.5740/jaoacint.13-033)

2012.08 Whey Protein Content in Milk-Based Infant Formula Finished Products (http://dx.doi.org/10.5740/jaoacint.13-076)

2012.09 Simultaneous Determination of Vitamins A and E in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.13-203)

2012.11 Simultaneous Determination of Vitamins D_2 and D_3 in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.13-176)

2012.12 Analysis of Free and Total Myo-Inositol in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.13-128)

2012.14 Total Iodine in Infant Formula and Nutritional Products (http://dx.doi.org/10.5740/jaoacint.13-104)

2012.17 Free and Total Carnitine in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.13-140)

2012.18 Choline in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.13-195)

2012.21 Vitamin C in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.13-115)

2012.23 Development and Validation of an Improved Oxygen Radical Absorbance Capacity Assay Using Fluorescein as the Fluorescent Probe (http://dx.doi.org/10.5740/jaoacint.13-175)

2012.26 Bovine Immunoglobulin G in Bovine Colostrum Powders, Bovine Milk Powders, and Dietary Supplements Containing Bovine Colostrum Products (http://dx.doi.org/10.5740/jaoacint.CS2012-26)

2013.03 Analysis of Cocoa Flavanols and Procyanidins (DP 1-10) in Cocoa-Containing Ingredients and Products (http://dx.doi.org/10.5740/jaoacint.14-112)

2013.04 Catechin and Epicatechin Enantiomers in Cocoa-Based Ingredients and Products (http://dx.doi.org/10.5740/jaoacint.13-351)

2013.05 Aflatoxins B_1, B_2, G_1, and G_2 in Olive Oil, Peanut Oil, and Sesame Oil (http://dx.doi.org/10.5740/jaoacint.13-129)

2013.06 Arsenic, Cadmium, Mercury, and Lead in Foods (http://dx.doi.org/10.5740/jaoacint.13-143)

2013.08 Lateral Flow Immunoassay for Ricin

2013.12 Total Carbohydrates in Wine and Wine-Like Beverages (http://dx.doi.org/10.5740/jaoacint.13-320)

2013.13 Free Folates in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.14-055)

2013.15 Hypericin and Pseudohypericin in St. John's Wort

2014.04 Free and Total Carnitine and Choline in Infant Formulas and Adult Nutritional Products (http://dx.doi.org/10.5740/jaoacint.15102)

2014.06 *Listeria* species in Selected Foods and Environmental Surfaces (http://dx.doi.org/10.5740/jaoacint.15-026)

2014.07 *Listeria monocytogenes* in Selected Foods and Environmental Surfaces (http://dx.doi.org/10.5740/jaoacint.15-031)

2015.01 Heavy Metals in Food (https://doi.org/10.5740/jaoac.int.2015.01)

2015.02 Sodium Monofluoroacetate in Dairy Powders (http://dx.doi.org/10.5740/jaoacint.15-0154)

2015.03 Sodium Fluoroacetate in Infant Formula (http://dx.doi.org/ 10.5740/jaoac.int.2015.03)

2015.04 Monofluoroacetate in Powdered Nutritional Products (http://dx.doi.org/10.5740/jaoac.int.2015.04)

2015.07 Chloride in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.15-0143)

2015.08 Chloride in Infant Formula and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.15-136)

2015.11 Chondroitin Sulfate Content in Raw Materials and Dietary Supplements (http://dx.doi.org/10.5740/jaoacint.15-0220)

2015.12 Screening and Identification of Phosphodiesterase Type 5 Inhibitors in Dietary Ingredients and Supplements (http://dx.doi.org/10.5740/jaoacint.15-0202)

2015.15 Nitrogen, Phosphorus, and Potassium Release Rates of Slow- and Controlled-Release Fertilizers (http://dx.doi.org/10.5740/jaoacint.15-0294)

2015.17 Estimation of Withanolides (Withanoside IV, Withanoside V, Withaferin A, 12-Deoxywithastromonolide, Withanolide A, Withanolide B) in *Withania somnifera* (http://dx.doi.org/10.5740/jaoacint.16-0202)

2015.18 Phosphorus and Potassium in Commercial Inorganic Fertilizers (http://dx.doi.org/10.5740/jaoacint.16-0050)

2016.10 Theanine in Tea *(Camellia sinesis)* Dietary Ingredients and Supplements (http://dx.doi.org/10.5740/jaoacint.16-0167)

2016.11 Biotin in Infant, Pediatric, and Adult Nutritionals (http://dx.doi.org/10.5740/jaoacint.16-0257)

2016.12 Ethanol in Kombucha (http://dx.doi.org/10.5740/jaoacint.16-0404)

2017.01 Detection of *E. coli* 0157:H7 species in Selected Foods

2017.02 Simultaneous Determination of Arsenic, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Selenium, and Zinc in Fertilizers (https://doi.org/10.5740/jaoacint.17-0241)

2017.04 *Cis* and *Trans* Lutein, *Cis* and *Trans* Beta-Carotene, and *Cis* and *Trans* Lycopene in Infant, Pediatric, and Adult Nutritionals (http://dx.doi.org/10.5740/jaoacint.17-0287)

2017.05 *Escherichia coli* 0157:H7 and *Escherichia coli* non-0157 Shiga Toxin-Producing *Escherichia coli* (STEC) in Select Foods (https://doi.org/10.5740/jaoacint.17-0301)

2017.06 *Salmonella* species in Select Foods (http://dx.doi.org/10.5740/jaoacint.17-0426)

2017.11 Identification of Pea, Rice, and Soy Proteins in Raw Materials and Finished Goods

2017.12 Identification of Milk Proteins in Raw Materials and Finished Goods

2017.13 Total Phenolic Content (http://dx.doi.org/10.5740/jaoacint.18-0031)

2017.14 Mitragynine in *Mitragyna speciosa* Raw Materials and Finished Products (http://dx.doi.org/10.5740/jaoacint.18-0026)

2017.15 Bisphenol A (BPA) in Commercially Packaged Ready-to-Consume Carbonated and Noncarbonated Water and Nonalcoholic Beverages (http://dx.doi.org/10.5740/jaoacint.18-0132)

2018.02 Enumeration of Yeast and Mold (http://dx.doi.org/10.5740/jaoacint.18-0262)

2018.03 2- and 3-MCPD, 2- and 3-MCPD Esters, and Glycidyl Esters (GE) in Infant and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.18-0266)

2018.04 Select Nonvolatile Ginger Constituents (https://doi.org/10.5740/jaoacint.19-0004)

2018.07 Fructan (Inulin, FOS, Levan, and Branched Fructan) in Animal Food (Animal Feed, Pet Food, and Ingredients) (http://dx.doi.org/10.5740/jaoacint.18-0330)

2018.08 Phenolic Compounds in Dietary Supplements and Dietary Ingredients Containing Echinacea

2018.09 Ginsenoside Content in *Panax ginseng* C.A. Meyer and *Panax quinquefolius* L. Root Materials and Finished Products

2018.10 Cannabinoid in Dried Flowers and Oils (https://doi.org/10.5740/jaoacint.19-0197)

2018.11 Quantitation of Cannabinoids in Cannabis Dried Plant Materials, Concentrates, and Oils (https://doi.org/10.5740/jaoacint.18-0426)

2018.12 2-Monochloropropanediol (2-MCPD), 3-Monochloropropanediol (3-MCPD), and Glycidol in Infant and Adult/Pediatric Nutritional Formula (http://dx.doi.org/10.5740/jaoacint.19-0026)

2018.14 Quantitation of Aloe Polysaccharides by O-Acetyl (https://doi.org/10.5740/jaoacint.18-0400)

2018.15 Quantification of Wheat, Rye, and Barley Gluten in Oat and Oats Products by ELISA RIDASCREEN® Total Gluten (http://dx.doi.org/10.5740/jaoacint.19-0094)

2019.02 Enumeration of Total Aerobic Counts by MC-Media Pad™ Rapid Aerobic Count Device (https://dx.doi.org/10.1093/jaoacint/qsaa040)

2019.04 Alcohol Content in Kombucha Tea by Headspace Solid-Phase Microextraction and Gas Chromatography-Mass Spectrometry

2019.05 Identification of A-Type Proanthocyanidins in Cranberry-Based Foods and Dietary Supplements (https://doi.org/10.1093/jaoacint/qsaa106)

2019.06 Quantification of Soluble Proanthocyanidins in Cranberry Foods and Dietary Supplements (https://doi.org/10.1093/jaoacint/qsaa084)

2019.07 Free Bisphenol A (BPA) in Commercially Packaged, Ready-to-Consume, Carbonated/Noncarbonated Water and Nonalcoholic Beverages (https://dx.doi.org/10.1093/jaoacint/qsaa123)

2019.08 Ethanol Concentration in Kombucha Beverages Using Ethanol Assay Kit (K-ETOH) (https://dx.doi.org/10.1093/jaoacint/qsaa122)

2019.09 Total Proteinogenic Amino Acids and Taurine in Infant Formula and Adult/Pediatric Formula (https://dx.doi.org/10.1093/jaoacint/qsaa124)

2020.02 *Salmonella* species in a Broad Range of Foods and Select Environmental Samples (https://doi.org/10.1093/jaoacint/qsab005)

2020.03 *Salmonella* species in Select Foods by Solus One *Salmonella* Assay (https://dx.doi.org/10.1093/jaoacint/qsaa071)

2020.06 Enterhemorrhagic *E. coli* (EHEC) in Select Foods (http://dx.doi.org/10.1093/jaoacint/qsab018)

2021.02 *Salmonella* species in a Broad Range of Foods and Selected Environmental Samples by SureTect™ *Salmonella* Species PCR Assay (automated workflow only) (https://doi.org/10.1093/jaoacint/qsab122)

2021.03 Heavy Metals in a Variety of Cannabis and Cannabis-Derived Products (https://doi.org/10.1093/jaoacint/qsab173)

2021.04 Measurement of Water Activity in the Presence of High Volatile Concentrations (https://doi.org/10.1093/jaoacint/qsac003)

2021.05 Detection of *Listeria monocytogenes* in a Broad Range of Foods and Selected Environmental Surfaces (automated workflow only) (https://doi.org/10.1093/jaoacint/qsac027)

2021.06 Detection of *Listeria* species in a Broad Range of Foods and Selected Environmental Surfaces (automated workflow only) (https://doi.org/10.1093/jaoacint/qsac044)

2021.08 *Cronobacter* species in Infant Formulas, Infant Cereals, Ingredients, and Environmental Samples (https://doi.org/10.1093/jaoacint/qsac121)

2021.10 Bovine Lactoferrin in Infant Formula and Pediatric/Adult Nutritionals

2022.01 Insoluble, Soluble, and Total Dietary Fiber in Foods (https://doi.org/10.1093/jaoacint/qsac098)

2022.02 Analysis of Six Human Milk Oligosaccharides (HMOs) in Infant Formula and Adult Nutritionals (https://doi.org/10.1093/jaoacint/qsac112)

2022.03 Taurine in Infant Formulas and Adult Nutritionals (https://doi.org/10.1093/jaoacint/qsad079)

2022.04 2′-Fucosyllactose (2′-FL), 3-Fucosyllactose (3-FL), 6′-Sialyllactose (6′-SL), 3′-Sialyllactose (3′-SL), Lacto-*N*-Tetraose (LNT), and Lacto-*N*-neoTetraose (LNnT) in Infant Formula and Adult Nutritionals (https://doi.org/10.1093/jaoacint/qsad072)

2022.05 Fluoride in Milk-, Soy-, and Water-Based Infant and Adult Nutritional Formulas (https://doi.org/10.1093/jaoacint/qsad104)

2022.06 Chlorate and Perchlorate in a Broad Range of Food Commodities, Including Baby Food, Nutritional Formulas, and Ingredients (https://doi.org/10.1093/jaoacint/qsad086)

2022.07 Seven Human Milk Oligosaccharides (HMOs) in Infant Formula and Adult Nutritionals (in process)

2023.01 Acrylamide in Coffee, Cereals, Baby Food, Cocoa, Dry Pet Food, Potato Products, Vegetable Crisps, Biscuit, Tea, Nuts, and Spices (https://doi.org/10.1093/jaoacint/qsae007)

Methods Recommended for Repeal

[First Action Official Methods℠ reviewed and recommended by an ERP to be no longer in use for various reasons (method performance feedback, method has been replaced by a newer method, reagents/equipment no longer available, etc.).]

2012.24 Flavanol and Procyanidin (by Degree of Polymerization 1–10) of Chocolate, Cocoa Liquors, Powder(s), and Cocoa Flavanol Extracts (http://dx.doi.org/10.5740/jaoacint.13-109)

AOAC *PERFORMANCE TESTED METHODS℠* IN PROGRESS

New *Performance Tested℠* Certifications

072301 Check-Points Check & Trace Salmonella 2.0

082301 Clear Scientific Solutions Clear Micro SalSTEC Mplex

082302 Clear Scientific Solutions Clear Micro Aspergillus Mplex

082303 Phigenics PVT Viable Method for *Legionella*

(Continued on page 30)

082304 Applied Food Diagnostics Simultaneous Multiplex Real-Time PCR (SIMUL-qPCR) Campylobacter Assay
092301 Hygiena LLC Innovate RapiScreen Dairy Kit
102301 Oculer Rapid 930 CS-Check
122302 Neogen Molecular Detection Assay 2—Salmonella Enteritidis/ Salmonella Typhimurium
122303 Bio-Rad RAPID'Campylobacter
012401 Bio-Rad dd-Check STEC Solution

Approved Modifications of *Performance Tested*℠ Certifications

August 2023
121001 Check-Points Check & Trace Salmonella
052301 Hygiena Innovate RapiScreen Beverage Kit
121802 bioMérieux GENE-UP® Salmonella 2 (SLM)
121806 bioMérieux GENE-UP® EHEC Series

September 2023
072105 PathogenDx QuantX Fungal Method

October 2023
012201 PathogenDx DetectX Combined Assay

December 2023
102301 Oculer Rapid 930 CS-Check
112301 Dayuan & Oasis Food Tech Ltd FSTest-Aerobic Count Plate (AC)
022204 Pathotrak, Inc. Pathotrak Next Generation Enrichment ■

Calendar

AOAC Section Meetings

March 25–27, 2024
AOAC Pacific Southwest Section
Co-hosted with California Section of IAFP
University of California-Davis, School of Veterinary Medicine, Gladys Valley Hall
1 Garrod Dr, Davis, CA 95616, USA
Contact: **Norma Hill** at normarhill@gmail.com
https://www.pswaoaci.org

April 2–3, 2024
AOAC Southern Section
37th Annual Conference
Atlanta Marriott Perimeter Center
246 Perimeter Center Pkwy NE, Atlanta, GA 30346, USA
Contact: **Ron Johnson,** president-elect, at ron.johnson@biomerieux.com
https://www.ssaoac.org

May 15–17, 2024
AOAC China Section
Forum of Analytical Science and Standards 2024
Chengdu Rongtong Xiangyu Hotel, No. 103 Xinnan Rd, Wuhou District, Chengdu, Sichuan, China

June 3–5, 2024
AOAC Midwest Section Meeting
Hilton Chicago/Oak Brook Hills Resort and Conference Center
3500 Midwest Rd, Oak Brook, IL 60523, USA
Contact: **Jay Alappat,** president and technical chair, at jay.alappat@mxns.com or (+1) 630-849-9186
https://www.mwaoac.org/

For more information on AOAC Section meetings, visit https://www.aoac.org/events/categories/section-meetings/.

AOAC Midyear Meeting

March 4–7, 2024
14th Annual AOAC Midyear Meeting
DoubleTree by Hilton Gaithersburg Hotel
Gaithersburg, Maryland, USA

AOAC Annual Meetings

August 23–29, 2024
138th AOAC INTERNATIONAL Annual Meeting and Exposition
Marriott Baltimore Waterfront
Baltimore, Maryland, USA

August 22–27, 2025
139th AOAC INTERNATIONAL Annual Meeting and Exposition
Town and Country Resort
San Diego, California, USA

August 28–September 2, 2026
140th AOAC INTERNATIONAL Annual Meeting and Exposition
JW Marriott Indianapolis
Indianapolis, Indiana, USA

August 27–September 1, 2027
141st AOAC INTERNATIONAL Annual Meeting and Exposition
Sheraton Centre Toronto Hotel
Toronto, Ontario, Canada

For more information on AOAC Midyear and Annual Meetings, visit https://www.aoac.org/meetings-and-events/ or contact ***Lauren Chelf*** *director, Meetings and Exposition, Tel: +1-240-912-14494-7089.*

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CHAMPION BENEFITS

- Booth space priority and 1 corner 10'x10' booth at the Annual Meeting & Exposition
- 40-minute vendor presentation at the Annual Meeting
- 4 complimentary registrations for the Annual Meeting
- 2 complimentary registrations for the Midyear Meeting
- Attendee list (in electronic format) for the Annual Meeting and Midyear Meeting for both pre-meeting and post-meeting marketing*
- Your materials (brochures, etc.) inserted into the Annual Meeting registration bags provided to every registrant
- Hyperlinked logo in:
  - Annual Meeting & Midyear Meeting email blasts (approx. 30 blasts)
  - Annual Meeting & Midyear Meeting web sponsor pages
  - AOAC's *Inside Laboratory Management* magazine
  - Annual Meeting & Midyear Meeting mobile app
- Champion recognition with company logo included in the:
  - *Journal of AOAC INTERNATIONAL* (print & online versions)
  - Annual Meeting & Midyear Meeting signage
- Social media "thank you" post with link to the Champions web page, issued twice a month in February and March for the Midyear Meeting and July and August for the Annual Meeting (Facebook, Twitter, and LinkedIn)
- Two half-page electronic advertisements within the May/June and July/August issues of *Inside Laboratory Management*
- Company profile and hyperlinked logo included in the weekly electronic newsletter sent to all members, *The Spectrum*
- Usage of AOAC Champion Logo on the company's website and social media

*Attendees will have the ability to opt out from these communications and be excluded from this list

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For more information regarding the AOAC Engagement Packages, please contact Lauren Chelf at lchelf@aoac.org.

AOAC INTERNATIONAL

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August 22–27, 2025
Town and Country Resort
San Diego, California, USA

August 28–September 2, 2026
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August 27–September 1, 2027
Sheraton Centre Toronto Hotel
Toronto, Ontario, Canada

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138th Annual Meeting • August 23-28, 2024 • Baltimore, MD

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- Build professional expertise and network with your community to share information and best practices
- Leverage unprecedented opportunity for stakeholder collaboration on complex testing and analysis challenges

- Take advantage of emerging methods, best practices, and trending topics
- Discover new technologies
- Get professional insights from industry insiders

For more information regarding the AOAC Annual Meeting, visit:

www.aoac.org/2024-annual-meeting-exposition/