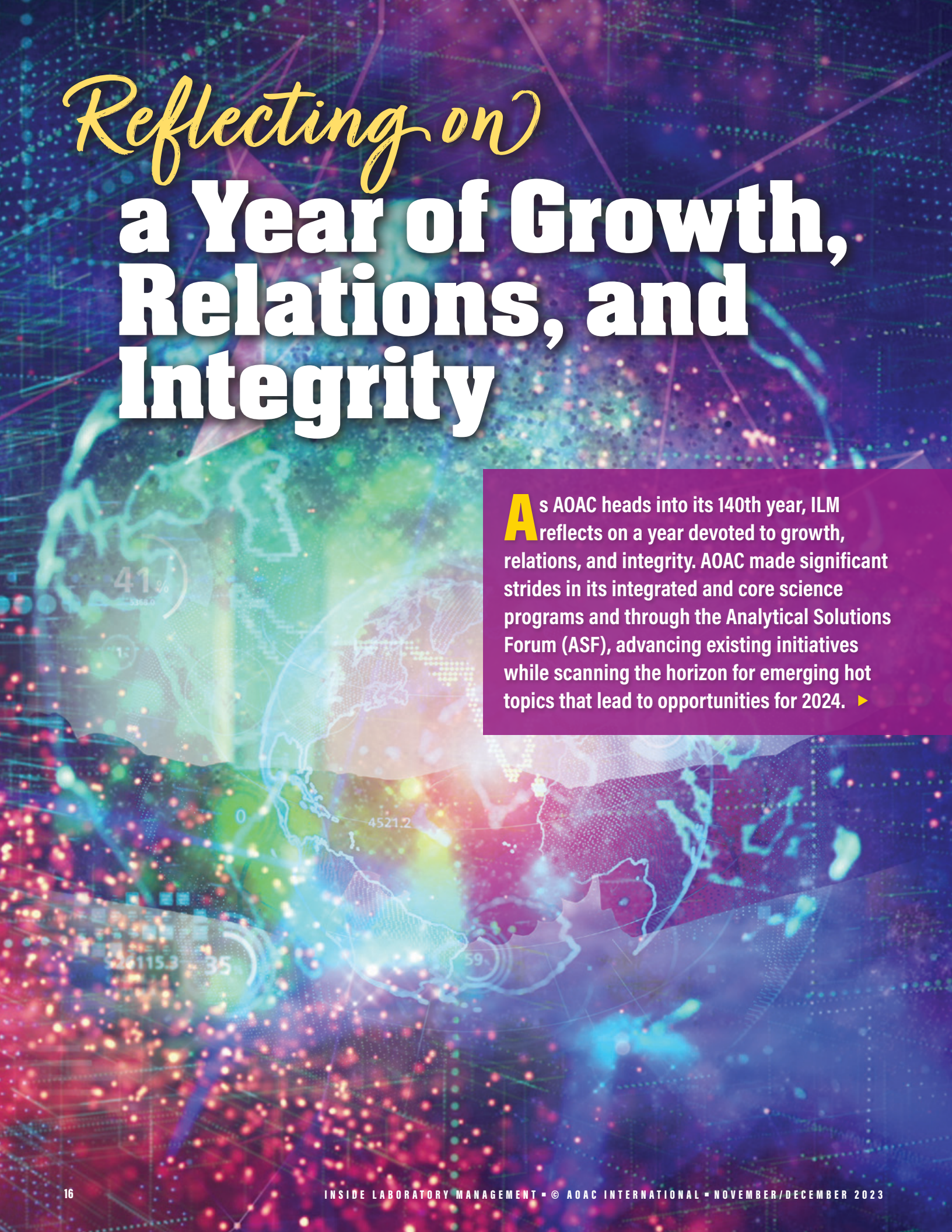
Reflecting on a Year of Growth, Relations, and Integrity



As AOAC heads into its 140th year, ILM reflects on a year devoted to growth, relations, and integrity. AOAC made significant strides in its integrated and core science programs and through the Analytical Solutions Forum (ASF), advancing existing initiatives while scanning the horizon for emerging hot topics that lead to opportunities for 2024. ▸

(l to r) The AOAC delegation comprised of Darryl Sullivan (Eurofins), Erik Konings (Nestlé), Kate Mastovska (AOAC), and Dustin Starkey (Abbott) ushered methods for amino acids, tryptophan, and vitamin B_{12} through for CCMAS endorsement in Budapest, Hungary, in June 2023.

After a comprehensive process, AOAC announced a new strategic plan at the beginning of the year to guide the organization through 2025. The core of AOAC's mission and vision remains the same, but, as part of the strategic planning process, it was refined to better reflect the heart of the Association's work. Under the new plan, the guiding vision is "global alignment for trusted analytical solutions." The organization's mission is to "advance food safety and product integrity through standards, validated test methods, and laboratory quality programs." A set of goals focused on growth, relations, and integrity serve as signposts to achieve AOAC's vision and mission.

AOAC was proactive in developing new science programs and delivering analytical solutions for global recognition—all part of implementing the Association's strategic plan. Among the many highlights, 2023 saw new AOAC *Official Methods*℠ for **amino acids, fluoride, biotin, acrylamide,** and **fatty acids** and *Standard Method Performance Requirements* (SMPRs®) for **pesticides** and **heavy metals** in cannabis-containing beverages, **pyrrolizidine alkaloids** (PAs), **per- and polyfluoroalkyl substances** (PFAS), **vanillin,** and selected residual solvents in **color additives.** In addition, AOAC published two standards on next-generation sequencing—amplicon sequencing and requirements for verification of sequences.

It was a year of continued growth, and AOAC had some fun along the way too, especially seeing members face-to-face at the Annual Meeting in New Orleans, Louisiana, USA. Thank you members, stakeholders, volunteers, and partners for making 2023 a success and for being part of the AOAC community. Here's a look at what AOAC was up to and where the Association is headed.

Standards Development and *Official Methods*℠

In support of its integrated science programs, AOAC delivered several new methods and SMPRs to address the most pressing issues identified as priorities by stakeholders (*see* above). In addition, AOAC working groups developed

The 2nd Annual AOAC Southeast Asia Section Conference in Ho Chi Minh City, Vietnam, in August 2023, featured a panel discussion on "Method Standardization—Key to Reducing Technical Barriers in Cross-Border Trade," with AOAC representatives Erik Konings (Nestlé) and DeAnn Benesh (Neogen).

ASF serves to spark innovation, inspire new ideas, and set the stage to advance these ideas into potential AOAC projects.

draft SMPRs for selected pesticides in crop-based colors from natural sources **(color additives),** *Listeria monocytogenes* in **cannabis-infused edibles, heavy metals,** *Salmonella* in **color additives** from natural sources, ***Cyclospora,*** and **amplicon sequencing,** which are all nearing completion.

Also in methods news, Final Action status was granted to methods for aloe vera, turmeric, sugars, lactose, veterinary drug residues, and sulfite in shrimp.

Core and Integrated Science Programs

AOAC continued to expand and grow its impact and relevance in the areas of infant formula and adult nutritionals, gluten and food allergens, botanical ingredients and dietary supplements, cannabis, biothreat detection, microbiology, chemical contaminants, and, more recently, novel foods from alternative protein sources.

Research Institute

In 2023, 19 new methods were granted *Performance Tested Methods*℠ (PTM) status, and 46 were approved as modifications of PTM certifications.

The AOAC Research Institute expanded the PTM Program scope to all user-based methods with a proprietary component, such as test kits, equipment device, columns/cartridges, software, etc. In addition, a new certification program, *Installation and Operational Qualification* (Q^2), was launched that provides an independent third-party review of instrument manufacturer-provided technical documents.

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About 635 analytical science leaders from 32 countries gathered in New Orleans, Louisiana, USA, to share expertise, collaborate, and expand their networks and professional horizons at the first fully in-person Annual Meeting since the pandemic.

Proficiency Testing

AOAC's Laboratory Proficiency Testing Program (LPTP) and its test material provider Signature Science LLC sent the first >0.3% THC cannabis samples for PT to laboratories. In this first pilot round of cannabis samples, labs were able to analyze and report on 18 cannabinoids and total THC, CBD, and CBG; 33 terpenes, moisture, and water activity; and 12 heavy metals.

AOAC LPTP has been developing more offerings for the Cannabis/Hemp PT Program. A Microbiology Contaminants PT Program will be offered in hemp and cannabis (>0.3% low, medium, high THC) dried flower/biomass samples. A pilot round study with hemp-only samples is planned for February 2024, with cannabis samples to follow. Activities on the horizon include expanded chemistry matrices (edibles and oils) and more methods (residual solvents and foreign material).

In addition, LPTP continued to develop new programs based on participant feedback and/or regulatory requirements. The *Listeria* Environmental Swab PT Program is now covered by AOAC's scope of accreditation. Also, lactic acid bacteria were added to the Pathogen-Free Program and water activity to the Cheese Chemistry Program.

Analytical Solutions Forum

ASF continues to be a valuable platform to advance existing programs, scan the horizon for the analytical needs of tomorrow, and bring in new ideas to drive new program development. Through ASF, AOAC and stakeholders explored emerging hot topics, such as **novel foods from alternative protein sources, ethylene oxide, *Legionella*, metagenomics, mushrooms,** and **pathogen quantitation**. Some of these have been developed into new initiatives that will be launched at the beginning of the year and others are also gaining momentum and support as potential new projects for 2024.

Infant Formula

Through international adoption of methods, the AOAC Stakeholder Program on Infant Formula and Adult Nutritionals (SPIFAN) activities in Codex continue to place AOAC at the forefront and help increase opportunities for AOAC methods to gain global relevance and impact the infant formula community. In November 2023, AOAC Final Action methods for total amino acids **(2018.06),** tryptophan **(2017.03),** and vitamin B_{12} **(2014.02)** were adopted by the Codex Alimentarius Commission at its 46th Session, representing the latest in a series of AOAC SPIFAN methods to be adopted as Codex Standards.

AOAC SPIFAN's collaboration with China continued with the GB evaluation and standards comparison studies with support from the AOAC China Section. Method comparison studies are underway for fatty acids, vitamin C, MCPD esters/glycidyl esters, acrylamide, and galacto-oligosaccharides, among others. In addition, standards development activities for vanillin were a regional collaboration with the AOAC China Section.

AOAC is in the early stages of forming a working group to develop voluntary consensus standards for milk fat globule membrane, a new topic that was introduced this year.

Biothreat Detection

The Stakeholder Program on Agent Detection Assays (SPADA), AOAC's longest standing stakeholder program, celebrated its "Sweet 16" years of successful collaboration to build a standard program for development, validation, and use of threat agent detection technologies. To this day, the initiative continues to be extended to other priority agents and technologies.

In 2023, SPADA reached consensus on new guidelines for "Standard Requirements for Nucleotide Sequences Used in Biothreat Agent Detection, Identification, and Quantification: Verified Next-Generation Sequences (VNGS)" and "Amplicon Sequencing Minimal Information (ASqMI): Quality and Reporting Guidelines for Actionable Calls in Biodefense Applications."

AOAC SPADA working groups are developing SMPRs for amplicon sequencing assays and validation guidelines for amplicon sequencing methods.

Cannabis and Hemp

The AOAC Cannabis Analytical Science Program (CASP) Microbiology Working Group developed draft validation guidelines to provide comprehensive technical guidance for conducting microbiological method validation studies for analysis of cannabis and cannabis products and draft SMPRs for detection and enumeration of *Listeria monocytogenes* in cannabis-infused edibles to address analytical gaps in methodology and regulatory requirements. Both were posted on the AOAC website for public comments.

In addition to publication of SMPRs for determination of pesticides and heavy metals in cannabis-containing beverages, CASP has launched a pesticide method "Think Tank," a community-based, step-by-step mechanism

for methods development and sharing of best practices.

Gluten and Food Allergens

Working groups for the AOAC Gluten and Food Allergens (GFA) Program developed method validation guidance for both gluten and food allergens. "Guidelines for Validation of Qualitative Gluten Methods, with Specific Examples of Lateral-Flow Devices" were approved and "Guidance on Food Allergens Immunoassay Validation" was posted on the AOAC website for public comment and is nearing consensus.

After completion of comprehensive

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More Happenings at AOAC in 2023

AOAC entered into liaison agreement with ISO/TC 134 (Fertilizers, Soil Amendments, and Beneficial Substances). In addition, AOAC and ISO renewed the cooperation agreement for joint development and approval of common standards and methods in ISO/TC 34 (Food Products) (*see* page 4 of this issue).

- AOAC scientists **Kate Mastovska,** deputy executive director and chief science officer; **Erik Konings,** AOAC member and past president; and **Deborah McKenzie,** deputy assistant executive director and chief standards officer were among the experts and resources who contributed to the World Health Organization's simplified protocol for measuring *trans* fatty acids.
- Mastovska highlighted AOAC standards development activities to address gaps in PFAS analysis at the PFAS Summit in February 2023, American Oil Chemists' Society Annual Meeting in April/May 2023, and Joint Institute for Food Safety and Applied Nutrition JIFSAN-CFS3 Advisory Council Annual Symposium in October 2023.
- The March 2023 issue of *Wiley Analytical Science Magazine* featured AOAC CASP and its projects. In the interview, the AOAC CASP leadership team, including **Shane Flynn,** senior director of the AOAC LPTP, and **Scott Coates,** senior director of the AOAC Research Institute, examined the importance of standardized methods and proficiency testing within the cannabis industry, provided a look at work done by CASP working groups, and stressed the impact of CASP and its projects on the cannabis industry.
- AOAC LPTP gave several presentations at the Cannabis Science Conference in April 2023, as well as submitted a joint poster with Signature Science LLC showcasing results of a pilot test to successfully develop representative, ready-to-analyze method-agnostic PT samples for cannabis and hemp testing laboratories.
- Also in April 2023, Mastovska presented on "AOAC INTERNATIONAL Programs Addressing Analytical Needs in Botanical Ingredients and Dietary Supplements" during the 21st Annual Oxford International Conference on the Science of Botanicals.
- AOAC and A2LA presented a joint complimentary webinar in May 2023 on how to improve instrument documentation quality and service and enhance ISO 17025 lab accreditation.
- AOAC Executive Director **David Schmidt** provided comments in June 2023 during the U.S. Food and Drug Administration Listening Session on Cosmetic Products GMPs, urging the agency to reference the use of AOAC methods and technically equivalent standards in rulemaking and guidance documents.
- Mastovska became a liaison to the MicroVal General Committee. Also, she and **Maria Nelson,** AOAC technical consultant, were selected as new liaison representatives to ISO/TC 34/SC 9/WG 3 to lead AOAC in playing a role in coordinating harmonized food safety standards between AOAC and ISO.
- For the plenary sessions of ISO/TC 276 (Biotechnology) and ISO/TC 34/SC 9 (Microbiology) in June 2023, AOAC provided liaison reports that highlighted AOAC work related to these committees, including AIMS development of SMPRs for *Cyclospora* and SPADA development of standard guidelines and SMPRs for next-gen sequencing (NGS) method detection approaches.
- AOAC representatives showcased AOAC programs and publications at the International Association for Food Protection (IAFP) annual meeting in July 2023.
- **Pam Coleman,** AOAC's chief innovation officer, gave the keynote address at the National Seasoning Manufacturers Association's 50th anniversary event in July 2023, titled "The State of Methods for FDA Compliance and the Role Played by AOAC: Contaminants, Nutrients, Allergens and More."
- Mastovska presented on "Method Development and Validation—AOAC's Perspective and Initiatives Focused on Residues and Contaminants" during the North American Chemical Residue Workship in July 2023.
- AOAC hosted an inaugural training course exclusively for Cannabis Regulators Association (CANNRA) members in August 2023, designed to provide training and education on AOAC SMPRs and conformity assessment processes.
- AOAC was part of a panel discussion during the Institute for Food Safety and Health (IFSH) Annual Meeting in September 2023. McKenzie gave a presentation on method validation with a focus on chemical contaminant analysis.
- In October 2023, McKenzie gave a presentation on AOAC's work on next-generation sequencing at the Forum for Food Microbiology.
- McKenzie and AOAC's certified standards professional, **Delia Boyd**, senior manager, Standards and *Official Methods*^{SM}, represented AOAC at the inaugural ANSI U.S. Government and Standards Developing Organizations in November 2023.
- In November 2023, Mastovska gave a keynote address at the 41st International Conference on Environmental and Food Monitoring (ISEAC-41) in Amsterdam, the Netherlands. The AOAC Europe Section workshop on "Best Practices for Bioassay Testing of Food and Other Complex Mixtures" was conveniently organized in conjunction with this meeting.
- In support of the new charge for the National Advisory Committee on Microbiology Committee for Food (NACMCF) to have a focus on genomics, McKenzie offered prepared comments during the public meeting of NACMCF in November 2023, highlighting AOAC's work in developing standards for next-generation sequencing.
- AOAC and Cannabis Science and Technology hosted a virtual symposium on "Microbial Testing in Cannabis: Basics, Guidance, and Applications" in December 2023.
- Also in December 2023, AOAC scientists **Constance Bahr** and Flynn presented and participated on panels during the Global Retailer and Manufacturer Alliance (GRMA) Summit. Flynn also presented on the many benefits of proficiency testing and educational sample programs, the use of these programs for continuous laboratory quality, and their role in a product integrity program. ■

technical guidelines for conducting validation studies for gluten and food allergen methods, the working groups plan to develop guidance for end users.

AOAC Executive Director David B. Schmidt (at podium) with (l to r) John Szpylka (AOAC past-president), Brendon Gill (editorial board member), John Spink (keynote speaker), and Michelangelo Anastassiades (Wiley Award winner)

Alternative Methods

A working group for the AOAC Analytical International Methods and Standards (AIMS) Program developed SMPRs for detection, identification, and characterization of *Cyclospora cayetanensis,* which is nearing completion. A new initiative focused on detection of *Legionella* will be launched early next year.

Botanicals and Dietary Supplement

In support of the AOAC Botanical Ingredients and Dietary Supplement Integrity (BIDSI) Program, SMPRs were approved for 35 PAs in teas, herbal infusions, dried herbs, seed spices, honey, and botanical dietary supplements and ingredients. Stakeholders are interested in developing standards for botanical identity verification and also identified the growing popularity of mushrooms as an opportunity to develop standards and validate methods to address variability, ensure product quality and safety, and meet label claims, among other needs.

Sections

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 helps grow AOAC at an international level. Section initiatives supported by AOAC INTERNATIONAL in 2023 included the AOAC Europe Section workshop on bioassays and initiation of the AOAC Southeast Asia work on pesticide residues in herbs and spices and cyanide in cassava and other food materials. In an effort to foster increased participation and engagement, the AOAC Board of Directors approved a recommendation from the Committee on Sections to consolidate North American Sections into better-defined regional groups.

Publications

New Edition of OMA

In February 2023, the latest edition of the OMA compendium entered a new era of publishing online for the first time on Oxford Academic, allowing AOAC *Official Methods*℠ and standards to be more accessible than ever. Today the OMA has grown to a comprehensive collection of nearly 3,100 validated methods and 160 consensus standards recognized worldwide.

J. AOAC Int.

The scope of the *Journal of AOAC INTERNATIONAL* was expanded

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Thank you 2023 AOAC Champions

Agilent Technologies is a worldwide provider of GC, LC, MS, and spectroscopy instruments, technologies, related consumables, support, services, and workflow solutions that enable labs to analyze, confirm, and quantify substances of interest with confidence while maintaining stringent laboratory practices, from sample preparation to final report.

ELISA Technologies kits have set the standard for meat speciation in food and feed while maintaining a full-service testing laboratory for allergens. EZ Gluten rapid test obtained AOAC *Performance Tested Method*℠ (PTM) certification for gluten tests.

MilliporeSigma advances the safety and analysis of foods, beverages, and cannabis using trusted brands like Millipore®, Supelco®, Milli-Q®, and Sigma Aldrich to support every stage of laboratory workflows.

From the launch of the first-ever commercially successful triple quadrupole mass spectrometer in 1981, **SCIEX** has empowered its customers to break new ground in food safety and compliance testing.

Shimadzu supports the food, cannabis, and hemp industry with an extensive portfolio of instrumentation, including UHPLC, LC-MS/MS, GC-MS/MS, ICP/MS, FTIR, UV-Vis, AA/ICP, EDXRF, MALDI-TOF, and analytical balances, designed to address specific laboratory workflows that generate reliable data to protect customers and brands.

Thermo Fisher Scientific™ is a leader in the food and beverage testing industry, providing innovative and comprehensive solutions for food safety, food quality, and food integrity.

Waters Corp. is a leading specialty measurement company focused on improving human health and well-being through the application of high-value analytical technologies and industry-leading scientific expertise.

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to include a new section on "Food Authenticity/Food Fraud, Food Allergens."

A published open access review article on measurement of dietary fiber garnered 4,013 views and five citations from *J. AOAC Int.*'s online site at Oxford Academic, making it the most viewed article in 2023.

Annual Meeting

This year, AOAC returned to hosting the Annual Meeting and Exposition entirely in-person. In addition to a full schedule of meetings and technical sessions, AOAC held a community networking mixer and women's networking social. Both events were new to the Annual Meeting program based on member feedback and interest in more opportunities to come together.

Advances made at the Annual Meeting will continue throughout winter 2023/2024, with updates provided at the AOAC Midyear Meeting in March 2024.

AOAC App

With the launch of the AOAC app, members can stay connected and engaged year-round. The app was designed to serve as a central communications hub and an all-in-one event platform. Users can easily access member benefits, latest news and resources, meetings, and more. The interactive AOAC app further improves communications.

Opportunities in 2024

The importance and contributions of AOAC and its members and stakeholders continue to rise, and this past year was no different. AOAC keeps the momentum going as it heads into 2024 by launching new working groups on ethylene oxide residues, *Legionella* in water, milk fat globule membrane in infant formula and adult nutritionals, 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.

For more information or to participate, visit https://www.aoac.org/aoac-science-and-supporting-programs/. ■