Incoming President’s Letter

-- By Nicola Stagg, Ph.D., D.A.B.T.

Looking forward to another SOT and especially since it will be in Phoenix, AZ, which has the best weather this time of year! We had a great turnout last year in San Antonio at our FS3 Reception, and the numbers of members keep steadily increasing. Food Safety has implications in a broad set of industries, and we welcome you all.

The executive committee has been quite busy preparing for the 2014 SOT with sponsoring sessions, choosing award recipients, preparing the SOT poster and planning the FS3 Reception. We have three great food safety sponsored sessions listed in the newsletter below and a Food Safety poster prepared by our graduate student representative, Xiao Pan. We have decided to delay voting for new officers until after this year’s SOT meeting so we can encourage more people to apply and/or nominate others.

Please mark your calendars for the FS3 reception, which will be on Monday, March 24th 6:00 to 7:30. The reception is a great venue to network, meet colleagues interested in the field and collaborate on future SOT sessions to progress the science. We also encourage you to attend the Food Safety sponsored sessions and check out our poster. See you in sunny Arizona!

FS3 Officers, 2013-2014

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Evaluation of Insulin-Like Growth Factor Acid-Labile Subunit as a Novel Biomarker of Effect to the Mycotoxin Deoxynivalenol.

B. Flannery1, 2, C. J. Amuzie2 and J. Pestka1, 2, 3.
1Food Science and Human Nutrition, Michigan State University, East Lansing, MI; 2Center for Integrative Toxicology, Michigan State University, East Lansing, MI; 3Microbiology and Molecular Genetics, Michigan State University, East Lansing, MI.

Deoxynivalenol (DON) is a trichothecene mycotoxin produced from Fusarium species frequently found in grain products due to its recurrent contamination and resistance to food processing treatments. In growing experimental animals, chronic low-level DON exposure has resulted in anorexia, weight suppression and growth hormone axis perturbations. As a result, children are thought to be especially sensitive to DON. Though a biomarker of exposure exists to measure DON exposure in humans, no biomarker of effect is currently available to predict the adverse negative weight effects of DON, thereby hindering complete risk assessment of this mycotoxin. Two studies were conducted to assess the potential of plasma insulin-like growth factor acid-labile subunit (IGFALS) to be used as an effect biomarker for DON. In the first study, a 9 wk dietary DON exposure was employed in mice to test the hypothesis that depression in plasma IGFALS occurs at toxicologically relevant doses prior to significant weight suppression. Results showed that the 1) NOAEL for depressed plasma IGFALS and weight was 2.5 ppm DON and 2) decreased plasma IGFALS was detectable before significant weight suppression was evident. In the second study, the specificity of reduced plasma IGFALS to DON, rather than DON-induced anorexia, was assessed using a dietary restriction study. Mice were fed ad-lib control diet, restricted control diet or identical amounts of restricted 15 ppm DON diet. Mice fed restricted DON diet exhibited significantly less plasma IGFALS than the restricted control indicating the specificity of plasma IGFALS reductions to DON. Thus, plasma IGFALS might be one suitable biomarker for predicting DON’s adverse growth effects in animals and humans.

Assessing endocrine disrupting activities of four bisphenols using zebrafish larvae
Ruixin Hao1, Maria Bondesson1, Patrick Balague2, Jan-Åke Gustafsson1, 3
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Endocrine disrupting chemicals (EDCs) are of concern since they may cause health problems, such as abnormal sexual differentiation, infertility, metabolic disorders, obesity and certain types of cancers. Bisphenol A (BPA), which is widely used for epoxy resin and polycarbonates plastics, has been extensively reported as an estrogenic EDC in the past few years. Therefore, the plastics industry is gradually introducing new BPA substitutes generating a need for an assessment of their estrogenic disrupting activities. As the estrogen signaling pathways are conserved from fish to mammals, zebrafish have become an emerging model for investigating estrogenic EDCs. Here, we investigated the estrogen disrupting activities of BPA, Bisphenol C (BPC), Bisphenol AF (BPAF) and Bisphenol AP (BPAP) using zebrafish larvae as a model. Larvae were exposed to bisphenols to examine estrogenic effects, or co-exposed together with ethinylestradiol (EE2) to examine anti-estrogenic effects. Exposures were performed from 4 to 6 days post fertilization and larvae were harvested for RNA extraction followed by RT-qPCR of estrogenic biomarkers. Expression of vitellogenins (vtgs) and cyp19a1b was strongly upregulated by EE2 and the four bisphenols, indicative of estrogenic activity. However, coexposure of the larvae to EE2 and three of the bisphenols (BPA, BPC and BPAF) repressed the EE2-induced transcriptional activation of the biomarkers, suggesting anti-estrogenic effects. We also used Tg(5xERE:GFP) transgenic zebrafish, which contains five copies of an estrogen response element upstream of the c-fos promoter and the green fluorescent protein (GFP) reporter, to monitor the estrogenic effects of the bisphenols. GFP expression in the reporter fish was increased after exposure to the bisphenols, which is in agreement with the induced expression of the biomarkers by bisphenol treatment. We conclude that the four bisphenols exhibited estrogenic activities to different extents while BPA, BPC and BPAF also exhibited anti-estrogenic activities in zebrafish larvae.
**Informational Session**

**Recent Challenges Beyond the Usual Toxicological and Public Health Challenges in Africa**
New Science and Perspectives Surrounding Environmental and Occupational Exposures  
**Wednesday, March 26, 4:30 PM to 5:50 PM**  
Chairperson(s): Abdel M. Kadry, US EPA, Washington, DC, and Steven Myers, University of Louisville, Louisville, KY.

**Workshops**

**Addressing Uncertainties of the Toxicology of Nanomaterials in Food and Food Contact Products**  
Safety Assessment: Mechanisms and Novel Methods  
**Tuesday, March 25, 1:30 PM to 4:15 PM**  
Chairperson(s): Annette Santamaria, Exponent, Houston, TX, and Christie M. Sayes, RTI International, Research Triangle Park, NC.

**Improving the Safety of Dietary Supplements and Natural Health Products by Assessing Effects in Humans**  
Advancing Clinical and Translational Toxicology and Application of Biomarkers  
**Wednesday, March 26, 9:00 AM to 11:45 AM**  

**Communication and Engagement with the Public about Toxicology in a World That Misunderstands Science and Scientists: How Do You Make Your Message Relevant and “Sticky”?**  
**Wednesday, March 26, 1:30 PM to 4:15 PM**  
Chairperson(s): Barbara L.F. Kaplan, Mississippi State University, Mississippi State, MS, and Steven J. Hermansky, ConAgra Foods, Omaha, NE.

**Poster Sessions**

**Food Toxicology/Nutrition**  
**Monday, March 24, 9:30 am -12:30 pm**

**Natural Products: In vitro**  
**Tuesday, March 25, 9:30 am-12:30 pm**

**Natural Products: In vivo**  
**Tuesday, March 25, 9:30 am-12:30 pm**

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**FS3 Meeting/Reception**

**Sheraton Valley of the Sun D,**  
**Monday, March 24, 6:00pm-7:30 pm**
Call for Nominations of FS³ Officers

Vice President-Elect (1-year term)
Treasurer-Secretary (2-year term)
Councilors (2 openings, 1 or 2 year term)

Please send your nominations to: Brenna Flannery: bflannery@ucdavis.edu

Upcoming Meetings/Events

**Food Safety Summit**
April 8-10, 2014
Baltimore Convention Center, MD, USA

**European Symposium on Food Safety**
May 7-9, 2014
Budapest, Hungary

Newsletter contributions are welcome!

Please email your article/upcoming event to:

Janet Zang, janet.zang@fda.hhs.gov
Dear friends, colleagues and members of the Food Safety Specialty Section,

Toxicology as a science is changing exponentially. Harmonization of the regulatory and scientific approaches for hazard and safety assessment is needed to accommodate global markets. High-throughput toxicology testing, use of computerized computational models, and attention on mapping of Adverse Outcome Pathways all started with a focused vision just several years ago but have had a global impact. The FSSS historically has focused on regulatory and toxicology approaches in food safety. New toxicological approaches require a fundamental broadening of the scope of expertise of most of us. Attention to this trend and its impact on understanding food safety should be addressed within the FSSS.

Practicing toxicologists should challenge themselves to stay current via involvement, continuing education courses, symposia, webinars and certifications, and embrace becoming the most-well-rounded scientists possible. This includes understanding global regulatory matters related to food, food additives, food contact, international registration requirements, and the integration of mechanistic systems biology approaches into most sub-specialties of toxicology. There is an evolution in thought, technologies, and strategies and FSSS members must stay abreast of the changes and become key participants and leaders in an evolving paradigm. Members of this specialty section in particular represent the leaders in the world responsible for developing and overseeing the science of food safety. That is an awesome responsibility and differentiates the FSSS from the other specialty sections.

This year, I cannot attend the SOT meeting. I will miss the traditional passing of the gavel to the incoming FSSS president, Nicola Stagg. She serves as an exemplary role model for leadership within the society and the specialty section. Personally, I want to thank the officers of the FSSS for everything they did for the specialty section and for me during this past year and leading up to the annual SOT meeting. The FSSS officer’s work as a team was a true inspiration. For this, I cannot thank them enough.

I wish the FSSS membership the best of good fortune and scientific achievement. The future holds great challenges but also great promise – it requires every FSSS member play a role in this organization’s success. You are the most select group of experts in the world in the science and technology of food safety.

I am thankful and humbled to be a member of the FSSS. Thanks for reading this message.

Sincerely,

Dan Wilson, Ph.D., DABT