

Natural Toxins - Methods Development, Validation - Expanding Needs and a Stakeholder Perspective

In addition to Task Force efforts to modernize testing methods and to reduce animal usage, the Marine and Freshwater Toxins community must deal with multiple stakeholder needs and increasing globalization of trade. Superimposed are several other challenges, including the already widespread nature of the toxin-producing organisms plus their still-expanding impact (such as the appearance of ciguatoxins in the Gulf of Mexico and also 2008 blooms of *Dinophysis* off of Texas) Speakers in this session, as well as among the Bioactives sessions, will give timely presentations on these and other polyether toxins, and also a stakeholder perspective.

Ciguatoxicity in the Northern Gulf of Mexico

Tracy Villareal, Univ. Texas at Austin

LC-MS analysis of several *Dinophysis* spp. in Japan

Toshiyuki Suzuki, Tohoku Natl. Fish. Res. Inst., Japan

Recent Advances in Analytical Methods of Marine Toxins and Mycotoxins in China

Lei Bao, Wang Daning, Tang Guangjiang, Zhang Yibing, Liang Chengzhu, Wu Zhenxing Shan Dong Import-Export Inspection and Quarantine Bureau of China

Production of putative analogs of okadaic acid and new cytotoxic macrolides by *Prorocentrum lima*

Takeshi Yasumoto, JFRL, Tokyo, Japan

Oral Poster Presentation:

BIOTOX Intercomparisons on LC-MS Analysis of Lipophilic Marine Toxins from the OA-, AZA-, PTX-a

Philipp Hess, Marine Institute, Galway, Ireland

Natural Toxins And Toxic Microorganisms Detection: Impact Of Materials Science And Nanotechnology

Chaired by Antje J. Baeumner, Cornell University, Ithaca, NY, USA, and James M. Hungerford, FDA, Bothell, WA, USA

In the 21st century there is an absence of boundaries in trade and also in threats to food safety. Addressing analytical challenges of food safety and defense requires modern and interdisciplinary approaches that cross conceptual boundaries. This applies also to detection strategies for marine toxins, mycotoxins, the botulinum toxins, phytotoxins such as ricin, and, via nucleic acids or protein determinants, toxic microorganisms - All could benefit from advances in micro-and nano-fabrication. The purpose of this session is to encourage new collaborations between multiple fields, and to ensure that these new ideas are known to analytical communities seeking "real world" validations and implementations.

HABLab: A Micro Fabricated Total Analytical System (uTAS) for Detecting Phytotoxins in Water

Victoria VanderNoot, Sandia National Labs

Micro-Total Analysis Systems for Toxic Microorganisms

Steven A. Soper, Louisiana State University

A Portable SPR Biosensor for Detection of Small Molecules, Proteins and Microbes

Rick Stevens, University of Washington

Cholera Toxin Detection in Microfluidic Biosensors

Antje J. Baeumner, Cornell University

Bioactives I and II - Detecting the Unknown, and Parallels in Drug Discovery and Toxin Detection

Chaired by Philipp Hess, Marine Institute, Galway, Ireland, and James Hungerford, FDA, Bothell, WA, USA

This symposium has the aim to bring together researchers from the two disciplines of marine toxins and from drug discovery. Both areas heavily rely on screening. However, while methods for marine toxins have traditionally been based on live animal assays, drug discovery has gone over to much more advanced techniques of high throughput screening, including functional assays and virtual screening (computer modeling). Parallel developments should be addressed as well as differences in the strategies used. Some of the technologies used in drug discovery are designed for detection of particularly small quantities of bioactive compounds and should be useful to the toxin area where limited availability of compounds has been hampering research for decades. Similarly, toxin screening may also be useful for the pharmaceutical industry and target discovery research.

Screening for electrophilic and potentially toxic metabolites using LC-MS-MS

Richard van Breemen, Univ. of Illinois College of Pharmacy, Chicago

Diversity of the toxins produced by *Gambierdiscus toxicus* and *Ostreopsis* spp. collected in Okinawa

Takeshi Yasumoto, JFRL, Tokyo, Japan

Effect Directed Analysis: Using Reporter Gene Assays for the Detection of Unknown Food Contaminants and Intestinal Cells for the Estimation of the Oral Bioavailability

Alfonso Lampen, Federal Institute for Risk Assessment, Berlin, Germany

Venomics to drugs: Analgesic cone snail venom peptides

Richard J. Lewis, Institute for Molecular Bioscience (QBP) The University of Queensland, Australia

In-vitro assays and LC-MS(MS): Ciguatoxins in fish, brevetoxin metabolites in shellfish

Robert W. Dickey, FDA Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA

Marine biotoxins among the bioactives - Lessons learned and missing information

Philipp Hess, Marine Institute, Galway, Ireland

Disruptive Technologies Fuel Marine Biotechnology

Daniel Baden, University of North Carolina, Wilmington, NC, USA

Spirolides - Discovery, toxicity, and pharmacological potential

Michael A. Quilliam, National Research Council of Canada, Institute for Marine Biosciences, Halifax, NS, Canada

Oral Poster Presentations:

Single Laboratory Validation Study on the DSP Assay Kit Using Recombinant PP2A

Atsushi Yoshino, Tropical Technology Center, Okinawa, Japan

Analytical Evaluation for the Study of Saxitoxin's Brain Distribution and its Effects on the Levels of Neurotransmitters in Different Rat Brain Regions

Ana Gago-Martinez, University of Vigo, Spain