

SOT FDA Colloquia on Emerging Toxicological Science Challenges in Food and Ingredient Safety



Toxicogenomics and Its Relevance to Support Hazard Assessment

May 4, 2022



SOT FDA Colloquia on Emerging Toxicological Science Challenges in Food and Ingredient Safety



Welcome from FDA

Steven M. Musser, PhD

Deputy Director of Scientific Operations

US FDA

Center for Food Safety and Applied Nutrition

College Park, MD



SOT FDA Colloquia on Emerging Toxicological Science Challenges in Food and Ingredient Safety

Colloquium Series

- Partnership of US FDA Center for Food Safety and Applied Nutrition (CFSAN) and the Society of Toxicology (SOT)
- Eighth year of colloquia series, two this year, and this is the 27th event
- Stimulate a dialogue among leading toxicology experts on future-oriented toxicological science relevant to food and food ingredient safety assessment
- Are a forum to discuss the latest toxicological science in the context of food chemical safety
- Not a forum for soliciting regulatory advice or discussing food or food ingredient regulatory issues



Colloquium Series

- Open to the public via webcast at no cost
- Global audience from all employment sectors
- Recording and slides for all colloquia are available at www.toxicology.org



SOT FDA Colloquia on Emerging Toxicological Science Challenges in Food and Ingredient Safety



Welcome from SOT

Michael Aschner, PhD, ATS
President, Society of Toxicology
Albert Einstein College of Medicine
Bronx, NY



SOT FDA Colloquia on Emerging Toxicological Science Challenges in Food and Ingredient Safety

Society of Toxicology Vision/Mission

**To Create a Healthier and Safer World by Advancing the Science
and Increasing the Impact of Toxicology**

Among Strategic Objectives

- Promote Transdisciplinary Science and Cooperation with Other Disciplines
- Expand Global Outreach, Engagement, and Collaboration
- Provide Opportunities to Capitalize on Scientific Advancements
- Develop Communication Partnerships with Key Influencers
- Promote Use of Science in Decision Making

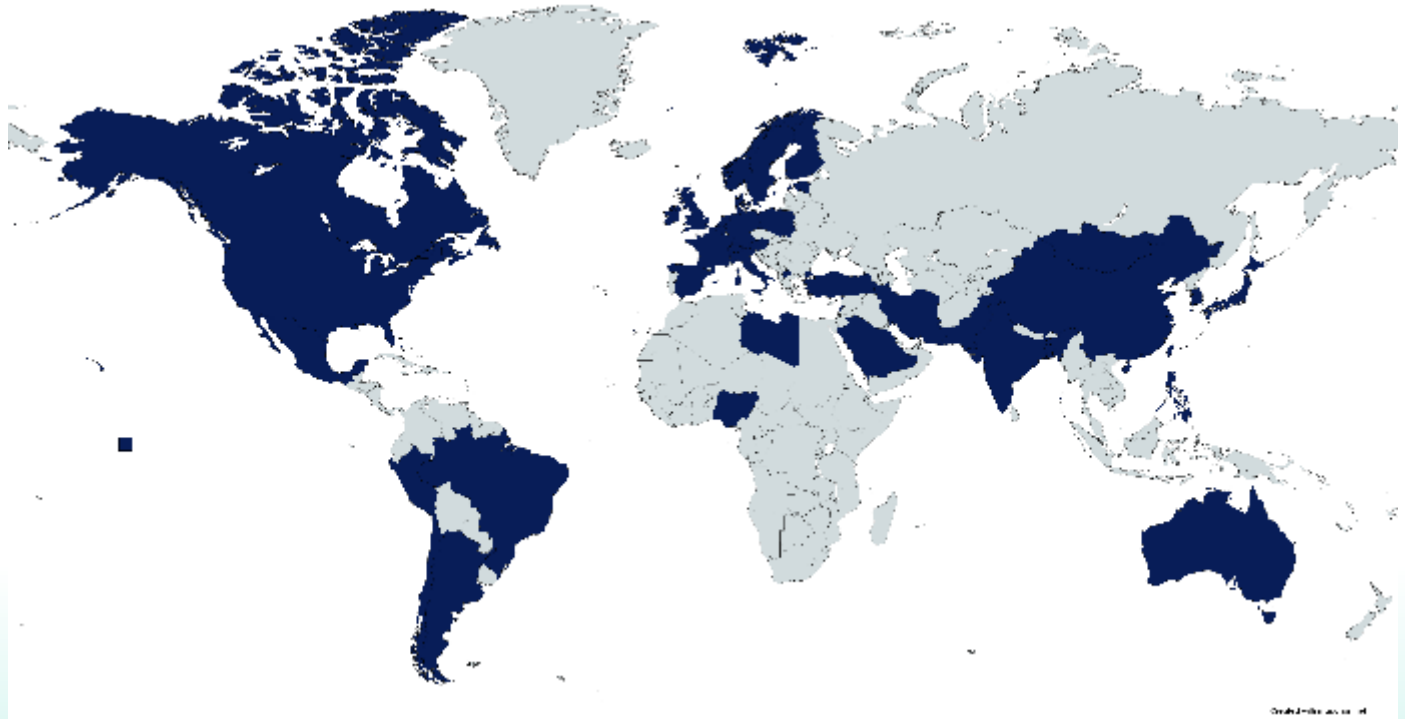


SOT FDA Colloquia on Emerging Toxicological Science Challenges in Food and Ingredient Safety

2018-2022 Registration by Country

45 Countries

Argentina	Macedonia
Australia	Mexico
Austria	Mongolia
Bangladesh	Netherlands
Belgium	Nigeria
Brazil	Norway
Canada	Pakistan
Chile	Peru
China	Philippines
Denmark	Poland
Estonia	Saudi Arabia
Finland	Singapore
France	South Korea
Germany	Spain
Hong Kong	Sweden
India	Switzerland
Iran	Taiwan
Ireland	Thailand
Italy	Turkey
Japan	United Kingdom
Lebanon	United States
Libya	US Virgin Islands



SOT FDA Organizing Committee

- **Stephen W. Edwards**, PhD, Colloquium Series Chair 2022-2023, RTI International, Chapel Hill, NC
- **David C. Dorman**, DVM, PhD, DABT, DABVT, ATS, Colloquium Series Co-chair 2022-2023, North Carolina State University, Raleigh, NC
- **Udayan Apte**, PhD, DABT, Colloquium Series Chair 2021-2022, University of Kansas Medical Center, Kansas City, KS
- **Jason L. Aungst**, PhD, FDA Liaison, US FDA, College Park, MD
- **Omari Bandele**, PhD, US FDA, FDA Liaison, College Park, MD
- **Suzanne C. Fitzpatrick**, PhD, DABT, US FDA, College Park, MD
- **A. Wallace Hayes**, PhD, DABT, ERT, ATS, FRSB, FACFE, University of South Florida and Michigan State University, Temple Terrace, FL
- **Willie McKinney**, PhD, DABT, McKinney Regulatory Science Advisors, LLC, Henrico, VA
- **Jason R. Richardson**, PhD, DABT, ATS, Florida International University, Miami Beach, FL
- **Jeffry J. Yourick**, PhD, DABT, ATS, US FDA, Laurel, MD
- **Christine Perdan Curran**, PhD, SOT Council Contact, Northern Kentucky University, Highland Heights, KY



Previous Colloquia

+ Arsenic and Children's Health—December 1, 2021

+ The Toxicology of Nanoparticles—April 8, 2021

+ New Plant-Based Foods and Proteins from Novel Sources—December 3, 2020

+ Integrated Approaches to Testing and Assessment (IATA)—The Future of Predictive Toxicology—May 28, 2020

+ Artificial Intelligence Applications in Food and Cosmetic Safety—April 29, 2020

+ Route-to-Route Extrapolation in the 21st Century—February 19, 2020

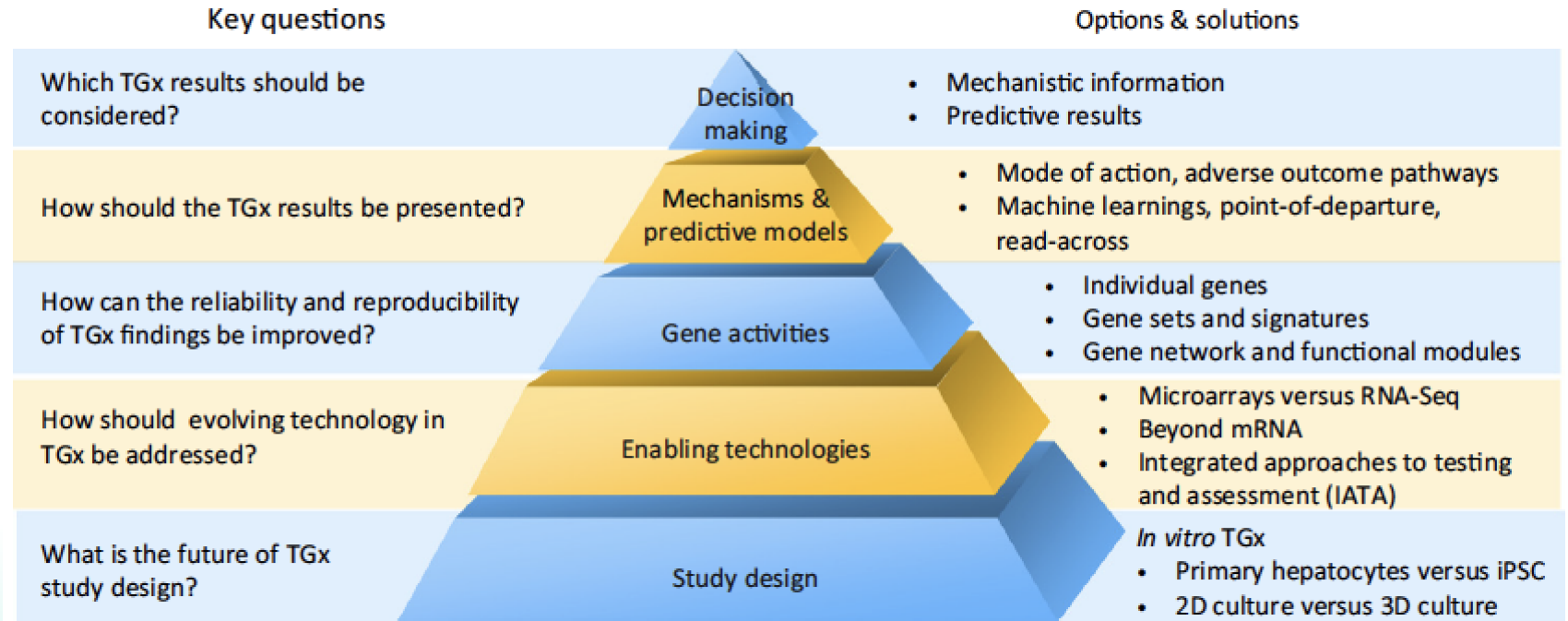
+ Dermal Absorption and Toxicity: Concepts for Application to Safety Assessment—December 12, 2019

+ *In Silico* Methods for Food Ingredient, Dietary Supplement, and Cosmetic Safety—May 15, 2019

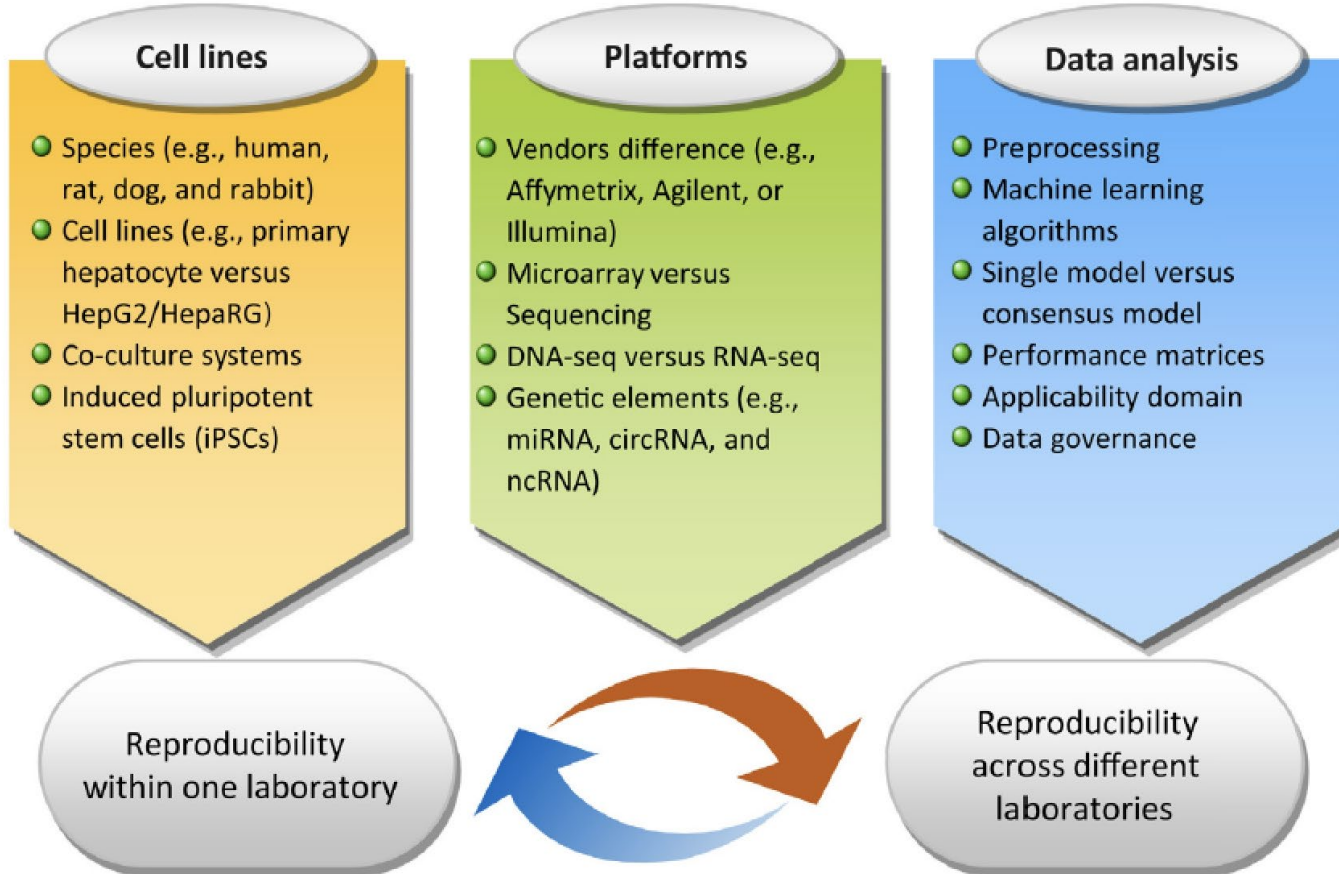
+ Alternative Methods for Predictive Safety Testing: 3D Bioprinted Tissue Models—April 9, 2019

+ Redesigning the Rodent Bioassay for the 21st Century—February 20, 2019

Outstanding Questions and Potential Solutions for Promoting Toxicogenomics in Decision making



Key Challenges of Reproducibility in Toxicogenomics

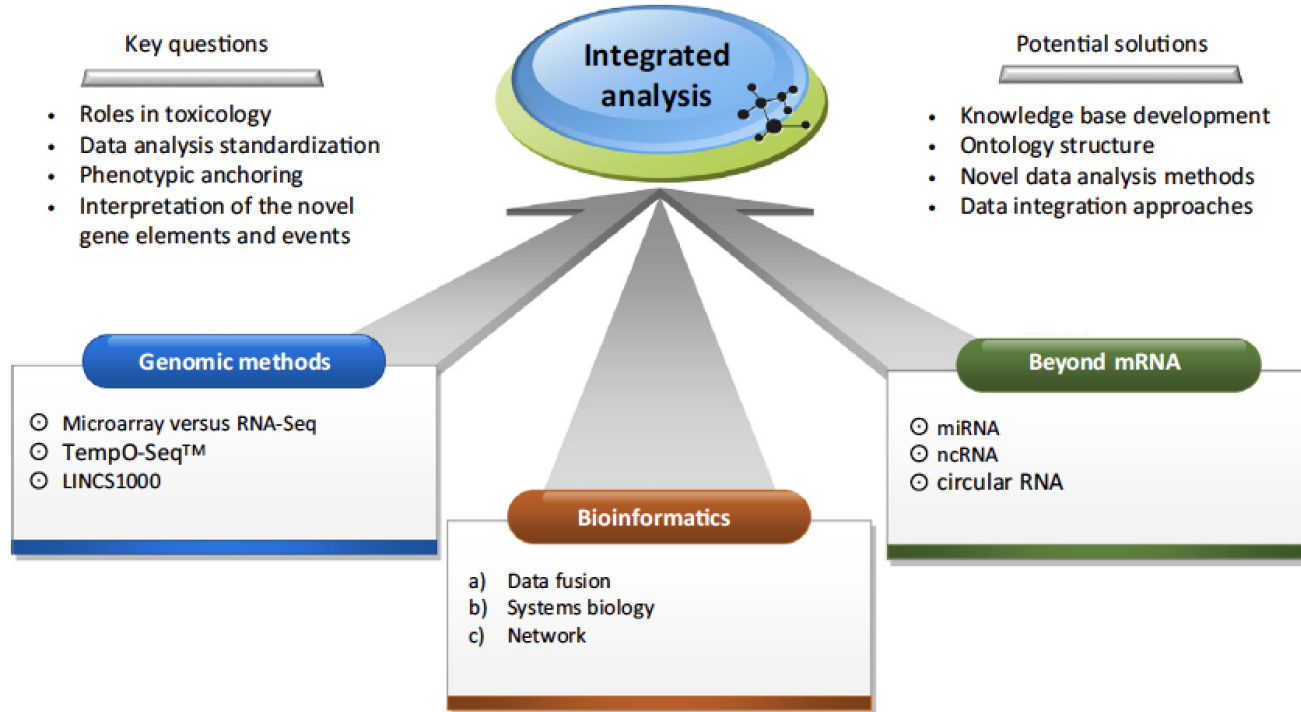


Hopeful Outcomes—Toxicogenomics

- Better understanding of the rapid advancement of genomics technologies, and how the generated genomics data will enhance risk assessment.
- Appreciation for the importance of reproducibility in utilizing TGx in the regulatory setting.
- Discussion on how machine learning (particularly deep learning; AI) will factor in developing TGx-based predictive models.



Application of Novel Genomics Technologies in Toxicogenomics





Schedule and Speaker Introductions

Stephen Edwards, PhD
Colloquium Co-Chair
RTI International, Chapel Hill, NC

Schedule (times Eastern US UTC-4)

9:15 AM	Overview of Toxicogenomics and Its Contribution to Toxicological Science Carole L. Yauk, University of Ottawa/Health Canada, Ottawa, Canada
10:00 AM	High-Throughput Transcriptomics for Chemical Bioactivity Screening and Tiered Hazard Evaluation Joshua A. Harrill, US EPA, Research Triangle Park, NC
10:40 AM	Break
10:50 AM	Toxicogenomics to Support Hazard Assessment Russell Thomas, US EPA, Research Triangle Park, NC
11:30 AM	Application of Toxicogenomics in Toxicity Assessment of Chemicals in Food and Cosmetics Jorge Naciff, Procter & Gamble Company, Mason, OH
12:10 PM	Roundtable Discussion , Moderator: Co-chairs; all speakers
1:00 PM	Conclusion