



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

**April 29, 2020—Artificial Intelligence Applications
In Food and Cosmetic Safety**

Live Webcast

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

April 29, 2020

Artificial Intelligence Applications in Food and Cosmetic Safety

Chair: Jim E. Riviere, 1DATA Consortium, Institute of Computational Comparative Medicine

Co-chair: Ernest K. Kwegyir-Afful, US FDA CFSAN

[Webcast registration](#)

Artificial Intelligence (AI) is defined as the science and engineering of making intelligent machines. Machine learning is a subset of Artificial Intelligence in which analytical model building is automated and not explicitly programmed. It is based on the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention. As more data are generated in various scientific disciplines, AI promises to provide an analytical tool with more precision than existing standard methods.

Advances in computational toxicology have benefited public health by reducing reliance on animal studies and reducing the cost of performing such experiments. Machine learning methods can extend the capacity of computational toxicology methods such as read across, QSAR, and kinetic models. In fact, natural language processing and deep learning methods are being used to develop predictive toxicology models to outperform the traditional QSAR and read across models.

These developments in science and technology show great potential in further advancing the safety of our food and cosmetic production. In the broader food production and food safety space, AI technologies are being developed to enhance the growth of foods by monitoring and modifying growth parameters, managing supply chains, cleaning processing equipment, identifying plant diseases, developing new products, and enforcing employee personal hygiene procedures during food processing. In the cosmetic space, AI technologies are being used to augment data from *in vitro* studies and predict dermal absorption and toxicity in the absence of animal tests. As

these technologies mature, we must start thinking about how to standardize procedures for safety assessments derived from AI generated data and how to best leverage these technologies to advance food and cosmetic safety.

	Welcome Amy P. Abernethy, Principal Deputy Commissioner, Acting Chief Information Officer, US FDA, College Park, MD
10:00 AM– 10:10 AM	Overview and Speaker Introductions Ernest K. Kwegyir-Afful, US FDA CFSAN, College Park, MD
10:10 AM– 10:45 AM	From Artificial to Real: AI Stories in Government Steve Bennett, SAS Institute, Cary, NC
10:45 AM– 11:20 AM	Artificial Intelligence: Introduction, Applications, and an Overview of the Colloquium Jim Riviere, 1DATA Consortium, Institute of Computational Comparative Medicine, Raleigh, NC
11:20 AM– 11:55 AM	AI Technologies for Future Factory Cleaning Nicholas Watson, University of Nottingham, Nottingham, UK
11:55 AM– 12:30 PM	Using AI to Extend QSAR Models Chaoyang (Joe) Zhang, University of Southern Mississippi, Hattiesburg, MS
12:30 PM– 1:05 PM	Using Machine Learning for Cosmetics and Cosmetic Ingredients Tim Allen, University of Cambridge, Cambridge, UK
1:05 PM– 2:00 PM	Roundtable Discussion Moderator: Jim Riviere, 1DATA Consortium All speakers Additional Panelist: Ernest K. Kwegyir-Afful, US FDA CFSAN