

NTP presentations highlight new technologies to protect human health

By Cathy Sprankle

New technologies such as high-throughput and high-content screening generate large amounts of data on potential toxic effects of chemicals. However, making sense of the data and using it to predict the effects of chemicals on human health remain a challenge. More than 20 NIEHS and NTP scientists joined nearly 300 researchers Jan. 16-17 at the University of North Carolina at Chapel Hill Friday Center to address this challenge.

"FutureTox II: In Vitro Data and In Silico Models for Predictive Toxicology"

(https://www.toxicology.org/ai/meet/cct_futureToxII.asp)

brought together experts in computational and high-throughput non-animal toxicology methods. The goal of the conference was to consider how these new technologies could lead to faster, cheaper, and more relevant alternatives to animal testing, to assess the potential toxic effects of chemicals.

NIEHS and NTP presenters discuss alternative toxicity data

Plenary sessions focused on biological systems, predictive models, and regulatory integration and communication. Among the presenters in the session on predictive models were NIEHS Deputy Director [Richard Woychik, Ph.D.](#), and [Scott Auerbach, Ph.D.](#), of the NTP Biomolecular Screening Branch.

Woychik focused on using stem cells derived from outbred mouse populations as a model for identifying variations in toxicity among humans. Auerbach discussed the use of gene expression data, from cells treated with chemicals that have known toxic effects, to predict possible toxic effects of related chemicals that are lacking toxicity data.

Alternatives for endocrine disruptor and skin sensitizer identification

NTP scientists presented 10 posters at the Jan. 16 poster session. Of these, five from the NTP Interagency Center for the Evaluation of Alternative Toxicological Methods ([NICEATM](#))

(<http://ntp.niehs.nih.gov/go/niceatm>)

addressed ongoing projects to develop alternative methods for identifying potential endocrine disruptors and skin sensitizers. Other posters were presented by members of NTP's Biomolecular Screening Branch and Toxicology Branch.

A poster by Nicole Kleinstreuer, Ph.D., contractor for NICEATM, outlined an approach that uses data from the EPA ToxCast research program to identify potential skin sensitizers. "The poster session was well-attended. The research presented on the posters was very timely and relevant to the goals of the meeting and generated some lively discussions," Kleinstreuer commented. "Overall, this was a very informative and productive meeting."

Strategies for application of new methodologies

Following the plenary and poster sessions, conference participants attended breakout groups to discuss strategies for applying the testing approaches to areas of current interest. The four breakout discussions focused on regulatory toxicology, liver toxicity, cancer, and developmental and reproductive toxicity.

Conference organizers will prepare an article on the outcomes of the meeting, for submission to the Forum section of the journal *Toxicological Sciences* later this year. Also, conference attendees will be invited to contribute manuscripts on conference topics to a special issue of *Reproductive Toxicology*.

(Catherine Sprankle is a NICEATM Communications Specialist and works for ILS, the contractor supporting NICEATM.)



NTP Associate Director John Bucher, Ph.D., center, listens to plenary session presentations with other meeting attendees. In addition to those attending in person, about 150 viewed the plenary session presentations via webcast in nine locations in the U.S. and Canada. (Photo courtesy of Ivan Rusyn, M.D., Ph.D., of the University of North Carolina at Chapel Hill)



The spacious atrium of the Friday Center was the perfect venue for attendees to view and discuss the poster presentations. (Photo courtesy of Society of Toxicology)

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