Converging on Cancer Workshop
April 29-30, 2019

William Jefferson Clinton East Building • U.S. Environmental Protection Agency
1201 Constitution Ave. NW, Washington, D.C.

Agenda

Day One, Monday, April 29

9:00 – 9:05 a.m.	**Welcome** Linda Birnbaum – Director, National Institute of Environmental Health Sciences (NIEHS) and National Toxicology Program (NTP)
9:05 – 9:25 a.m.	**Leveraging the Past to Challenge the Present and Define the Future** Brian Berridge – NIEHS/NTP
9:25 – 9:45 a.m.	**Cancer Hallmarks: An Approach to Understanding the Biology of Tumorigenesis** Dean Felsher – Stanford University
9:45 – 10:05 a.m.	**Key Characteristics Approach to Hazard Identification** Martyn Smith – University of California, Berkeley
10:05 – 10:30 a.m.	**Break**
10:30 – 10:50 a.m.	**Application of the Key Characteristics of Carcinogens in the IARC Monographs** Kate Guyton – International Agency for Research on Cancer
10:50 – 11:10 a.m.	**Towards Patient Specific Organotypic Models of Cancer** David Beebe – University of Wisconsin-Madison
11:10 – 11:30 a.m.	**Carcicast: Developing a Carcinogenicity Testing Toolbox** Nicole Kleinstreuer – NIEHS/NTP
11:30 – 1:00 p.m.	**Lunch on Your Own**
1:00 – 1:20 p.m.	**Using Preclinical Models to Understand Metastasis** Kandice Tanner – National Cancer Institute
1:20 – 1:40 p.m.	**Mutation Signatures of Environmental Exposures in Mouse and Human Cancer** Allan Balmain – University of California, San Francisco
1:40 – 2:00 p.m.	**Integrating Information From Multiple Toxicity Testing Approaches in Cancer Hazard Identification** Martha Sandy – Office of Environmental Health Hazard Assessment (OEHHA)
2:00 – 2:30 p.m.	**Break**

This workshop is sponsored by the National Toxicology Program and the National Institute of Environmental Health Sciences.

2:30 – 2:50 p.m.	**Weight of Evidence Approaches for Evaluating Carcinogenesis in Drug Development** Tim McGovern – U.S. Food and Drug Administration
2:50 – 3:10 p.m.	**A Modern Approach for Evaluating Human Cancer Risk From Exposure to Chemicals** Doug Wolf – Syngenta
3:10 – 3:25 p.m.	**Instructions for the Breakout Groups**
3:25 – 5:00 p.m.	**Breakout Groups**
5:00 – 6:30 p.m.	**Poster Reception With Independently Sponsored Refreshments**

Day Two, Tuesday, April 30

9:00 – 9:15 a.m.	**Regulatory Questions That Mixture Science Can Help Address** Lauren Zeise – OEHHA
9:15 – 9:35 a.m.	**Developing Rational Hypotheses for Testing Mixtures of Chemicals That Target Pathways of Carcinogenesis** Cynthia Rider – NIEHS/NTP
9:35 – 9:55 a.m.	**AOP Based Approach for Mixture Testing and Risk Assessment by the EuroMix Project** Johanna Zilliacus – Karolinska Institutet
9:55 – 10:15 a.m.	**Cancer Risk Assessment for Environmental Chemical Mixtures and Combined Chemical and Nonchemical Stressors** Glenn Rice – U.S. Environmental Protection Agency
10:15 – 10:45 a.m.	**Break and Transition to Breakout Groups**
10:45 a.m. – noon	**Breakout Groups**
Noon – 1:30 p.m.	**Lunch on Your Own**
1:30 – 3:00 p.m.	**Breakout Groups**
3:00 – 3:30 p.m.	**Break and Preparation for Report Back**
3:30 – 4:30 p.m.	**Report Back From Breakout Groups**
4:30 – 4:45 p.m.	**Wrapup**

Questions for Breakout Groups:

- What are the benefits and challenges to using mechanistic cancer data (e.g., key characteristics of carcinogens framework) in public health-based decision-making?

- Where along progression of cancer development would we be comfortable in predicting the eventual outcome of malignancy? What key events, individually or in combination, would be necessary or sufficient to indicate carcinogenicity?

- How might we detect those key events in an in vivo animal modeling system and in vitro/in silico modeling systems? Specifically, what are the existing technologies and platforms (in vivo, in vitro, and in silico) that should be applied to a human-relevant carcinogenicity evaluation strategy, and in what combinations?

- How would we go about building scientific confidence in new testing strategies? How can we better communicate the probabilistic nature of chemical carcinogenic risk?

- Should we be addressing the joint action of co-carcinogens below their individual cancer thresholds, or focusing on chemicals that are not carcinogens, but target the hallmarks and key characteristics that could contribute to cancer development jointly?

- Can mixtures hypotheses be generalizable across cancer types? When should they be specific to tumor types and incidence based on ADME principles and knowledge of key events for that cancer type?