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
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**

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**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?