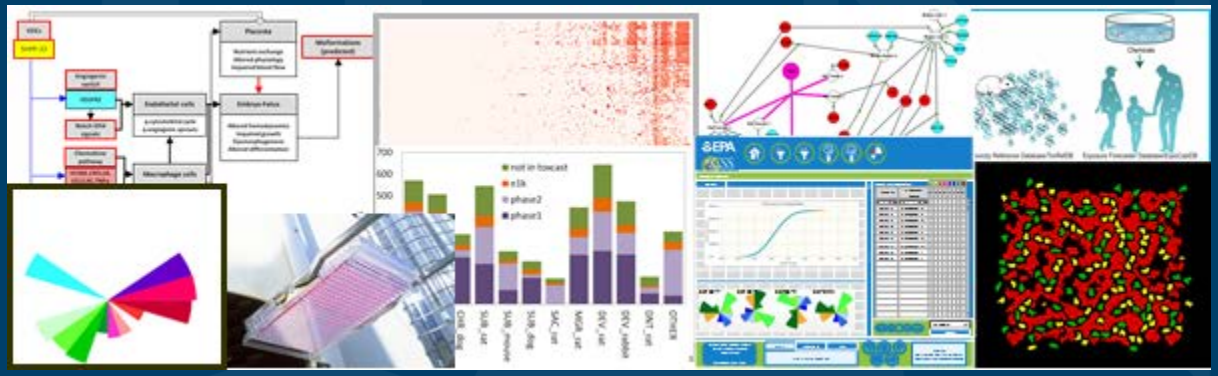
United States Environmental Protection Agency

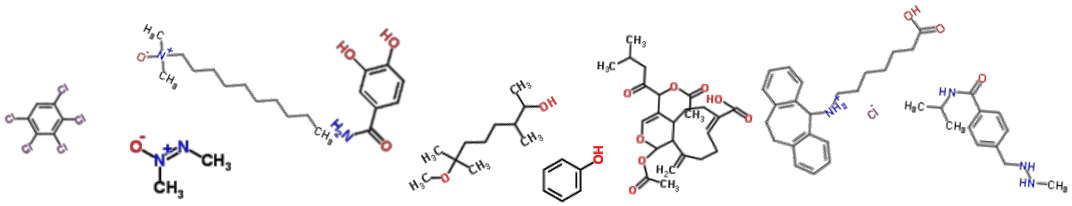
Integration of High-Throughput Transcriptomics in a Tiered Testing and Evaluation Strategy

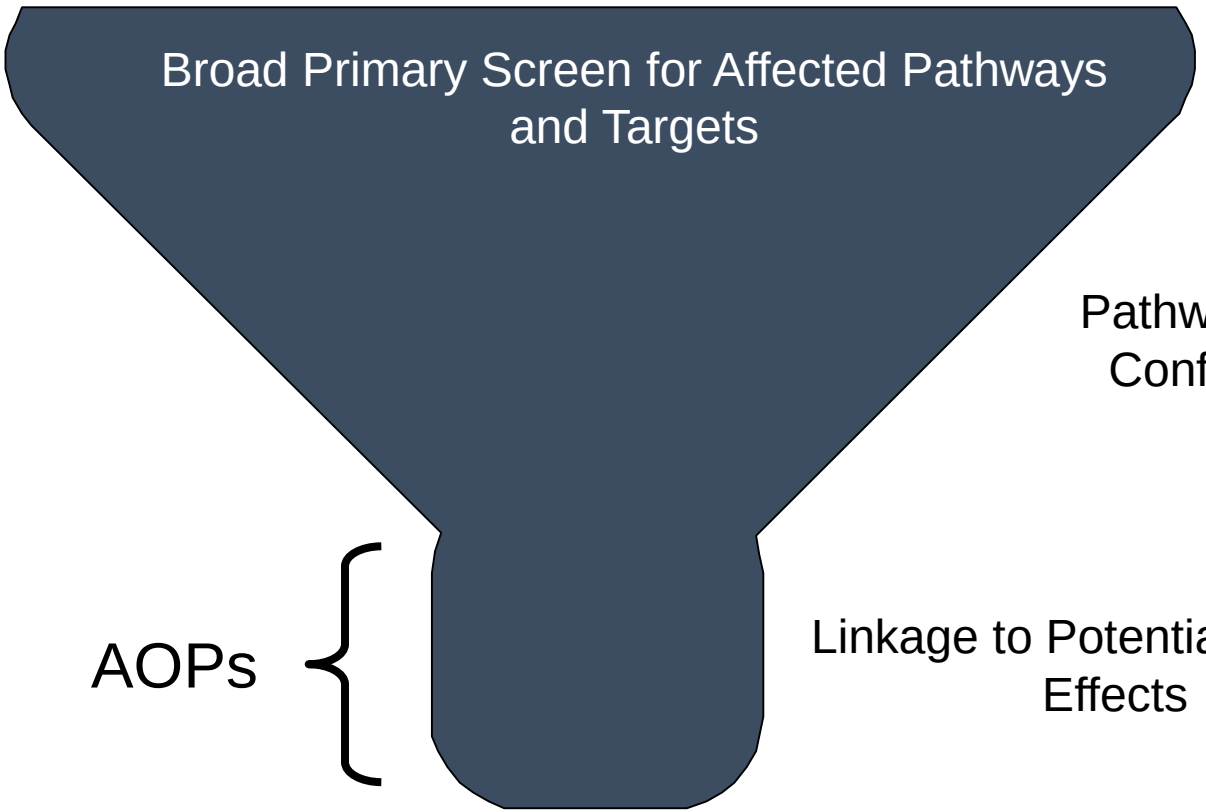


EAGMST Meeting
June 15, 2017

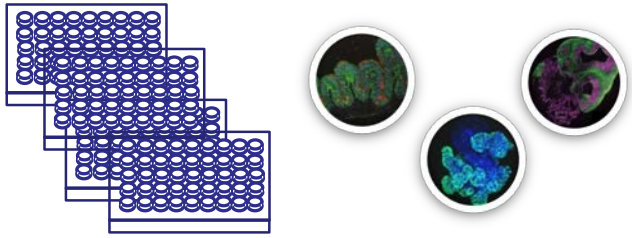
Russell Thomas
Director
National Center for Computational Toxicology

Developing a Comprehensive Hazard Screening Strategy

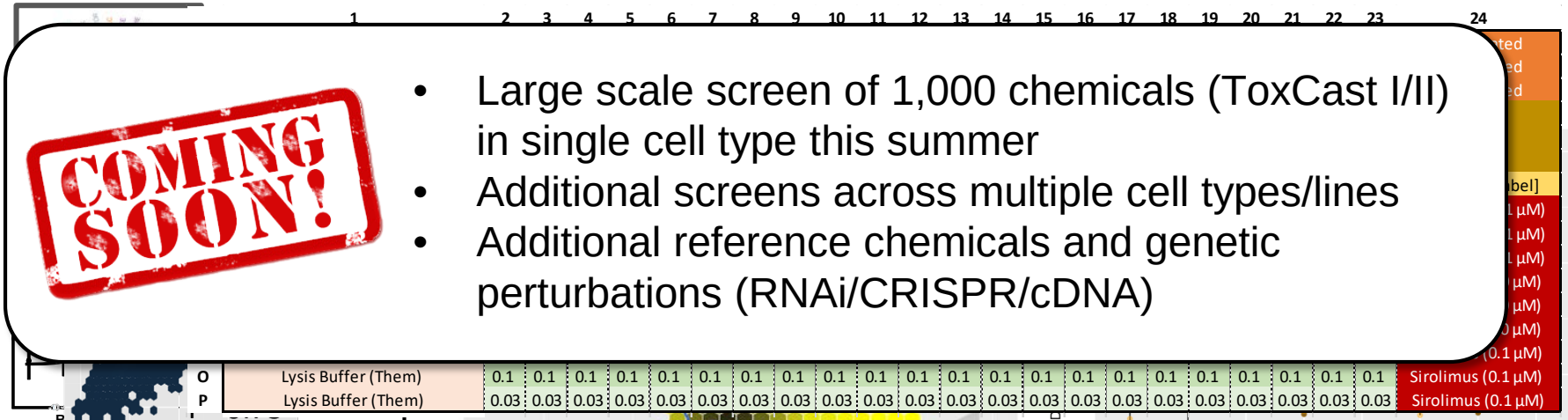




Using a Portfolio of Transcriptomic Experimental and Analytical Tools



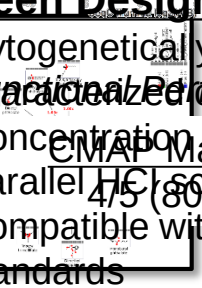
High-Throughput Transcriptomic Screen
- TempOSeq whole transcriptome assay
- Low cost
- 384-well, cell lysate compatible
- Automatable



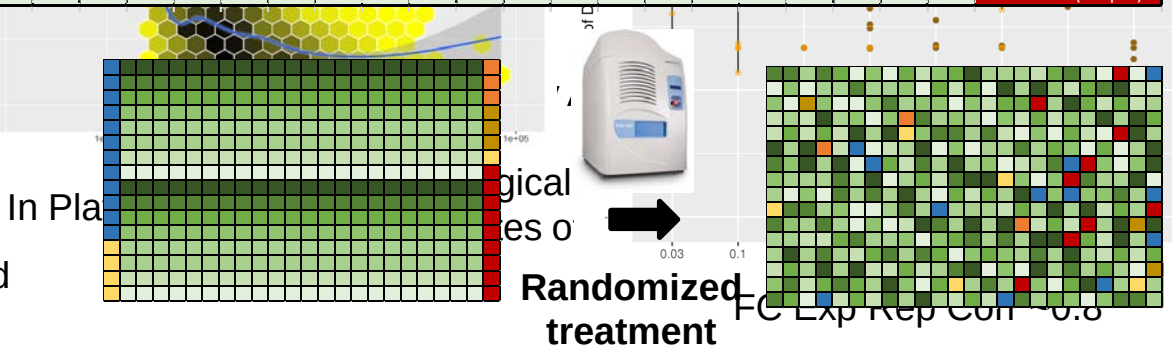
- Large scale screen of 1,000 chemicals (ToxCast I/II) in single cell type this summer
- Additional screens across multiple cell types/lines
- Additional reference chemicals and genetic perturbations (RNAi/CRISPR/cDNA)

Screen Design

- Cytogenetically and functionally characterized cells
- Concentration response
- Parallel HCI screen
- Compatible with performance-based standards



Shah et al., 2016



Integrating Components Into a Tiered Testing and Assessment Strategy