

Understanding the Biology and Technology of ToxCast Assays

Keith Houck

National Center for Computational Toxicology, Office of Research and Development, US Environmental Protection Agency, RTP, NC

The ToxCast high-throughput toxicity (HTT) testing methods have been developed to evaluate the hazard potential of diverse environmental, industrial and consumer product chemicals. The main goal is prioritizing the compounds of greatest concern for more detailed toxicological study. These methods consist of a broad suite of in vitro and model organism assays covering a wide range of molecular targets, pathways and biological processes. The screening platforms range from biochemical assays to complex primary cell systems to developing zebrafish embryos. Technological approaches of these assays are also highly varied with readouts consisting of fluorescence, luminescence, radioligands, imaging and analytical chemistry. This diversity of targets, formats and technologies have varied and important considerations for appropriate contextual interpretation of testing results. For example, a chemical with cytotoxic effects in a loss-of-signal cellular assay may appear to be positive; however, the activity may be a false positive with respect to the intended biological target. This session will cover the major assay sources and platforms for the ToxCast data including intended biological targets being measured and caveats to interpretation of screening results. *This abstract does not reflect EPA policy.*