

Next Generation Innovation in Toxicology at NIEHS

Dr. Brian Berridge, Scientific Director, DNTP

The Division of the National Toxicology Program (DNTP) at NIEHS has a long history as an innovation catalyst and engine in the field of environmental hazard assessment. A portfolio of studies and research founded in 2-year carcinogenicity studies now includes work to evaluate unique life-stage susceptibilities, model varying routes of exposure, conduct development and reproduction studies, critically evaluate specific organ system effects and apply modern methods to characterize hazards computationally and at the molecular level. There has also been significant progress in approaches to leverage existing data and knowledge through systematic and integrated literature assessments.

Despite great progress, there is no rest for the weary since there is an important need to continue to innovate to meet growing demands for more timely and human-relevant data on a rapidly expanding exposome. This presentation will provide an overview of our programmatic framework for continuous innovation as well as key opportunities we're pursuing to meet the increasing demands of our many stakeholders. Opportunities of particular interest will include applications of Artificial Intelligence and Machine Learning, increasing the organ system resolution of our bioactivity screening, bridging bioactivity to apical outcomes using more complex in vitro and computational modeling systems and increasing the translational relevance of animal studies by applying advances in biomonitoring technology. Our fundamental aim is to continue to be impactful purveyors of trusted science that meets the ever-changing needs of our stakeholders.