HESI Genetic Toxicology Technical Committee

Where the Rubber Meets the Road: Transitioning Academic Research into Regulatory Requirements

Monday, 23 September 2024 13:00 – 16:30

Co-Chairs: Connie L. Chen (HESI); Marie Vasquez (Helix3)

This workshop aims to address the current use of genotoxicity studies in regulatory applications and highlight how academic research has moved regulatory science forward. The first part of the symposium will cover regulatory use of genotoxicity studies, current perspectives on and the current status of various consortia efforts regarding data quality. The second half of the workshop will present recent success stories of genotoxicity assays and approaches with origins in academia that have either successfully been or are on the road towards regulatory use and acceptance. This workshop will feature speakers from across the academic, industry and regulatory disciplines towards fostering collaboration and knowledge exchange by bridging research into translation and application.

Part 1: Crosstalk between academic genotoxicity research and regulatory genotoxicity assessment

13:00 – 13:05 **Welcome & Introductions**

13:05 – 13:35 **Reflections on the commonalities and differences between academic and regulatory genotoxicity studies**
Carol Beevers (Corteva AgriScience)

13:35 – 13:55 **Statistics and Experimental Design: Similarities and Differences Between Regulatory and Academic Studies**
David Lovell (St. George's Medical School, University of London)

Standard regulatory studies in genotoxicity testing use experimental designs based upon methods developed in the mid-to-late twentieth century. Development of new test methods and mechanistic studies, especially those where multiple variables may be acting, would benefit from the application of Design of Experiment (DOE) approaches as opposed to the 'traditional' one-facto-= at-a-time (OFAT) approach. These methods extract more information from the available biological material. An educational programme will probably be needed to help genetic toxicologists and regulators understand these developments in experimental design and statistical methodologies."

13:55 – 14:15 **What do regulatory agencies look for in studies and how they use academic**

and regulatory studies
Roland Froetschl (BfARM)

14:15 – 14:35 **Genotoxicity in marine organisms, assessing the potential impacts of offshore oil and gas activities on the marine environment.**
Steven Brooks (NIVA)

Genotoxicity assessments in both wild fish and field transplanted mussels that live on and around offshore oil and gas installations in the North Sea, have been performed to assess the health status of the populations and to determine the potential impacts of oil and gas activities on the marine environment. Application of three genotoxicity biomarkers (comet, micronuclei and DNA adducts) in marine organisms will be presented and discussed.

14:35 – 15:00 **Break**

<u>Part 2: From academic origins to the regulatory arena: Successes and current challenges</u>

15:00 – 15:20 **PigA: Lifecycle and lessons learned**
Javed Bhalli (Frontage Laboratories)

15:20 – 15:40 **Duplex Sequencing: The roadmap for error-corrected next gen sequencing**
Francesco Marchetti (Health Canada)

15:40 – 16:00 **From Bench to OECD validation: The ToxTracker journey**
Giel Hendricks (Toxys)
The first ToxTracker reporters, for the detection of oxidative stress and DNA damage, were developed at the Leiden University Medical Centre (LUMC) and published in 2012. Since then, the company Toxys was created, and the assay has been expanded with additional reporters to detect non-DNA reactive genotoxic modes of action. ToxTracker has been thoroughly validated across laboratories, most recently in a ring-trial that was used as the OECD validation to support test guideline creation. This presentation will describe use cases, where lack of DNA reactivity was pivotal to product stewardship and provide interlaboratory data from the OECD ring-trial.

16:00 – 16:25 **Quantitative-based Genotoxicity Risk Assessment**
Hans-Jorg Martus (Novartis)

16:25 – 16:30 **Closing remarks, conclusions**