

SEAZIT: The National Toxicology Program's Systematic Evaluation of the Application of Zebrafish in Toxicology

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Zebrafish are being considered for use in hazard identification and risk assessment in the Tox21 and ToxCast programs. A Collaborative Workshop on Aquatic Models and 21st Century Toxicology identified lack of standardized husbandry and testing protocols as a challenge to broader use. Addressing this is the central focus of a National Toxicology Program initiative, the Systematic Evaluation of the Application of Zebrafish in Toxicology (SEAZIT). The initial phase of SEAZIT cataloged common current practices in zebrafish assay protocols. Zebrafish researchers in academic, federal, and industry labs were asked about their practices and the literature was surveyed to incorporate recent efforts to standardize zebrafish toxicity screening. Information was collected about protocol components including zebrafish strains, types of feed, preparation of system water, disease surveillance practices, embryo exposure conditions, and endpoints assessed. Interviews revealed a high degree of variability across design parameters, data collected, and analysis procedures. The presence of the chorion and whether or not exposure media is renewed every 24 hours (static versus static-renewal) were identified as key parameters that potentially influence study outcomes. Accordingly, an interlaboratory study was designed to determine the influence of the chorion and exposure media renewal on study outcomes. Reference chemicals selected for the interlaboratory study represent a range of physicochemical properties, potency, and modes of action. Ultimately, this comprehensive effort will improve guidance for the use of zebrafish in toxicity evaluation. *This project was funded in whole or in part with Federal funds from the intramural research program of NIEHS/NIH and under Contract No. HHSN273201500010C. This abstract may not necessarily reflect official U.S. EPA Agency policy.*

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