Precision Toxicology consortium aims to protect human health from effects of harmful chemicals

A major research project to shape regulation and policy on chemical safety without the use of animal testing has been launched with the aid of €19.3M funding from the European Commission. Led by the University of Birmingham and involving 15 European and US organisations, PrecisionTox aims to protect human health from the toxic effects of chemicals found in people's homes, food and the environment.
(https://cordis.europa.eu/project/id/965406)

The KIT participates in the project via the Institute of Biological and Chemical Systems - Biological Information Processing (IBCS-BIP) and receives more than 1 million Euro for its project tasks. The IBCS-BIP leads the work package "Comparative Toxicology" as one of the six work packages and specifically provides expertise in molecular toxicology and zebrafish research. With the help of human cell cultures as well as zebrafish embryos, hundreds of chemicals are to be systematically investigated with regard to their possible toxic effects using the latest systems biology approaches. To achieve this goal, the IBCS-BIP will produce thousands of biological samples, which will be further processed by various international partners of the consortium. In this way, compound-induced changes in the activity of thousands of genes as well as of metabolic products will be quantitatively recorded. Bioinformatics approaches to analyze these data will determine the effect of a wide variety of chemicals on complex biological processes. Predictions on the biological effects of chemicals will be made on this basis using computer-assisted modelling and artificial intelligence. These predictions then will guide further targeted investigations in cell culture models and in zebrafish at the IBCS-BIP.
These large-scale studies are directly linked to the Helmholtz Research Field Information and its program "P2 - Natural, Artificial and Cognitive Information Processing (NACIP)". The research groups of Carsten Weiss (Molecular Toxicology) and Thomas Dickmeis (Endocrinology and Metabolism of Zebrafish) as well as the Screening Centre headed by Ravindra Peravali will conduct the research. Carsten Weiss and Uwe Strähle will lead the work package in close coordination with the Helmholtz Centre for Environmental Research (UFZ) in Leipzig, which provides complementary expertise in environmental toxicology.