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eawag aquatic research

Eawag Seminar Invitation

Translating metabolomics from academic research towards regulatory applications in chemical risk assessment

Speaker **Prof Mark Viant, Professor of Metabolomics, School of Biosciences, University of Birmingham, UK**

When **December 16, 16:00 – 17:00, CET**

Where **Online via Zoom, contact seminars@eawag.ch for access details.**

Abstract **The field of metabolomics is over 20 years old and continues to be a fascinating scientific pursuit. Through combining analytical and computational approaches it allows rich insights into small molecule metabolism within animals, plants, and microbes, enabling researchers to probe the molecular responses to chemical exposure. While a proven approach for blue skies research, this 'omics technology has not yet translated into applications in regulatory toxicology. It is widely accepted, however, that solutions must be found for the growing challenges in both human and environmental chemical risk assessment. These include how to safety assess large numbers of data-poor industrial chemicals and how to incorporate more 'biological effects' measurements into hazard assessments that have traditionally relied heavily on predicting toxicity from chemical structure. The buzzword in regulatory toxicology is NAMs - new approach methodologies - to accelerate the pace of chemical risk assessment. The European Chemicals Agency (ECHA) has referred to NAMs as methods that bring greater robustness, throughput and/or mechanistic knowledge into risk assessment, enabling more relevant decision making for chemical safety. My presentation will introduce metabolomics - a NAM - and then describe how we are collaborating with ECHA to help to translate this technology towards regulatory application, including recent progress in applying 'omics to 'grouping and read-across' (a commonly used approach for filling data gaps in chemical risk assessment). Next I will introduce a data mining project to establish a panel of metabolic biomarkers as predictors of chemical mode-of-action and adversity, responding to a need recently highlighted by the OECD. Finally, I will highlight an underutilised strength of metabolomics, to be able to reveal insights into ADME/toxicokinetics and biological effects, simultaneously.**