Precision Medicine – Getting Personal on Safety

Precision medicine integrates clinical and molecular information to better understand the biological basis of disease, and in turn, to develop medicines that can be tailored to individual characteristics of patients. Major advances in bioinformatics and computational modeling have helped precision medicine to come of age with the ability to integrate heterogeneous data from nonclinical molecular, cellular, and *in vivo* studies, along with clinical response and safety data, and models of human disease. Most current precision medicine successes have arisen from the characterization of interindividual differences in genome sequences that can lead to alterations in pharmacokinetic properties of molecules or from antineoplastic agents that have been approved on the basis of genomic biomarkers for selection of patients. This webinar will provide an overview of the landscape of precision medicine to date. This presentation also will focus on the impact of how understanding interindividual variability in disease targets and cellular pathways has enabled improvements in prediction of patients’ susceptibility to adverse events, illustrated by case examples of precision medicine approaches in preclinical drug development including target safety reviews, drug induced liver injury, and hypersensitivity reactions. In addition, this webinar also will introduce PredicTox, a Precision Medicine Pilot Project that utilizes a systems pharmacology approach to understand the connectivity between genomics and clinical phenotype of adverse events.