

Module 8 Abstract: Reproductive/Developmental and Juvenile Toxicology ***Basic Topics in Toxicology eLearning Seminar***

This module aims to provide an overview of Reproductive, Developmental and Juvenile Toxicology with a focus on the non-clinical testing of drugs, medical devices, and vaccines (intentional exposures) and chemicals, food additives, etc. (unintentional exposures), on male and female fertility and early embryonic development, embryofetal development (EFD), pre-and post-natal (PPND) development and direct exposure postnatally.

The regulatory guidance for testing of reproductive and development drugs and chemical toxicants including the newly approved ICH S5(R3) (18Feb2020) and OECD 421/422/414/443 will be discussed. Included are overviews of study designs, reasons for species selection and appropriate age of animals for testing. The presentation will cover the various stages of the male and female fertility/reproduction, fetal development and growth and development of future generations, data interpretations on the toxicity endpoints (paternal/maternal/developmental/juvenile) and outcomes, including establishment of a no-observed-adverse-effect-level (NOAEL) and hazard assessments. The reproductive and developmental testing of biologics, biopharmaceuticals, and vaccines, including species selection, enhanced/combined study designs, appropriate organ and other toxicity assessments and outcomes are also discussed.

The last part of this module will focus on the principles of Juvenile Toxicology and address whether a juvenile animal study should be conducted, the timing of juvenile studies when needed and how it should be conducted. An overview of juvenile toxicology guidelines, the ICH S11 guidance, for nonclinical juvenile animal testing to support pediatric medicine development will be presented. This will include a weight-of-evidence approach to decide when a juvenile animal study is warranted. Topics addressed will include selection of juvenile toxicology species, age of the animals, dose range finding and ADME considerations in juvenile animals. Lastly, interpretation considerations unique to juvenile animal studies and application of results to human risk assessment will be discussed with a focus on pharmaceuticals.