Biography

Dr. Joseph Cichocki is currently a Toxicologist in the Department of Early Development at Alnylam Pharmaceuticals. In his current role, he provides scientific support to multiple Program Teams, on which he is the Assistant Nonclinical Safety Representative. In addition to his regulatory toxicology duties, he also works closely with the investigational toxicology group to support the development of lead candidates.

Dr. Cichocki received his Ph.D. in Pharmacology/Toxicology from the University of Connecticut in 2014. He performed postdoctoral work at Texas A&M University and was funded, in part, by a National Research Service Award (F32) through NIEHS.

Dr. Cichocki has published nineteen peer-reviewed manuscripts and book chapters and serves as an ad hoc reviewer for multiple toxicology journals. He is an active member of the Society of Toxicology and currently serves as the Junior Councilor for the Northeast Chapter of the Society.

Abstract

“From Airways to Fatty Livers: The Delivered-Dose Makes the Poison”

One of the fundamental principles of toxicology is that “the dose makes the poison.” It is well-appreciated in the field that everything is toxic, and only the dose will determine whether an agent will precipitate an adverse reaction. Once a chemical enters the body, it can interact with a toxicological target tissue and exert its effects. One of the main determinants of toxicity is the concentration of the toxicant at the target tissue, commonly referred to as the “delivered-dose”. By quantifying the delivered-dose of toxicant, one can more fully characterize the dose-response relationship. These data could then be used to inform human health assessments and drive risk management decisions, particularly for environmental chemicals. This presentation will consist of two parts. The first part will focus on inter-species dosimetry and toxicology of inhaled diacetyl (2,3-butanedione), a flavoring agent added to impart a buttery aroma and taste to food. The second part will discuss how a mouse model of non-alcoholic fatty liver disease can be used to understand how underlying disease state modifies the delivered-dose and toxicological profile of perchloroethylene, a ubiquitous environmental contaminant. Marrying these two seemingly unrelated topics will provide the audience with an appreciation of the fact that “the delivered-dose makes the poison”, regardless of route of administration or chemical class.