

Computational Toxicology and Environmental Health

Dr. Karen H. Watanabe

If you enjoy math, science and want to learn more about how chemicals in the environment affect living organisms, this is the research group for you. Dr. Watanabe's research focuses on developing mathematical models of how chemicals affect biological processes such as reproduction, development, endocrine signaling, and neurotransmission. Chemical toxicity testing is moving away from whole animal experiments to *in vitro*, cell-based and cell-free tests to determine how chemicals affect a variety of biological endpoints. Mathematical models (*in silico*) are needed to interpret data from hundreds of tests and extrapolate the data to effects on organisms. Possible NCEHSS 2020 summer projects include (i) evaluating the ability of a model to predict effects of estrogen and androgen mixtures on reproduction; (ii) evaluating the ability of a cell-based ovarian development model to predict data from knock-out mice; or (iii) developing a mathematical model of how pesticides affect the nervous system. Feel free to email Dr. Watanabe (karen.watanabe@asu.edu) with questions about the projects in her research group.