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Department of Marine Sciences
Presents a Seminar by

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Mixture effects between different classes of chemicals on fish biomarkers

Chemicals can interfere with each other's modes-of-action and causing toxicodynamic interactions. Alternatively, chemicals can interfere with each other's elimination pathways and causing toxicokinetic interactions. In human drug therapies it is now well established that different drugs and dietary products can cause adverse drug-interactions, as a result of toxicokinetic interactions. Fish are typically exposed to mixtures of different classes of chemicals in their natural habitats. However, little is known about possible toxicokinetic interactions in fish. We focus our studies on mechanisms involved in the detoxification pathway in fish *in vivo* or in cultured fish cells *in vitro*. We test different classes of environmental pollutants including aromatic hydrocarbons, endocrine disrupting chemicals and pharmaceuticals. We investigate how these chemicals interact with key proteins in the detoxification pathway. We monitor how these chemicals alone and in binary mixtures affect fish biomarkers. Due to the combinational challenge, new mathematical models are needed to describe and predict mixture effects *in silico*. We hypothesize that by identifying how different chemicals interact with key proteins (receptors, enzymes, transporters) in the detoxification pathway we can create new mathematical models that can be used to describe toxicokinetic interactions. By identifying key steps in detoxification pathways and how chemicals individually and in mixtures interact on these key steps we can create new mathematical bottom-up models. Data from lab-experiments with binary mixtures are used to create a first mathematical bottom-up-model for synergistic mixture effects, where we fit a multi-dimension function to a given dataset using an auxiliary non-additive model.

Host: Ann Bucklin

Time & Date: 11:00 am, Friday, February 22, 2019

Place: Marine Sciences Building, Seminar Room 103

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