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Seminar Title:  Xenopus as a Model Organism for Testing Nanoparticle Toxicity

Abstract:  The size range that accounts for many of the unique chemical and physical properties of nanomaterials also poses special problems for studying their potential toxicity.  In particular, it is difficult to distinguish limited uptake of these molecules into cells (bioavailability) from genuine lack of toxicity.  Xenopus (African claw-toed frog) allows a means to eliminate this variable through direct microinjection of known amounts of material directly into oocytes and embryos.  Moreover, toxicity is tested during early development, which is a period of considerable sensitivity to aberrations in metabolism, DNA synthesis, programmed cell death, and transcriptional regulation.  Embryogenesis, which occurs outside the mother, is rapid and easily monitored under a light microscope. This talk will focus primarily of the toxic effects of TiO2 nanoparticles.

