

Information Exchange Seminar Announcement

“Fishing to Design Safer Nanomaterials”

Presented by Professor Robert Tanguay
Oregon State University

When: Wednesday, October 29, 2008

Where: EMSL 1077

Time: 10:00am- 11:00am

Seminar abstract:

The rapid rate of discovery and development in nanotechnology will undoubtedly increase the potential for both human and environmental exposures to novel nanomaterials. While numerous applications promise benefit to human health or the environment, the potential health and environmental risks associated with the unique properties of nanoscale materials are largely unknown. The current gap in nanoparticle toxicological data dictates the need to develop rapid, relevant and efficient testing strategies to assess these emerging materials of concern prior to large-scale exposures. Here we present a powerful approach that utilizes a dynamic whole animal (*in vivo*) zebrafish embryonic assay to define the biological responses to nanomaterial exposures. Early developmental life stages are often uniquely sensitive to environmental insults, due in part to the enormous changes in cellular differentiation, proliferation and migration required to form the required cell types, tissues and organs. Molecular signaling underlies all of these processes. Most toxic responses result from disruption of proper molecular signaling, thus, early developmental life stages are perhaps the ideal life stage to determine if chemicals or nanomaterials perturb normal biological pathways. Therefore, the embryonic zebrafish model was chosen to investigate nanomaterial biological activity. Investigations using this model system can reveal subtle interactions at multiple levels of biological organization (i.e. molecular, cellular, systems, organismal). The added value of this system is that the mechanism underlying the responses to biological materials can be rapidly investigated. To date well over 200 individual engineered nanomaterials have been evaluated and representative data will be presented. The timely evaluation of nanomaterial-biological interactions and responses will provide a pathway for nanomaterial designers to develop better and inherently safer nanomaterial derived products. Finally, and perhaps most importantly, with data rather than uncertainty, there will be improved public trust in the nanotechnology industry.

For additional information on Prof. Robert Tanguay, please visit:

<http://emt.oregonstate.edu/faculty/tanguay.htm>