

**NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
POSTDOCTORAL RESEARCH PROGRAM
Cincinnati, Ohio**

Project # EPA-NCEA-2006-01

Research to improve and support the incorporation of quantitative biological systems modeling into hazard identification

Project Description: A research project is available through the Postdoctoral Research Program at the U.S. Environmental Protection Agency (EPA), National Center for Environmental Assessment (NCEA) in Cincinnati, Ohio. Under the direction of a NCEA team leader and scientific staff, the research participant will gain educational benefits and applied experience in biological modeling to improve the assessment of health and environmental risks of chemicals released to the environment.

These models can coordinate and unite mechanistic studies with information available from animal bioassays. Based on the level of information available, biological modeling can support assessment and improve predictive approaches in the absence of chemical specific test data. This position will focus on the development and application of modeling to improve and support the incorporation of quantitative biological systems modeling into hazard identification, dose response and risk assessments. Primary areas of research interest include:

Computational Modeling

- Developing and applying new methods of computational modeling incorporating chemistry, biochemistry and toxicology.
- Developing predictive models (QSAR, SAR, et al.) for hazard assessment.
- Integrating and applying genomic/proteomic/metabolomic data into risk assessment.

Development of PB/PK and BBDR Models

- Modeling of chemical disposition and tissue response, especially interaction at the molecular and macromolecular levels (e.g., receptor/ligand, enzyme substrate).
- Improving the quantitative value of physiologically- and biologically-based modeling
- Improving cross-species extrapolation of physiological, biochemical and toxicological processes and examination of human intra-individual variability (life stage, gender, disease state, et al.)

Development of BBDR models for application in risk assessment for single chemicals or chemical mixtures

- Applying mechanistic and mode-of-action models to risk assessment.
- Improving the use of biological systems modeling to support hazard and risk assessment.

Expected Results: Throughout the course of the appointment with NCEA, the participant will

identify at least one key research issue or gap associated with EPA's approach to chemical risk assessment (e.g., needed improvements in analyses, methods or models) and address it in a publishable form (either in an EPA report and/or peer-reviewed journal article). The participant will also present results of the assigned project.

Qualifications and Skills: Applicants must have received a doctoral degree in toxicology, chemistry, biochemistry, pharmacology, physiology, biomedical engineering, biomathematics or related field relevant to computational toxicology or biological modeling within three years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date. Preferred specialized training or experience includes: quantitative structure-activity modeling, pharmaco- or toxicokinetic modeling. The ability to review bodies of literature and develop sound conclusions based on information from multiple sources. Experience in team environments, strong written and communication skills, and a mastery of toxicologic principles are preferred. U.S. citizenship or lawful permanent resident status is preferred. The program is open to all qualified individuals without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam era or disabled veteran.

Stipend and Tenure: The appointment will initially be full-time for a one-year period and may be renewed for up to two additional years depending on funding. The annual stipend will range from \$53,000 - \$65,000 depending on degree and experience. The appointee will not be considered an employee of EPA.

The EPA-NCEA contact person for this project is Dr. Michael E. Troyer. His e-mail address is Troyer.Michael@epa.gov.

The Postdoctoral Research Program for EPA-NCEA is administered by the Oak Ridge Institute for Science and Education. *Please reference Project # EPA-NCEA-2006-01 when calling or writing for information.* For additional information and application material contact: Internship Program – EPA Water, Attn: Betty Bowling, Science and Engineering Education – MS 36, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831 Phone: (865) 576-8503 Fax: (865) 241-5219 e-mail: betty.bowling@ornl.org.

An application can be found at <http://www.ornl.gov/orise/edu/EPA/app-gugrgpd.pdf>.