Opportunity Title: EPA Fellowship on Physiologically-Based Toxicokinetic (PBTK) Models to Build New Methods for the Endocrine Disruption Screening
Opportunity Reference Code: EPA-OCSPP-2024-04

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-OCSPP-2024-04

How to Apply ***Connect with ORISE...on the GO!*** Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. Click here for detailed information about acceptable transcripts.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations. Click here for detailed information about recommendations.

All documents must be in English or include an official English translation.

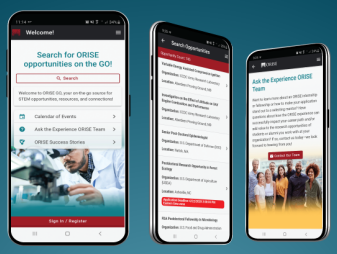
Application Deadline 6/21/2024 3:00:00 PM Eastern Time Zone

Description ***Applications may be reviewed on a rolling-basis and this posting could close before the deadline.** Click **here** for information about the selection process.

EPA Office/Lab and Location: A research opportunity is currently available with the U.S. Environmental Protection Agency (U.S. EPA) in the Office of Chemical Safety and Pollution Prevention (OCSPP), located in either Washington DC, Duluth MN, or Research Triangle Park NC.

Research Project: The U.S. Environmental Protection Agency (U.S. EPA) developed the Endocrine Disruptor Screening Program (EDSP) to screen chemicals for the potential to disrupt the estrogen, androgen, and thyroid pathways in humans and wildlife. The EDSP helps to develop, validate, and implement in vitro and in silico new approach methods to reduce animal use for screening chemicals for the potential to disrupt the estrogen, androgen, and thyroid pathways. There are thousands of chemicals which need to be screened, so there is significant regulatory need to develop New Approach Methods (NAMs) to more efficiently identify and evaluate chemicals that may disrupt the endocrine system.

One such approach is In Vitro to In Vivo Extrapolation (IVIVE) which is the process of converting an in vitro concentration, associated with bioactivity, to an external exposure level, using a Physiologically Based ToxicoKinetic (PBTK) model, to determine a plausible in vivo exposure level. These models include parameters that describe the processes of absorption, distribution, metabolism, and excretion (ADME), and the values of model parameters may be obtained using in vitro assays and in silico methods. The predicted exposure level can then be compared with the actual or

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estimated exposures to perform a screening level risk assessment. Therefore, it is extremely important to build a consistent and reliable in vitro to in vivo extrapolation method using mathematical modeling to numerically simulate the behavior of a complex physiological system, using in vitro data to provide the parameter values for developing the model.

The objective of this project is to assess and/or develop PBTK models for utilization in IVIVE approaches to allow in vivo predictions of endocrine activity for select ecological species. The participant will have the opportunity to contribute to and publish original research on novel approaches relevant to the EDSP. The ORISE participant will also be afforded an opportunity to interact with internationally recognized leaders, both within and outside EPA, in the area of developing and applying NAMs to the practice of chemical risk assessment with a focus on screening chemicals for the potential to disrupt the endocrine system. It is expected that this training opportunity will provide an early career scientist with knowledge, skills, and abilities needed to apply new technologies and associated data to regulatory decision-making at the local, national, and/or international scale and to pursue a professional career in the life sciences.

Under the guidance of a mentor, research activities may include:

- Evaluate and/or develop PBTK models to support IVIVE with fish and other ecological vertebrate classes.
- Define chemical training sets for the technical validation of IVIVE in select ecological species.
- Help develop and curate the necessary datasets to support the standardization, performance assessment, and validation of a PBTK based IVIVE approach for select ecological species.

Learning Objectives: Participatory learning objectives include:

- Engagement and leadership in the design and implementation of PBTK models for select ecological species.
- Develop technical proficiency in the use and implementation of in silico tools for performing IVIVE approaches for chemical screening.
- Build expertise in computational toxicology approaches by leading data analysis efforts.
- Active participation in project team and program meetings.
- Preparing presentations, internal reports and data summaries.
- Presenting at scientific conferences.
- Authoring manuscripts for publication in peer-reviewed journals.

Mentor(s): The mentor(s) for this opportunity are Dr. Scott Lynn (lynn.scott@epa.gov) and Jon Haselman (haselman.jon@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date**: June/July 2024.** All start dates are flexible and vary depending on numerous factors. Click **here** for detailed information about start dates.

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Appointment Length: The appointment initially may be for one year and may be renewed upon EPA recommendation and subject to availability of funding.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience.

EPA Security Clearance: Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at EPA.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and EPA. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

ORISE offers all ORISE EPA graduate students and Postdocs a free 5 year membership to the National Postdoctoral Association (NPA).

The successful applicant(s) will be required to comply with Environmental, Safety and Health (ES&H) requirements of the hosting facility, including but not limited to, COVID-19 requirements (e.g. facial covering, physical distancing, testing, vaccination).

Questions: Please see the FAQ section of our website. After reading, if you have additional questions about the application process, please email ORISE.EPA.REG@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields.
Doctoral Degree received within the last 60 months or anticipated to be received by 6/30/2024

Preferred skills:

- Knowledge and experience with Physiologically-Based ToxicoKinetic (PBTK) modeling, with a particular emphasis on aquatic wildlife (i.e., fish and amphibians)
- Experience in mathematical modeling, computer science, or engineering, including hands-on experience developing modeling code in R and/or Python
- Skills or interest in bioinformatics, biology, or toxicology
- Experience with mathematically modeling, fish physiology, and in vitro assays.
- Familiarity with the basic principles and concepts associated with In Vitro to In Vivo Extrapolation (IVIVE)

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- Interest or some experience working with biological or toxicological data, such as in bioinformatics, high throughput testing results, environmental toxicology, etc.
- Experience with basic statistical methods and software (e.g. GraphPad Prism).
- Highly self-motivated individual with excellent writing and oral communication skills.
- Demonstrated ability to communicate scientific findings through peer-reviewed publications and oral presentations.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 6/30/2024 11:59:00 PM.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (1 👁)
  - **Engineering** (3 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (51 👁)
  - **Mathematics and Statistics** (11 👁)