Opportunity Title: EPA Ecological Toxicity of Organic Contaminants Fellowship
Opportunity Reference Code: EPA-ORD-CCTE-GLTED-2020-06

Organization	U.S. Environmental Protection Agency (EPA)
Reference Code	EPA-ORD-CCTE-GLTED-2020-06
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
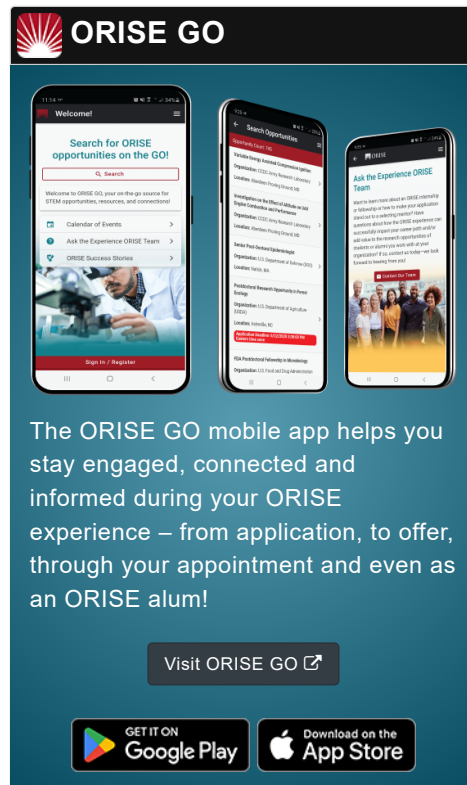- Two educational or professional recommendations. Click here for detailed information about recommendations.

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

Application Deadline	10/9/2020 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 available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Computational Toxicology and Exposure (CCTE), Great Lakes Toxicology & Ecology Division (GLTED) located in Duluth, Minnesota.

Research Project: An important aspect of EPA's mission is to protect human health and the environment from harmful effects of chemicals. Hazards that chemicals pose to humans or wildlife have traditionally been assessed using toxicity tests in which animals are exposed to a chemical of interest for days to weeks and then effects on survival, growth, reproduction, or health outcomes are evaluated. While effective, these approaches are costly and time-consuming, making it impractical to collect toxicity data for tens of thousands of chemicals currently in commerce and present in the environment. In order to address this challenge, there has been a strong interest in employing advances in biotechnology, miniaturization, robotics, and computing to collect chemical safety information in a more rapid and cost-effective manner. This has been termed high throughput toxicology. In recent years a number of pioneering high throughput toxicology programs such as ToxCast and Tox21 have generated data for thousands of chemicals. Additionally,

emerging methods in high throughput transcriptomics are providing concentration-response data that may be predictive of longer-term impacts in organisms. However, regulators and environmental decision-makers remain hesitant to employ these new sources of data as a basis for chemical safety decisions.

The research participant will be trained in the design and execution of case studies that explore the value and limitations of these alternative data for estimating chemical toxicity. The research participant will also engage in the development of innovative approaches in concentration-response modeling and in vitro to in vivo extrapolation that can reduce uncertainties in the use of data from high throughput toxicity testing methods, with a particular focus on estimating ecological risks.

With guidance from the mentor, the research participant may be involved in any or all of the following training activities:

- Estimating points of departure (e.g., lowest observed effect concentrations, benchmark doses) from high throughput toxicity testing data including ToxCast data and omics data sets.
- Comparing points of departure from alternative methods with those derived from traditional animal testing.
- Applying innovative and cutting edge approaches in in vitro to in vivo extrapolation and reverse toxicokinetics to translate effect concentrations measured in multi-well plates to equivalent blood, tissue, or environmental media concentrations.
- Adapting existing toxicity testing methods with aquatic vertebrates, invertebrates, plants and/or algae to high throughput formats.
- Optimizing assay conditions.
- Developing high throughput approaches for collecting phenotypic data from exposed organisms.
- Developing high throughput techniques for collection, batch processing, and analysis of biofluid and tissue samples suitable for molecular, biochemical, and/or histological analyses.

<u>Learning Objectives</u>: The research participant will learn a diversity of laboratory, analytical, and computational techniques which can be applied across life sciences research fields. The research participant will learn how to operate and use a range of scientific equipment. The research participants will learn to evaluate data quality, trouble shoot research results, apply statistical methods for data analysis and interpretation.

The research participant will be integrated into a transdisciplinary research team and engaged in multiple aspects of project planning, communication and coordination, research implementation, and analysis. The research participants will be afforded an opportunity to interact with internationally recognized leaders, both within and outside EPA. The research participant

will contribute to and/or publish original research. 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 life sciences research.

Mentor(s): The mentor for this opportunity is Dan Villeneuve (villeneuve.dan@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Summer/Fall 2020. All start dates are flexible and vary depending on numerous factors. Click **here** for detailed information about start dates.

Appointment Length: The appointment will initially be for one year and may be renewed up to four additional years 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. Click **here** for detailed information about full-time stipends.

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.

Questions: Please see the FAQ section of our website. After reading, if you have additional questions about the application process please email EPArpp@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, or be currently pursuing the degree and will reach completion by September 2020. Degree must have been received within five years of the appointment start date.

Preferred skills:
- Previous research experience, beyond lab-oriented course work alone
- Previous experience writing peer reviewed journal articles

- Previous experience with science communication to a diversity of technical and non-technical audiences
- Computational skills (e.g., programming, R-based statistics)
- Previous experience working with omics data and/or high throughput data sets such as those from EPA's ToxCast program
- Experience conducting bioassays at the in vitro, in vivo, or field scale
- Previous experience working with aquatic organisms such as fish, crustaceans, insect, plants, or algae
- Experience with basic molecular biology techniques used for analysis of proteins and nucleic acids (e.g., gel electrophoresis, PCR, quantitative real-time PCR, use of thermocyclers and/or bioanalyzers, etc.)
- Course work in biostatistics and/or bioinformatics
- Cell culture experience (e.g., plating, maintaining, freezing animal cells using aseptic technique)
- Experience with analytical chemistry instrumentation and extraction methods

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 9/30/2020 11:59:00 PM.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (5 👁)
  - **Computer, Information, and Data Sciences** (3 👁)
  - **Environmental and Marine Sciences** (3 👁)
  - **Life Health and Medical Sciences** (11 👁)
  - **Mathematics and Statistics** (2 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).