**Opportunity Title:** EPA Research Opportunity on Alternatives for Assessing Toxicity of Environmental Contaminants to Aquatic Organisms
**Opportunity Reference Code:** EPA-ORD-CCTE-GLTED-2023-04

**Organization** U.S. Environmental Protection Agency (EPA)

**Reference Code** EPA-ORD-CCTE-GLTED-2023-04

**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** 9/1/2023 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:** Two research opportunities are 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:** Due to the large number of chemicals in commerce and subsequently introduced into the environment, chemical safety assessments based on traditional animal testing have been unable to keep pace with the needed hazard information to support screening, prioritization, and both human health and ecological risk assessment. To address this, EPA's Office of Research and Development is developing alternative testing approaches (termed "new approach methodologies") to generate toxicity information in a more rapid and cost-effective manner while providing data that are equivalent to or better than that derived from traditional testing. These alternative approaches may involve exposure of small aquatic organisms including larval fish, zooplankton, insect larvae, and/or plants/algae in 96-well plate format using robotic liquid handling and other automation. Testing of both individual chemicals in both cell-based and cell free assays that screen chemicals for their ability to interact with specific molecular targets or pathways may also be employed. To aid in interpretation of the results, research participant(s) may also be engaged in literature review and hypothesis-driven studies that help establish causal relationships between perturbation of biological systems at the molecular and cellular level and adverse effects on

individuals and/or populations.

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

- Conducting laboratory exposures to organic chemicals using aquatic organisms including fish, invertebrates, and algae.
- Conducting molecular, biochemical, physiological, and/or histological analyses on biofluids and tissue samples collected from aquatic organisms.
- Screening chemicals or chemical mixtures for biological activity using a diversity of cell-free, cell-based, and/or high throughput testing approaches.
- Compiling and summarizing scientific information from the peer-reviewed literature and from on-line data sources.
- Conducting critical weight of evidence-based evaluations based on Bradford Hill considerations.
- Analyzing experimental data and generating tables, figures, and other summaries of results.
- Presenting research results at scientific meetings and contributing to written reports and journal articles.

**Learning Objectives:** The research participants will learn a diversity of laboratory techniques which can be applied across life sciences research fields. The research participants learn to operate and use a range of scientific equipment. The research participants will learn to conduct research with aquatic organisms, cell culture, and/or biochemical assays. The research participants will learn to search strategies and tools to aid in efficient and transparently documents literature retrieval and evaluation. The research participants will learn to evaluate data quality, trouble shoot research results, apply statistical methods for data analysis and interpretation.

The research participants will collaborate with a transdiciplinary research team and engage 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 have the opportunity to 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 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: September 13, 2023.** 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 three 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.

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 EPArpp@orau.org and include the reference code for this opportunity.

**Qualifications**

The qualified candidate should have received a bachelor's or master's degree in one of the relevant fields (e.g., Biology, (Eco)Toxicology, Biochemistry, Molecular Biology, Genetics, Bioinformatics, Computational Biology, Computational Chemistry, Chemistry), or be currently pursuing one of the degrees with completion before the appointment start date. Degree must have been received within five years of the anticipated appointment start date.

Preferred Skills:

- 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.)
- Computational skills (e.g., programming, R-based statistics)
- Course work in biostatistics and/or bioinformatics
- Skills in oral and written communication

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- Previous experience working with aquatic organisms, particularly fish.
- Previous research experience, beyond lab-oriented course work alone.
- Familiarity with literature search tools and strategies
- Cell culture experience (e.g., plating, maintaining, freezing animal cells using aseptic technique).
- Training or experience in organic chemistry, biochemistry, and analytical chemistry.

**Eligibility Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree or Master's Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (6)
  - **Computer, Information, and Data Sciences** (3)
  - **Engineering** (1)
  - **Environmental and Marine Sciences** (14)
  - **Life Health and Medical Sciences** (48)
  - **Mathematics and Statistics** (4)