

**Opportunity Title:** EPA Postdoctoral Fellowship in Computational Toxicology

**Opportunity Reference Code:** EPA-ORD-CCTE-GLTED-2021-08

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

**Reference Code** EPA-ORD-CCTE-GLTED-2021-08

**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.

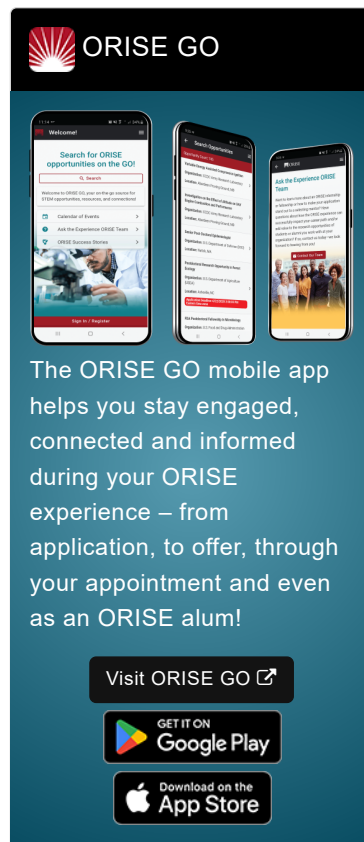
All documents must be in English or include an official English translation.

**Application Deadline** 12/16/2021 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:** This research project is in collaboration with Unilever scientists through a Cooperative Research and Development Agreement (CRADA), is to jointly explore the utility of a battery of new approach methods (NAMs), which are non-animal based, for evaluating the safety and hazard of chemicals – establishing Next Generation Risk Assessments (NGRA). One of the primary missions of the US Environmental Protection Agency, Office of Research and Development, Center for Computational Toxicology and Exposure is to develop such methods. This includes high-throughput transcriptomics methods (HTTr) and bioinformatics approaches to predict chemical susceptibility across species (e.g., SeqAPASS; <https://seqapass.epa.gov/seqapass/>). Understanding the conservation and relevance of targets and toxicity pathways, identified through HTTr screening using human and fish cell lines, across environmentally relevant species to inform chemical susceptibility and ultimately inform Environmental Risk Assessment (ERA) are major objectives of this training opportunity. This will be achieved using a suite of bioinformatics tools encompassing genomics and phylogenetics. The participant will be involved in the development of interoperable approaches to inform predictions of cross-species chemical susceptibility with demonstration of their application


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toward current challenges in ERA. Additionally, literature review will be conducted to capture cross-species biological pathway information linking mechanisms of chemical perturbation to adverse effects .

The research participant will be trained in predictive toxicology aimed at characterizing the similarities and differences across species that drive chemical sensitivity. This research will primarily be computationally-based research taking place in an office setting with the potential to apply molecular techniques in the laboratory to validate computational results.

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.
- Designing workflows and data analysis pipelines for automated and standardized analysis of large data sets.
- Developing and implementing a data archiving and storage system.
- Automate data collection and collation processes.
- Proposing solutions and strategies to improve existing web-based U.S. EPA tools, particularly considering interoperability with other internal and external tools.
- Extending existing software programs, web-based interactive tools, or database queries as analysis needs evolve.
- Exploring and operating molecular docking programs to support research.
- Testing computational applications to identify bugs and recommend fixes.
- Developing or applying data mining and machine learning algorithms.
- Conducting large scale literature review, integrating computational methodology to expedite knowledge synthesis.
- Present research results at regional, national, and/or international conferences and workshops.
- Contributing to the preparation of peer-reviewed journal articles and disseminating research results to project partners and stakeholders.

**Learning Objectives:** The research participant will be afforded an opportunity to interact with internationally recognized leaders, both within and outside EPA, in the area of applying new approach methods to the practice of chemical risk assessment with a particular focus on evaluating cross-species differences in chemical sensitivity. The research participant will have the opportunity to contribute to and/or publish original research on novel research outcomes that demonstrate the application of new approach methods. It is expected that this research 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 graduate education or a professional career in life sciences research.

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**Mentor(s):** The mentor for this opportunity is Carlie LaLone ([lalone.carlie@epa.gov](mailto:lalone.carlie@epa.gov)). If you have questions about the nature of the research please contact the mentor(s).

**Anticipated Appointment Start Date:** **Fall/Winter 2021.** 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 three 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 [ORISE.EPA.ORD@orau.org](mailto:ORISE.EPA.ORD@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 the appointment start date. Degree must have been received within five years of the appointment start date.




Preferred skills:

- Course work or experience in bioinformatics
- Demonstrated computer programming capabilities (e.g., Java)
- Familiarity with database systems
- Previous research experience in molecular biology, beyond lab-oriented course work alone
- Previous experience working with omics data and/or high throughput data sets such as those from EPA's ToxCast program.
- Previous experience writing peer reviewed journal articles.
- Previous experience with science communication to a diversity of technical and non-technical audiences.

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- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
  - **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 12/31/2021 11:59:00 PM.
  - **Discipline(s):**
    - **Computer, Information, and Data Sciences** ([17](#) )
    - **Environmental and Marine Sciences** ([3](#) )
    - **Life Health and Medical Sciences** ([8](#) )
  - **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).