Opportunity Title: EPA Internship for Molecular Biology Laboratory Research
Opportunity Reference Code: EPA-ORD-CCTE-GLTED-2022-05

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-CCTE-GLTED-2022-05

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 12/30/2022 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 Cincinnati, Ohio.

Research Project: The need to provide information that can be used to rapidly and accurately evaluate the risk that chemicals pose to the environment has prompted the development of novel approach methodologies (NAMs). Though these NAMs can take many forms, many focus on the molecular responses of in vitro or in vivo model systems to chemical exposures as a means of characterizing chemical mode of action. This information can be used in many contexts including chemical read-across and to determine the bioactivity of complex environmental mixtures. The current project aims to develop transcriptional profiles for different classes of chemicals, phenotypes, tissues, and stages of development in aquatic organisms using RNA-seq. These profiles are being used to populate a Connectivity Mapping library that will be used to link chemicals and modes of action based on the similarity of their transcriptional response. The library is currently focused on the zebrafish and fathead minnow, two often used toxicology model systems, but will expand to include invertebrate species as well.

The research participants will be part of a highly collaborative, dynamic, and transdisciplinary research team consisting of molecular biologists,

toxicologists and bioinformaticians with the goal of expanding the chemical and taxonomic breadth of the molecular response library as well as testing its performance in different laboratory and field-based use applications.

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

- Designing experiments to evaluate the performance of the Connectivity mapping approach
- Isolating and evaluating the quality of RNA and develop RNA-seq libraries using different methods
- Designing, setingt-up, and maintaining acute toxicity tests in laboratory and field conditions.
- Performing and analyzing behavioral testing experiments
- Maintaining aquatic cultures of fathead minnow and Daphnia magna
- Contributing to the preparation of peer-reviewed journal articles and disseminating research results to project partners, stakeholders, and the research community

Learning Objectives: The research participant will learn multiple aspects of designing and carrying out experiments, how to operate equipment commonly used in molecular biology and toxicology laboratories, and a diversity of molecular and organismal level techniques which may include:

- Preparation of RNA-seq or other next generation sequencing libraries
- Isolation of nucleic acids
- Quantitative Polymerase Chain Reaction (QPCR) and Reverse Transcription-PCR (RT-PCR)
- Analysis of RNA-seq and PCR results
- Behavioral analysis

Mentor(s): The mentor for this opportunity is Adam Biales (biales.adam@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: October 28, 2022. 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

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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, Toxicology), or be currently pursuing one of the degrees and will reach completion before the appointment start date. Degree must have been received within five years of the appointment start date.

Preferred skills:

1. Experience with good laboratory practices common to molecular biology
2. Ability to work independently on basic laboratory tasks
3. Familiarity with statistical analysis
4. Experience in performing commonly used techniques (PCR, etc.)
5. Experience generating libraries for next generation sequencing

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** (2)
  - **Environmental and Marine Sciences** (2)
  - **Life Health and Medical Sciences** (48)