

Opportunity Title: EPA Ecological Effects of Per- and Poly-Fluorinated Alkyl Substances (PFAS) Fellowship

Opportunity Reference Code: EPA-ORD-CCTE-GLTED-2020-08

Organization U.S. Environmental Protection Agency (EPA)

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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: Per- and polyfluoroalkyl substances (PFAS) are a complex class of thousands of chemicals of potential concern in terms of ecological effects. Some PFAS have proven to be both very persistent and widely distributed in the environment; however, only a select PFAS (e.g., perfluorooctanesulfonate [PFOS]; perfluorooctanoic acid [PFOA]) have been well-studied. Given the large number of PFAS of concern, it is unreasonable to evaluate each compound with traditional whole animal toxicity testing. Consequently, there is a need to develop predictive approaches to support assessment of PFAS, using existing knowledge, computational models, pathway-based in vitro assays, and short-term in vivo tests with molecular/biochemical endpoints. In order for these data to inform our understanding of the hazards, there is a need to organize and communicate the scientific evidence linking perturbation of potential biological targets/pathways with outcomes of concern to decision makers (e.g., survival, growth/development, reproduction, and population sustainability).

This research project aims to identify effects of different groups of high-priority PFAS on ecologically-relevant species using the Adverse Outcome



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Pathway (AOP) framework. This project will include evaluation and organization of existing empirical evidence (toxicity literature, on-line sources, physiological data), procurement/analysis of existing and new in vitro data, and comparative physiological and toxicological data/models to develop and evaluate AOPs relevant to non-mammalian species. In vitro and in vivo experimentation with aquatic vertebrates (fish, amphibians) and, possibly invertebrates, will also be employed to expand upon and evaluate veracity and predictive value of derived AOPs.

The research participant may be involved in any or all of the following activities with guidance from the mentor:

- Compiling information from the literature and from on-line data sources relevant to hazard assessment of PFAS
- Organizing existing knowledge using the adverse outcome pathway (AOP) framework and publishing AOP descriptions in the AOP-Wiki (aopwiki.org)
- Developing or implementing data mining, machine-learning, and other computational methodologies to expedite organization and synthesis of existing knowledge
- Designing, planning, and implementing in vitro and in vivo studies to evaluate and support development of PFAS-relevant AOPs, using PFAS chemicals and other reference chemicals thought to act through similar modes of action, including:
 - In vitro bioassays with immortalized recombinant cell lines and/or primary tissues collected from exposed and non-exposed test organisms

Learning Objectives: The research participant will learn skills in applied biochemistry, toxicology, and biology and will learn how methods in toxicology can be applied to support environmental decision making. The participant will gain experience in multiple aspects of research project planning, communication, coordination, implementation and analysis.

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 participant will be afforded an opportunity to interact with internationally recognized leaders, both within and outside EPA, in the area of toxicology and regulatory environmental science. The research participant will have the opportunity to contribute to and/or publish original research, attend and present at local and national scientific meetings, and develop collaborations with other investigators as appropriate to addressing the research problem.

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

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research please contact the mentor(s).

Anticipated Appointment Start Date: 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@ornl.gov 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:





- Academic background in toxicology, computational biology, and/or molecular biology along with an interest in applied research in toxicology
- Familiarity with literature search tools and strategies
- Laboratory research experience with in vivo and in vitro toxicology study design, data collection, statistical analyses, and a general knowledge of good laboratory practices
- Experience working with aquatic organisms, particularly fish, in a laboratory environment
- Experience with biochemical toxicology/molecular biology techniques (e.g., measuring gene or protein expression, enzyme activity, cell-based in vitro assays, etc.)
- Computer skills relating to data collection, analysis, and graphical presentation
- Coursework and/or experience with statistical analysis
- Course work in biostatistics and/or bioinformatics
- Computational skills (e.g., programming, R-based statistics)
- Skills in oral and written communication
- Skills in appropriate research data documentation and recordkeeping

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- Familiarity with routine quality assurance/quality control procedures for laboratory research

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):**
 - **Computer, Information, and Data Sciences** ([16](#) )
 - **Environmental and Marine Sciences** ([3](#) )
 - **Life Health and Medical Sciences** ([11](#) )
 - **Mathematics and Statistics** ([1](#) )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).