


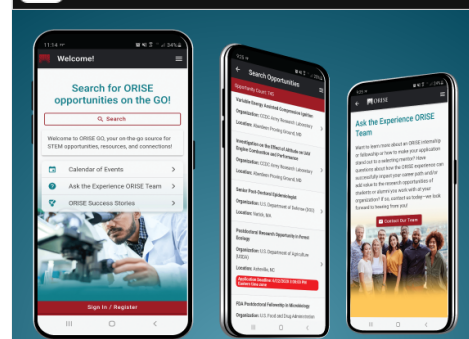
Opportunity Title: Evaluating Sources and Effects of Bioactive Contaminants in Waste Water Impacted Streams

Opportunity Reference Code: EPA-ORD-NHEERL-MED-2018-01

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| Organization | U.S. Environmental Protection Agency (EPA) |
| Reference Code | EPA-ORD-NHEERL-MED-2018-01 |
| How to Apply | <p>A complete application consists of:</p> <ul style="list-style-type: none"> • An application • Transcripts – 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 references <p>All documents must be in English or include an official English translation.</p> <p>If you have questions, send an email to EPArpp@oraui.org. Please include the reference code for this opportunity in your email.</p> |
| Description | <p>A research opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD)/National Health and Environmental Effects Research Laboratory (NHEERL). This appointment will be served with the Mid-Continent Ecology Division (MED) in Duluth MN.</p> <p>The lack of established water quality criteria or guidelines for many contaminants of emerging concern (CECs) in surface waters represents a significant challenge to state and regional risk assessors charged with protecting our nation's waters and associated aquatic ecosystems from harmful impacts of toxic chemicals. For example, recent contaminant and biological effects surveillance on the South Platte and Colorado rivers in Colorado and Utah have detected complex mixtures of contaminants and estrogen receptor (ER), glucocorticoid receptor (GR), and peroxisome proliferator activated receptor (PPAR)-mediated biological activities in surface waters downstream of municipal waste-water treatments plants. Chemicals responsible for these biological activities, their spatial and temporal variation in relation to discharge and flows, the potential hazards those activities pose to resident aquatic organisms, and whether there are adverse biological effects occurring in exposed organisms are unknown. The research participant will be involved in research aimed at using biological pathway-based tools and approaches being developed through EPA's Chemical Safety for Sustainability Research program to address these unknowns.</p> <p>The research participant may be involved in any or all of the following training activities:</p> <ul style="list-style-type: none"> • Applying cell-based and/or cell free in vitro and in chemico |









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bioassays to detect and characterize pathway-based bioactivities associated with surface water samples or surface water extracts.

- Developing adverse outcome pathway (AOP) descriptions that outline the scientific evidence supporting the linkage between detected biological activities and apical hazards (e.g., impacts on survival, reproduction, development), in aquatic organisms.
- Extracting organic contaminants from surface water samples.
- Using receptor/protein pull-down methods coupled with non-targeted analytical chemistry to identify candidate bioactive chemicals present in surface water extracts.
- Bioassay-directed fractionation
- Conducting field-based research outdoors and/or at remote laboratory locations other than the primary training location, including involvement in planning and logistics associated with remote activities.
- Conducting in situ exposures with caged organisms.
- Developing techniques for collection, processing, and analysis of biofluid and tissue samples suitable for molecular, biochemical, and histological analyses.
- Collecting surface water, sediment, and biological samples from aquatic environments and developing methods for clean-up, concentration, and fractionation of environmental samples.
- Analyzing gene expression using real-time polymerase chain reaction and developing novel primers, probes, and standards for gene expression analyses.
- Analyzing steroid hormones and plasma proteins using radioimmunoassay (RIAs) and enzyme-linked immunosorbent assays (ELISAs)
- Compiling information from the literature and from on-line data sources relevant to hazard assessment of CECs (e.g., data related to adsorption, distribution, metabolism, elimination, toxicity, etc.), chemical analysis parameters and integration of that information into a prioritization framework.
- Conducting high quality, carrier-free, flow-through chemical exposure experiments with aquatic vertebrates (primarily fish).
- Conducting statistical analyses on experimental data.
- Presenting 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.

The research participant will learn diverse laboratory techniques which can be applied across life sciences research fields. The research participant will learn to operate and use a range of scientific equipment. The research participant will learn to evaluate data quality, trouble shoot research results, apply

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statistical methods for data analysis and interpretation.




The 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 participant will be afforded an opportunity to interact with internationally recognized leaders, both within and outside EPA, in the area of applying adverse outcome pathway knowledge to the practice of chemical risk assessment with a particular focus on applications to effects-based surveillance and monitoring. The research participant will have the opportunity to contribute to and/or publish original research on novel adverse outcome pathways relevant to aquatic ecotoxicology. 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 graduate education or a professional career in life sciences research.

The appointment is full-time for one year and may be renewed upon recommendation of EPA and contingent on the availability of funds. The participant will receive a monthly stipend. Funding may be available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences. No funding will be available to cover travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee.**

The mentors for this project are Dan Villeneuve (villeneuve.dan@epa.gov). The desired start date is March 19, 2018.

Qualifications Applicants must have received a bachelor's degree biology, (eco)toxicology, biochemistry, molecular biology, genetics, chemistry, or a related field within five years of the desired starting date. Research experience, cell culture experience (e.g., plating, maintaining, freezing animal cells using aseptic technique), and 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.) are desirable.

Eligibility Requirements

- **Degree:** Bachelor's Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (2 )
 - **Computer, Information, and Data Sciences** (1 )
 - **Environmental and Marine Sciences** (3 )

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◦ **Life Health and Medical Sciences** (14 )