

Opportunity Title: EPA Postdoctoral Fellowship in Computer Programming and Modeling

Opportunity Reference Code: EPA-ORD-CCTE-CCED-2021-15

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.

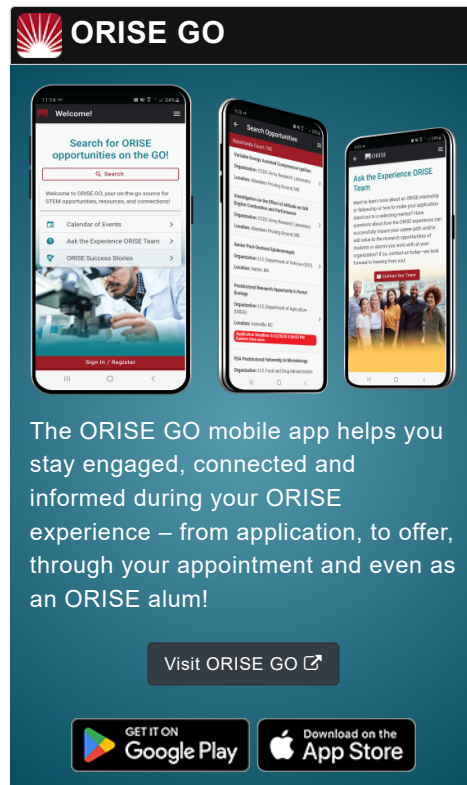
All documents must be in English or include an official English translation.

Application Deadline 2/15/2022 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), Chemical Characterization & Exposure Division (CCED) located in Research Triangle Park, North Carolina.

Research Project: Non-targeted analysis (NTA) methods based on high-resolution mass spectrometry (HRMS) are now widely used for identifying emerging organic contaminants in a variety of media. To date, most research emphasis has been placed on developing technologies to confidently identify the chemical structures of emerging contaminants. Considerably less emphasis has been placed on developing technologies to confidently quantify detected analytes in the absence of authentic chemical standards. Chemometric and statistical modeling approaches can now predict HRMS instrument response based on chemical structure, convert predicted instrument response to estimated analyte concentration, and calculate confidence intervals about spot concentration estimates. While these achievements mark great strides for the NTA field, more research is needed to operationalize and standardize quantitative NTA (qNTA) methods, and to significantly reduce predicted uncertainties. The research



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participant will be part of an EPA team of experts who are researching the best strategies to improve qNTA methods so that they are suitable for use by HRMS-equipped public health laboratories.

The participant will contribute to code development and utilization of statistical/mathematical/machine learning models for generating qNTA estimates. Research activities may include computer programming (Python and/or R), numerical verification of experimental data and code output, model selection, model execution, results evaluation, and written/oral discussion.

Learning Objectives: Professional development activities will include scientific hypothesis testing (via computational experimentation) and scientific presentation and manuscript development. These training activities will enable the research participant to further develop statistical inference and scientific writing skills. The research participant will train with an integrated team of agency scientists towards generating critical research hypotheses, developing programmatic tools to test these hypotheses, and ultimately solving complex environmental health problems. Through this research training opportunity, the research participant will have the opportunity develop their programming, analytical, and communication skills. Under the guidance of a team of mentors, the research participant will make decisions regarding the direction of their own research to ensure a fulfilling and prosperous training experience.

Mentor(s): The mentor for this opportunity is Jon Sobus (sobus.jon@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Winter/Spring 2021-2022. 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 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

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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@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 with completion by the appointment start date. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Experience using a scientific programming language (e.g. R, Python) to summarize and manipulate data files, manage data, and conduct data analyses (including statistical and mathematical modeling)
- Evidence of coursework and/or experience performing quantitative chemical analysis, including a working knowledge of mass spectrometry

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 1/31/2022 11:59:00 PM.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (12 )
 - **Computer, Information, and Data Sciences** (17 )
 - **Earth and Geosciences** (21 )
 - **Engineering** (27 )
 - **Environmental and Marine Sciences** (14 
 - **Life Health and Medical Sciences** (46 )
 - **Mathematics and Statistics** (10 )
 - **Physics** (16 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).