

Opportunity Title: EPA Math Models and Data Science Fellowship

Opportunity Reference Code: EPA-ORD-CCTE-CCED-2021-04



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Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-CCTE-CCED-2021-04

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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 9/20/2021 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), Chemical Characterization & Exposure Division (CCED) located in Durham, North Carolina.

Research Project: The research participant will be involved in highly visible chemical safety efforts as part of the computational toxicology research projects and will be engaged with researchers world-wide. The EPA Center for Computational Toxicology and Exposure (CCTE) is responsible for developing new computational tools and providing quantitative analysis for improving public health and environmental risk assessments and regulatory decisions pertaining to chemical safety. This research project focuses on refining and advancing EPA's tools for high throughput toxicokinetics (also known as HTTK). These tools were recently reviewed by Breen et al. (2021) (<https://doi.org/10.1080/17425255.2021.1935867>). Quantitative information developed by this project is needed to understand the risks posed by chemicals in the environment to the public health. In particular, determining the behavior of chemicals in the body (their absorption, distribution, metabolism, and elimination) will provide insight linking everyday chemical exposures with potentially hazardous tissue concentrations. HTTK directly

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informs in vitro-in vivo extrapolation, or IVIVE.

The participant will join a high-performing team supporting the advancement of HHTK. The team includes modelers, programmers, wet lab scientists, and public health decision makers. EPA develops open source data and models with it distributes as R packages via CRAN (<https://cran.r-project.org/package=httk>) and GitHub (<https://github.com/USEPA/CompTox-ExpoCast-httk>).

Collaborating research contributors will include investigators from CCTE (including Drs. Barbara Wetmore, Caroline Ring, Marina Evans, and Rogelio Tornero-Velez). The research participant will have latitude in exercising independent initiative and judgment to participate and develop additional research projects commensurate with the level of training.

The research participant will be mentored in conducting independent research. Depending upon the research participant's interests, the project may address 1) new mathematical toxicokinetic models for occupationally-relevant routes of exposure and sensitive populations; 2) new methods, and potentially a new R package, for the analysis of in vitro toxicokinetic measurements; 3) analysis of machine learning tools for extrapolating from existing data; 4) analysis of new in vitro toxicokinetic data; and/or 5) new approaches for evaluating in vitro predictions with in vivo data.

Learning Objectives: Through this project, the participant will gain education and training in the areas of toxicokinetics, applied statistics, mathematical modeling, informatics, exposure science, chemical analysis, and data management. The research participant will receive training that will lead to authorship and co-authorship on peer-reviewed scientific publications. The research participant will communicate project research at national meetings of professional societies and EPA work-in-progress seminars.

Mentor(s): The mentor for this opportunity is John Wambaugh (wambaugh.john@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Fall 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 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

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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@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 December 2021. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Generally knowledgeable in at least one of the following fields: biomedical engineering, informatics, computer science, signal processing, machine learning, chemistry, physics, applied mathematics, pharmacology, or statistics
- Fluent programmer in a modern programming language (for example, R, Python, Julia, C)
- Proficiency in mathematical modeling (particularly ordinary differential equations)
- Knowledge of biochemistry, toxicology, physiology, and/or applied statistics
- Prior experience in the areas of toxicokinetics, applied statistics, mathematical modeling, informatics, exposure science, chemical analysis, and data management

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):**
 - **Chemistry and Materials Sciences** (6 )
 - **Computer, Information, and Data Sciences** (17 )
 - **Engineering** (6 )
 - **Environmental and Marine Sciences** (2 )
 - **Life Health and Medical Sciences** (9 )
 - **Mathematics and Statistics** (10 )
 - **Physics** (16 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).