

Opportunity Title: EPA Postdoctoral Fellowship on Development of Improved In Vitro Models and Exposure Systems to Assess Potential Health Effects of Chemicals

Opportunity Reference Code: EPA-ORD-CPHEA-PHITD-2022-07

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 9/1/2023 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 Public Health Environmental Assessment (CPHEA), Public Health and Integrated Toxicology Division (PHITD) located in Research Triangle Park, North Carolina.

Research Project: There is a large and diverse inventory of inhalable chemicals with little to no data available for safety evaluation; however, addressing these data gaps using traditional in vivo animal studies is impractical due to their high cost, low throughput, and concerns regarding their biological relevance. The Office of Research and Development is uniquely positioned to deploy the latest in vitro exposure technology to apply the "best available science" to fill these data gaps while advancing the transferability and translation of New Approach Methods (NAMs).

This research project will combine ORD-developed in vitro exposure technology (aerosol-compatible cell culture exposure system [ACCES]), organotypic in vitro models of the human respiratory tract, and an assay battery that will evaluate endpoints representing AOP-driven key events such as cytotoxicity, cell metabolism, epithelial barrier function, and



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cytokine production. In addition, the project aims accomplish benchmark dose (BMD) modeling of transcriptomic changes to determine portal of entry points of departure. There will also be opportunities for the research participant to contribute to the development high-resolution mass spectrometry methods to quantify dose deposition, cellular uptake, and metabolism to provide missing dose-metrics for ALI exposures.

Learning Objectives: The research participant will have the opportunity to collaborate with a multi-disciplinary team of toxicologists, biologists, chemists, and engineers and will utilize molecular, analytical, and computational approaches for in vitro assay development. With guidance from the mentor, the research participant will contribute to developing methods, executing lab-based experiments, and generating, analyzing, and reporting data. Preferred areas of specialized training or experience include: ALI cell culture, cell-based assay development, and pathway analysis of transcriptomic datasets.

Mentor(s): The mentor for this opportunity is Mark Higuchi (higuchi.mark@epa.gov). If you have any questions about the research, please contact the mentor.

Anticipated Appointment Start Date: December 1, 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 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.

ORISE offers all ORISE EPA graduate students and Postdocs a free 5 year membership to the National Postdoctoral Association (NPA).

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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 ORISE.EPA.ORD@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields (e.g. Biology, Chemistry, Toxicology, Pharmacology, Environmental Engineering), or be currently pursuing the degree with completion before the appointment start date. Degree must have been received within the past five years.

Formal education and research experience in air pollution and/or chemical safety research with focus on experimental systems that define health outcomes will enhance the research experience.










Preferred skills/experience:

- Formal education and research experience in cell culture technique and molecular analysis of responses are desirable.
- Demonstrated education and/or experience in cellular toxicity testing with particular focus on inhalation toxicology and in vitro exposure systems are preferred.
- Additional interest in computational biology and pathway analysis with associated experience in commercial software applications is appreciated.
- Mammalian cell culture, preferably air-liquid interface (ALI) cell culture and organotypic airway models
- Development and optimization of cell-based toxicity assays
- Benchmark dose modeling and pathway analysis of transcriptomic datasets
- Operation and maintenance of ALI exposure systems
- Analytical chemistry experience in extraction and preparation of cell and tissue samples for LC-MS analysis
- Ability to coordinate exposure schedules and data distribution
- Data management, including written reports of laboratory activities, instrument status, system modifications, and data summaries
- Present data and results in internal meetings and/or professional conferences
- Contribute to formal publication of research findings through public reports or journal articles.
- Good interpersonal and language skills

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**Eligibility
Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (5 )
 - **Computer, Information, and Data Sciences** (3 )
 - **Earth and Geosciences** (2 )
 - **Engineering** (5 )
 - **Environmental and Marine Sciences** (2 )
 - **Life Health and Medical Sciences** (48 )
 - **Mathematics and Statistics** (1 )
 - **Physics** (4 )
 - **Science & Engineering-related** (1 )