

**Opportunity Title:** EPA Internship in Cyanobacteria and Microplastics Research

Using Novel Fluorescence Techniques

**Opportunity Reference Code:** EPA-ORD-CPHEA-PHITD-2024-16

**Organization** U.S. Environmental Protection Agency (EPA)

**Reference Code** EPA-ORD-CPHEA-PHITD-2024-16

**How to Apply** *Connect with ORISE...on the GO!* Download the new ORISE GO mobile app in the [Apple App Store](#) or [Google Play Store](#) to help you stay engaged, connected, and informed during your ORISE experience and beyond!

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** 4/11/2025 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 and Environmental Assessment (CPHEA), Public Health & Integrated Toxicology Division (PHITD) in Research Triangle Park, North Carolina.

**Research Project:** This research opportunity involves using “state of the art” fluorescent equipment to conduct scientific experiments in microplastics as well studying cyanobacteria growth and death to help solve biological problems relevant to environmental issues.

The cyanobacteria research includes developing methods for characterizing cyanobacteria and algae in water and developing more efficient techniques to treat these organisms. Water obtained from rivers and lakes is evaluated by measuring fluorescent particles using flow cytometry, fluorescent stereo microscopy and growing a cyanobacteria cell line in the environment river and reservoir water. The laboratory will study the interaction of algaecides with cyanobacteria to optimize algaecide treatment and determine the amount of algaecide needed to kill water organisms without destroying the water ecology.

The microplastic research involves using a Cytex spectral flow cytometer, and fluorescence and darkfield research microscopic imaging equipment to study the uptake of microplastic and nanoplastic particles by mammalian cells to determine potential health effects. The major aims of this project are the following: 1) determine whether microplastic particles cause harm to animals and humans and 2) determine better methods to detect microplastics and Nano plastics in the environment.

Under the guidance of a mentor, the research participant will have the opportunity to use a Cytex 5 laser flow cytometer, a Nikon fluorescent Ti2 microscope and a Leica Stereo fluorescent



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microscope for the following research studies:

- Study the effects of chemicals (i.e., H<sub>2</sub>O<sub>2</sub> and CuSO<sub>4</sub>) used in water treatment on cyanobacteria.
- Study the growth of cyanobacteria under various environmental conditions and nutritional factors.
- Evaluate nutritional components in lakes and streams that can support cyanobacteria growth using cyanobacteria cell lines.
- Evaluate the amount of cyanobacteria and algae in lake and river water.
- Conduct research to determine the most effective way to treat water prior to human consumption.

**Learning Objectives:** Under the guidance of a mentor, these projects will offer the research participant an opportunity to:

- Gain experience using specialized scientific equipment to support biological research questions.
- Conduct scientific experiments.
- Grow tissue cultures cells.
- Analyze data.
- Create graphs/figures and help prepare the data for publication.

**Mentor(s):** The mentor for this project is Robert Zucker ([zucker.robert@epa.gov](mailto:zucker.robert@epa.gov)). If you have questions about the nature of the research please contact the mentor(s).

**Anticipated Appointment Start Date: Winter/Spring 2025.** 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).

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](mailto:ORISE.EPA.ORD@orau.org) and include the

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**Qualifications** The qualified candidate should have received a bachelor's or master's degree in one of the relevant fields or be currently pursuing with completion before the appointment start date. Degree must have been received within five years of the appointment start date.

**Preferred skills/experience:**

- Coursework in the fields of physics, chemistry, and biology.
- Computer literacy with good working knowledge of Microsoft Office programs which include Excel, Word, and PowerPoint Knowledge of micro-plastics.
- Knowledge of cyanobacteria and algae.
- Operation of microscopes.
- Laboratory research experience.
- Cell culturing of mammalian cells, microbiology organisms and cyanobacteria.
- Microbiology techniques.
- Publications in scientific journals.
- Science writing.
- A good scientific understanding of physics, chemistry, and biology.
- Willingness to learn new scientific techniques and software in a laboratory setting.

**Point of Contact** [Debi Ash](#)**Eligibility** • **Citizenship:** U.S. Citizen Only**Requirements** • **Degree:** Bachelor's Degree or Master's Degree received within the last 60 months or currently pursuing.

- **Discipline(s):**
  - **Chemistry and Materials Sciences** ([2](#))
  - **Communications and Graphics Design** ([1](#))
  - **Computer, Information, and Data Sciences** ([2](#))
  - **Engineering** ([3](#))
  - **Environmental and Marine Sciences** ([4](#))
  - **Life Health and Medical Sciences** ([14](#))
  - **Physics** ([1](#))
  - **Science & Engineering-related** ([1](#))