Opportunity Title: CDC Metagenomic Sequencing Methods Development and Application for Public Health Surveillance
Opportunity Reference Code: CDC-NCEZID-DFWED-2024-0169

Organization Centers for Disease Control and Prevention (CDC)

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How to Apply ***To submit your application, scroll to the bottom of this opportunity and click APPLY.***

A complete application consists of:

- 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
- One educational or professional recommendation. Your application will be considered incomplete, and will not be reviewed until one recommendation is submitted.

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

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Description ***Applications will be reviewed on a rolling-basis.**

CDC Office and Location: A bioinformatics fellowship is available in the Culture Independent and Metagenomic Subtyping (CIMS) Team in the Enteric Diseases Laboratory Branch (EDLB) in the Division of Foodborne, Waterborne, and Environmental Diseases in the National Center for Emerging and Zoonotic Infectious Diseases at the Centers for Disease Control and Prevention (CDC), located in Atlanta, Georgia.

The Centers for Disease Control and Prevention (CDC) is one of the major operation components of the Department of Health and Human Services. CDC works to protect America from health, safety and security threats, both foreign and in the U.S. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease and supports communities and citizens to do the same.

Research Project: To maintain long-term viability, foodborne enteric pathogen outbreak surveillance systems must transition from culture-based methods, which require extensive laboratory work to isolate pathogens from other microbes in a patient stool sample, to molecular techniques compatible with complex metagenomic samples. CIMS is working closely with PulseNet and other surveillance partners to develop workflows spanning specimen collection to final pathogen report. These metagenomic methods also offer exciting opportunities to resolve outbreaks of unknown etiology by discovering new pathogens, and to link antimicrobial resistance on mobile elements to specific bacteria in the sample. CIMS is offering a fellowship to support the evaluation and adaptation of bioinformatics pipelines to support the use of metagenomic sequence data in the detection and prevention of foodborne outbreaks. The fellow will collaborate closely

with CIMS and other public health laboratory scientists and bioinformaticians to identify needs for bioinformatic pipelines and custom research analyses and plan solutions, as well as acting collaboratively to implement these solutions. The fellow may also participate in collaborations and troubleshooting with state and local public health scientists in support of CIMS research, development, and application goals.

Learning Objectives: Training activities will include:

- Frequent consultation with CIMS and partners to evaluate potential solutions to relevant analytical challenges;
- Adaptation of selected methods to meet the analysis need, including writing new code as required;
- Testing code performance against relevant data sets;
- Consulting with laboratory scientists to design relevant experiments to assist in pipeline development and testing;
- Adapting pipelines on CDC computing systems as needed;
- Documentation for code and pipelines;
- Preparation of final pipelines for publication and deployment to partner public health laboratories.

Mentor(s): The mentor for this opportunity is A. Jo Williams-Newkirk (igy7@cdc.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: August 26, 2024. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed upon recommendation of CDC and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

Participant Stipend: Stipend rates may vary based on numerous factors, including opportunity, location, education, and experience. If you are interviewed, you can inquire about the exact stipend rate at that time and if selected, your appointment offer will include the monthly stipend rate.

Citizenship Requirements: This opportunity is available to U.S. citizens only.

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 CDC. Participants do not become employees of CDC, 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.

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 visit our Program Website. After reading, if you have additional questions about the application process please email ORISE.CDC.NCEZID@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in the one of the relevant fields (biological sciences, bioinformatics, or other relevant STEM field).

Preferred skills:

- Excellent oral and written communication skills;
- Comfort in a highly interdisciplinary environment;
- Experience scripting in at least one language (Python preferred);
- Experience implementing pipelines using NextFlow or similar frameworks;
- Familiarity with the following is helpful, but not required: UNIX command line bioinformatics tools;
- Use of version control systems and code repositories (e.g. GitHub);
- Analysis of next generation sequencing data, including QC, alignment, quantification, or phylogeny tools;
- Metagenomics, comparative genomics, targeted sequencing, or AMR-related analysis tools.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Life Health and Medical Sciences** (51)

Affirmation

I certify that I have not previously been employed by CDC or by a contractor working directly for CDC. I understand that CDC does not permit individuals with a prior employment relationship with CDC or its contractors to participate as trainees in the ORISE program. (Exceptions may be granted for individuals who, since the previous CDC employment, have obtained a new STEM degree which necessitates training in a new field.)