

Opportunity Title: CDC Research Opportunity in Enteric Diseases Genome Comparison and Sequence Data Analysis

Opportunity Reference Code: CDC-NCEZID-DFWED-2022-0252

Organization Centers for Disease Control and Prevention (CDC)

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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.

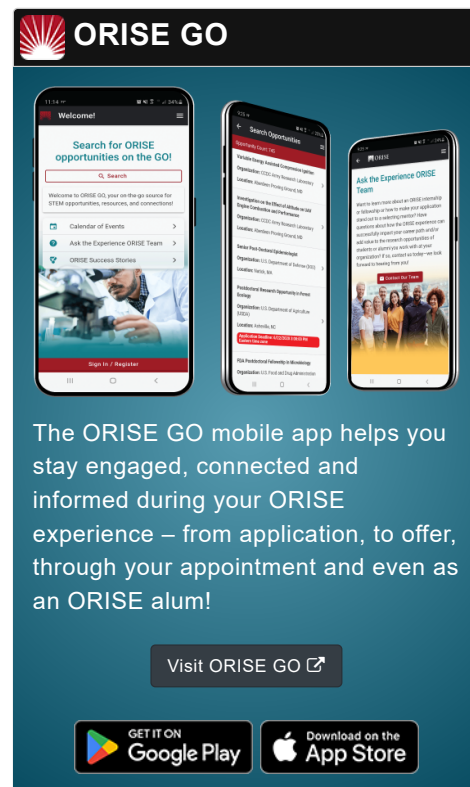
Application Deadline 12/29/2022 3:00:00 PM Eastern Time Zone

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

CDC Office and Location: A research opportunity is available with the Division of Foodborne, Waterborne, and Environmental Diseases (DFWED) in the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Enteric Disease Laboratory Branch (EDLB) 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: The selected participant will be involved with an EDLB program on foodborne and diarrheal bacterial diseases. The National Antimicrobial Resistance Monitoring System – Applied Research Unit (NARMS-ARU) conducts research into the epidemiology and ecology of antimicrobial resistance in enteric pathogens, and aids outbreak response efforts through molecular characterization of resistant pathogens. NARMS-ARU is working closely with PulseNet, the Enteric Diseases Epidemiology Branch (EDEB) Analytics Team, and other government and academic partners to explore the value of incorporating pangenome analysis (core and accessory genomic data) into routine surveillance and outbreak detection algorithms for public health purposes. In particular, we are investigating the utility of the pangenome for surveillance, outbreak detection and



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identifying likely source of infections for enteric pathogens present along the farm-food-fork continuum.

Learning Objectives: NARMS-ARU is offering a fellowship to support the evaluation and implementation of a k-mer-based genome comparison method, as well as Illumina and Oxford Nanopore sequence data analysis. In this learning opportunity, the fellow will be expected to collaborate closely with bioinformaticians and epidemiologists at CDC, and researchers from external institutions. The fellow will receive training in the following activities:

- Evaluating and adapting existing bioinformatics pipelines on CDC computing systems
- Writing of new pipeline components
- Building automations to facilitate analysis of sequence data
- Documentation for code and pipelines
- Regular collaboration with NARMS-ARU and academic partners to evaluate potential solutions to the analytical challenge
- Adaptation of selected methods to meet the analysis need, including writing new code as required

Mentor(s): The mentor for this opportunity is Jason Folster (gux8@cdc.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: 2022. 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: The participant will receive a monthly stipend commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details page](#) of the program website for information about the valid immigration statuses that are acceptable for program participation.

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

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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 bachelor's, master's, or doctoral degree in one of the relevant fields (e.g. Microbiology, Bioinformatics), or be currently pursuing a master's or doctoral degree. Most recent degree must have been received within the past five years.

Preferred skills:

- Excellent oral and written communication skills
- Comfort working in a highly interdisciplinary environment
- Experience scripting in at least one language (Python, R, or shell preferred)
- UNIX command line bioinformatics tools
- Use of version control systems and code repositories (e.g. GitHub)
- Analysis of next generation sequencing data, including QC, assembly, alignment, or phylogeny tools
- Wet laboratory protocols for DNA extraction and sequencing, Illumina or Oxford Nanopore
- Antimicrobial resistance and mobile genetic elements

Eligibility Requirements

- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** (3 👁)
 - **Life Health and Medical Sciences** (13 👁)