Opportunity Title: NGS Shotgun Metagenomics Fellowship - CDC
Opportunity Reference Code: CDC-NCEZID-2016-0122

Organization Centers for Disease Control and Prevention (CDC)

Reference Code CDC-NCEZID-2016-0122

How to Apply A complete application consists of:

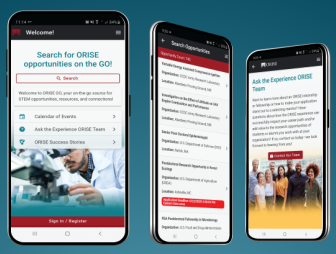
- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

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

If you have questions, send an email to CDCrpp@orau.org. Please include the reference code for this opportunity in your email.

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Description A laboratory fellowship is currently available in the Culture Independent and Metagenomic Subtyping group (CIMS) in the Enteric Diseases Laboratory Branch (EDLB) in the Division of Food, Water-borne and Enteric Diseases (DFWED) within the National Center for Zoonotic Emerging Infectious Diseases (NCIZID) at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia.

The fellow will support a group of bioinformatics and laboratory scientists in CIMS to research and develop shotgun metagenomics approaches to characterize outbreaks and subtype foodborne pathogens directly out of disease state stool samples. Among the key challenges to this approach is finding sufficient pathogen signal among a noisy background of host and commensal organism DNA to be able to recover subtyping data useful for public health surveillance and outbreak detection. Acute disease detection in the microbiome setting is a rapidly developing field. Towards this end, the fellow will be involved in the evaluation and development of laboratory techniques to improve pathogen signal recovery through human signal removal, pathogen enrichment, and phasing for improved species binning. Additionally, stool sample transport continues to pose a practical challenge. The fellow will be involved in a project to evaluate a number of chemistries for stool sample transport without refrigeration designed to preserve nucleic acid content. Finally, the fellow will be involved in a project to process and perform shotgun metagenomic sequencing on both healthy and disease-state stools to better understand the microbial composition and pathogen signal.

The fellow may be involved in the following activities:

- Extracting DNA from stool and complex samples
- Testing and evaluating stool preservatives under different storage conditions

- Testing and evaluating stool DNA extraction kits for extraction bias
- Preparing Illumina next-generation sequencing libraries
- Evaluating and troubleshooting human content removal, pathogen enrichment, and phasing chemistries
- Bioinformatic analysing of shotgun metagenomic data for quality and community bias evaluation
- Partnering with stool banks, state public health laboratories, and other external partners involved in the stool collection project

This position requires working with human pathogen isolates and human clinical specimens (primarily stool). Extensive training and oversite will be provided. In addition, this position will require vaccinations for working with primary samples where blood and bodily fluids are sometimes present. Biosafety and Chemical safety training will also be provided.

This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between DOE and CDC. The initial appointment is for one year, but may be renewed upon recommendation of CDC contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time at CDC in the Atlanta, Georgia, area. Participants do not become employees of CDC, DOE or the program administrator, and there are no employment-related benefits.

Qualifications

- Applicants must have a master's or a doctorate degree in biological sciences, microbiology, bioinformatics, or related field within five years of the starting date.
- Molecular biology laboratory experience (PCR experience required, DNA extraction and Next Generation sequencing experience a plus)
- UNIX command line bioinformatics experience a plus
- Microbiology or primary clinical stool sample experience a plus

Eligibility Requirements

- **Degree:** Master's Degree or Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Life Health and Medical Sciences** (3 👁)