

**Opportunity Title:** CDC Fellowship in Next-generation Sequencing and Bioinformatics with Vector Mosquitoes

**Opportunity Reference Code:** CDC-NCEZID-DVBD-2022-0212



**Organization** Centers for Disease Control and Prevention (CDC)

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**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
- 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** 7/13/2022 3:48:05 PM Eastern Time Zone

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

**CDC Office and Location:** A fellowship opportunity is available in the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Vector-Borne Diseases (DVBD), at the Centers for Disease Control and Prevention (CDC) in Fort Collins, Colorado.

The 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.

The DVBD is a national and international leader in researching, preventing, and controlling viruses and bacteria spread by vectors including mosquitoes, ticks, and fleas. Our staff includes entomologists, epidemiologists, molecular biologists, laboratorians, microbiologists, physicians, veterinarians, virologists, and zoologists.

**Research Project:** The focus of the CMES (Comprehensive Molecular Entomological Surveillance) project is to develop and implement three next-generation amplicon sequencing, and associated data analyses, workflows on Oxford Nanopore Technology's MinION sequencing platform. The overall goal of the project is to put useful genetic data closer to the people that practice vector mosquito control. As such, the three areas of research are: CMES-blood (identifying host bloodmeal species), CMES-IR (sequencing insecticide resistance mutations), and CMES-parity (estimating age structure in mosquito populations).

Training for the selected participant will include primer panel design, and assay optimization (specimen preparation, nucleic acid extraction, PCR, sequencing library preparation, sequencing) with an eye towards using barcodes to maximize the number of specimens sequenced in a run. As well, training will include assisting in the development of analysis pipelines so end users can analyze the data they generate. We anticipate the three areas of research will be conducted more concurrently than sequentially. If desired, a significant component of the training can involve the incumbent collaborating with our scientific computing staff to develop user-friendly pipelines that use publicly-available tools to analyze their data.

The participant will also have the opportunity to conduct research on other projects underway in our lab including developing species-specific genetic markers to discern closely-related species, draft genome or exome generation of vector mosquitoes, and viral genome sequencing. If the participant wishes to develop

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their own, additional, related side project, we are open to discussing that as well.

**Learning Objectives:** As a result of this training, the participant will improve their skills in laboratory techniques such as next-generation sequencing library preparation, amplification, quantitation, and troubleshooting unexpected results in order to optimize processes.

As a result of this training, the participant will also improve their skills in explaining and promoting the use of the workflows by the intended users by collaborating with CDC partners.

**Mentor(s):** The mentor for this opportunity is Linda Kothera ([lkothera@cdc.gov](mailto:lkothera@cdc.gov)). If you have questions about the nature of the research please contact the mentor(s).

**Anticipated Appointment Start Date:** August 1, 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 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](mailto:ORISE.CDC.NCEZID@orau.org) and include the reference code for this opportunity.


## Qualifications

The qualified candidate should be currently pursuing or have received a master's or doctoral degree in one of the relevant fields (e.g. Biological Science). Degree must have been received within five years of the appointment start date.

Preferred skills:

- Previous molecular biology laboratory experience
- Previous experience analyzing next generation sequencing data
- Ability to work independently once comfortable with basic procedures
- Curiosity
- Attention to detail
- Good record keeping, in the form of laboratory notebooks and spreadsheets
- Familiarity with one or more of the following: R, CLC Genomics, Python, GTAK, Galaxy, Geneious

## Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
  - Life Health and Medical Sciences (41 )