Opportunity Title: FDA Fellowship in Functional Genomics
Opportunity Reference Code: FDA-CFSAN-2022-30

Organization U.S. Food and Drug Administration (FDA)

Reference Code FDA-CFSAN-2022-30

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

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

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

Application Deadline 1/20/2023 3:00:00 PM Eastern Time Zone

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

A research opportunity is currently available at the U.S. Food and Drug Administration (FDA), Center for Food Safety and Applied Nutrition (CFSAN), located in College Park, Maryland.

Salmonella spp. are one of the leading causes of human gastroenteritis worldwide and pose a serious health concern. Many varieties of produce have been associated with foodborne outbreaks caused by Salmonella. The wide spectrum of food commodities that Salmonella serovars associated with highlights the adaptability of this pathogen to a variety of different food growing and processing environments. Comparing to an improving understanding of host-pathogen interactions underlying the infection process, our current knowledge on Salmonella survival and persistence in food growing and processing environments is still limited. In vitro evidence showed that certain Salmonella serovars can survive and persist under different environment conditions. Several genomic and population-based studies also revealed that the distinction between Salmonella serovars in terms of adaptation is more complicated than just presence or absence of specific genes. With the rapid increasing of our Salmonella genome database, our knowledge of gene function has increasingly lagged, and hinders our understanding of the genetic basis of microbial phenotypes (survival and persistence in agriculture environment in this case). High-throughput functional studies are needed to identify niche-specific essential genes. Genomic characterization and identification of niche-specific essential genes would greatly improve our understanding of adaptations of Salmonella serovars to certain environment conditions.

Experience in gene modification, including gene transfers and knockouts, knowledge with various DNA sequence analysis equipment and adjoining computational programs, as well as other data analysis software is preferred. The fellow will perform RNA sequencing and Transposon-Directed Insertion Site Sequencing (TraDIS), to identify genes and other elements that may confer survival advantages to foodborne and environmental Salmonella in high stress environments. The Participant will be able learn these approaches including the subsequent analyses.

Participants will have an opportunity to utilize their knowledge about genetics and molecular

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biology from their education to enhance their career path by having a hands-on learning experience that will enable them to acquire experience they may need for future endeavors.

Under the guidance of a mentor, the participant will be involved in the following learning activities:

1. Application of Next Generation Sequencing technology and Bioinformatics tools to characterize foodborne pathogens.
2. Performing Transposon-Directed Insertion Site Sequencing (TraDIS) to identify genes essential to different environment conditions.
3. Utilization of RNA-SEQ using Illumina, Pacbio or Nanopore technology for analysis of microbial transcriptomes to determine functional phenotype of organisms being assayed.
4. Performing gene modifications in Salmonella to confirm identified gene/pathway functions.
5. Participating in presenting results of research at technical conferences and to grant review panels.
6. Writing publications to submit to peer reviewed journals.

Anticipated Appointment Start Date: **Opened Until Filled; start date is flexible**

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 FDA. The initial appointment is for one year but may be renewed upon recommendation of FDA 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 FDA in the College Park, Maryland, area. Participants do not become employees of FDA, DOE or the program administrator, and there are no employment-related benefits.

Completion of a successful background investigation by the Office of Personnel Management is required for an applicant to be on-boarded at FDA. OPM can complete a background investigation only for individuals, including non-US Citizens, who have resided in the US for a total of three of the past five years.

FDA requires ORISE participants to read and sign their FDA Education and Training Agreement within 30 days of his/her start date, setting forth the conditions and expectations for his/her educational appointment at the agency. This agreement covers such topics as the following:

- Non-employee nature of the ORISE appointment
- Prohibition on ORISE Fellows performing inherently governmental functions
- Obligation of ORISE Fellows to convey all necessary rights to the FDA regarding intellectual property conceived or first reduced to practice during their fellowship
- The fact that research materials and laboratory notebooks are the property of the FDA
- ORISE fellow’s obligation to protect and not to further disclose or use non-public information

Qualifications

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

Preferred skills:

- Knowledge in the following areas: molecular biology/microbiology, genetics, especially in gene modifications and life science
- Knowledge of next generation sequencing and basic Bioinformatics tools and where to source them from

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- Previous experience with foodborne pathogens in a laboratory setting
- Experience with Linux, Microsoft Office Suite, i.e. Word, Excel, PowerPoint, Outlook, etc

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
  - **Life Health and Medical Sciences** (48 👁)

Affirmation Have you lived in the United States for at least 36 out of the past 60 months? (36 months do not have to be consecutive.)