Opportunity Title: USDA-ARS Environmental Microbial and Food Safety Laboratory Summer Internship
Opportunity Reference Code: USDA-ARS-NE-2024-0015B

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-NE-2024-0015B

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.
- Two educational or professional recommendations

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

Application Deadline 5/3/2024 11:59:00 PM Eastern Time Zone

Description **ARS Office/Laboratory and Location:** Multiple research opportunities are available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Environmental Microbial and Food Safety Laboratory (EMFSL) at the Beltsville Agricultural Research Center, Northeast Area, in Beltsville, Maryland.

Research Project: The mission of EMFSL is to better understand the origin, movement, survival, and detection of foodborne pathogens. This includes how microorganisms are distributed through pre-harvest (farms, irrigation water, soils, manure, controlled environment agricultural production) and post-harvest environments (fruit and vegetable processing plants, washwater, on commodities). There are five major research projects (listed below), along with other research projects, developing methods to detect, characterize, and reduce parasitic and foodborne pathogens. Projects are led by the mentors listed below.

- Detection and Characterization of Zoonotic and Emerging Parasites Affecting Food Safety and Public Health
Help determine the presence, persistence, and genomic composition of protist parasites in various food animals, fresh produce, and water to assess the risk that parasites pose to human health and to help develop intervention strategies to improve food and water safety.
Mentors: Monica Santin Duran, Jenny Maloney

- Evaluation of Genetic and Management Factors to Reduce Foodborne Pathogens and Antimicrobial Resistance in Dairy Cattle
Characterizing antimicrobial resistance and pathogenic bacteria associated with dairy cattle. Methods used include standard bacterial isolation and culture methods, molecular biology, and genomic sequencing and analyses
Mentors: Jo Ann S. Van Kessel, Bradd Haley

- Intervention Strategies to Mitigate the Food Safety Risks Associated with the Fresh Produce Supply Chain
Assessing the introduction and survival of enteric bacteria during growth,

harvest, postharvest handling and processing of fresh fruits and vegetables.
Examining agricultural inputs (Water, fertilizers, growth lights, and nutrients) on microbial survival on fresh produce grown under Controlled Environment Agriculture (CEA) practices on earth and in space.
Mentors: Jitendra (Jitu) Patel, Xiangwu Nou, Patricia A. Millner, Yaguang (Sunny) Luo

- Advancement of Sensing Technologies for Food Safety and Security Applications
Developing rapid, sensitive methods for identification of specific foodborne pathogens, as well as nondestructive methods for detection of biological and chemical contaminants on fresh fruits, vegetables, and food processing surfaces
Mentors: Moon S. Kim, Insuck Baek, Jianwei (Tony) Qin, Kuanglin (Kevin) Chao

- Improving Pre-harvest Produce Safety through Reduction of Pathogen Levels in Agricultural Environments and Development and Validation of Farm-Scale Microbial Quality Model for Irrigation Water Sources
Investigating factors controlling spatial and temporal variation of pathogens and indicator organisms in irrigation water sources.
Investigating filtration technologies to reduce pathogens in irrigation water
Mentors: Yakov Pachepsky, Manan Sharma

Learning Objectives: Selected participants will be matched with and mentored by individual scientists with appropriate research expertise, and will be provided learning and training opportunities on various technologies and methodologies utilized at EMFSL.

Mentor(s): The coordinator for this STEM internship opportunity is Manan Sharma (manan.sharma@usda.gov). Other EMFSL scientists will serve as mentors depending on which specific research objective or topic the participant is interested in. If you have questions about the nature of the research or specific research questions, please contact the mentor(s).

Anticipated Appointment Start Date: May 15 - June 15, 2024 (flexible; other start dates can also be considered).

Appointment Length: The appointment can be for 2-3 months (8-12 weeks), can be renewed upon recommendation of the ARS mentor, and is contingent on the availability of funds.

Level of Participation: The appointment is full-time during summer 2024 and can be renewed for part-time participants during the academic semester. Selection of participants is on a rolling basis, so participants are encouraged to apply as early as possible.

Participant Stipend: The participant(s) will receive a monthly stipend commensurate with educational level and experience. **For undergraduate students, a monthly stipend of $3200 will be provided, along with $1000 dislocation allowance. For graduate students, a monthly stipend**

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of $3520 will be provided, along with $1000 dislocation allowance.

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR). If you are not a U.S. citizen, you must have had continuous permanent residency within the U.S. for 3 years.

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 ARS. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits. However, this position requires a pre-employment check and a full background investigation. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

This is an equal opportunity program open to all qualified individuals without regard to race, color, age, sex, religion, national origin, mental or physical disability, genetic information, sexual orientation, or covered veteran's status.

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

Qualifications

The qualified candidate should have received or be currently pursuing an Associate's, Bachelor's, Master's, or Ph.D. degree in one of the relevant fields of study.

Preferred skills:

Scientific disciplines represented at EMFSL include: parasitology, microbiology, molecular biology, bacteriology, food technology, plant science, animal science, soil science, hydrology, environmental science, spectroscopy, spectral imaging, and engineering.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Associate's Degree, Bachelor's Degree, Master's Degree, or Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12)
  - **Communications and Graphics Design** (1)
  - **Computer, Information, and Data Sciences** (17)
  - **Earth and Geosciences** (21)
  - **Engineering** (7)
  - **Environmental and Marine Sciences** (14)
  - **Life Health and Medical Sciences** (48)
  - **Mathematics and Statistics** (3)
  - **Other Non-Science & Engineering** (1)

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- **Physics** (1 👁)