**Opportunity Title:** USDA-ARS Plant Pathology Student Research Opportunity
**Opportunity Reference Code:** USDA-ARS-NE-2023-0142

**Organization** U.S. Department of Agriculture (USDA)

**Reference Code** USDA-ARS-NE-2023-0142

**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
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. 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** 12/8/2023 11:59:00 PM Eastern Time Zone

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

**ARS Office/Lab and Location**: An undergraduate student research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), within the Foreign Disease/Weed Science Unit (FDWSRU) in Frederick, Maryland.

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency with a mission to find solutions to agricultural problems that affect Americans every day from field to table. ARS will deliver cutting-edge, scientific tools and innovative solutions for American farmers, producers, industry, and communities to support the nourishment and well-being of all people; sustain our nation's agroecosystems and natural resources; and ensure the economic competitiveness and excellence of our agriculture. The vision of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

The ARS-FDWSRU is a unique governmental research facility with a mission to combat invasive organisms that endanger U.S. agriculture. These organisms can be foreign pathogens (bacteria, viruses, fungi, oomycetes) that cause disease on economically important crops or invasive weeds that endanger crops or rangeland. Our 43,000 square foot research facility provides a wide range of labs, greenhouses, and growth chambers, including a 10,000 square foot BSL-3 containment facility, plus powerful computational and bioinformatic tools through the ARS SciNet platform.

**Research Project**: A student research opportunity is available to study possible alternative hosts of Cacao mild mosaic virus (CaMMV). CaMMV is an emerging disease on *Theobroma cacao*, the plant whose beans are used to produce chocolate. Several relatives of *T. cacao* are present in places

where the virus has been found and could be serving as sources of infection for new farms. This research will increase knowledge of CaMMV epidemiology, leading to more effective disease management. Research will use recently developed PCR tests to detect the presence of the virus in leaf tissue from potential alternative hosts. A similar method will be used to determine if plants grown from seeds from infected trees are also infected with the virus.

**Learning Objectives**: Under the guidance of a mentor, learning opportunities include:

- Plant cultivation
- General pathogen maintenance
- DNA extraction
- Viral gene detection and amplification through polymerase chain reaction (PCR)
- Sanger sequencing to confirm pathogen identity

**Mentor(s)**: The mentor for this opportunity is Alina Puig (alina.puig@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

**Anticipated Appointment Start Date**: **August 2023.** Start date is flexible and will depend on a variety of factors.

**Appointment Length**: The appointment will initially be for nine months but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

**Level of Participation**: The appointment is part-time (20 hours per week).

**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 and Lawful Permanent Residents (LPR).

**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. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

**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 be currently pursuing an associate's or bachelor's degree in one of the relevant fields.

Preferred Skills:

- Work both independently and as part of a diverse team
- Experience with plant pathogens
- Experience with plant cultivation

**Opportunity Title:** USDA-ARS Plant Pathology Student Research Opportunity
**Opportunity Reference Code:** USDA-ARS-NE-2023-0142

- Experience with molecular biology techniques, including nucleic acid extraction, PCR, sequencing, and sequence analysis

**Eligibility Requirements**

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Currently pursuing an Associate's Degree or Bachelor's Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (2 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (48 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (2 👁)
  - **Social and Behavioral Sciences** (28 👁)