

**Opportunity Title:** USDA-ARS Pre-baccalaureate Research Opportunity for Oomycete Pathogens of Plants

**Opportunity Reference Code:** USDA-ARS-NE-2023-0139

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

**Reference Code** USDA-ARS-NE-2023-0139

**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. All transcripts must be in English or include an official English translation. 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** 9/1/2023 3:00:00 PM Eastern Time Zone

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

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

**Research Project:** A pre-baccalaureate research opportunity is available to study oomycete pathogens of citrus and other crops, conducting research with both domestic and foreign pathogens. Oomycetes are filamentous, fungal-like organisms that cause some of the most destructive plant diseases. To better understand oomycete plant pathogens, including *Phytophthora* and *Phytophthora* species, these are being characterized in terms of microbiological attributes (optimal growth temperature, robustness to salinity and pH, resistance to fungicide, etc.) as well as using traditional molecular biology approaches (DNA extraction, PCR, sequencing, evaluation of heterozygosity, etc.). The successful candidate for this research project will undertake both microbiological and molecular biology objectives, leveraging an existing international collection of oomycetes.



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**Learning Objectives:** Under the guidance of a mentor, the participants may be involved in the following activities:

- Evaluation of microbiological characteristics (growth rates at different temperatures, salinity, pH; sporulation rates; microscopic measurement of structural components, etc.)
- Standard and/or qPCR for pathogen identification or downstream analyses
- Maintaining and inoculating plants with plant pathogens
- Exposure to experimental design and data analysis
- Exposure to manuscript preparation and experimental result reporting

**Mentor(s):** The mentor for this opportunity is Emily Pfeufer ([emily.pfeufer@usda.gov](mailto:emily.pfeufer@usda.gov)). If you have questions about the nature of the research, please contact the mentor(s).

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

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

**Level of Participation:** The appointment is full-time.

**Participant Stipend:** The participant(s) will receive an annual stipend commensurate with educational level and experience.

**Citizenship Requirements:** This opportunity is available to U.S. citizens and Lawful Permanent Residents.

**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](mailto: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 and have at least 12 earned college credits in life, agricultural, or physical sciences, including but not limited to biology, plant science, plant pathology, agronomy, entomology, or mathematics.

Preferred skills:

- Microbiological laboratory experience, including sterile technique
- Experience with molecular biology techniques, including DNA extraction, PCR and sequencing
- Ability to collaborate and contribute to the efforts of a diverse team of researchers and students

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- Detail- and documentation oriented

- 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](#))
  - **Age:** Must be 18 years of age