

**Opportunity Title:** USDA-ARS Biodefense Research in Infection and Vaccination of Foreign Animal Diseases

**Opportunity Reference Code:** USDA-ARS-P-2024-0155

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

**Reference Code** USDA-ARS-P-2024-0155

**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.

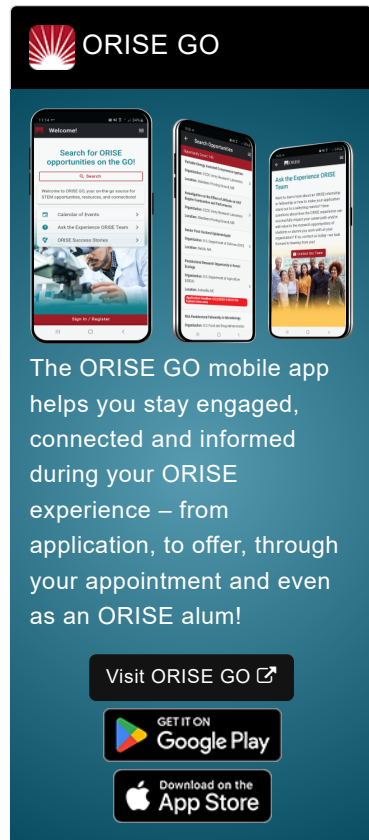
**Description** **\*Applications may be reviewed on a rolling-basis and this opportunity may close before the application deadline.**

**ARS Office/Lab and Location:** A research opportunity is currently available with the Foreign Animal Disease Research Unit (FADRU) within the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), at the Plum Island Animal Disease Center (PIADC) located in Orient Point, New York. The selected candidate must have or be eligible to obtain a high security clearance.

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.


PIADC is the only U.S. laboratory facility performing research, development and diagnosis of foreign animal diseases of highest threat to the U.S. This critical national asset is located off the northeast coast of Long Island, NY, and accessible by government-provided ferry from Orient Point, NY, and Old Saybrook, CT. Research at PIADC is performed on animal diseases that threaten the nation's animal industries and exports.


One of the missions of FADRU is to investigate foreign animal diseases (FADs) in their endemic settings to help mitigate the risks of catastrophic economic losses caused by these pathogens in the event of accidental or




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deliberate introduction to the United States.

**Research Project:** This research opportunity will involve the study of the molecular mechanisms encoded by Foot-and-mouth disease virus (FMDV) proteins and their role in antagonizing host immune defenses including innate immunity, inflammatory responses, and specific metabolic pathways. As viruses ingeniously rewire the host cell metabolism to bolster their replication and modulate inflammation, this research project will be focused to develop innovative vaccine and therapeutic strategies against FMDV. This project will engage the use of advanced genetic, biochemical, and microscopy imaging techniques to dissect the multifaceted immune modulation orchestrated by FMDV.

Under the guidance of a mentor, the participant will develop distinct assays to identify protein candidates that are required for optimal FMDV replication. The participant's research will also involve a comparative pathophysiological analysis between FMDV WT and FMDV mutant strains through a comprehensive cellular transcriptome study significantly enhancing our understanding of FMDV's manipulation of host immune responses.

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

- Study of virus-host interactions to understand the molecular mechanisms involved in blocking immune responses
- Design and develop experiments for distinct biological and chemical assays
- Immunofluorescence
- Live imaging confocal microscopy
- Western blotting
- Cloning
- Measure respiration, glycolysis, and ATP production rates of cells infected
- qPCR
- Single cell RNA sequencing
- Next generation sequencing
- Data analysis
- Drafting manuscripts reporting experimental results
- Lentiviral transductions
- CRISPR Cas9 knockdown

Being stationed at PIADC offers the selected participant with the opportunity of learning to handle select agents in livestock species and managing select agent inventories. The participant will have the opportunity of participating in national and international meetings, workshops and training courses for the advancement of their scientific careers in foreign animal diseases and emerging infectious animal diseases.

**Mentor(s):** The mentor for this opportunity is Gisselle Medina ([gisselle.medina@usda.gov](mailto:gisselle.medina@usda.gov)). If you have questions about the nature of the research, please contact the mentor(s).

**Anticipated Appointment Start Date:** As soon as a qualified candidate is identified. Start date is flexible and will depend on a variety of factors.

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**Appointment Length:** The appointment will initially be for one year, but may be renewed upon recommendation of ARS 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 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 [USDA-ARS@ornl.gov](mailto:USDA-ARS@ornl.gov) and include the reference code for this opportunity.



**Qualifications** The qualified candidate should have received or be currently pursuing a doctoral degree in one of the relevant fields.

The selected candidate must have or be eligible to obtain a high security clearance.

Preferred Skills:

- A keen interest in the biology of virus-host interactions
- Experience in molecular biology techniques including cloning, PCR, sequencing, NGS, western blotting
- Experience in tissue culture techniques including primary and secondary cell lines
- Experience in microscopy imaging
- Motivated to solve complex problems by undertaking innovative approaches and applying state-of-the-art technologies
- Effective organizational and multi-tasking skills

**Point of Contact** [Janeen](#)

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
  - **Degree:** Doctoral Degree received within the last 60 months or currently pursuing.
  - **Discipline(s):**
    - **Life Health and Medical Sciences** ([48](#) )
    - **Mathematics and Statistics** ([11](#) )
  - **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).