

**Opportunity Title:** USDA-ARS Postdoctoral Fellowship in Computational Biology

**Opportunity Reference Code:** USDA-ARS-2022-0417

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

**Reference Code** USDA-ARS-2022-0417

**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** 2/2/2023 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 available with the U.S.

Department of Agriculture (USDA), Agricultural Research Service (ARS) within the Virus and Prion Research Unit at the National Animal Disease Center located in Ames, Iowa.

For more information about the facility, please follow this link: <https://youtu.be/A7sENK8GvnA>

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:** The selected participant will be involved in conducting research on swine viral diseases (e.g., porcine reproductive and respiratory syndrome virus, porcine epidemic diarrhea virus, swine influenza A virus, coronaviruses) which will include development and analysis of sequence data from available sources and past and future experimental studies for use in studying the pathogenesis, ecology, vaccinology, and protective immune response of these viruses in swine. Specifically, the participant will evaluate the host response to swine viruses by sequence analysis and collaborate as part of a team to identify mechanisms to modulate innate and adaptive immune responses to swine viral pathogens with in vivo and



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in vitro experiments.

**Learning Objectives:** The project assignment should provide the participant with an opportunity to receive hands-on experience that complements his/her educational and professional background and helps the participant gain knowledge in areas related to the mission. Collaborations have been established with a group with expertise in building machine learning models to discriminate human-infecting viruses based on the frequency of k-mers in the viral genomic sequences. This will aid the Research Fellow in any machine learning aspects of this project beyond the mentors capabilities. Project activities assigned to the participant will be appropriate for an education and training program and will not include governmental functions such as, project, budget, or personnel management, or clerical responsibilities.

The Research Fellow will create computational workflows that combine sequence data from new and previous experiments and will develop and improve methods to integrate datasets from different fields of study that are tested through real-time analysis of existing porcine and viral sequence samples. The datasets, results, and findings of this project will be disseminated through three major activities. This will allow the implementation of this collaborative endeavor to have a greater impact in both scientific/academic and social communities. (1) Make the workflows, methods, and software information readily accessible by both command line and graphical interfaces for researchers seeking to perform computational analysis. (2) Project Data deposition into public databases, which include GitHub for code sharing, and NCBI SRA databases for transcriptomic datasets; (3) Conference/seminar presentations, class instruction, and journal publications.

**Mentor:** The mentor for this opportunity is Laura Miller ([laura.miller@usda.gov](mailto:laura.miller@usda.gov)). If you have questions about the nature of the research please contact the mentor.

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

**Appointment Length:** The appointment will initially be for two years, 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, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details](#) page of the program website for information about the valid immigration statuses that are acceptable for program participation.

**ORISE Information:** This program, administered by ORAU through its

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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.Midwest@ornl.gov](mailto:ORISE.ARS.Midwest@ornl.gov) and include the reference code for this opportunity.

**Qualifications** The qualified candidate should have received a doctoral degree in one of the relevant fields, or be currently pursuing the degree with completion before May 31, 2023. Degree must have been received within the last five years.

Preferred skills:

- Knowledge of Genetics
- A background in Animal Science
- Demonstrated experience with designing computational methods and tools
- Demonstrated proficiency in management, analysis, interpretation, and visualization of large amounts of biological data
- A track record of publication in leading peer-reviewed journals
- Ability to work independently, as well as part of a team while building and nurturing collaborations with external research groups
- Excellent communication skills to disseminate research findings and keep team members and collaborators informed

- Eligibility Requirements**
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 5/31/2023 11:59:00 PM.
  - **Discipline(s):**
    - **Computer, Information, and Data Sciences** ([4](#) )
    - **Life Health and Medical Sciences** ([17](#) )