

Opportunity Title: USDA-ARS Postdoctoral Computational Biologist Research

Opportunity in Influenza A Virus (IAV)

Opportunity Reference Code: USDA-ARS-2022-0005

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0005

How to Apply *Connect with ORISE...on the GO!* Download the new ORISE GO mobile app in the Apple 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 12/31/2021 3:00:00 PM Eastern Time Zone

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

ARS Office/Lab and Location: A research opportunity in computational biology is available with the U.S. Department of Agriculture Agricultural Research Service (ARS) in the Virus and Prion Research Unit at the National Animal Disease Center (NADC) located in Ames, Iowa. The NADC is a flagship laboratory facility conducting animal health research at USDA-ARS. The 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: This postdoc will be based within the Intervention Strategies to Control Influenza A Virus Infection in Swine project in the Virus and Prion Research Unit, NADC. The postdoc project will investigate the evolutionary dynamics of influenza A virus (IAV) at human and swine interfaces through computational analyses of IAV in support of a contract between USDA-ARS and the University of Pennsylvania Center for Excellence in Influenza Research and Response (CEIRR), which is part of the NIH NIAID CEIRR collaborative network. Scientists on this project maintain a comprehensive IAV research program including investigation of virulence mechanisms, vaccinology, immunology, and virus evolution. The postdoc will interact with a dynamic community of scientists across the CEIRR network, ARS scientists, postdoctoral fellows, graduate students,



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and research technicians.

Goals for the project are to quantify drivers of IAV evolution in the swine host using data generated from coordinated active IAV surveillance in swine and human populations, along with public data from passive USDA IAV in swine surveillance. We will investigate virus properties that confer greater capacity to infect and transmit in swine and that may spillover and cause pandemics in humans. The studies will measure ongoing evolution of contemporary swine IAV isolates and quantify genetic and antigenic divergence from current human seasonal IAV, candidate vaccine viruses used for pandemic preparedness, or swine IAV vaccine strains. These studies will identify divergent swine IAV strains for use during *in vivo* and *in vitro* laboratory experimentation conducted by collaborators. These data will determine genetic predictors of influenza host range and virulence, facilitate our understanding of the genetic and antigenic variability of endemic swine IAV, and be used to develop a framework for predicting the pandemic potential of swine IAV as it transmits among hosts and across landscapes. An additional goal is the development of bioinformatic tools or analytical pipelines that quantify the diversity of IAV in swine to deploy in online databases or interactive websites.

Learning Objectives: The participant will collaborate with the scientists and other laboratory staff in all phases of the research process (conception, study design, analysis, interpretation, and scientific writing and communication). The participant will advance his or her knowledge in genomic epidemiology, bioinformatic and sequence analysis techniques, phylogenetic methods (including Bayesian), and collaborate in a team-oriented, multi-disciplinary IAV research environment. The participant will have the opportunity to attend and present at local and/or national meetings upon acceptance of research abstract and will be supported and encouraged to publish their research in peer reviewed journals.

Mentor(s): The mentor for this opportunity is Tavis Anderson (tavis.anderson@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

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

Appointment Length: The appointment will initially be for one year, but may be renewed an additional year 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 contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education

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(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 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 by the end of January 2022. Degree must have been received within the past five years.

Preferred skills:

- Experience in bioinformatics/computational biology
- Strong interpersonal skills with the ability to perform collaboratively
- Experience in virology, population genetics, molecular biology, or using Bayesian approaches to study the evolutionary dynamics of infectious diseases
- Experience in the use of scripting languages (e.g. python, R, bash, perl) and biologic databases and other bioinformatic tools
- Experience in multivariate statistical analyses, including generalized linear mixed models, generalized additive mixed models, and variants of these methods

**Eligibility
Requirements**

- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 1/31/2022 12:00:00 AM.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** ([2](#) )
 - **Life Health and Medical Sciences** ([20](#) )
 - **Mathematics and Statistics** ([1](#) )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).