

Opportunity Title: USDA-ARS Postdoctoral Fellowship in SARS COV-2

Infection in Animals

Opportunity Reference Code: USDA-ARS-2022-0192

Organization U.S. Department of Agriculture (USDA)

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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 5/31/2022 3:00:00 PM Eastern Time Zone

Description *Applications will 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) at the Southeast Poultry Research Laboratory (SEPRL) located in Athens, Georgia.

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 SARS coronavirus 2 (SARS COV-2) has become a human pandemic, but it can also infect wild and domestic animals. Currently we don't have an easy way to predict what animal species are susceptible to infection and what disease it may cause in susceptible species. Previous work has shown that chicken DF1 cells are not normally susceptible to SARS-COV-2, but if you express the ACE2 and TMPRSS2 protease proteins from susceptible species in the cell line, it can be made permissive for infection. A good correlation has been demonstrated with susceptible and resistant animals using this model system. However, the emergence of multiple variants



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means that some SARS COV-2 viruses may now infect previously resistant animals or no longer infect certain animals. With the number of new variants, it is impractical to do animal challenge studies on every species with all these variants.

This project looks to extend the initial cell culture studies to look at additional wild and domestic animal species for susceptibility to the original SARS-COV-2 and important variants as they emerge. In some cases the sequence for the ACE2 gene or TMPRSS2 protease genes are not known and have to be determined. The research that the selected participant will be involved in will primarily be laboratory based studies, but animal studies could be conducted if results support a major change in host susceptibility, particularly in poultry.

Learning Objectives: The selected participant will have the opportunity to learn aseptic cell culture techniques which can be applied to growing SARS-COV-2 in the laboratory. The participant will learn to make expression vectors that can be inserted into cells to express the ACE2, TMPRSS2, and other host proteins. Microscopy techniques to monitor expression and work with a FACS machine to sort cells that are expressing the genes of interest will be learned. Sequencing of ACE2 and TMPRSS2 genes will be learned if these sequences are not available in GenBank. Bioinformatics analysis of different genes will be conducted to provide better prediction of susceptible species. Based on how well the viruses grow in cell culture, an assessment of susceptibility will be determined. The participant will contribute to research publications that are generated as part of the project.

Mentor(s): If you have questions about the nature of the research, please contact David Suarez (david.suarez@usda.gov).

Anticipated Appointment Start Date: June 1, 2022. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for eighteen months, 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(s) 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

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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. However, this position requires a pre-employment check and a full background investigation. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

This is an equal opportunity program open to all qualified individuals without regard to race, color, age, sex, religion, national origin, mental or physical disability, genetic information, sexual orientation, or covered veteran's status.


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 be currently pursuing or have received a doctoral degree in one of the relevant fields.

Candidates with Biology backgrounds are preferred to have Biotechnology skills or knowledge.

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Life Health and Medical Sciences** (5 )