

Opportunity Title: USDA-ARS Postdoctoral Fellowship to Investigate Detection Methods and Vaccines for Persistent Salmonella Infantis Strains and the pESI MDR/Virulence Plasmid

Opportunity Reference Code: USDA-ARS-2022-0362

Organization U.S. Department of Agriculture (USDA)

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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

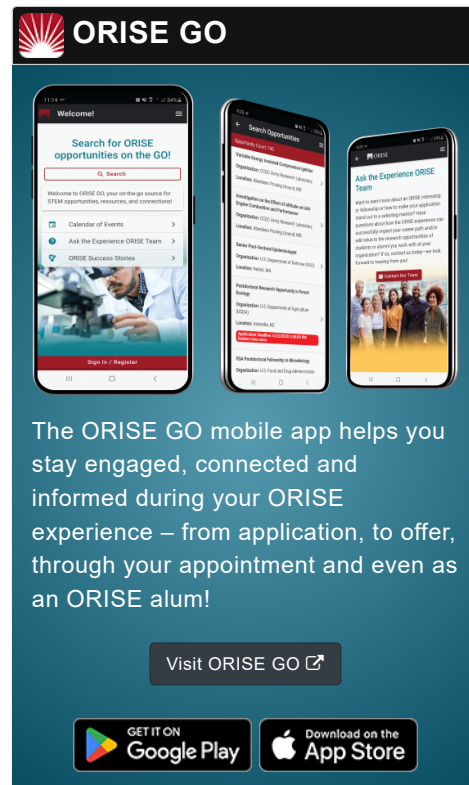
All documents must be in English or include an official English translation.

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

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), within the Bacterial Epidemiology and Antimicrobial Resistance Research Unit 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.

The Bacterial Epidemiology and Antimicrobial Resistance Research Unit's mission is to determine causes of antimicrobial resistance (AMR), to understand how Salmonella strains become established in poultry production, and to develop interventions to reduce their impact on human health. The laboratory consists of four PIs, support scientists, technicians, graduate students, undergraduate students, and postdoctoral trainees working in a dynamic team setting. The PIs have diverse interests focused on poultry production and each PI has independent and team projects all striving to improve food safety.



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Research Project: Multi-drug resistant

(MDR) *Salmonella* Infantis has been established in U.S. poultry production and is causing a continuing outbreak in humans.

Vaccines to eliminate this dangerous pathogen in U.S. poultry are needed. The postdoctoral fellow will participate in the development of recombinantly expressed subunit vaccines and mRNA vaccines. These methods allow targeting of specific structures on the cell surface of *Salmonella* Infantis with neutralizing antibodies, and also benefit from containing no live *Salmonella* that can be detected in downstream food safety compliance testing. The fellow will also assist in developing assays to detect *Salmonella* Infantis and the pESI MDR/virulence plasmid it carries for use in determining the epidemiology of this persistent problem in poultry production. Additional research opportunities include environmental monitoring of AMR bacteria in surface water and training in computational biology.

Learning Objectives: This project provides training in cutting edge recombinant and mRNA vaccine technology, assay development, and exposure to national and regional AMR monitoring programs.

Mentor: The mentor(s) for this opportunity are Drs. Hung-Yueh Yeh and Jonathan Frye (jonathan.frye@usda.gov). Dr. Yeh will focus on vaccine development and testing and Dr. Frye will focus on assay development and technology transfer. If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: As soon as a qualified candidate is identified. 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 up to two more years 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. **The current stipend for this opportunity will be \$5,823.17 plus \$562.68 for medical, prescriptions, dental and vision each month.**

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

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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.Southeast@ornl.gov and include the reference code for this opportunity.

Qualifications The qualified candidate must have received a doctoral degree in one of the relevant fields. Degree must have been received within five years of the fellowship start date.

- Knowledge and skills in basic bacteriology and molecular biology, including isolation and cultivation of bacteria, PCR assay development, recombinant DNA methodology, protein expression, mRNA expression, cell culture, in-vitro and in-vivo immune assays, and basic laboratory skills
- Comfortability with animal work, specifically with poultry
- Ability to work independently to advance project goals and participate in preparation of presentations and publications
- BSL-2 experience, particularly experience with *Salmonella* or similar bacterial pathogens
- Animal handling skills, such as inoculation, challenge studies, blood draws, and necropsy
- Bioinformatics skills in genome analysis

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** (17 )
 - **Earth and Geosciences** (21 )
 - **Environmental and Marine Sciences** (14 )
 - **Life Health and Medical Sciences** (48 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).