Opportunity Title: USDA-ARS Postdoctoral Fellowship in Insect Molecular Biology
Opportunity Reference Code: USDA-ARS-PW-2023-0376A

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
- Transcripts – 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 postdoctoral research opportunity is available within the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) with the Pest Management and Biocontrol Research Unit at the U.S. Arid Land Agricultural Research Center (ALARC), located in Maricopa, Arizona.

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 mission of the Pest Management and Biocontrol Research Unit is to develop unique and improved biological, behavioral, and genetic based methods to reduce losses by insects affecting cotton and other crops in arid land production areas of the U.S.

Research Project: A research opportunity is available to a motivated postdoctoral fellow interested in developing or furthering their experience with contemporary functional genomics approaches (CRISPR, RNAi, transgenics) in insect pests. The successful participant will join a broad disciplinary team currently applying these techniques to elucidate the molecular factors underlying reproduction and sex determination, the basis of resistance to *Bacillus thuringiensis* (Bt) toxins/crops, and the potential application of arthropod gene-drive systems to agricultural pests. Although numerous targets have been identified, we encourage exploration of other genes/pathways of interest to the fellow that support the overall goal of the Unit. Knowledge of basic bioinformatic software and analytical techniques

would be helpful but is not required.

The fellowship will provide opportunities to learn about various applications of molecular biology to insect pest management in cotton and other cropping systems that can be used to guide and inform lab studies. The fellow will have opportunities to improve their skills in public speaking, scientific manuscript writing, and critical evaluation of scientific literature. During the appointment, opportunities for travel to professional meetings, to visit stakeholders, and/or hands-on training at surrounding federal/university locations will be encouraged and may include stateside and foreign venues.

Learning Objectives: The fellow will gain practical laboratory experience in:

- Adapting gene editing techniques to agricultural insect pests
- Elucidating molecular mechanisms/pathways driving biology with opportunities for comparative analyses
- Developing/refining PCR and other molecular methods
- Applying modern molecular methods to entomology
- Relating computer-based bioinformatics data to biological questions
- Interacting with an interdisciplinary research team with expertise in molecular biology, genetics, physiology, endocrinology, and biochemistry
- Preparing manuscripts/grants
- Public speaking/presentations

Mentor: The mentor for this opportunity are Colin Brent (colin.brent@usda.gov); Joe Hall (joe.hull@usda.gov); Jeff Fabrick (jeff.fabrick@usda.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: **March 2024.** 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. **The current stipend range for this opportunity is $65,000 - $70,000 per year contingent on education 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

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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.PacificWest@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in a relevant field (Biochemistry, Cellular and Molecular Biology, Entomology, Evolutionary Biology, Genetics), or be currently pursuing the degree with completion by November 1, 2023. Degree must have been received within five years of the appointment start date.

Candidates with a proven track record of publication in peer-reviewed journals, grant writing, and delivering oral presentations are highly desirable.

Preferred skills:

- Timely observations and keen attention to detail.
- Solid wet lab skills, including experience with gene editing (CRISPR), RNA interference (RNAi), DNA/RNA manipulation and cloning, real-time quantitative PCR, microinjection and/or other delivery techniques, and insect bioassays/handling.
- Excellent written and oral communication skills, as evidenced by presentations at professional society meetings is highly desirable.
- Experience with bioinformatics is desirable, but not required.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 11/1/2023 12:00:00 AM.
- **Discipline(s):**
  - **Life Health and Medical Sciences** (12 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).