

Opportunity Title: USDA-ARS Fungi for Delivery of RNAi for Wood Boring Insects Internship

Opportunity Reference Code: USDA-ARS-NEA-2024-0351

Organization U.S. Department of Agriculture (USDA)

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How to Apply *To submit your application, scroll to the bottom of this opportunity and click **APPLY**.*

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.

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Application Deadline 12/20/2024 3:00:00 PM Eastern Time Zone

Description ***Applications are reviewed on a rolling-basis and interviews may occur before the deadline.**

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), in the Emerging Pests and Pathogens Unit located in Ithaca, New York.

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 emerging pests and pathogens unit tackles the challenges of invasive insects, weeds, and plant pathogen species using innovative approaches.

Research Project: This project will investigate the RNA interference (RNAi) to control the emerald ash borer, a highly destructive and invasive insect pest of ash trees across North America. It is part of a collaborative project with USDA and University of Kansas that seeks to use entomopathogenic fungi as vectors to deliver dsRNA to the insect. The goals of the project are



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to:

- Screen 10-12 promising targets for RNAi to identify the best 1-2 loci,
- Transform a fungus to express dsRNA for silencing, and
- Test delivery approaches of the fungi using an oviposition trap.

Learning Objectives: The project will provide training to the participant in rearing of insects, laboratory bioassays to test effectiveness of both dsRNA and fungus engineered to express dsRNA in killing larvae and adults emerald ash borer, growth chamber experiments to deliver entomopathogenic fungi to insects, and training in genetically transforming fungi. The participant will also have opportunity to participate in workshop or conference trainings in either insect biology or genetic engineering to enhance their skillset.

Mentor(s): The mentor for this opportunity is Kathryn Bushley (kathryn.bushley@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: January 6, 2025. 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 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 (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.Northeast@ornl.gov and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a bachelor's degree in one of the relevant fields. Degree must have been received within the past four

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years.

Preferred skills:

- Any of the disciplines within the "Life Health and Medical Sciences" discipline category of the eligibility criteria.
- Experience or training in culturing fungi and other microbes, rearing insects, laboratory bioassays, and/or molecular biology and genetics.

**Eligibility
Requirements**

- **Degree:** Bachelor's Degree received within the last 48 months or anticipated to be received by 12/31/2024 11:59:00 PM.
- **Discipline(s):**
 - **Life Health and Medical Sciences** ([51](#) )

Affirmation I affirm that:

I am a US Citizen, OR;
I am a non-US citizen currently living in the United States