

Opportunity Title: USDA-ARS Molecular and Computational Biology Internship

Opportunity Reference Code: USDA-ARS-2022-0300

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0300

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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 10/10/2022 3:00:00 PM Eastern Time Zone

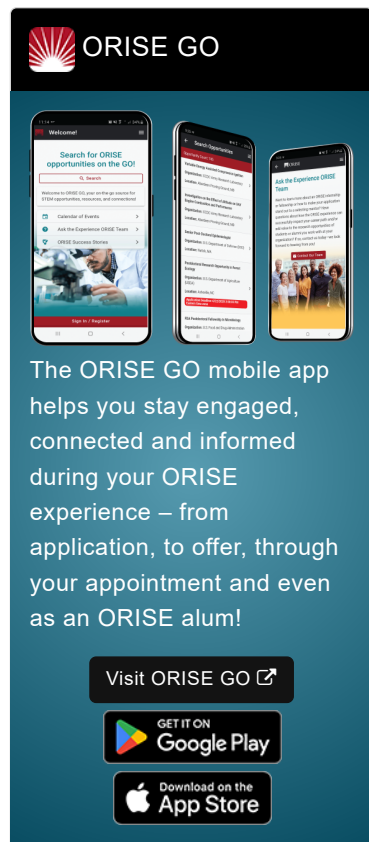
Description *Applications may be reviewed on a rolling-basis.

ARS Office/Lab and Location: A research opportunity in molecular biology and computational biology/bioinformatics is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), within the Mycotoxin Prevention and Applied Microbiology Research Unit located in Peoria, Illinois.

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 participant will join a team to conduct research in characterization of genomic difference in *Fusarium* head blight (FHB) isolates and evaluation of phylogenetic diversity of FHB isolates and mycotoxin profile dynamics that may be used to develop novel methods to reduce mycotoxin contamination and facilitate the incorporation of pathogen genotype data in variety screening programs for enhancing the resilience of FHB resistance.

Learning Objectives: The learning objectives for this opportunity include training and experience in general molecular biology techniques such as DNA/RNA isolation, PCR and Next-Generation Sequencing (NGS) and a diverse array of computational biology and bioinformatics analyses to solve



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a biological question. The selected individual will be directly involved in obtaining sequencing quality grade DNA or RNA from fungal cultures and conducting computational biology analyses in the following area: (1) design and develop bioinformatic analysis pipeline for analyzing NGS datasets (2) integrate molecular technologies and appropriate informatics workflows can be useful for research in genomics, genetics, multi-omics, pangenome and genome-wide single nucleotide polymorphisms (SNP) analysis using programming languages to manipulate research data.

Mentor: The mentor for this opportunity is Hye-Seon Kim (hyeseon.kim@usda.gov). If you have questions about the nature of the research please contact the mentor.

Anticipated Appointment Start Date: September 1, 2022. 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 USDA-ARS@ornl.gov and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a bachelor's or master's degree in one of the relevant fields (e.g. Agricultural Sciences, Agriculture, Agronomy and Crop Science, Bioinformatics, Computational Biology, Biology, Biological Sciences, Molecular Biology, Ecology, Plant Pathology, Animal and Plant Genetics, Infectious Disease, General Computer Science, Information Science and Technology, Scientific Computing and Informatics), or be currently pursuing one of the degrees with completion by August 31, 2022.

Preferred Skills:

- Knowledge of molecular biology as well as lab experience with basic molecular techniques such as DNA isolation and PCR reaction.
- Experience with high throughput data analysis, genomic data and/or

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phenotypic data.

- Experience with programming language(s): R/Python/Java/Perl/C++.
- Practical knowledge of biological sciences, biology or a similar field.
- Basic interest in agriculture research and development of approaches for data analysis of diverse sample types.
- Excellent interpersonal communication skills, ability to communicate effectively in English, and ability to work independently and in a team environment.

**Eligibility
Requirements**

- **Degree:** Bachelor's Degree or Master's Degree received within the last 60 months or anticipated to be received by 8/31/2022 11:59:00 PM.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** ([17](#) 👁)
 - **Earth and Geosciences** ([1](#) 👁)
 - **Engineering** ([6](#) 👁)
 - **Environmental and Marine Sciences** ([6](#) 👁)
 - **Life Health and Medical Sciences** ([48](#) 👁)
 - **Mathematics and Statistics** ([11](#) 👁)
 - **Science & Engineering-related** ([1](#) 👁)