

Opportunity Title: USDA-ARS Post-Doctoral Research Fellowship: Genomic Study of *Calonectria illicicola*, the Causal Agent of Soybean Red Crown Rot
Opportunity Reference Code: USDA-ARS-MWA-2025-0102

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 with cover letter, 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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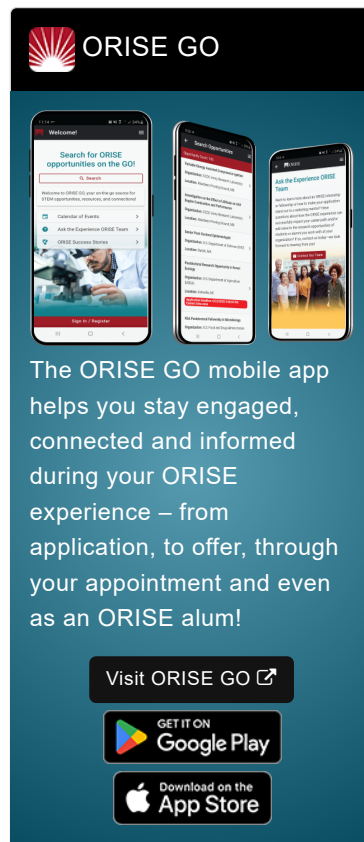
Application Deadline 10/24/2025 3:00:00 PM Eastern Time Zone

Description *Applications are reviewed on a rolling-basis.

ARS Office/Lab and Location: A postdoctoral fellowship opportunity is available at the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), within the Soybean/Maize germplasm, pathology, genetics research unit, USDA-ARS at University of Illinois, Urbana-Champaign, 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.

The mission of this unit is to: 1) acquire, characterize, evaluate, maintain, utilize, and distribute germplasm accessions in the genus *Glycine*; 2) identify genes controlling traits of economic importance in soybean including seed yield, seed composition, and disease or pest resistance, and transfer those traits into improved germplasm; 3) investigate soybean genomic responses to microbial and pest interactions; 4) determine the genetic and pathogenic variability of soybean pathogens and pests, and the epidemiology of the diseases they cause; 5) improve management strategies for soybean pathogens and pests utilizing host genetics and knowledge of population dynamics; and, 7) acquire, maintain, develop evaluate, characterize, and distribute genetic and



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cytogenetic stocks of maize.

Research Project: Red crown rot, caused by *Calonectria ilicicola*, is an emerging threat to soybean production in key Midwestern states, where outbreaks have recently increased. The fellow will have the opportunity to be a part of whole genome sequencing and transcriptomic analysis of *C. ilicicola*. Under the guidance of a mentor, the fellow will be involved in generating a reference-quality genome using PacBio and Illumina sequencing platforms, accompanied by comprehensive de novo assembly, gene annotation, structural characterization and comparative analysis of *Calonectria* isolates. In addition to assembling the reference genome, we will sequence multiple isolates from various *Calonectria* species to investigate population diversity and evolutionary relationships. RNA-Seq-based gene expression analysis will be conducted to identify virulence-related genes and pathways involved in pathogenicity. Findings from this research will be valuable for developing effective disease management strategies and advancing soybean resistance breeding efforts, ultimately benefiting soybean growers across the Midwest.

Learning Objectives: Under the guidance of a mentor, the participant will learn:

- To prepare next-generation sequencing libraries for whole genome and RNA-Seq analysis of *Calonectria ilicicola*.
- To conduct genome assembly, annotation, validation, and structural analysis.
- To perform genome-wide comparisons of multiple isolates to assess population diversity and evolutionary relationships.
- To carry out RNA-Seq analysis to identify virulence-associated genes and pathways in *C. ilicicola* and develop methods for their validation.
- About project management, including data interpretation and manuscript preparation.
- To collaborate with graduate and undergraduate students in the laboratory.

Mentor(s): The mentors for this position are Dr. Hari Karki (hari.karki@usda.gov) and Dr. Steven Clough (steven.clough@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: December 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. **The anticipated stipend range is \$60,000 - \$72,000 annually.**

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR) only.

ORISE Information: This program, administered by ORAU through its

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

Qualifications The qualified candidate should have received or be pursuing a doctoral degree in the one of the relevant fields (e.g. Plant Pathology, Mycology, Microbiology, Population genetics, Genomics, Bioinformatics or related science).

Preferred Qualifications:

- Strong background in fungal biology & genetics, genomics, molecular and population biology.
- Knowledge of plant pathology and familiarity with molecular pathogen-host interactions.
- Experience with next-generation sequencing (Whole genome & RNA-Seq) data analysis.
- Proficiency in bioinformatics and statistical analysis.
- Experience with genome assembly and annotation.
- Excellent communication skills and ability to work collaboratively.
- Previous research publications in peer-reviewed journals in the fields of genomics and bioinformatics, with a focus on fungal or plant systems.

Stipend \$60,000.00 – \$72,000.00 Yearly

Point of Contact [Janeen](#)

- Eligibility Requirements**
- **Citizenship:** LPR or U.S. Citizen
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Life Health and Medical Sciences** ([6](#) )