

**Opportunity Title:** USDA-ARS Postdoctoral Fellowship in Molecular Plant

Pathology & Microbiology

**Opportunity Reference Code:** USDA-ARS-2021-0231

**Organization** U.S. Department of Agriculture (USDA)

**Reference Code** USDA-ARS-2021-0231

**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 are reviewed on a rolling-basis and this posting will remain open until filled.

**ARS Office/Lab and Location:** A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Genetic Improvement for Fruits and Vegetables Lab located in Beltsville, Maryland.

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 the agency is to provide global leadership in agricultural discoveries through scientific excellence.

**Research Project:** The Genetic Improvement for Fruits and Vegetables Lab studies multiple microbial pathogens of potato to develop novel disease control tools. Common scab is major biotic constraint of potato throughout much of the world. The disease is caused by pathogenic species of *Streptomyces*. Molecular biology, basic plant pathology, genomics, and transcriptomics are employed to identify *Streptomyces* genes involved in pathogenicity of potato and potato genes involved in plant response to the pathogen. Specifically, the participant will identify candidate *Streptomyces* virulence genes and perform molecular functional characterization. The participant will participate in generating and testing transgenic potatoes differentially expressing genes putatively involved in host response to infection as well. Differential host plant resistance will be identified in collaboration with potato breeders and plant cultivar by pathogen strain interactions identified. The participant will research Quantitative PCR detection assays for critical pathogenic lineages and participate in development and validation of the assays. The participant will also collaborate to identify and test novel biological antimicrobial agents.

**Learning Objectives:** The participant will learn and use multiple molecular biology and microbiology tools for studying *Streptomyces*-plant interactions including: development of transgenic plants, potato pathology assays, quantitative PCR detection assays, comparative



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genomics, cloning and functional characterization of putative virulence genes, and identification and screening of novel biological-based antimicrobials.

**Mentor(s):** The mentor for this opportunity is Christopher Clarke ([Christopher.clarke@usda.gov](mailto:Christopher.clarke@usda.gov)). If you have questions about the nature of the research please contact the mentor(s).

**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 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 only.

**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](mailto:USDA-ARS@ornl.gov) and include the reference code for this opportunity.

**Qualifications** The qualified candidate should have received a doctoral degree in one of the relevant fields.

Preferred skills:

- Knowledge of basic plant pathology, genetics, genomics, microbiology, and molecular biology
- Demonstrated skill and practical experience in molecular biology techniques (e.g., nucleic acid purification, gene amplification and cloning, bioinformatic analysis genome data, qRT-PCR, plant and microbial transformation)
- Demonstrated experience in plant pathology techniques (e.g., isolation and culture of bacterial and fungal plant pathogens; plant infections in growth chambers and greenhouses)
- Demonstrated experience in design of experiments and development of laboratory protocols
- Ability to recognize the significance of unexpected results, and to make minor modifications to ensure validity of testing and data
- Ability to work independently as well as part of a team, with good communication skills to keep team members informed and disseminate results at meeting and in refereed journals

**Eligibility** • **Citizenship:** U.S. Citizen Only

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- Requirements**
- **Degree:** Doctoral Degree.
  - **Discipline(s):**
    - **Chemistry and Materials Sciences** ([12](#) 👁)
    - **Communications and Graphics Design** ([2](#) 👁)
    - **Computer, Information, and Data Sciences** ([17](#) 👁)
    - **Earth and Geosciences** ([21](#) 👁)
    - **Engineering** ([27](#) 👁)
    - **Environmental and Marine Sciences** ([14](#) 👁)
    - **Life Health and Medical Sciences** ([46](#) 👁)
    - **Mathematics and Statistics** ([10](#) 👁)
    - **Physics** ([16](#) 👁)
    - **Science & Engineering-related** ([1](#) 👁)
    - **Social and Behavioral Sciences** ([28](#) 👁)