

Opportunity Title: Postdoctoral Research Opportunity in Molecular Plant Pathology and Genomics

Opportunity Reference Code: USDA-ARS-2020-0002

Organization U.S. Department of Agriculture (USDA)

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How to 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. All transcripts must be in English or include an official English translation. 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.

If you have questions, send an email to USDA-ARS@ora.ou.org. Please include the reference code for this opportunity in your email.

Application Deadline 11/27/2019 3:00:00 PM Eastern Time Zone

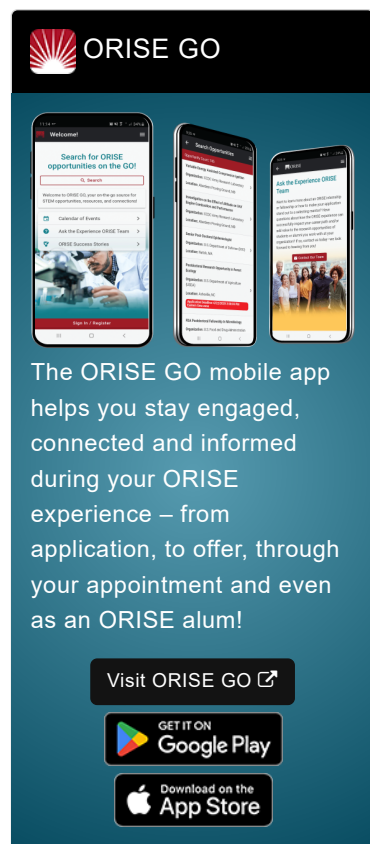
Description *Applications will be reviewed on a rolling-basis.

A research opportunity is available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Beltsville Agricultural Research Center (BARC) located in Beltsville, Maryland.

The Genetic Improvement for Fruits and Vegetables Lab studies multiple microbial pathogens of potato to develop novel disease control tools. Common scab disease is major biotic constraint of potato throughout much of the world. The disease is caused by pathogenic species of *Streptomyces*. Under the guidance of a mentor, the participant will use genomics, transcriptomics, molecular biology, and basic plant pathology approaches to identify *Streptomyces* genes involved in pathogenicity of potato and potato genes involved in plant response to the pathogen. Specifically, the participant will collect whole-genome sequence data from pathogenic and non-pathogenic *Streptomyces* and predict novel *Streptomyces* genes potentially involved in pathogenicity. The participant will express these identified genes in heterologous systems or create *Streptomyces* knock-out mutants to confirm their role in the manifestation of disease symptoms. Additionally, a recently identified potato gene predicted to be critical for sensitivity to the pathogen will be silenced in potato to create disease-resistant plants. The participant will also have the opportunity to gather and analyze transcriptome data by profiling global gene expression in potato treated with the auxin analog 2,4d, which has been shown to be effective at protecting potato from common scab, to identify genetic pathways involved in resistance to common scab symptoms. Alternative chemical treatments that achieve common scab protection through similar mechanisms will also be identified. Finally, toxins produced by the early blight of potato pathogen, *Alternaria solani*, will be identified and the molecular mechanisms of toxicity elucidated. Potato cultivars resistant to disease-critical *Alternaria* toxins will be identified and the resistance characterized.

Interested applicants may email Christopher Clarke (Christopher.clarke@usda.gov) with any questions.

Anticipated Appointment Start Date: February 3, 2020



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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. The initial appointment is for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time at ARS in the Beltsville, Maryland, area. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits.

While participants will not enter into an employment relationship with ARS, this opportunity requires a pre-appointment check and a full background investigation.

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.

For more information about the ARS Research Participation Program, please visit the [Program Website](#).

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, RNA-seq, genome sequencing, bioinformatic analysis of transcriptome and 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 conduct research independently as well as part of a team, with good communication skills to keep team members informed and disseminate results at meeting and in referenced journals

- Eligibility Requirements**

- **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Life Health and Medical Sciences** ([4](#) )
 - **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).