

**Opportunity Title:** Research Opportunity in Molecular Plant Pathology

**Opportunity Reference Code:** ARS-GIFVL-2017-888-0035

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

**Reference Code** ARS-GIFVL-2017-888-0035

**How to Apply** A complete application package consists of:

- An application
- Transcript(s) – [Click here for detailed information about acceptable transcripts](#)
- A current resume/CV
- Two references - While two references are requested, applications will be considered without reference information. It is preferred that a complete application package contains a minimum of one reference.

All documents must be in English or include an official English translation.

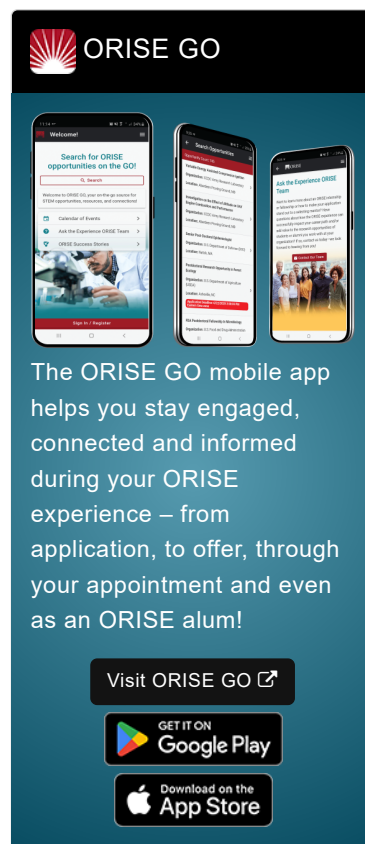
If you have questions, send an email to [USDA-ARS@orau.org](mailto:USDA-ARS@orau.org). Please include the reference code for this opportunity in your email.

**Description** A research opportunity is available at the Genetic Improvement of Fruits and Vegetables Laboratory located in Beltsville, Maryland.

Several species of the plant pathogen *Colletotrichum* cause anthracnose in Solanaceous crops such as tomato, pepper and potato. Anthracnose has typically been associated with decay of ripe or ripening fruit and is a threat to profitable crop production. Host resistance is desirable since crop rotation and chemical controls provide incomplete protection from this pathogen. A more aggressive form of the disease has emerged in the Eastern and Midwestern U.S. This more aggressive form of the pathogen attacks peppers at both immature and mature stage of fruit development. Effective genetic resistance to common and aggressive forms of the pathogen is not present in cultivated tomato or pepper, but is available in unadapted crop relatives. Resistance is multigenic and difficult to transfer to cultivated forms of the crop.

*Colletotrichum* species causing anthracnose on tomato and pepper will be studied to determine pathogen and host genes that are involved in disease and disease resistance. Utilizing *Colletotrichum* isolates exhibiting differential pathogenicity on tomato and pepper, RNA-seq based gene expression analysis will be conducted at early stages of infection, and testing of candidate genes by fungal transformation and *Agrobacterium* infiltration. Expression of genes in resistant and susceptible host plants will involve the same RNA-seq analysis procedures, and subsequent testing of candidate genes by transient overexpression or silencing. Available recombinant inbred lines of tomato developed from a cross with a resistant crop relative will be utilized to map genetic factors contributing to host resistance/susceptibility.

The appointment is full-time for 12 months and may be renewed based upon recommendation of the ARS and availability of funding. The selected applicant will receive a stipend as support for their living and other expenses during this appointment. Stipend rates are determined by ARS



**Opportunity Title:** Research Opportunity in Molecular Plant Pathology

**Opportunity Reference Code:** ARS-GIFVL-2017-888-0035

officials, and are based on the applicant's academic and professional background. The participant must show proof of health and medical insurance. Health insurance can be obtained through ORISE. The participant will not enter into an employee/employer relationship with ORISE, ORAU, USDA, ARS, or any other office or agency. Instead, the participant will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment.

While participants will not enter into an employment relationship with ARS, this position 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** PhD from an accredited institution in plant pathology, plant sciences, microbiology, molecular biology or closely related field.

**Preferred skills include:**

- Knowledge of basic plant pathology, genetics, 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, and qPCR).
- Demonstrated experience in plant pathology techniques (e.g., isolation and culture of fungal plant pathogens).
- 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 Requirements**

- **Degree:** Any degree .
- **Discipline(s):**
  - **Life Health and Medical Sciences** ([3](#) )