Opportunity Title: Postdoctoral Research Opportunity in Biological Sciences
Opportunity Reference Code: USDA-ARS-2020-0034

Organization U.S. Department of Agriculture (USDA)

ORISE

Reference Code USDA-ARS-2020-0034

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@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline 1/15/2020 3:00:00 PM Eastern Time Zone

Description

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

A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Western Regional Research Center (WRRC) located in Albany, California.

Preharvest sprouting (PHS) and late maturity alpha amylase (LMA) in wheat seed are triggered by rain and temperature fluctuations during grain development and maturation. In 2016 37-39% of the Washington State soft white wheat crop was affected by these which resulted in economic losses of more than $30 million in reduced prices. We have assessed susceptibility to PHS in cultivars grown in the Pacific Northwest and have sequenced 6 loci encoding ABA 8'-hydroxylase; the main enzyme responsible for ABA degradation. The sequence data were then used to design two CRISPR sgRNA constructs.

The project's specific goal will be to identify different allelic combinations of edited ABA 8'-hydroxylase and characterize their transcriptional and physiological responses during seed maturation, germination and subsequent growth under controlled conditions. The longer term goal would be to utilize specific edited alleles directly for breeding purposes and validate the use of a similar strategy to edit ABA8'OH-1 and/or ABA8'OH-2 in elite winter-wheat cultivars.

The selected participant will be involved in first the genetic characterization of the resulting wheat lines. The participant will learn methods regarding characterization of on-target, bi-allelic CRISPR mutation activity through sequencing of homoeolog- specific PCR products. It will also include monitoring the stability of T1 lines by following segregation of the transgene and further on-target editing events in this and the T2 generations. Generation advancement through speed-breeding techniques will produce sufficient quantities of seed for the participant to learn testing methods in the second year of the project. Temporal and spatial changes in ABA, GA, alpha-amylase activity, and coordinately regulated gene sets would be expected to be detected and whole plant responses may also be detected if ABA levels remain high throughout the life cycle.

Anticipated Appointment Start Date: January 15, 2020

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 six months, 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 Albany, California, area. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits.

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

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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.

A combination of experience in molecular biology, bioinformatics, and plant physiology is preferred.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Life Health and Medical Sciences** (3 👁)