USDA-ARS Postdoctoral Fellowship in Honey Bee Nutrition and Microbiology

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Honey Bee Breeding Genetics and Physiology Research Unit located in Baton Rouge, Louisiana.

Research Project: Honey bee health is threatened by parasites, pathogens, poor nutrition and pesticides. The mission of the USDA-ARS Honey Bee Breeding Genetics and Physiology Research Unit is to improve resistance (or tolerance) to threats that could mitigate these problems. This opportunity is funded by the National Institute of Food and Agriculture - Agriculture and Food Research Initiative (NIFA-AFRI) Competitive Grants Program for the project "Microalgae as a Novel Platform to Improve Honey Bee Nutrition, Microbiome Health, and Disease Resistance". The proposed research aims to characterize microalgae for its nutritional and functional properties in honey bees, and to test select algal strains for their ability to augment bee health. The objectives are as follows: 1) Conduct a holistic assessment of the utility of microalgae to improve individual bee health. 2) Evaluate the use of a microalgae diet to improve bee health and sustainability of colonies involved in commercial pollination and queen production. 3): Test the potential of select microalgae strains to augment honey bee nutrition, immune function, and pathogen resistance.

Learning Objectives: Under the guidance of mentor Vincent Ricigliano, the participant may be involved in the following activities:

- Study design for honey bee nutrition experiments involving natural and artificial diets
- Execution of laboratory and field experiments involving honey bee nutrition
- Experimental infection of honey bees with pathogens to understand nutrition-pathogen interactions
- Characterizing the effects of nutrition in different genetic stocks of honey bees
- Microbiological isolation of honey bee gut bacteria
- Maintenance and growth of microalgae cultures
- Honey bee gene expression analyses using qPCR and RNAseq
- Gut microbiome analyses of next generation sequencing data
- Drafting manuscripts and reporting experimental results

Mentor(s): The mentor for this opportunity is Vincent Ricigliano (<u>Vincent.ricigliano@usda.gov</u>). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: Spring 2021. 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 extended up to three years, with renewal on an annual basis contingent on the availability of funds and project progress.

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 <u>Program Website</u>. After reading, if you have additional questions about the application process please email <u>USDA-ARS@orau.org</u> and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields, or be currently pursuing the degree with completion by May 1, 2021. Degree must have been received within five years of the appointment start date.

Preferred skills/experience:

- Honey bee handling and sampling experience
- Molecular biology techniques
- Analysis of data from laboratory and field studies
- Analysis of next generation sequencing data
- Microbiology techniques

Eligibility Requirements

- Citizenship: U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 5/1/2021 11:59:00 PM.