Opportunity Title: Post Graduate Research Opportunity - Animal Biosciences and Biotechnology Laboratory
Opportunity Reference Code: ARS-ABBL-2015-0140

Organization U.S. Department of Agriculture (USDA)

Reference Code ARS-ABBL-2015-0140

How to Apply A complete application package 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. Selected candidate must provide proof of completion of the degree before the appointment can start. Proof must be sent to ORISE directly from the academic institution including graduation date and degree awarded. All transcripts must be in English or include an official English translation.
- A current resume/CV

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

Description A post graduate research opportunity is available with the Animal Biosciences and Biotechnology Laboratory (ABBL) in Beltsville, Maryland. Due to the increase in antibiotic resistant pathogens, there is a need to develop and characterize novel enzyme antimicrobials for use against common agricultural bacterial pathogens. The primary goal is to use existing antimicrobial enzymes to replace over-used antibiotics. The participant will be involved in manipulating of bacteriophage endolysin genes and other peptidoglycan hydrolase enzyme genes. They will be expected to have a working knowledge of Gram positive bacterial cell walls and peptidoglycan structure. A working knowledge of basic molecular biological skills will be useful for engineering of enzyme domains to create more thermostable constructs and multi-functional enzymes. Testing of the candidate antimicrobials will be performed with live pathogens so the ability to maintain Biosafety level 2 containment, sterile technique and microbiological assays are a routine part of the experience. Bioinformatic knowledge in the designing of Polymerase Chain Reaction primers will benefit the program while engineering the novel antimicrobials. Site-directed mutagenesis might also be utilized to create single residue changes in candidate antimicrobial enzymes.

The appointment is full-time for eight 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 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-employment check and a full background investigation.

This opportunity is available to U.S. citizens.

This is an equal opportunity program open to all qualified individuals without regard to race, color, age, religion, sex, sexual orientation, gender identity, national origin, mental or physical disability, covered veteran's status or genetic information.

For more information about the ARS Research Participation Program, please visit the **Program Website**.

Qualifications

To be eligible, applicants must have received a Bachelor's degree in biology within five years of the desired starting date. One year post graduate experience in a molecular biology laboratory is highly desirable.

Experience and knowledge of antimicrobial enzymes to replace over-used antibiotics would be essential. The ability to manipulate DNA in vitro and to be involved in manipulating of bacteriophage endolysin genes and other peptidoglycan hydrolase enzyme genes would be critical. They will be expected to have a working knowledge of Gram positive bacterial cell walls and peptidoglycan structure. A working knowledge of basic molecular biological skills will be useful for engineering of enzyme domains to create more thermostable constructs and multi-functional enzymes. Testing of the candidate antimicrobials will be performed with live pathogens so the ability to maintain Biosafety level 2 containment, sterile technique and microbiological assays are a routine part of the experience. Bioinformatic knowledge in the designing of Polymerase Chain Reaction primers will benefit the program while engineering the novel antimicrobials. Site-directed mutagenesis might also be utilized to create single residue changes in candidate antimicrobial enzymes.

The selected applicant must keep impeccable notes and have experience with SDS PAGE and agarose gels. Important skills include: Restriction enzyme digestions, DNA fragment purification and extraction, Polymerase Chain Reaction (PCR), ligations, antibiotic selection for correct plasmid bearing E coli, DNA isolation (Quiagen mini and maxi preparations), culturing of

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Gram positive bacteria, photodocumentation, plate lysis assay, turbidity reduction assay, zymogram analysis.

Applicants must have a grade point average (GPA) of 3.1 or greater. The ability to work well with others as well as excellent communication skills are essential.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree.
- **Overall GPA:** 3.10
- **Discipline(s):**
  - **Communications and Graphics Design** (1 👁)
  - **Life Health and Medical Sciences** (1 👁)