

**Opportunity Title:** Microbiology: Zeolite Based Antimicrobial/Antiviral Formulations

**Opportunity Reference Code:** DHA-JBSA-2021-0003

**Organization** U.S. Department of Defense (DOD)

**Reference Code** DHA-JBSA-2021-0003

**How to Apply** Components of the online application are as follows:

- Profile Information
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records
- Recommendation

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blanked out, blackened out, made illegible, etc.) prior to uploading into the application system.

If you have questions, send an email to [stem-workforce@orise.ora.gov](mailto:stem-workforce@orise.ora.gov). Please list the reference code of this opportunity in the subject line of the email.

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

## Description

Join the US Air Force and Defense Health Agency in cutting edge research to advance the field of self renewing disinfectant strategies! This project will be conducted at Joint Base San Antonio-Lackland in a well-appointed cell biology and microbiology laboratory. The participant will have access to core equipment including flow cytometers, high throughput sequencing and genomics equipment, spectrophotometers, and other autonomous machines such as the EpMotion for automated reagent addition. The project is wet lab based, and has the potential to expand beyond microbiological and cell biology assays into more complex biological and environmental models.


The proposed opportunity will develop a new class of self-renewable, stable, safe surface disinfectants that require minimal reapplication. Here, nanozeolites, which are very porous materials, will be used as a carrier for transition metals such as copper, silver, zinc, and iron. These metals have been shown to have swift antimicrobial activity against viruses, bacteria and fungal pathogens. In addition, in a pro-oxidant environment such as those created by air purification systems that generate the antimicrobial gas hydrogen peroxide, nano-zeolites that contain transition metals will continuously undergo reactions that allow for production of reactive oxygen species. In this effort, effectiveness of zeolites will be tested for antimicrobial action on various surfaces such as stainless steel, plastics, and textiles with the end goal of moving this product line closer to regulatory approval for commercial use. The participant will actively engage in experiments under the guidance of mentors and other technical staff to further their professional development. In addition, the participant will gain useful knowledge on how government research is conducted, grant opportunities and exposure to other military relevant research projects. Many opportunities will be presented for inter departmental collaboration and exposure to joint research efforts between the services, educational institutions, small businesses, and other federal agencies.

Desired Appointment Start Date: TBD




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#### Appointment Length

This appointment is an eight month research appointment, with the possibility to be renewed for additional research periods. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

#### Participant Benefits

Participants will receive a stipend to be determined by DHA. Stipends are typically based on the participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement. *Participants are eligible to purchase health insurance through ORISE.*
- Relocation Allowance
- Training and Travel Allowance

#### Nature of Appointment

The participant will not enter into an employee/employer relationship with ORISE, ORAU, DOD, 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 DOD or any other agency, this opportunity will require a suitability investigation/background investigation. Any offer made is considered tentative pending favorable outcome of the investigation.

#### Qualifications

- Possess a MS or PhD (PhD Preferred but not required for qualified individuals) Microbiology, Cell Biology, Biology, Integrated Biomedical Science, Environmental Science, Toxicology, Pharmacology, or closely related discipline
- Have demonstrated professional competence and success in the form of peer-reviewed publications and presentations
- Display excellence in technical writing and report/ powerpoint presentations
- Display knowledge and competency in microbiology and cell biology techniques such as culturing, CFU assays, live dead assays, proliferations assays, bacterial culture, streaking, aseptic technique
- Have practical and functional knowledge of biosafety practices, pipetting, dilutions, unit conversions, and laboratory mathematics.
- Have bench skills including proficiency in cell culture, and in vitro screening assays such as live dead assay, luminescence, colony counts, turbidity assays, proliferation and viability assays.
- Familiarity with graphing software such as Graphpad Prism and Sigma plot
- Be comfortable in independent and team atmospheres, and be patient and flexible
- Excellent communication skills













#### Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or currently pursuing.

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- **Discipline(s):**

- **Chemistry and Materials Sciences** (12 )
- **Communications and Graphics Design** (2 )
- **Computer, Information, and Data Sciences** (16 )
- **Earth and Geosciences** (21 )
- **Engineering** (27 )
- **Environmental and Marine Sciences** (14 )
- **Life Health and Medical Sciences** (45 )
- **Mathematics and Statistics** (10 )
- **Other Non-Science & Engineering** (2 )
- **Physics** (16 )
- **Science & Engineering-related** (1 )
- **Social and Behavioral Sciences** (27 )