Opportunity Title: WRAIR - Optimization and Evaluation of mRNA Platform Technology Research Inernship
Opportunity Reference Code: MRDC-WRAIR-2025-0014

Organization U.S. Department of Defense (DOD)

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How to Apply Click on *Apply* at the bottom of the opportunity to start your application.

Description The Department of Defense (DoD) is offering a post bachelor's internship at the U.S. Army Medical Research and Development Command - Walter Reed Army Institute of Research (USAMRDC WRAIR).

Why should I apply?

The utility of the mRNA platform for infectious diseases lies in its speed, flexibility, safety and ability to elicit robust immune responses. mRNA medicines can be rapidly developed, modified, and combined into single formulations to target multiple pathogens. The technology uses a genetic blueprint to create a novel mRNA for target proteins, which can be encapsulated into lipid nanoparticles (LNPS) for delivery and cellular uptake. This research opportunity will focus on a targeted gene design, bioinformatics approach, to develop coding and noncoding sequence elements for stabilizing mRNAs for in vivo delivery. These mRNAs will either express target antigens as vaccine candidates or for delivery of heavy and light chain antibodies as immunoprophylactic molecules or as mRNA replacement therapeutics.

What will I be doing?

Under the guidance of a mentor and as the selected candidate, you will learn how to apply algorithms to predict parts of coding and noncoding sequences for optimization. As a result, designed mRNA transcripts will be produced by standard molecular biological techniques, i.e. plasmid DNA isolation, PCR amplification of templates and mRNA in vitro transcription reactions (IVT). You will gain experience using standard methods to purify mRNA molecules to homogeneity and evaluate them for quality. The final mRNA products will be assessed in in vitro assays for expression levels, and cellular localization. In addition to the in vitro assessment, you will engage in the evaluation of mRNAs in vivo in mice to determine effectiveness of the approach. These studies will be used to identify basic features of mRNA transcripts that enhance mRNA stability and efficiency of translation.

Where will I be located?

Silver Spring, Maryland

What is the appointment length?

Appointments are initially for one year with the option to extend the appointment for up to four additional years, contingent upon project needs and funding availability.

What are the provisions?

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

- Health Insurance Supplement (*Participants are eligible to purchase health insurance through ORISE)*
- Relocation Allowance

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- Training and Travel Allowance

About WRAIR

The Walter Reed Army Institute of Research (WRAIR) aims to conduct biomedical research that is responsive to Department of Defense and U.S. Army requirements and delivers lifesaving products including knowledge, technology and medical material that sustain the combat effectiveness of the warfighter. WRAIR provides unique research capabilities and innovative medical solutions to a range of Force Health Protection and Readiness challenges currently facing U.S. Service Members, along with threats anticipated during future operations. These research opportunities include ongoing efforts to identify and treat traumatic brain injury as well as to understand and mitigate thedeleterious effects of repeated exposures to blast. For more information about WRAIR, please Army Home.

About ORISE

This program, administered by Oak Ridge Associated Universities (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 DoD. Participants do not enter an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program at the U.S. Department of Defense.

Qualifications

The qualified candidate will have earned a bachelor's degree in bioengineering or biomedical engineering, biochemistry, structural biology, immunology or other eligible STEM discipline within 24 months of the appointment start date.

Highly competitive applicants will have education and/or experience in one or more of the following:

- Biochemistry - buffer preparation and general methods for purification proteins, molecular biology techniques to isolate DNA, RNA, and cell biology -
- Cell culture techniques such as sterile technique.
- Basic skills in nucleic acid quantitation's, i.e. gels and spectrophotometry.

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - Please upload a copy of a transcript for your current or most recent degree program that meets the disciplinary qualifications of the opportunity. Click here for detailed information about acceptable transcripts.
- Two recommendations. We encourage you to contact your recommenders as soon as you start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your

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scientific capabilities, personal characteristics, and describe how they know you. You can always log back in to your Zintellect account and check the status of your application.

If you have questions, send an email to ARMY-MRMC@orise.orau.gov. Please list the reference code of this opportunity [MRDC-WRAIR-2025-0014] in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials should be submitted via the “Apply” button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

Connect with ORISE...on the GO! Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

Point of Contact Kimberly

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree received within the last 24 month(s).
- **Discipline(s):**
  - **Engineering** (1 👁)
  - **Life Health and Medical Sciences** (5 👁)