

Opportunity Title: Computational Neuroscience Research at the U.S. Air Force Research Laboratory (AFRL)

Opportunity Reference Code: AFRL-711HPW-2024-0001

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 U.S. Air Force Research Laboratory (AFRL) is offering internships and fellowships for students to support the AFRL 711 Human Performance Wing (711 HPW), Airman Systems Directorate, Warfighter Medical Optimization Division, Product Development Branch, Enroute Care (RHBAM) branch aeromedical research collaboration with the University of Texas at San Antonio (UTSA).

What will I be doing?

As an ORISE participant, you will join a community of scientists and researchers in an effort to strengthen your skills in computational neuroscience.

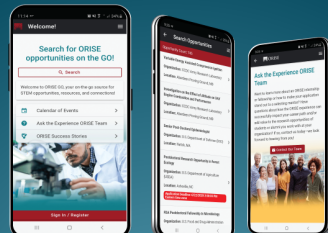
This project seeks to develop a computational model based on fast thermal gradients impact on synaptic mechanisms in dendritic spines. You will have the opportunity to be part of a collaborative project between UTSA, AFRL, and other universities where experiments and simulations will combine to understand fundamental plasticity processes in neuronal synapses. The results will have important practical implications in neuroscience and biomedical engineering. Within this project, you will develop deterministic and stochastic models of the biochemical signals involved in synaptic plasticity, and study how thermal gradients affect those reactions in the structurally complex dendritic spine environment.

Why should I apply?

Under the guidance of a mentor, you will gain hands-on experience to complement your education and support your academic and professional goals. Along the way, you will engage in activities and research in several areas. These include, but are not limited to:

- Understanding and implementing biochemical reactions and molecular diffusion dynamic simulations using state-of-the-art computational approaches.
- Having access to high-performance computing environments.
- Learning how to integrate experimental data and to use the models to make experimentally testable predictions. As such, you will develop skills at the boundary of computational and experimental sciences in biophysics and neuroscience.
- Interacting with an interdisciplinary team.
- Learning to efficiently and succinctly communicate key results to a broad specialized scientific audience.
- Learning to collaborate during the generation of presentations and publications.

Where will I be located?



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San Antonio, Texas

What is the anticipated start date?

AFRL is ready to make appointments immediately. Exact start dates will be determined at the time of selection and in coordination with the selected candidate. Applications are reviewed on an ongoing basis and internships and fellowships will be filled as qualified candidates are identified.

What is the appointment length?

This appointment is a one year 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. The participation rate may vary from completing 19 hours of training or research per week during the academic year to completing 40 hours of training or research per week during the summer months.

What are the benefits?

You will receive a stipend to be determined by AFRL. Stipends are typically based on a 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

About 711 HPW

The 711 HPW is headquartered at Wright-Patterson Air Force Base in Ohio, is the first human-centric warfare wing to consolidate human performance research, education, and consultation under a single organization. Established under AFRL, the 711 HPW is comprised of the Airman Systems Directorate (RH) and the United States Air Force School of Aerospace Medicine (USAFSAM). For more information about the 711th Human Performance Wing, please visit <https://www.wpafb.af.mil/afrl/711hpw/>.

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 into 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](#).

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Qualifications The qualified candidate will be an undergraduate or graduate student in a related discipline.

Highly competitive applicants will have programming skills such as in Python and Matlab. A background in engineering and or physics is highly desirable, but trainees from neuroscience or other biosciences with modeling experience are highly encouraged to apply.

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 - 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. [Click here for detailed information about acceptable transcripts.](#)
- One Recommendation - Your application will be considered incomplete and will not be reviewed until your recommendation is submitted. We encourage you to contact your recommender 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 scientific capabilities, personal characteristics, and describe how they know you.

If you have questions, send an email to AIRFORCE@orise.orau.gov. Please list the reference code of this opportunity [AFRL-711HPW-2024-0001] 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.

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- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Currently pursuing an Associate's Degree, Bachelor's Degree, Master's Degree, or Doctoral Degree.
 - **Discipline(s):**
 - **Computer, Information, and Data Sciences** ([1](#) )
 - **Engineering** ([3](#) )
 - **Life Health and Medical Sciences** ([2](#) )
 - **Mathematics and Statistics** ([1](#) )
 - **Physics** ([2](#) )