

**Opportunity Title:** Cellular and Molecular Neuroscience Internship

**Opportunity Reference Code:** AFRL711HPW-2020-0001

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

**Reference Code** AFRL711HPW-2020-0001

**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 - [Click here for detailed information about acceptable transcripts](#)
- 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 [AIRFORCE@orise.ora.gov](mailto:AIRFORCE@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

The Air Force Research Laboratory's Airman Systems Directorate is a key component of the 711th Human Performance Wing. The directorate is composed of a diverse group of scientists and engineers studying developing technologies specific to the human element of warfighting capability. We are leading the Air Force in its human-centered research, and we integrate biological and cognitive technologies to optimize and protect the Airman's capabilities to Fly, Fight, and Win in Air, Space, and Cyberspace. We are headquartered at Wright-Patterson Air Force Base, Dayton, Ohio, with additional locations at Brooks Joint Base San Antonio, Texas, Cincinnati, Ohio, and Baltimore, Maryland. For more information about the 711th Human Performance Wing, Airman Systems Directorate (RH), please visit <https://www.wpafb.af.mil/afri/711hbw/rh/>.

The overarching research goal of this lab is to understand how directed energy (DE) interacts with biological systems. This is important because, as members of the 711th Human Performance Wing, we want to understand the immediate and long lasting effects of DE exposure for the safety of our military personnel. To this end, we design experiments to study the effects of DE on excitable cells such as muscle and neurons; specifically, how muscle cell physiology is impacted by DE. Under the guidance of a mentor, the participant will support research to determine if DE-derived effects are transient or chronic in nature and be a part of short term goals to understand how calcium dynamics and intracellular mechanism are modulated by DE.

During this opportunity the participant will gain knowledge in:

- Live confocal microscopy
- Electrophysiology
- Data analysis



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The participant would be expected to present their research findings both orally and in written form for technical reports and peer-reviewed journals. The day-to-day tasks involve maintaining cultured cell lines, preparing cells for live imaging (transfections, seeding, dye incorporation), and conducting live imaging experiments. The live imaging experiments would be conducted in parallel with the application of field evoked stimulation from metal electrodes, and exposure to a fast thermal gradient from an infrared optical source.

#### **Appointment Length**

This appointment is a twelve 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 USAFRL. 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**

The applicant should be in pursuit of a bachelor's degree, preferably in biomedical engineering, and must be in their junior or senior year. The preferred applicant should have research experience in neuroscience research; specifically, electrophysiology and live-confocal microscopy.

#### **Eligibility Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Currently pursuing a Bachelor's Degree to be received by 5/31/2021 11:59:00 PM.
- **Overall GPA:** 3.00
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 )
  - **Engineering** (27 )
  - **Environmental and Marine Sciences** (12 )
  - **Life Health and Medical Sciences** (45 )
  - **Mathematics and Statistics** (10 )

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- **Age:** Must be 18 years of age
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).