REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHD-21-09

UNDERSTANDING THE IMPACT OF DIRECTED ENERGY ON NEUROMUSCULAR AND NEUROBIOLOGICAL MECHANISMS

PROJECT DESCRIPTION: Our laboratory's goal is to understand the bioeffects driven by directed energy exposure. To this end, my research focus is to evaluate how excitable cells such as skeletal muscle and neurons respond to infrared energy exposure. The purpose of this work is to identify the infrared parameters that uniquely modify cellular process in these cell types. To this end, we will be utilizing an array of live imaging microscopy techniques, behavioral assessments, and biomarker analyze to measure the immediate and long-term cellular effects triggered in skeletal muscle and neuronal cells.

ACADEMIC LEVEL: Bachelors

DISCIPLINE NEEDED:

- Life Health and Medical Sciences
    - Neurosciences

RESEARCH LOCATION: JBSA, Fort Sam Houston, San Antonio, TX

RESEARCH ADVISER: Christopher Valdez, PhD
Neuroscience, University of Michigan, 2016

Dr. Christopher Valdez joined the Air Force Research Laboratory in early 2018 as a principal investigator of infrared laser and high peak power microwaves (HPPM) bioeffects. His work focuses on discovering mechanism(s) of interaction between neurons and laser/HPPM exposure. Dr. Valdez utilizes behavioral, electrophysiological, and cellular techniques to address his research goals. His current efforts include evaluating learning and memory, and cellular dynamics. Dr. Valdez has published in various journals including Bioelectromagnetics, Journal of Neuroscience, Hippocampus, Molecular and Cellular Neuroscience, Neurosurgery, and Scientific Reports. Throughout his academic and post-doctoral career he has been awarded funding from the National Science Foundation, and the National Academy of Sciences.