

During my time at Wright State, I had the privilege of receiving an LSAMP research stipend that not only helped financially, but it encouraged me to make meaningful contribution to something I cared about: the health and wellbeing of others. This stipend facilitated my research into traumatic brain injuries (TBIs), specifically with a new diagnostic measure for continuous monitoring of the brain called 'functional near-infrared spectroscopy' (fNIRS). TBIs are more prevalent than one might think. They cause more deaths and disabilities than HIV/AIDS, breast cancer, multiple sclerosis, and spinal cord injuries combined.

As a collegiate soccer player, I saw the consequences first hand of this rather unseen injury. Persistent headaches, struggle with focus, memory loss, confusion, depression—it is quite dismal. I also noticed the lack of understanding of how to diagnose and manage it. The healthy brain is already complex, and while science is making productive advances in understanding it, there is still so much ambiguity and lack of knowledge on what happens when it sustains a trauma such as a blow to the head.

My research looked into using near infrared light to be able to continuously monitor blood flow in the brain, kind of like an Apple Watch but for your head. Employing this technology clinically could provide important measures such as oxygenation, autoregulation (how our body provides blood to our organs...in this case our brain), and activation. While currently research mainly looks at how these signals change over time, I got to look at what frequencies are present in our brain's blood flow. It was exciting to be able to see how such a simple little tool can show us so much and the impact it could have on patients in the future. The LSAMP stipend not only facilitated my ability to even conduct this research, but it communicated to me that there are people out there that believe in me. That I, a Hispanic female pursuing a bachelor's and master's in biomedical engineering, was capable and adequate. And for that, I am so grateful.

I was born in Mexico City, but moved to Puerto Rico when I was three. My parents' work then brought us to the U.S. six years later. It is their work ethic and perseverance to establish themselves in a foreign country (that might not always accept them) that has impacted me the most. Here in Ohio, I fell in love with soccer, and after playing for Loveland HS and a local club, I was recruited to Wright State. It was perfect. They had a major (biomedical engineering) that combined my interest for the human body and my math/problem-solving brain AND they had an athletic program that would challenge me and allow me to compete in a sport I loved.

I thoroughly enjoyed my time here and it undoubtedly grew me as a person, a student, and an athlete. It prepared me to be a soccer manager at LSU this past year and help those girls navigate how to balance academics, the pressure to perform at a high level, and just life in general. It prepared me to handle their performance data and analyze metrics such as heart rate, training loads, and energy expenditure. It prepared me for my current internship in Ohio where I work as a manufacturing engineer in the medical device field. My experiences have equipped me for a future of contributing both as a worker and a person, and I am indebted to Wright State and the LSAMP for the opportunity. All I can say is thank you. ~**Andrea Gomez BS ME '20, '21, MS BME**