ASNR Meet Our Members: Alexi Reed

Alexandra (Alexi) Reed studied chemical engineering as an undergraduate, and she is currently a second year PhD student at Arizona State University School of Biological and Health Systems Engineering. After hearing from her advisor Dr. Sydney Schaefer about how welcoming the ASNR community is and how engaging with other members could enrich her academic experience, Alexi decided to become a member in January of this year. She was also selected to receive one of our 2024 ASNR Diversity Fellowship Awards, which provides travel, training, and mentorship support.

1) How did you get interested in science, and what steps did you take to get to your current role?

I had always been interested in science from a young age, but my dad taking me to the California State University, East Bay Science Fair in fifth grade was the defining moment when I knew I wanted to be a scientist. After igniting this curiosity, my dad always made it a point to foster my love and curiosity for science and technology, for which I am forever grateful. My sophomore year of high school is when I discovered my love for chemistry, while also becoming interested in applying engineering toward neurological disorders after becoming the primary caregiver for my grandfather with Parkinson's disease. Due to my multitude of interests, deciding on a major when applying to college was difficult, especially because I didn't have anyone to really guide me as a first-generation college student. Eventually, I decided to pursue my bachelor's degree in Chemical Engineering at California State University, Long Beach, and along the way, I realized that doing biomedical engineering would suit my interests more. However, I didn't want to change my major because I enjoyed my chemical engineering classes, so I decided to pursue biomedical engineering on the side until I could attend graduate school.

After gaining undergraduate research experience in a tissue engineering lab, I did an NIH-Postbaccalaureate Research Education Program (PREP) at Purdue University where I engaged in a preclinical animal model research experience for brain-computer interfaces. Attending Purdue gave me the confidence and skills I didn't know I needed before applying to a biomedical engineering PhD program, and my newly discovered dislike for animal work is how I ended up at Arizona State University doing research with people who have Alzheimer's disease (AD).

2) What is the focus of your current research, and what are some of your findings?

My current research focuses on relating clinical motor assessments with cognition, daily function, and brain amyloid for AD and related dementias. Advancements in the understanding of AD have led to the development of non-invasive methods that can screen and monitor for

disease-related brain changes in the preclinical stages (i.e., magnetic resonance imaging, positron emission tomography, blood-based biomarkers). However, these methods are expensive and require extensive resources making them not affordable or accessible for many people. Moreover, these biomarkers have been primarily tested and validated in Non-Hispanic White individuals, and only limited data exist for Hispanic/Latino older adults who are 1.5 times more likely to develop the disease. Thus, there is a critical need for the development of other non-invasive screening methods.

One potential alternative is to utilize other non-invasive biomarkers to screen for AD, like motor behavior and performance. Our prior work has demonstrated that objective clinical assessments involving motor behavior in Non-Hispanic White older adults can identify early signs of AD. These findings are further corroborated by other research demonstrating how motor decline may begin years earlier than cognitive decline, however, the relationships between clinical motor assessments (i.e., gait speed), cognition, and daily function and AD pathology in Hispanic/Latino older adults is unknown. Therefore, my current work is testing the extent to which these variables are associated. I do not have any findings *yet*, but I expect that there will be no difference between Non-Hispanic White and Hispanic/Latino older adults when examining the relationships due to the objectivity of motor-based measures.

3) How have you benefited from your membership in ASNR and receipt of the Diversity Fellowship Award?

Being an ASNR member and recipient of the Diversity Fellowship Award has been extremely rewarding for me because it's allowed me to meet so many passionate and talented researchers in different areas of neurorehabilitation. Receiving the Diversity Fellowship also gave me the opportunity to attend the ASNR Annual Meeting for the first time in San Antonio, where I got to present my work, get feedback on my research, and connect with other knowledgeable people. Being a part of ASNR has helped me think about my work from different perspectives, and it has showed me the potential avenues that are open to me after my PhD program.

4) What are your longer term career goals?

My long-term career goal is to run research programs for undergraduates and post-baccalaureates at a minority-serving institution. While I was completing my bachelor's degree in Chemical Engineering, I was accepted to various research and graduate school readiness programs where my mentors were my guiding light during the application and decision-making process. They also heavily contributed to my personal development and showed me that my voice and my questions matter. Their passion and unwavering support is why I was able to make it this far, and I want to pay it forward by providing that same support for other students from similar backgrounds. I hope that I can have just as powerful of an impact on students as my mentors did on me.

Visit Alexi's profile on LinkedIn to get connected.