Meet Our Members: Adarsh Mavathaveedu

We are excited to welcome Adarsh Mavathaveedu, one of this year's new ASNR Members. Adarsh is a pre-medical student majoring in neuroscience at the University of Rochester (Class of 2024). He joined ASNR to expand his knowledge of applied neuroscience as well as learn more about the career options available to him upon graduation. In our interview, Adarsh shares more about his career and his research.

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

From 2016 to 2020, I had the opportunity to attend a dual-enrollment program and obtain my associate degree and high school diploma concurrently. During the highly caffeinated, late-night study sessions with my friends, I developed a deep appreciation for the cellular and biological mechanisms of human behavior. In particular, the level of collaboration among my peers and the emphasis on innovative experimental techniques for generating possible hypotheses were of great interest to me.

Driven by these interests, I decided to attend the University of Rochester for my undergraduate training, and I'm currently majoring in neuroscience. While my coursework has taught me basic foundational concepts, it was my position as an Undergraduate Research Assistant in Dr. Ania Busza's lab that has truly immersed me in the field and enabled me to gain both clinical and research experience. Through working with acute stroke patients at the University of Rochester Medical Center, I've been able to listen to their concerns and challenges as they adjust to their new lives. Similarly, by collecting and analyzing their electromyographic data, conducting motor assessments, and reading/presenting literature, I could test and devise new ways of objectively assessing their motor impairments as well. Lastly, with the aim of learning new tools for motor recovery, such as transcranial magnetic stimulation, I travelled to Cleveland last summer and worked with Dr. David Cunningham on his motor mapping study at the Cleveland Functional Electrical Stimulation Center.

Overall, it was my experiences outside of class, including the time I spent with Dr. Busza and Dr. Cunningham, as well as my time at the ASNR conference that has solidified both my understanding of neuroscience and its direct applications in improving patients' quality of life.

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

Prior literature has highlighted how certain impairments such as coactivation, fatigability, delay, and weakness can be debilitating for chronic stroke patients. However, more work is needed to

understand when these impairments emerge in the acute phase, how they evolve over time, and whether early targeted intervention can assist with recovery. At the Movement and Plasticity Lab (MAPL), we've developed a novel, electromyographic (EMG) computer interface to collect data from acute stroke patients in a more engaging manner. We're actively enrolling patients and analyzing EMG data for our longitudinal study, but we've observed some preliminary findings within our smaller subset of patients. In particular, patients with varying level of impairments seem to undergo different modes of recovery with several metrics improving and/or worsening independently of each other. For example, one patient saw an increase in strength with no change in coactivation on their affected side when comparing baseline (< 1 week after stroke) visits to other time points (1 month, 3 months). However, others have seen an increase and/or decrease in one or both metrics over time. Our lab's current goal is to meet our target enrollment count (n=60) and observe whether these groups of patients with different recovery patterns can be correlated to clinical (e.g. lesion location), motor (Fugl-Meyer), or EMG (peak EMG, time of onset etc.) variables.

3) What are your long-term career goals?

As I approach my senior year, I hope to begin applying to MD as well as MD/PhD programs. I've been inspired by my PI's continuous efforts to work with patients, identify a key impairment, and push for active research in that direction. I believe that not only building my knowledge of neuroscience, but also understanding its relevance to motor impairment, recovery, and functioning will help make my academic career more meaningful and complete. Medicine and research are inextricably connected, and in sum, I would love to continue my journey specializing in the overlap of these two fields. With the support of my PI and the invaluable connections at the ASNR, I feel confident that I have the resources needed to succeed in this endeavor!

To learn more, you can connect with Adarsh on LinkedIn.