

**Name:** Ananya Govindarajan

**Year in Course:** 1st (Sophomore)

**Topic:** Alzheimer’s Disease, Neuroscience, Neurorehabilitation, Bioinformatics

**Mentor:** Dr. Badri Vardarajan, Columbia University; Dr. Tomoko Kitago, Burke Neurological Institute, Weill Cornell Medicine

**Title:** “Using Paired Associative Stimulation to Evoke Plasticity and Effective Motor Recovery Techniques”

“Frequency of APOE in Hispanic Populations Effect on Alzheimer's Disease and Inheritance”

**Bio:**

Ananya Govindarajan is a sophomore at Pawling High School and is currently enrolled in her first year of Pawling's Science Research Program. During the school year, Ananya has enrolled herself in several rigorous honors classes and is taking AP Capstone Seminar, this year. Ananya is genuinely interested in all subjects and courses she takes and is especially engrossed by the accelerated science and math courses she takes. Ananya is involved in several extracurriculars, in addition to her heavy workload. Some examples include her involvement in the Pawling Girl's Soccer Team, Debate Team, Mock Trial, Jazz Band, and Math Team. This year, Ananya was very fortunate to act as an alternate for Pawling's Math Team in sectionals and was also a defense attorney on Pawling Mock Trial Team. Ananya is also an athlete and participates in soccer in the Fall. She has been playing since she was four years old and has continued to play ever since. Another one of Ananya's avid passions is piano playing. She has been playing since the age of five and participates in NYSSMA competitions since the age of six. Moreover, she was honored with the opportunity of playing at Carnegie Hall in May 2019 and is very enthusiastic about the instrument and its history. Lastly, Ananya is extremely ardent on community service and helping the people of her community. In her free time, she enjoys volunteering at several establishments, including the Pawling Resource Center, Pawling Free Library, Pawling High School events, retirement homes, and several others. Ananya aspires to attend a University to further her knowledge and passion for neuroscience.

Ananya's keen interest in neuroscience stems from her love of biology and how different mechanisms in the human body function. Because of her curiosity in this area, she has taken up an interest in Alzheimer's Disease and its genetic implications and how specific genes may play a role in the progression of the terminal, neurodegenerative disease. She is researching certain molecules and genes, such as APOE and how different ancestries/racial background may contribute to the development of the disease. APOE or apolipoprotein E is a lipoprotein-associated with lipid packaging and cholesterol, which is very under-researched in the field of Alzheimer's Disease and neuroscience. Through investigation of genomic data and DNA sequences, Ananya will be able to investigate APOE and its frequency/effects on an individual. Ultimately, this area of research will aim to find genetic targets for Alzheimer's Disease and give further insight into what may be a cause or risk factor for individuals. Furthermore, Ananya is very fortunate to be able to pursue another project in neuroscience regarding neurorehabilitation in stroke patients. Under the guidance of Dr. Tomoko Kitago, Ananya will be investigating kinematics and how specific techniques will enhance stroke patients' motor capabilities. Using human trials and working with stroke patients, Ananya will help assess the efficacy of these techniques. This particular area of research is very vital because of how variant rehabilitation techniques are, and this research seeks to find more specific, individualized, and more effective ways to better the recovery of stroke patients.