

Name: Ananya Govindarajan

Year in Course: 2nd (Junior)

Topic: Microbiology; Neuroscience

Mentor: Dr. Badri Vardarajan, Columbia University; Dr. Tomoko Kitago, Burke Neurological Institute, Weill Cornell Medicine; Dr. Todd. Hennessey, University at Buffalo

Title: "Behavioral Effects of Chemorepellents on Wild-Type and Mutant *Tetrahymena thermophila*"

Bio:

Ananya Govindarajan is a junior at Pawling High School and is currently enrolled in her second year of Pawling's Science Research Program. During the school year, Ananya has enrolled herself in several rigorous honors classes and is taking AP Chemistry, AP Language and Composition, and AP US History. 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 Math Team, Mock Trial, and Math, Spanish, Science, and National Honor Societies. 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. She also continues to peer tutor students within the Pawling District and outside because of her immense love of learning and knowledge. Ananya aspires to pursue a career in neuroscience in the future..

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 microbiology and specifically neural behavior. *Tetrahymena thermophila* are a type of model organism to indicate how different stimuli affect the cells. These cells can be indicative of how neurons respond to a variety of stressors. The two main stressors focused on with these cells are temperature and chemicals. Ananya's research specifically focuses on chemicals and chemorepellents; chemorepellents are substances that repel cells away from toxic chemicals/environments, making it a part of an integral survival mechanism. Her research focuses on specifically a mutant gene that controls a chemorepellent response pathway known as *G37* which controls the receptor GPCR3. This particular receptor has been identified to be more responsive to



certain chemicals, but not specifically chemorepellents. Ananya aims to investigate how different chemorepellents, particularly oxidants and reductants affect their cellular behavioral responses and homeostasis.

Awards:

- ISEF Finalist 2021
- 1st Place at DSEF 2021
- Vassar Brothers Institute Award 2021
- Scientific Research Society Award 2021
- Pamela Edington Science Award 2021
- Society of Women Engineers Award 2021
- Yale Science and Engineering Association Award 2021