



# HERRICKS HERALD

HERRICKS SCHOOL DISTRICT NEWSLETTER

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## Regeneron Science Talent Search

**SPECIAL ISSUE**

This month's edition of the Herricks Herald is dedicated to the five Herricks High School students who have been named semifinalists in the 2025 Regeneron Science Talent Search. Congratulations to Serena Chen, Shannon Hong, Caitlin Lee, Sandeep Sawhney and Armaan Vaswani!

# Regeneron Science Talent Search

**R**egeneron is the nation's oldest and most prestigious science, technology, engineering and math (STEM) competition for high school seniors. Only 300 students are selected nationwide for this distinction, and with just 49 students from Long Island, 5 are from Herricks! Finalists were selected from 2,471 entrants, the largest pool of applicants since 1967. Selections are based on the originality and creativity of their scientific research. We could not be more proud of our students who worked extremely hard throughout this process!



## Serena Chen

*The Novel Involvement of Peroxisomal Beta-Oxidation During Mitochondrial Inhibition in Catecholamine Stimulated Acyl-Coenzyme A Oxidase 1 (ACOX1) Knockout White Adipocytes*

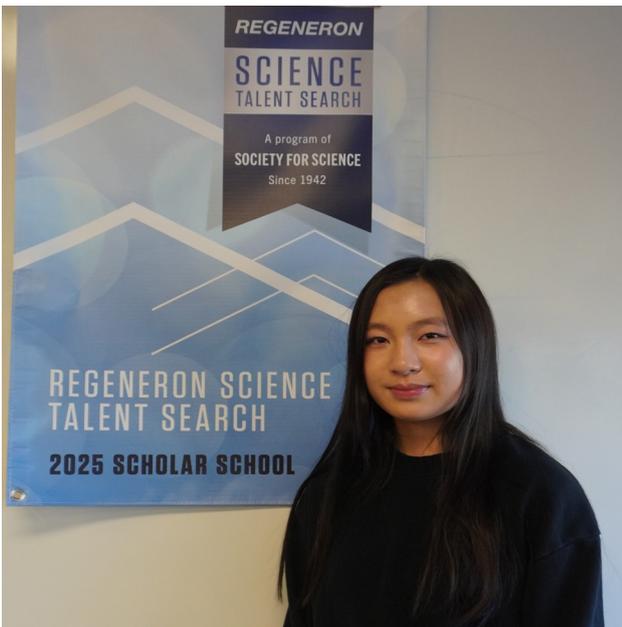
When Serena entered high school, she never expected to become so deeply involved in the science research program. Growing up, she wasn't particularly passionate about science and had always been more drawn to the arts. However, her freshman year biology teacher changed that perspective. His engaging teaching style sparked her interest in science, particularly in cell organelles and the molecular workings of cells. By the time she reached her junior year, Serena knew she wanted to focus on molecular biology. She intentionally

sought out a lab that aligned with her interests. Inspired by her mentors' passion for the field, she chose to continue her research at the same lab during her senior year.

The research process wasn't without its challenges. Serena encountered issues like cell contamination and unexpected results, which often left her feeling frustrated and defeated. But through these struggles, she learned to embrace failure and the importance of perseverance. She realized that research isn't always a straight path—sometimes you don't know the next step, but it's crucial to keep pushing forward, staying courageous and committed to the process.

When Serena found out she had made the top 300 scholars in the Regeneron Science Talent Search, it was an emotional moment. She had always been familiar with the program through her older brothers, but never felt pressured to become a semifinalist. After putting in countless hours of hard work and discovering her passion for molecular cell research, being recognized was a deeply rewarding experience. She was thrilled to share the news with her family, who had supported her every step of the way.

Looking ahead to college, Serena is excited to pursue biomedical engineering and continue her research. She has also delved into metabolic health and developed an interest in neuroscience and developmental biology. With these diverse interests, she is eager to explore new fields and broaden her horizons beyond molecular biology.



## Shannon Hong

*Leveraging Machine Learning to Reveal the Impacts of Light Pollution on Suboscine Birdsong Characteristics Extracted From the Xeno-Canto Database: A Principal Component Analysis*

From a young age, Shannon developed a deep affinity for birds, even having two pet birds of her own. In school, she became increasingly aware of the alarming decline in bird populations through documentaries on climate change. She felt a strong connection to these creatures and empathized with their struggle. Since birds lack a voice, Shannon made it her mission to give them one.

When Shannon joined the science research program, she discovered a community of researchers working on bird conservation, and she was inspired to follow their lead. Her Regeneron Science Talent Search project built upon her junior-year research, which focused on how light pollution impacts bird species. She explored the unexpected ways humans contribute to their decline and ways to mitigate those effects.

Before entering the science research program, she had originally planned to become a veterinarian. However, when she was paired with a mentor who studied the evolution of birds—examining their behavior and how things like their feathers have changed over time—Shannon was amazed. The complexity of bird evolution opened her eyes to a whole new realm of research, and her curiosity only grew from there. As she continued her research, Shannon became increasingly fascinated by the intricacy of bird behavior. This ongoing curiosity fueled her passion throughout the years in the science research program.

When Shannon learned she had been named a Top 300 Scholar, she was overwhelmed with excitement and gratitude. Birds are often overlooked in the broader conversation about conservation, as many people focus primarily on issues that affect human society. For Shannon, knowing that her work was helping elevate the importance of birds and wildlife in the public eye was incredibly rewarding. She was also thrilled to see other students studying birds, appreciating how the Regeneron program uplifted their projects and encouraged them to continue pursuing careers in conservation.

After completing her freshman-year project with a mentor who had earned a PhD in evolutionary biology, Shannon was certain she wanted to pursue this field for the rest of her high school career. Now, as a senior, she is committed to majoring in evolutionary biology in college and is excited to further her research on bird conservation. Over the years, Shannon has also become aware of the need for stronger public policy regarding wildlife conservation. She believes that, given the current state of our climate, more must be done to create meaningful change. Shannon is determined to advocate for that change and hopes to combine her passion for science with public policy to make a lasting impact.



## Caitlin Lee

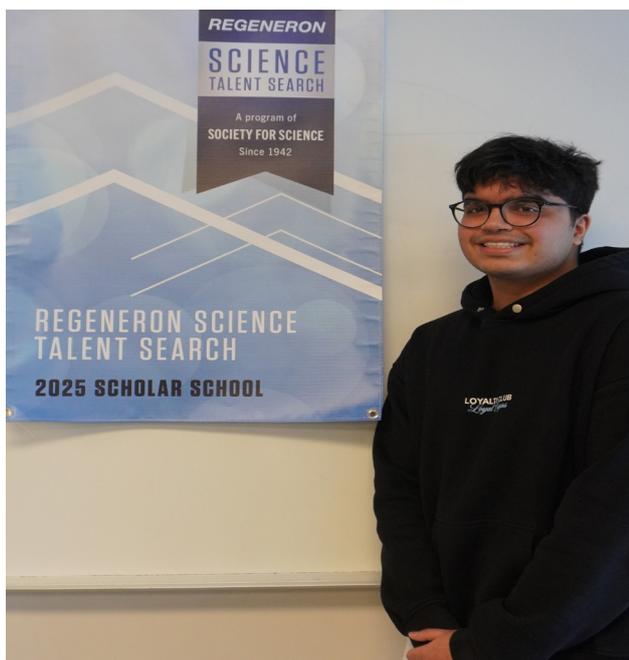
*In vitro Analysis of SARS-CoV-2 Omicron JN.1 Subvariants with Spike S31 Deletion and Their Evasion of COVID-19 Therapy*

During her freshman year, Caitlin embarked on an independent research project investigating the antibiotic effects of various spices, which sparked her initial interest in microbiology. This project not only fueled her curiosity about science, but also set her on a path toward exploring the broader implications of microbiological research. When it came time to search for labs and refine her focus, the COVID-19 pandemic played a pivotal role in shaping her academic direction. After learning about the disease's global impact, Caitlin felt compelled to delve into virology.

Since that first project, Caitlin has developed a deep passion for the research process. It has allowed her to not only learn about the topics she's researching, but also refine critical skills like scientific reading analysis and writing. These skills were instrumental in her work for the Regeneron Science Talent Search project, where she was able to apply her growing expertise. Additionally, being part of a class with other students equally passionate about science and medicine has been incredibly enriching. The collaborative environment gave Caitlin the opportunity to exchange ideas, learn from others, and grow academically.

When Caitlin found out she had been named a semifinalist in the Regeneron Science Talent Search, it was a moment of unexpected joy. While she had already felt a sense of accomplishment just by submitting her project to such a prestigious competition, she never imagined she would be recognized. The moment became even more special when she received the news surrounded by her classmates and friends, who were all incredibly supportive and excited for her. Sharing this achievement with her family was equally thrilling, especially since they hadn't anticipated such an honor.

Looking ahead, Caitlin plans to continue her research in college, remaining open to exploring different fields. She intends to major in public health, driven by a desire to contribute to the prevention and protection of human health on a global scale.



## Sandeep Sawhney

*Gallium Mediated DNA Tensegrity Triangle Based Crystals: A Novel Prototype Facilitating Gallium Cancer Therapy*

Throughout high school, Sandeep was deeply interested in computer science, physics, and engineering. When searching for a lab, he initially targeted those focused on these interests. However, after realizing these were mostly reserved for graduate students, he adjusted his search. He eventually found a lab focused on DNA engineering, which didn't initially appeal to him, as he thought it was too biology-based. After learning more, he realized the lab was engineering DNA to behave in specific ways, aligning more with his interests. When Sandeep heard back

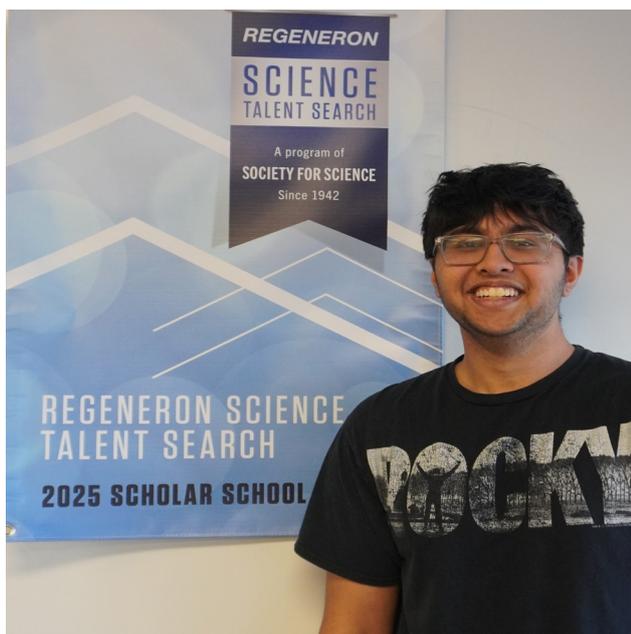
from the lab, they mentioned knowing his older brother, who had worked there previously without Sandeep's knowledge—a funny coincidence that led to a great opportunity.

Sandeep decided to research advancing cancer treatment based on gallium drugs, motivated by the loss of his grandfather to cancer. He felt that while cancer wasn't the direct cause of his death, the harsh treatments weakened his body. Determined to combine his engineering skills with his personal connection to the problem, Sandeep hoped to create a better cancer treatment. He pitched his idea to his mentor, who was excited because the lab had worked on similar cancer treatments before. Once approved, Sandeep dove into the project. The lab gave him a lot of independence, providing resources while he did all the work, and the results were promising.

The Herricks Science Research Program is a tight-knit group of students who go through a rigorous process to prepare their work for submission to Regeneron. The collaborative environment made Sandeep's semifinalist recognition even more special, when the students found out together. During the announcement, Sandeep sat in the back of the classroom, anxiously waiting for the results to be updated on the smartboard. When the page refreshed, he didn't see his name. It wasn't until his friend Armaan, also a semifinalist, congratulated him that he realized he made the Top 300. It was the most exciting moment he has had in High School.

The excitement didn't stop there. A few weeks later, Regeneron began calling the Top 40 finalists. Sandeep had been busy with extracurriculars and hadn't noticed the missed calls from Washington, D.C. When he returned the call, he was thrilled to learn that he was a finalist. His mom was so overjoyed she started crying. It was an amazing moment, and they couldn't wait to share the news with his dad, who was equally thrilled. Sandeep will now travel to Washington, D.C., to meet leading scientists, undergo a rigorous judging process, and compete for more than \$1.8 million in awards, including the top prize of \$250,000.

Beyond the Regeneron competition, Sandeep plans to continue his research. He has a prototype for a transportation system for gallium cell therapy and wants to develop it further in college, with his eyes set on Johns Hopkins' biotechnology lab, which aligns with his current research. If successful, his work could lead to a mass-producible cancer treatment, simpler and less harmful than chemotherapy. He hopes to contribute to more targeted and advanced cancer treatments in the future.



## Armaan Vaswani

*The Novel Effect of Veratrin on Cellular Viability and Apoptotic Proteins in Fuchs Endothelial Corneal Dystrophy*

From a young age, Armaan has been interested in ophthalmology, particularly because of a disease that runs in his family. This personal connection sparked his fascination with the field. When he was paired with a mentor in ophthalmology, it felt like a natural path to follow. After spending time in the lab and gaining a deeper understanding of the work being done—

particularly the focus on degenerative diseases—Armaan decided he wanted to contribute to the research. He put together a research proposal for a potential treatment for the disease and presented it to his lab.

When Armaan first started in the research program, he thoroughly enjoyed it, though he quickly realized it was a significant jump in terms of workload. The program required the most effort, especially in the first two years when he was learning how to read and annotate scientific literature. However, as time passed, it became more manageable. Armaan appreciated the subject matter so much that he never dreaded the coursework; it simply took time to adjust to the demands.

Armaan was ecstatic when he found out he had been named a Top 300 Scholar. It was an unexpected honor for him. The most rewarding part of this accomplishment was sharing the news with his parents and family. For Armaan, the recognition was a powerful reminder that his hard work had paid off. He felt proud knowing that he was capable of contributing to important research that could one day help others.

Looking ahead, Armaan plans to continue his research in college and hopes to pursue it throughout his life. Being named a scholar has already opened doors and introduced him to a valuable network that will help him gain more research opportunities. He plans to continue working in research, potentially in the same lab, over the summer. Armaan is eager to keep exploring ophthalmology or a related field, and he hopes to continue this research professionally after graduation, alongside his pursuit of a medical career.