

# Excellence

Center for Excellence in Education

## 2020 Research Science Institute Alumni Named 2021 Regeneron STS Semifinalists

**Sarah Chen**, Phillips Academy, MA

Project Title: *In Silico* Prediction of Retained Intron-Derived Neoantigens in Leukemia

**Dev Chheda**, Ardrey Kell High School, NC

Project Title: Novel Methods for Shape Classification, Analysis, and Synthesis Using the Isoperimetric Profile and Mathematical Morphology

**Yunseo Choi**, Phillips Exeter Academy, NH

Project Title: On Two-Sided Matching in Infinite Markets

**Kenneth Choi**, Ridgefield High School, CT

Project Title: Constructing General Hamiltonian Ground States on a Quantum Computer Using the Projected Cooling Sensor Algorithm

**Owen Dugan**, Dugan Homeschool, NY

Project Title: Astronomy Will Not Trail Off: Novel Methods for Removing Satellite Trails from Celestial Images

**Ishan Khare**, Ottawa Hills High School, OH

Project Title: Computational Discovery: Novel Material NaAsS<sub>2</sub> Predicted to Exhibit Promising Optical Absorption Coefficient and Seebeck Coefficient for Photovoltaic and Thermoelectric Applications

**Song Kim**, William Henry Harrison High School, IN

Project Title: Computational Modeling of Intracellular Movement of Vesicular Stomatitis Virus Ribonucleoprotein Particles

**Khushi Kohli**, Olathe North High School, KS

Project Title: Dynamics of Brain Metastasis in Non-Small Cell Lung Cancer

**Jessica Lee**, Bergen County Academies, NJ

Project Title: Analysis of Data-Reduction Techniques Used in Dynamical Systems Modeling

**Marvin Li**, James M. Bennett High School, MD

Project Title: Machine Learning Classifiers to Predict Outbreaks of Toxic *Karenia brevis* Blooms on the West Florida Shelf

**Anne Liang**, duPont Manual High School, KY

Project Title: Grape Polyphenols Inhibit Pro-Inflammatory Signaling and Dental Bacteria

**Addison Liu**, Unionville High School, PA  
Project Title: Simulation and Analysis on the Self-Foldability of the Origami Hyperbolic Paraboloid

**Daphne Liu**, West High School, UT  
Project Title: Using Machine Learning to Predict Physiological Metrics from PPG Pulse Shapes

**Andrei Mandelshtam**, University High School, CA  
Project Title: The Structure of the Positive Monoid of Integer-Valued Polynomials Evaluated at ALPHA  
IN Q

**Sayalee Patankar**, Adlai E. Stevenson High School, IL  
Project Title: Deep Learning-Based Computational Drug Discovery to Inhibit the RNA Dependent RNA Polymerase: Application to SARS and COVID-19

**Melanie Quan**, Las Lomas High School, CA  
Project Title: Developing a Sustainable Cycle of Compostable and Water-Soluble Plastics by Repurposing Waste Products of Algal Biofuel Production

**Shreya Ramachandran**, American High School, CA  
Project Title: Water Recycling: The Effect of Soap Nut Grey Water on Soil and Plant Health, *E. coli* and Fecal Coliform Contamination, and the Soil Microbiome

**Kaien Yang**, Thomas Jefferson High School for Science and Technology, VA  
Project Title: New Methods for Computing the Configurational Entropy of Deeply Supercooled Liquids with the Potential Energy Landscape

**Vivian Yee**, International Academy, MI  
Project Title: A Novel Epidemiological Approach to Exploring the Implications of Social Determinants of Health on COVID-19 Spread: A Call to Action for Health Equity

**Amy Zhou**, William P. Clements High School, TX  
Project Title: Entropy of Amorphous Systems in Their Ground States

**Alec Zhu**, Lexington High School, MA  
Project Title: Investigation of Selenium Mediated Allylic and Propargylic Amination with Computational Chemistry

## **2020 USABO Alumnus Named 2021 Regeneron STS Semifinalist**

**Victor Li**, Age: 17  
The Wheatley School, NY

Project Title: Acoustic Analysis of Laser-Induced Graphene: Development of Quantitative Indicators for Direct Determination of Quality and Microstructure Morphology