2021 Regeneron STS Scholars

Society for Science proudly announces the top 300 scholars in the Regeneron Science Talent Search 2021, the nation's oldest and most prestigious science and math competition for high school seniors. The Regeneron Science Talent Search provides students a national stage to present original research and celebrates the hard work and novel discoveries of young scientists who are bringing a fresh perspective to significant global challenges. The 300 scholars and their schools will be awarded $2,000 each. The Regeneron Science Talent Search scholars were selected from 1,760 applications received from 611 high schools across 45 states. Scholars were chosen based on their exceptional research skills, commitment to academics, innovative thinking and promise as scientists and hail from 193 American and international high schools in 37 states, Puerto Rico and two additional countries.

VIEW THE PRESS RELEASE

View the 2021 Scholar Book

Regeneron Science Talent Search

Sign Up to Receive Updates about STS

2021 Scholars

Laalitya Acharya, Age: *17*
William Mason High School, OH
Project Title: Nereid: Using a Convolutional Neural Network (CNN) Approach, an AI Technique, to Rapidly and Accurately Detect Microbial Contamination that May Cause Water-Borne Diseases

Vardhan Agrawal, Age: *18*
Cupertino High School, CA
Project Title: BP-Lytic: A Novel Apparatus to Continuously, Cufflessly, and Affordably Monitor Blood Pressure Trends

Shray Alag, Age: *17*
The Harker School, CA
Project Title: Analysis of COVID-19 Clinical Trials: a Data-Driven, Ontology-based, Longitudinal, and Natural Language Processing Approach

Ibrahim Al-Akash, Age: *18*
Veterans Memorial High School, TX
Project Title: Max Health: Engineering a User-Friendly Smartphone and Smartwatch Application with Intelligent Textiles Biosensors to Detect Arrhythmias, Dysglycemia, Neurological Diseases, and Predict Asthma Attack Risk

Mir Zayid Alam, Age: *18*
Manhasset High School, NY
Project Title: Identification of Genetic Biomarkers for Hepatocellular Carcinoma Using an Automated Microarray-Based Pipeline and Pathway Enrichment

Foyez Alauddin, Age: *17*
Trinity School, NY
Project Title: Quadratization of Ordinary Differential Equations: Monomial vs. Non-Monomial

Ashley Alcantara, Age: *17*
Brentwood High School, NY
Project Title: Farming Biodegradable Packaging Using *Pleurotus ostreatus* Mycelium

Christopher Alexander, Age: *17*
Elmont Memorial High School, NY
Project Title: *Avian Paramyxovirus Serotype 4* (*APMV-4*) Promotes Greater Rates of Apoptotic Cell Death & Stimulated Immune Responses in Malignant Melanoma and Relapse Cancers in Respect to *Newcastle Disease Virus* (*NDV*): The Characterization of a Novel Oncolytic Virus

Isabella An, Age: *17*
Union County Academy for Allied Health Sciences, NJ
Project Title: A Systematic Analysis of SLC9A9 SNP Sites and Their Association with Human Disease

Yash Anand, Age: *17*
Montgomery Blair High School, MD
Project Title: Developing a Toy Model for Quantum Chaos Theory: Entanglement Entropy of Bipartite System Under Random Real Hamiltonians

Sraavya (Aashi) Anne, Age: *16*
Mayfield High School, OH
Project Title: Efficacy of Plant Extracts in Alzheimer's Disease Using Transgenic *C. elegans*

Parth Asawa, Age: *17*
Monta Vista High School, CA
Project Title: Mapping US Solar Insolation and Analyzing Cloud Predictability with a Novel Method using NASA's DSCOVR & SORCE Satellites

Perisa Ashar, Age: *18*
Maggie L. Walker Governor's School, VA
Project Title: Development of a Novel Biomarker Panel and Investigation of Blood-Based and Tumor miRNAs for Rapid Identification of Lung Cancer by Blood Tests Utilizing Next-Generation Sequencing, Computational, and In-Vitro Analyses

Elena Bai, Age: *18*
Rolla Senior High School, MO
Project Title: Exploring Perceptual Associations Between Color and Music

Akhilesh Balasingam, Age: *17*
Archbishop Mitty High School, CA
Project Title: A Kinetic Monte Carlo Simulator for Multi-Terminal RRAM Devices with Applications to Brain-Inspired Computing

Manav Bansal, Age: *18*
The Wheatley School, NY
Project Title: Metformin and Mannose Inhibit Human Hepatic Stellate Cell Activation and Proliferation: Implications for Anti-Fibrotic Therapies in Patients with MPI Deficiency and Chronic Liver Disease

Alexandra Bardas, Age: *17*
New Trier Township High School, IL
Project Title: Identification of Novel Candidate Genes for Anthelmintic Drug Susceptibility to Alter Neglected Tropical Disease Treatment Strategies

Clara Barschdorff, Age: *18*
Bronx High School of Science, NY
Project Title: Race, Mobility, and the American Dream

Hannah Barsouk, Age: *17*
Taylor Allderdice High School, PA
Project Title: Cross-Species Complementation Experiment Exploring the Role of Mammalian ALPHA-Arrestins in Glucose Transporter Trafficking

Hirak Basu, Age: *17*
Turpin High School, OH
Project Title: The Efficacy of Retaining Water for Citrus Derived SAPs: Year Two — A Quest for Optimization

Michael Batavia, Age: *17*
Bronx High School of Science, NY
Project Title: New Computational Model For Mitosis to Save Lives from Cancer

Alexander Bell, Age: *17*
Kealakehe High School, HI
Project Title: Optimization of a Venturi Flow Mechanism for Gas-Transfer Applications

Anika Bhadriraju, Age: *17*
North Carolina School of Science and Mathematics, NC
Project Title: Computational Design of Pathogen-Specific Hsp90 Inhibitor to Target Malarial Parasites

Sid Bharthulwar, Age: *17*
Fairview High School, CO
Project Title: Reconstructing Thoracic Computed Tomography Volumes from Single-Plane and Dual-Plane Chest Radiographs Using Encoder-Decoder Neural Networks

Niharika Bhattacharjee, Age: *17*
Yorktown High School, NY

Project Title: Digital Dental Triage: Automated Digital Diagnosing System for Dental Cavities Using Artificial Intelligence

Tymber Boldt, Age: *18*
Flasher High School, ND
Project Title: Driving on Air

Malik Bradford III, Age: *17*
Ardsley High School, NY
Project Title: Exploring Novel Regulators of Endoplasmic Reticulum (ER) Stress Through Cell Signaling and Unsupervised Machine Learning Methods

Alex Breslav, Age: *18*
George W. Hewlett High School, NY
Project Title: Evaluating the Specificity of Novel Monoclonal Antibodies for Pancreatic Ductal Adenocarcinoma

Charles Brown, Age: *17*
Ossining High School, NY
Project Title: The Validation of Electrodermal Activity as an Objective Measurement of Generalized Anxiety Disorder in Adolescents

Jonathan Bruce, Age: *16*
Taipei American School, Chinese Taipei
Project Title: Conjugation of Carboxylated Graphene Quantum Dots with Cecropin P1 for Bacterial Biosensing Applications

Tyler Burden, Age: *17*
Harrison High School, NY
Project Title: Evaluating the Effects of Dance Improvisation on Brain Activity Using a Battery Cognitive Tests

Callie Burns, Age: *17*
John F. Kennedy High School, NY
Project Title: Student Discipline in Nassau County High Schools: Comparing Distinct Layers of Law Enforcement and Disparity in Student Punishment

Nicole Camilliere, Age: *17*
Ossining High School, NY

Project Title: Year-Long Salinization of Groundwater and Surface Waters of Hudson River Watersheds due to Chronic Road Salt Application

Olivia Canter, Age: *17*
Byram Hills High School, NY
Project Title: Birds of a Feather Age Together: Telomere Dynamics and Social Behavior Predict Lifespan in Female Japanese Quail (*Coturnix japonica*)

Katrina Case, Age: *17*
Pembroke HIll School, MO
Project Title: Importance of Neoantigen Affinity for Determining the Effectiveness of Immunotherapy in Lung Carcinomas

Anya Chabria, Age: *17*
The Wheatley School, NY
Project Title: A New Look at Writing: Using Fractal Geometry to Evaluate Whether SLV Affects the Readability of Written Works

Benjamin Chan, Age: *17*
Bronx High School of Science, NY
Project Title: Revolutionizing Computer Vision Algorithms in Cancer Pathology: The Use of Comprehensive Toolkits to Overcome Machine Learning Obstacles in the Digital Pathology Field

Maya Chari, Age: *17*
Bronx High School of Science, NY
Project Title: The Impact of Effective Policing, Victim and Community Demographics, and Community-Police Relations on Homicide Rates: A New Counter Intuitive and Scientifically Solid Methodology to Restructure Police Reform

Alexander Chasteen, Age: *17*
Bronx High School of Science, NY
Project Title: Genomic Analysis of Novel *Klebsiella pneumoniae* Phage Vulcan

Linda Chen, Age: *17*
Lexington High School, MA
Project Title: Reducing Round Complexity of Byzantine Broadcast

Eric Chen, Age: *17*
Bronx High School of Science, NY

Project Title: Organizing Science of the Future: Design of Cyberinfrastructure Networks to Stimulate Collaboration and Equality in Availability of Resources for Researchers From Different Fields

Sarah Chen, Age: *17*
Phillips Academy, MA
Project Title: *In Silico* Prediction of Retained Intron-Derived Neoantigens in Leukemia

Anthony Chen, Age: *18*
St. Paul Academy & Summit School, MN
Project Title: The Effects of Short Term Radiofrequency Electromagnetic Radiation on Diatom Photosynthetic Productivity

Eddie Chen, Age: *17*
West Windsor-Plainsboro High School North, NJ
Project Title: Epidemiological Models for COVID-19 Spread in US

Quanlin Chen, Age: *18*
Princeton International School of Math and Science, NJ
Project Title: The Center of the q-Weyl Algebra Over Rings with Torsion

Alvin Chen, Age: *18*
North Carolina School of Science and Mathematics, NC
Project Title: Alpha Invariants of K-Semistable Smooth Toric Fano Varieties

Alan Chen, Age: *18*
Montgomery Blair High School, MD
Project Title: Predicting High Energy Eigenstates by Coupling Discrete Supersymmetry and the Localization Landscape

Dev Chheda, Age: *17*
Ardrey Kell High School, NC
Project Title: Novel Methods for Shape Classification, Analysis, and Synthesis Using the Isoperimetric Profile and Mathematical Morphology

Derek Chien, Age: *18*
The Davidson Academy of Nevada, NV
Project Title: Curing COVID-19: Novel Design and Computational Evaluation of Potential SARS-CoV-2 Helicase Inhibitors

Erica Choe, Age: *18*
Bergen County Academies, NJ
Project Title: The Effect of Human Hepcidin and *Pseudosciaena crocea* Hepcidin on the Prevention & Mitigation of *Staphylococcus epidermidis* Biofilm

Yunseo Choi, Age: *18*
Phillips Exeter Academy, NH
Project Title: On Two-Sided Matching in Infinite Markets

Kenneth Choi, Age: *18*
Ridgefield High School, CT
Project Title: Constructing General Hamiltonian Ground States on a Quantum Computer Using the Projected Cooling Sensor Algorithm

Sam Christian, Age: *17*
Liberal Arts and Science Academy, TX
Project Title: A Possible Alignment Between Orbits of Visual Binary Stars and Their Planetary Systems

Elizabeth Chun, Age: *17*
Ardsley High School, NY
Project Title: Combating Familial Alzheimer's Disease: A Study of Resveratrol's Effects on a Presenilin Model of *Drosophila melanogaster*

Joseph Clary, Age: *17*
Caddo Parish Magnet High School, LA
Project Title: Designing and 3D Printing a 3D Clinostat to Simulate Microgravity

Patryk Dabek, Age: *17*
Bergen County Academies, NJ
Project Title: Exploiting Metabolic Reprogramming in Liver Cancer: Mitochondrial Membrane Potential Response to Selective ATP Hydrolysis Inhibition

Raiya Dhalwala, Age: *17*
Bronx High School of Science, NY
Project Title: The Entry Effect of Ride Sharing Services on NYC Taxi Wages

Saisha Dhar, Age: *17*
Paul Laurence Dunbar High School, KY

Project Title: The Role of Apoptosis Signal-Regulating Kinase 1 (ASK1) in Hyperoxia-Induced Lung Injury

Mia Dittrich, Age: *18*
Byram Hills High School, NY
Project Title: Epigenetic Editing of *Cdk5* Leads to Sexually Dimorphic Stress Responses

Kosei Dohi, Age: *18*
Tenafly High School, NJ
Project Title: Variational Autoencoders for Jet Simulation

Melissa Du, Age: *17*
North Carolina School of Science and Mathematics, NC
Project Title: A Stochastic Population Dynamics Model of Antibiotic Resistance, Tolerance, and Persistence

Owen Dugan, Age: *17*
Dugan Homeschool, NY
Project Title: Astronomy Will Not Trail Off: Novel Methods for Removing Satellite Trails from Celestial Images

Karin Ebey, Age: *17*
Los Alamos High School, NM
Project Title: Climate Change on Crocodilians: Modeling the Effects of Variations in Rainfall on Crocodilians and Their Ecosystem

Maya El-Sharif, Age: *17*
Pine Crest School, FL
Project Title: Understanding the Regulation of Food Consumption in *Drosophila Melanogaster*

Daniel Feng, Age: *17*
University High School, CA
Project Title: Discovering Antibiotic Molecules in *Ceanothus leucodermis* and Enhancing and Quantifying Their Efficacy with a Novel Simulation-Aided Method

Rachel Field, Age: *18*
Monticello High School, VA
Project Title: A Potential Pathway for an Inducible, Protective Response to Excess Glutamate that may be Disrupted in ALS

Tali Finger, Age: *18*
Dr. Michael M. Krop Senior High School, FL
Project Title: A Genomic-Based Investigation of Repetitive Behaviors Across Four Neurodevelopmental Disorders Using a Machine Learning Approach

Alexandra Fitzgerald, Age: *17*
Horace Greeley High School, NY
Project Title: Standardization of Plastic Particle Extraction and Analysis from Seafloor Sediment

Halley Friedman, Age: *17*
Acton-Boxborough Regional High School, MA
Project Title: Zombie Flies': Examining Effects of *E. muscae* on Olfactory Function in *D. melanogaster*

Tara Fusillo, Age: *17*
John F Kennedy High School, NY
Project Title: Predicting Health Disparities in Regions at Risk of Severe Illness to Inform Healthcare Resource Allocations during Pandemics: Observational Study

Jessie Gan, Age: *17*
San Diego Jewish Academy, CA
Project Title: Predicting Metastasis with a Novel Biophysical Cell-Adhesion Force Technique

Noah Getz, Age: *17*
Bronx High School of Science, NY
Project Title: A Novel High Throughput Method for Prescreening Drugs: Using Machine Learning to Predict Phenothiazines That Reduce TNF-ALPHA Secretion with Applications for Alzheimer's Disease and COVID-19 Treatment

Animesh Ghose, Age: *18*
Ward Melville High School, NY
Project Title: Prognosis and Diagnosis of Alzheimer's Disease Using Graph Convolutional Neural Networks

Aryan Ghotra, Age: *18*
Syosset High School, NY
Project Title: Mathematical Models of Quaternary Body Equilibria

Gopal Goel, Age: *17*
Krishna Homeschool, OR
Project Title: Discrete Derivative Asymptotics of the beta-Hermite Eigenvalues

Hannah Goldenberg, Age: *17*
Greenwich High School, CT
Project Title: Linking Continued Exposure to E-Cigarette Vapor Constituents with Chronic Obstructive Pulmonary Disease

Bailey Goldstein, Age: *18*
Byram Hills High School, NY
Project Title: Investigating Differences in the Relaxation of Non-Photochemical Quenching and its Implications for Crop Photosynthetic Efficiency

Michael Gomez, Age: *17*
Bergen County Academies, NJ
Project Title: Underscoring the “Hypo-Hyper” Duality of Celecoxib in Melanocyte Pigmentation

Shayna Gordon, Age: *17*
Bergen County Academies, NJ
Project Title: FTY720 Enhances Remyelination in Sciatic Nerve Cells: A Targeted Approach to Treating Peripheral Nervous System Demyelinating Diseases

Amy Guan, Age: *18*
Texas Academy of Mathematics and Sciences, TX
Project Title: Designing a Catalyst for Methane Activation Through Density Functional Theory Optimizations

Anshul Guha, Age: *17*
Montgomery High School, NJ
Project Title: A New Bound on Odd Multicrossing Numbers of Knots and Links

Sanjana Gurram, Age: *17*
Westview High School, CA
Project Title: Optimization of Plant Cellulose to Create a Cost-Effective and Environmentally Benign Oil Spill Sorbent

Ali Hafez, Age: *17*
Byram Hills High School, NY

Project Title: Using Artificial Neural Networks to Accurately Simulate Carbon Nanotube Field-Effect Transistors

Priva Halpert, Age: *18*
Stella K Abraham High School, NY
Project Title: Harnessing the Colorimetric Changes due to the Antenna Effect for Detection of Aliphatic Alcohols in 2-HP-BETA-Cyclodextrin Solutions

Emily Hashem, Age: *17*
Bergen County Academies, NJ
Project Title: Contextualizing IP3 Receptor-Dependent Astrocytic TGF-BETA Signaling in Blood-Brain Barrier Permeability: A Novel Functional Role

Ryan Helmer, Age: *17*
Jefferson Montessori Academy, NM
Project Title: Engineering a Desiccant-Driven (CaCl2) Self-Contained Solar Distillation System to Collect Drinking Water from the Atmosphere

Ava Herzog, Age: *17*
Saratoga Springs High School, NY
Project Title: The Effect of the Retinal Degeneration Mutation *rd1* on Circadian Locomotor Activity and Nesting Behavior in Mice

Anthony Hill, Age: *18*
Woodinville High School, WA
Project Title: TAME(ing) Human Caused Waterway Pollution: A Cleaning System Addressing Toxic Algal Blooms and Microplastics

Sammy Hillenmeyer, Age: *17*
King School, CT
Project Title: The Electrochemical Oxidation of Methane in a Fuel Cell Utilizing Carbon Sequestration

Zen Ho Sang, Age: *16*
Central Islip Senior High School, NY
Project Title: Covariant Study of the Coronavirus Spike Protein

Erin Horack, Age: *17*
Conrad Weiser High School, PA

Project Title: *Lycorma delicatula*'s Mitochondrial DNA in Relation to *L. delicatula*'s Feeding Pattern based on Monosaccharide Concentrations of Host Plants

Wenjun Hou, Age: *18*
Jesuit High School, OR
Project Title: Quantum-Based Algorithm and Circuit Design for Bounded Knapsack Optimization Problem

Hayden Housen, Age: *18*
Pawling High School, NY
Project Title: Lecture2notes: Summarizing Lecture Videos by Classifying Slides and Analyzing Text

Alicia Hsu, Age: *17*
George W. Hewlett High School, NY
Project Title: The Challenging Nature of Maternal Empathy: An Investigation of Maternal Empathy and Its Relationship to Self-Esteem

William Hu, Age: *17*
Hunter College High School, NY
Project Title: Molecular Dynamics Simulations of Sequence Dependent Nucleosome Core Particles Unwrapping

David Hu, Age: *18*
Lynbrook High School, CA
Project Title: Probabilistic Zero Forcing on Grid, Regular, and Hypercube Graphs

Lixin Huang, Age: *18*
Princeton International School of Math and Science, NJ
Project Title: Risk Taker or Driver: An Empirical Analysis of American Stock Markets During the COVID-19 Pandemic

Jared Ilan, Age: *17*
Byram Hills High School, NY
Project Title: Modulus of Elasticity of the Ideal Decellularized Plant Material Scaffold for the Production of Cultured Meat

Vedanth Iyer, Age: *17*
Sunset High School, OR

Project Title: First-Principles Characterization of a Novel Chromium Doped Vanadyl-Oxide Based Cathode for Higher Energy and Efficiency Lithium-Ion Batteries

Rincon Jagarlamudi, Age: *17*
Marquette High School, MO
Project Title: Utilization of a Novel Method of RNA Interference in *Caenorhabditis elegans* to Conduct a Phenotypic Analysis of the *daf-2* and *daf-16* Longevity Genes

Eshani Jha, Age: *17*
Lynbrook High School, CA
Project Title: Thiol Functionalized and Manganese Dioxide Doped Biochar for the Removal of Toxic Organic and Inorganic Contaminants from Water

Kylan Jin, Age: *18*
Fossil Ridge High School, CO
Project Title: A Novel Bioelectrochemical Tool for Real-Time In Situ Monitoring of Soil Microbial Activity

Elisha Johnston, Age: *17*
Joseph Lister High School for Biomedical Sciences and Technology, CA
Project Title: A Novel Mechanistic Hypothesis Elucidating the Role of a Medical Procedure in Managing a Root Cause of Osteoarthritis by Regenerating Cartilage

Eli Jones, Age: *18*
Jackson Senior High School, MO
Project Title: Towards the Total Synthesis of the Leishmanicidal *Lindbergin E* for the Development of an Enantioselective Phloroglucinol-Derived Polyketide Synthesis

Danielle Kacaj, Age: *17*
John F. Kennedy High School, NY
Project Title: Retinal Ganglion Cell Dysfunction is Associated with Macular Microvascular Abnormalities in Pre-Perimetric Glaucoma

Yash Kadadi, Age: *18*
The Westminster Schools, GA
Project Title: SWIFT: A Novel Machine-Learning Platform for Space Weather Forecasting from HMI Vector Magnetograms

Vasu Kaker, Age: *18*
United World College of South East Asia, East Campus, Singapore

Project Title: Porous, Thin Co/CeO1.88-NCNR Cathode Structure for Ultra-High Specific Capacity Li-O2 Batteries

Raquel Kanner, Age: *17*
Byram Hills High School, NY
Project Title: How do Others Perceive Me? An Exploration of the Influence of Self-Disclosure Statements on Viewer Perceptions of Emerging Adults who Stutter

Sohum Kapadia, Age: *17*
University School, OH
Project Title: Mitral and Tricuspid Valve Morphology: Analysis from Sheep Hearts to Normal and Diseased Human Hearts

Sarah Karam, Age: *17*
Bergen County Academies, NJ
Project Title: GRN Acts as a Novel Biomarker of Chemotherapy Resistance in Small Cell Lung Cancer

Saaim Khan, Age: *17*
Cranbrook Kingswood Upper School, MI
Project Title: Identification of Novel LEAD Compounds for Solute Transporter Protein Member 5 in Sensorineural Hearing Loss

Ishan Khare, Age: *18*
Ottawa Hills High School, OH
Project Title: Computational Discovery: Novel Material NaAsS2 Predicted to Exhibit Promising Optical Absorption Coefficient and Seebeck Coefficient for Photovoltaic and Thermoelectric Applications

Jaeah Kim, Age: *17*
Hunter College High School, NY
Project Title: Save Our Sons: Exploring RNAi- Mediated Intragenomic Conflict in *D. sim* Through Genetic Sex-Ratio Assays

Eric Kim, Age: *18*
Sunset High School, OR
Project Title: Combating Diabetes: Novel Synaptic Mechanisms of FGF1 in Hypothalamic and Hindbrain Neurons

Song Kim, Age: *18*
William Henry Harrison High School, IN
Project Title: Computational Modeling of Intracellular Movement of Vesicular Stomatitis Virus Ribonucleoprotein Particles

Isabel Kim, Age: *18*
Bergen County Academies, NJ
Project Title: Voltage-Dependent Anion Channel 1 (VDAC1) Expression in Retinal Cells Under Varying Glucose Conditions

Beom Joon Kim, Age: *18*
Palos Verdes High School, CA
Project Title: Flexible, Water-Resistant, and Biocompatible Medifoam-and URGO-Based Resistive Random-Access Memory for Skin-Wearable Healthcare Devices

Thomas King, Age: *17*
Bergen County Academies, NJ
Project Title: The Impact of UV-Blocking Chemicals on the Bleaching of *Acropora yongei*

Khushi Kohli, Age: *17*
Olathe North High School, KS
Project Title: Dynamics of Brain Metastasis in Non-Small Cell Lung Cancer

Jordyn Krinsky, Age: *17*
John F. Kennedy High School, NY
Project Title: The Combinatorial Effects of Diet and Caffeine Mitigate Parkinson's Disease in a *Drosophila melanogaster* System

Siddharth Krishnakumar, Age: *17*
Thomas Jefferson High School For science and Technology, VA
Project Title: A Genetic Tool to Analyze de novo Mutations in Autism Spectrum Disorder

Aravind Krishnan, Age: *18*
Hillsborough High School, NJ
Project Title: A Novel Assay to Quantitatively Detect Bacterial Endotoxin by Harnessing PAMP-Triggered Immunity of *FRK1-LUC Arabidopsis thaliana*

Navya Lam, Age: *18*
Henry M Gunn High School, CA

Project Title: Harnessing CRISPRi and HiPSCs to Down Regulate SFPQ Gene Expression Results in Massive Cell Death; Immense Implications for Animal Tested Drugs

Hope Lane, Age: *17*
Paul D. Schreiber Senior High School, NY
Project Title: Optimizing the Interconnectivity of the Liver Allocation Network to Minimize Death and Inequality Using LivSim

Victor LaVaglia, Age: *17*
Ossining High School, NY
Project Title: Open Office Noise Disrupts Worker Focus, Satisfaction, and Perception of their Productivity: A Quasi-Experimental Field-Study

Katelyn Lee, Age: *17*
Bronx High School of Science, NY
Project Title: Role of Obesity-Related MicroRNAs in Breast Cancer Survival Rates

Jessica Lee, Age: *17*
Bergen County Academies, NJ
Project Title: Analysis of Data-Reduction Techniques Used in Dynamical Systems Modeling

Julia Levine, Age: *17*
John F. Kennedy High School, NY
Project Title: Reduced *Fasciclin 2* Expression in *Drosophila melanogaster* Leads to Impaired Locomotor Function and Abnormal Stress Response Following Dietary Alterations of Carbohydrates in a Celiac Disease Model

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

Sabrina Li, Age: *17*
Walnut High School, CA
Project Title: Effect of Baycrete Texture and Tidal Elevation on the Recruitment of *Ostrea lurida* and *Amphibalanus amphitrite* in San Diego Bay, CA

Marvin Li, Age: *17*
James M. Bennett High School, MD

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

David Li, Age: *18*
New Hartford Senior High School, NY
Project Title: Numerical Investigation on the Filtration Process of Alternating Micro-Nano Multilayer N95 Face Masks

Yangyang Li, Age: *18*
Brookline High School, MA
Project Title: A Robust Classification Method Using Hybrid Word Embedding for Early Diagnosis of Alzheimer's Disease

Aidan Li, Age: *18*
Dublin Jerome High School, OH
Project Title: Quantitative Digital Imaging Analysis of HER2 Immunohistochemistry Predicts Response to Anti-HER2 Therapies in HER2-positive Breast Carcinoma

Danny Li, Age: *18*
Jericho Senior High School, NY
Project Title: Astragalin and Antirrhinin: Novel Plant-Derived Ligands to Attenuate the Multifactorial Pathogenesis of Alzheimer's

Sean Li, Age: *17*
Monte Vista High School, CA
Project Title: On Group-Theoretic Extensions of Penney's Game

Anne Liang, Age: *18*
duPont Manual High School, KY
Project Title: Grape Polyphenols Inhibit Pro-Inflammatory Signaling and Dental Bacteria

James Licato, Age: *17*
Washington-Liberty High School, VA
Project Title: Development of a Zeolite Composite Material for the Simultaneous Removal of Pharmaceuticals, Personal Care Products (PPCPs), and Perfluorinated Alkyl Substances (PFAS) in Water Treatment

Julie Lin, Age: *18*
Bronx High School of Science, NY

Project Title: Introducing a Live Tutor after the Sensitive Phase Improves Song Learning in Zebra Finches Trained by an Artificial Tutor – A Pilot Study

Zipeng Lin, Age: *18*
Basis Independent McLean, VA
Project Title: An Old Bird with New Feathers: Classic SIR Model Incorporated with Novel Neural Network Achieves a Better Prediction on COVID-19's Infected Population

Catherine Liu, Age: *18*
Jericho Senior High School, NY
Project Title: Individual and Combined Treatments of Berberine and Estrogen Mitigate the Cytotoxic and Inflammatory Effects of DSS and LPS Induced Colitis

Daphne Liu, Age: *17*
West High School, UT
Project Title: Using Machine Learning to Predict Physiological Metrics from PPG Pulse Shapes

Kelly Liu, Age: *18*
Bronx High School of Science, NY
Project Title: Does the Media Still Matter?: Measuring the Effect of Traditional Media and Social Media Influencers on the COVID-19 Twitter Conversation

Friedrich Liu, Age: *18*
Boston University Academy, MA
Project Title: Phenotyping Neuropsychiatric Symptoms Profiles of Alzheimer's Disease Using Cluster Analysis on EEG Power

Stanley Liu, Age: *17*
Arcadia High School, CA
Project Title: A Microfluidic Device for Blood Plasma Separation and Fluorescence Detection of Biomarkers Using Acoustic Microstreaming

Addison Liu, Age: *17*
Unionville High School, PA
Project Title: Simulation and Analysis on the Self-Foldability of the Origami Hyperbolic Paraboloid

Noah Loewy, Age: *17*
Paul D Schreiber High School, NY

Project Title: Developing an Empirical Model to Forecast United States Presidential Elections: A Machine Learning Approach

Michael Lu, Age: *17*
The Mississippi School for Mathematics and Science, MS
Project Title: Development of Predictive Tools for Anticancer Peptide Candidates using Generative Machine Learning Models

Lana Lubecke, Age: *17*
Kalani High School, HI
Project Title: Life ReADeR: Remote Airborne Detection of Respiration

Emily Ma, Age: *18*
Manhasset High School, NY
Project Title: Optimizing the Efficiency of Amorphous Silicon Solar Cells

Srinath Mahankali, Age: *17*
Stuyvesant High School, NY
Project Title: Velocity Inversion using the Quadratic Wasserstein Metric

Michael Maloney, Age: *18*
Proof School, CA
Project Title: Mask Mandates and COVID-19: The Efficacy of Face Mask Mandates in Increasing Mask Usage, While Decreasing the Spread of and Deaths from COVID-19 in the United States

Andrei Mandelshtam, Age: *17*
University High School, CA
Project Title: The Structure of the Positive Monoid of Integer-Valued Polynomials Evaluated at ALPHA IN Q

Linlee Mangialardi, Age: *17*
Ossining High School, NY
Project Title: Reciprocal Synthesis and Degradation of Trehalose and Glycerol in *Saccharomyces cerevisia*e: Analysis Using a Consensus Genome Scale Metabolic Model

Neha Mani, Age: *17*
Hunter College High School, NY
Project Title: Distinguishing Bacterial Motion Quantitatively: A Diagnostic Method for Intestinal Disease

Aerin Mann, Age: *18*
Bronx High School of Science, NY
Project Title: The Partisanship of the Planet: A Look Into Climate Discourse on Social Media

Sriya Mantena, Age: *17*
North Carolina School of Science and Mathematics, NC
Project Title: Investigating the Geometric Determinants of Hemodynamics in Carotid Artery Stenosis for Stroke Prediction

Tarun Kumar Martheswaran, Age: *17*
The Waterford School, UT
Project Title: Prediction of Dengue Fever Outbreaks Using Climate Variability and Markov Chain Monte Carlo Techniques in a Stochastic Susceptible-Infected-Removed Model

Lucia Martin, Age: *17*
North Shore High School, NY
Project Title: The Effect of Political Division on Compliance with COVID-19 Health Guidelines

Arjun Mazumdar, Age: *17*
Bronx High School of Science, NY
Project Title: Demystifying 'Fake News': Evaluating Media-Borne Misinformation Through the Novel Application of AI-Powered Sentiment Analysis

Michaela McCormack, Age: *18*
TC Williams High School, VA
Project Title: Too Cool for JUUL: The Effect of Pod-Based E-Cigarettes on Sleep and Cognitive Function

Viraj Mehta, Age: *18*
BASIS Scottsdale, AZ
Project Title: GLIA-Deep: Glioblastoma Image Analysis Using Deep Learning Convolutional Neural Networks to Accurately Classify Gene Methylation and Predict Drug Effectiveness

Tanya Mehta, Age: *17*
Parkland High School, PA
Project Title: Effect of Cytokines on Functional Performance of Human Mesenchymal Stem Cells (hMSC) Encapsulated in Synthetic Wound Healing Scaffolds

Beatrice Mihalache, Age: *17*
Los Gatos High School, CA

Project Title: The Effects of Polyethylene Microbeads and Polyester Microfibers on the Firmicutes and Proteobacteria Phyla in the Human Gut Microbiome

Brian Minnick, Age: *17*
Academies of Loudoun, VA
Project Title: A Fully 3D Printed 3D Printer as a Step Toward a Self-Replicating Spacecraft

Roshni Mishra, Age: *18*
American Heritage School, FL
Project Title: Expression of Anti-Neurodegeneration Genes in Mutant *Caenorhabditis elegans* Using CRISPR-Cas9 Improves Behavior Associated with Alzheimer's Disease

Rebecca Monge, Age: *17*
Carmel High School, NY
Project Title: Polar Amplification in CMIP6 Models: Projections, Mechanisms, and Regional Patterns

Taylor Moniz, Age: *18*
Kamehameha Schools Kapālama, HI
Project Title: Ivermectin Induces Apoptosis, Cell Cycle Arrest, and Senescence in C4-2 Prostate Cancer Cells

Nina Nair, Age: *18*
North Carolina School of Science and Mathematics, NC
Project Title: *In Silico* Rational Design of a Novel Anticancer Topo IIα/Hsp90 Dual Inhibitor with Potential for Oral Administration

Sathvik Nallamalli, Age: *17*
Olympia High School, WA
Project Title: A Portable Machine-Learning Based Detection System of Prevalent Chronic Respiratory Illnesses and Lung Cancer

Rithika Narayan, Age: *17*
Elwood John Glenn High School, NY
Project Title: Machine Learning on Crowd-Sourced Data to Highlight Coral Disease

Charit Narayanan, Age: *17*
Mission San Jose High School, CA
Project Title: A Novel Cohort Analysis Approach to Determining the Case Fatality Rate of COVID-19 and Other Infectious Diseases

Aryan Naveen, Age: *17*
James L Mann High School, SC
Project Title: Correlation Agnostic Fusion for Enabling Drone Flights in Challenging Environments

Om Nerurkar, Age: *17*
North Carolina School of Science and Mathematics, NC
Project Title: Estimating The Effects of Ocean Acidification on Coastal Communities: A Case Study in South Puget Sound

Divya Nori, Age: *17*
Milton High School, GA
Project Title: Hero: Automated Detection System for Prescription Stimulant Overdose via AI-Based Emotion Inference, Metabolite Detection, and Biometric Measurement

Nnamdi Obi, Age: *16*
North Carolina School of Science and Mathematics, NC
Project Title: Investigation of the Possible Synergistic Effects Between MSDC-0160 and Rapamycin in Treating Parkinson's Disease

Ethan Ocasio, Age: *17*
The New School of Northern Virginia, VA
Project Title: Deep Learning Prediction of Mild Cognitive Impairment to Alzheimer's Disease Conversion at 3 years using Longitudinal and Whole-Brain 3D MRI

Michael Odzer, Age: *18*
Dr. Michael M. Krop Senior High School, FL
Project Title: Identifying and Overcoming Environmental Factors Affecting the use of Unmanned Aerial Systems (UAS) in Wildlife Studies of *Chelonia mydas*

Lara Ozkan, Age: *17*
Bergen County Academies, NJ
Project Title: Identifying the Causal Mediators Between Diet, Obesity, and Cancer

Celeste Paerels, Age: *17*
Hastings High School, NY
Project Title: Up in Smoke: Recent Influences on Adolescent E-Cigarette Usage

Jian Park, Age: *18*
Sage Hill School, CA

Project Title: DT-DBSCAN: Density Based Clustering of Planar Datasets in Linear Expected Time Through Delaunay Triangulation

Allison Pascual, Age: *17*
Bronx High School of Science, NY
Project Title: The Potential Risk for Parents with Children Diagnosed with Congenital Cancer Predisposition Syndromes due to Parental Mosaicism

Sayalee Patankar, Age: *17*
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

Alexander Patti, Age: *18*
Greenwich High School, CT
Project Title: Plant Growth Enhancement & Fungal Disease Suppression via Copper, Zinc, and Manganese Nanoparticle Foliar Sprays

Aalok Patwa, Age: *18*
Archbishop Mitty High School, CA
Project Title: Analysis of the Tumor-Immune Microenvironment Reveals Predictors of Recurrence and Overall Survival in Triple-Negative Breast Cancer

Michael Pavelchek, Age: *18*
Ossining High School, NY
Project Title: Swap70 and Myc Promote Sequential Switching to High Affinity IgE in Allergic Asthma

Nicholas Pietraszek, Age: *18*
University of Chicago Laboratory High School, IL
Project Title: Application of Machine Learning to Classify Unmarked Cancer Cells from 3D Images

Alexandra Popescu, Age: *18*
Joel Barlow High School, CT
Project Title: Conserved Cellular Crosstalk to the Microvascular Niche Identified via Single-Cell Analysis of the Lung and Liver

Jayanth Pratap, Age: *18*
John Foster Dulles High School, TX

Project Title: An Optimal Control Strategy for Mathematically Modeling Cancer Combination Therapy

Sofia Pronina, Age: 17
Greenwich High School, CT
Project Title: Carbon Nanotube Lab-on-Chip as a Rapid, Inexpensive, Lyme Disease Detection System

Ritvik Pulya, Age: *17*
Acton-Boxborough Regional High School, MA
Project Title: A Novel Deep Learning Model for Breast Cancer Risk Quantification Using Mammography and MRI Images

Jeffrey Qian, Age: *17*
Independence High School, TX
Project Title: Emotion Polarity Analysis: A NLP Deep Learning Model For Detecting Imperilled COVID-19 Frontline Workers

Timothy Qian, Age: *18*
Montgomery Blair High School, MD
Project Title: Optimal Measurement of Field Properties with Quantum Sensor Networks

Melanie Quan, Age: *18*
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

Maiya Raghu, Age: *18*
Syosset High School, NY
Project Title: The Effect of Blue Light and Epigallocatechin Gallate on Oxidative Stress in *Caenorhabaitis elegans*

Vishaal Ram, Age: *18*
Milton High School, GA
Project Title: Applications of an Age-Structured SIR Model

Shreya Ramachandran, Age: *17*
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

Rhea Rasquinha, Age: *17*
Herricks High School, NY
Project Title: Identifying the Prognostic, Tumor-Suppressive and Immunologic Roles of IRF5 in Breast Cancer

Giselle Rasquinha, Age: *17*
Syosset High School, NY
Project Title: Novel Strategies Targeting Entry and Membrane Fusion Steps in the Viral Life-Cycle to Enhance Potency and Stability of HIV-1 Inhibitors and Inactivators

Sean Reichbach, Age: *17*
Somers High School, NY
Project Title: Does the American Political System Harm United States Representative Democracy?

Elaina Render, Age: *18*
duPont Manual High School, KY
Project Title: Exploring Probiotic Food Products as a Reservoir for Antimicrobial Resistance

Sarah Rojas, Age: *18*
Germantown Academy, PA
Project Title: Inducing Dysbiosis in Brown Planaria with Single Strain Probiotics *Clostridium butyricum*, *E.coli* Nissle *1917*, and *Lactobacillus acidophilus*

Leela Roye, Age: *17*
Ossining High School, NY
Project Title: Race vs. Emotion: Evaluating Which is the More Predominant Bias When Using an Attentional Task

Tyler Ruvolo, Age: *18*
Plainedge High School, NY
Project Title: A Regression-Based Investigation Into Presidential Public Approval as a Factor of Political and Economic Policy

Meagan Ryan, Age: *17*
Ossining High School, NY
Project Title: Discovering Long-Lasting Novel Epigenetic Mechanisms Associated with Cocaine Addiction: The Role of the SWI/SNF Remodeling Complex in the Nucleus Accumbens

Saksham Saksena, Age: *17*
Houston High School, TN
Project Title: Universal Screening Test for Cancer Using Ultrasound Detection and Machine Learning Automation

Julia Salatti, Age: *17*
Kings Park High School, NY
Project Title: Utilizing MR Imaging to Analyze Tumor Texture and Its Effects on Long Term Survival in Patients with Glioblastoma Multiforme

Sreenidhi Sankararaman, Age: *18*
Thomas Jefferson High School for Science and Technology, VA
Project Title: Discovery of COVID-19 N-Protein Active Sites for Effective Antiviral Drug Target Treatment: An Innovative Approach Using Torsion Angle Changes in Relation to Functional Activity of Viral N-Proteins

Laboni Santra, Age: *17*
Oviedo High School, FL
Project Title: Optimized 3D-Printed Microneedle Devices for the Delivery of New Therapeutics to Citrus Phloem Tissue

Anushka Sanyal, Age: *17*
Homestead High School, CA
Project Title: Intronic RNA Lariats Protect Against Neurodegenerative Disease Related Protein Aggregation

Julia Savino, Age: *17*
Smithtown High School West, NY
Project Title: Using the Sea Anemone, *Nematostella vectensis*, to Probe the Mechanism of Excitotoxicity

Sam Savitt, Age: *17*
Blind Brook High School, NY
Project Title: The Suitability of Vibration Data Loggers for the Development of a Condition-Based Maintenance System for Aircraft and Rotorcraft Operations

Lori Saxena, Age: *17*
Horace Greeley High School, NY
Project Title: Circadian Process in Prostate Cancer and Type 2 Diabetes

Lila Schweinfurth, Age: *18*
Oregon Episcopal School, OR
Project Title: Predicting Harmful Algal Blooms to Mitigate Marine Neurotoxin Exposure Using 20 Years of Shellfish and MODIS Satellite Data

Krupa Sekhar, Age: *17*
Hunter College High School, NY
Project Title: Discovering Population-Specific Epigenetic Markers for Pancreatic Cancer Through Examination of Chromatin Accessibility

Ganesh Selvakumar, Age: *17*
Marple Newtown High School, PA
Project Title: Bacoside A: A Promising Synaptic Plasticity Enhancer to Overcome Memory Impairment in Alzheimer's Disease

Jack Sendek, Age: *18*
Briarcliff High School, NY
Project Title: Interactive Multiple Model Filter for Inertial Sensor Drift Correction in GPS-Denied Target Drone Waypoint Flights

Alay Shah, Age: *17*
Plano West Senior High School, TX
Project Title: Identifying Eye-Movement Patterns in Neurological Disorders to Assess Cognitive and Motor Function

Saloni Shah, Age: *17*
The Harker School, CA
Project Title: Identifying Resilience Mutations in an Alzheimer's Disease Whole-Genome Sequencing Cohort

Vyom Shah, Age: *17*
Jericho Senior High School, NY
Project Title: Linking Diet and Cancer: Arachidonic Acid Augments Stemness via Canonical Wnt and Hippo Signaling

Raiyaan Shaik, Age: *17*
Bergen County Academies, NJ
Project Title: The p53 Dependent and Independent Chemotherapeutic Potential of TQ in Breast Cancer : Targets *In-Vitro* and *In-Silico*

Andy Shar, Age: *15*
Vanguard High School, FL
Project Title: Novel Fabricaiton and Implementation of Copper and Silver Plasmonic Nanostructure-Coated Foil as a Spectrally Selective Absorber in Highly Efficient Solar Steam Generation Under One Sun Illumination

Siddharth Sharma, Age: *18*
BASIS Independent Silicon Valley, CA
Project Title: Nature's Learning Algorithm? Experiments and Analysis of the Hebbian-LMS Algorithm

Sasha Shefter, Age: *17*
Bergen County Academies, NJ
Project Title: The Role of 5-fluorouracil in the Late Twentieth Century Decline of Cancer Mortality in the United States

Justin Shen, Age: *17*
Jericho Senior High School, NY
Project Title: L-Theanine: Neuroprotective Against Trichloroethylene-Induced Parkinson's Disease Hallmarks

Jerry Shen, Age: *18*
Richard Montgomery High School, MD
Project Title: Analysis of the Asian Dust Trend in Recent Decades

Fareed Sheriff, Age: *17*
Mills E. Godwin High School, VA
Project Title: ELMOPP: An Application of Graph Theory and Machine Learning to Traffic Light Coordination

William Shi, Age: *17*
Northview High School, GA
Project Title: Refinements of Product Formulas for Volumes of Flow Polytopes

Eleanor Sigrest, Age: *18*
Forest Park High School, VA
Project Title: "Can You Hear the Empty Spaces?" – Improving Spacecraft Efficiency and Capability Through a Novel Microgravity Fluid and Slosh Management Technique

Emma Silverman, Age: *17*
Putnam Valley High School, NY
Project Title: Examining Differences in Blood Calcium, Phosphorus, and T4 Levels in Various Breeds of Canines: A Study on its Association Between the Age of Spay/Neutering, and Osteopathic/Neurological Diseases

Sam Singer, Age: *17*
Horace Mann School, NY
Project Title: Discovery of Eight Pathogenic Genetic Mutations Correlated with Poor Prognosis in African American and Hispanic Patients

Priya Soneji, Age: *17*
Milton High School, GA
Project Title: Autonomously Tracking Organisms in Three Axes at Microscopic Resolution

Edgar Sosa, Age: *20*
Greenwich High School, CT
Project Title: Metal Oxide Nanoparticle Suppression of Coffee Rust Using an Alternaria, Stomata-Sporulating Model Fungus

Isabella Souza, Age: *17*
Syosset High School, NY
Project Title: Seeing Through the Scan: The Impact of fMRI Evidence on Juror Satisfaction and Verdicts

Christian Spadini, Age: *17*
Harrison High School, NY
Project Title: Political Geographical Bias in Congressional House Elections: A Quantitative Analysis of the Real Gap Between the Popular Vote and Electoral Outcomes

Nitin Sreekumar, Age: *18*
Troy High School, CA
Project Title: Variation in Gene Expression Reveals Genes Predictive of Overall Survival in the Triple-Negative Breast Cancer Subtype

Saraswati Sridhar, Age: *17*
Southwestern Educational Society, PR
Project Title: A Deep Network-Based Brain-Computer Interface for the Detection of Mild Cognitive Impairment Using Sensorimotor EEG and EMG Data

Alliyah Steele, Age: *17*
Putnam Valley High School, NY
Project Title: A Visual Cortex Examination: Familiarity and Selective-ROI BOLD signal Differences Between Scenes and Objects, Behaviorally and Neurologically

Suvin Sundararajan, Age: *17*
Westfield High School, MA
Project Title: Functionalized Polylactide Filament for Additive Manufacturing

Nitya Sunkad, Age: *17*
Amador Valley High School, CA
Project Title: Effects of Spaceflight on Gene Expression Patterns in Dermal Tissue

Aditya Tadimeti, Age: *17*
The Harker School, CA
Project Title: Machine Learning and Wildfire Burned Area: Examining Computational Techniques to Predict Fire Size for Practical Insights

Claire Tang, Age: *17*
Lynbrook High School, CA
Project Title: Automated Diagnostic Imaging for COVID-19: from the Unknown Detection to Clinical Prediction

Dasia Taylor, Age: *17*
West High School, IA
Project Title: A Novel Suture Additive: Use of Beet Extract to Assess for Surgical Wound Infection

Emily Tianshi, Age: *17*
The Cambridge School, CA
Project Title: Biomimicking Torrey Pine Needles: Atmospheric Moisture Harvesting Through Alternating Hydrophilic and Hydrophobic Micro-Patterns

Marie-Hélène Tomé, Age: *17*
Ardsley High School, NY
Project Title: On the Use of Statistical Measures and Density Maps Generated from CT Scans for the Detection, Classification, and Monitoring of COVID-19 Cases

Christopher Tong, Age: *18*
Montgomery Blair High School, MD

Project Title: Signatures of Second Generation Exoplanet Formation

Arya Tschand, Age: *17*
High Technology High School, NJ
Project Title: Implementation of Novel Semi-Supervised Machine Learning Model into Autonomous Irrigation Network Optimized for Power Self-Sufficiency

Katherine Tung, Age: *17*
Menlo School, CA
Project Title: The Sperner Property for 132-Avoiding Intervals in the Weak Order

Zoya Unni, Age: *18*
Paul D. Schreiber High School, NY
Project Title: Shelter-in-Place, Connect Online: What Trending TikTok Content Reveals about Social Media use During the Early Days of the U.S. COVID-19 Pandemic

Amulya Vatsavai, Age: *17*
Raleigh Charter High School, NC
Project Title: EVGG16: Extended VGG16 Model for Thoracic Disease Identification in X-Ray Images

Parisa Vaziri, Age: *18*
Plano East Senior High School, TX
Project Title: The Neuro-Protective Role of FOXO in a PINK1 Loss-of-Function Based Model of Neurodegeneration in *Drosophila melanogaster*

Vetri Vel, Age: *16*
Bangor High School, ME
Project Title: Real-Time Fall Detection System for the Elderly Using Thermal Imaging and Deep Learning

Bala Vinaithirthan, Age: *18*
San Ramon Valley High School, CA
Project Title: Prediction of Phenotypic Cancer Drug Response with an Image-Based Dual Convolutional Neural Network

Adway Wadekar, Age: *17*
Saint John's High School, MA
Project Title: A Psychosocial Approach to Understanding Substance Use Disorder Among Adolescents

Jeffrey Wang, Age: *17*
The Bishop's School, CA
Project Title: A Systematic Method to Identify Significant Changes in 3D Genome Compartmentalization Across Multiple Cell Lines

Jason Wang, Age: *17*
Thomas Jefferson High School for Science and Technology, VA
Project Title: SOSNet: A Graph Convolutional Network Approach to Fine-Grained Cyberbullying Detection

Eric Wang, Age: *17*
Syosset High School, NY
Project Title: Investigation of Novel Anti-Cancer Effects of Oxymatrine and Deferoxamine on Neuroblastoma

Emma Wang, Age: *17*
Manhasset High School, NY
Project Title: Investigating Potential Agro-Economic Benefits of Solar Pollinator Habitats

Mia Wang, Age: *17*
Great Neck South High School, NY
Project Title: Assessing the Impacts of Social Determinants on Adult Obesity Rates in New York

Jerry Wei, Age: *17*
Oakton High School, VA
Project Title: Generative Image Translation for Data Augmentation in Colorectal Histopathology Images

Ethan Weisberg, Age: *17*
Packer Collegiate Institute, NY
Project Title: Development of a Peptoid-Peptide Macrocycle Targeting CDK2-Cyclin A for Cancer Therapy

Scott Weitman, Age: *18*
Yorktown High School, NY
Project Title: Emotional and Social Impact of Autoimmune Diseases

Maya Weitzen, Age: *18*
Sleepy Hollow High School, NY

Project Title: High-Throughput Discovery and Validation of Cancer-Testis (CT) Antigen and Neoantigen HLA-Presented Peptides in Non-Small Cell Lung Carcinomas (NSCLC)

Kevin Wen, Age: *17*
Somerville High School, MA
Project Title: Polystyrene Nanoplastics Spontaneously Enter Lipid Bilayers and the Blood-Brain Barrier

Kate Weseley-Jones, Age: *17*
North Shore High School, NY
Project Title: Parenthood: Penalty or Premium? The Effect of Parental Status and Gender on Perceptions of Physicians

Bella Wiebelt-Smith, Age: *18*
Central High School, MO
Project Title: Investigation of Bacterial Gene Transcription from Promoters with Proximal i-motifs and G-quadruplexes

Devin Willis, Age: *18*
Florida Atlantic University Highschool, FL
Project Title: SlideMap: A Flexure Based Approach to Automating Digital Pathology Cancer Diagnosis

Joseph Winterlich, Age: *17*
King School, CT
Project Title: Antimicrobial Peptides and Antibiotics Produce Bactericidal and Bacteriostatic Effects on Wild-Type *E. coli*

Andrew Woen, Age: *18*
Peak to Peak Charter School, CO
Project Title: ReDetect: A Novel Way to Reduce Recycling Contamination by Telling Users if an Object is Recyclable Through Either the Portable Device or Mobile Application

Michael Wong, Age: *17*
Tenafly High School, NJ
Project Title: The Human Tumor Microbiome Modulates Response to Checkpoint Blockade Immunotherapy by Influencing Immune Infiltrates in the Tumor Microenvironment

Jiefei Wu, Age: *18*
Westminster School, CT

Project Title: Biases in First and Second Moments of the Fourier Coefficients in One- and Two-Parameter
Families of Elliptic Curves

Charles Wu, Age: *18*
Thomas Jefferson High School for Science and Technology, VA
Project Title: A Learned Encircling Strategy for Robot Swarm Pursuit-Evasion Against a Superior Evader

Zheheng Xiao, Age: *18*
Phillips Exeter Academy, NH
Project Title: On Real Forms of Dubrovin-Ugaglia Poisson Brackets

Helen Xiao, Age: *18*
Newton North High School, MA
Project Title: A Simple Approach for Evaluating Survey and Forecasting Data

Angelina Xu, Age: *18*
Ridge High School, NJ
Project Title: Is Seeing No Longer Believing? Detecting Deepfakes Using Discrete Fourier Transforms and Frequency Analysis

Justin Xu, Age: *17*
Charter School of Wilmington, DE
Project Title: Novel Nanoscale Analysis of the Electronic Structure Basis of Strength and Toughness in Fluoropolymers

Sidra Xu, Age: *17*
The Harker School, CA
Project Title: Application of Gene Embedding for Improved Somatic Mutation-Based Primary Cancer Typing and Biomarker Discovery

Noam Yakar, Age: *17*
Tenafly High School, NJ
Project Title: Design & Construction of a Cost-Effective Full Arm Prosthesis with Computer Vision

Emily Yang, Age: *17*
North Carolina School of Science and Mathematics, NC

Project Title: The Effects of Social Interaction on the Distribution and Acquisition of Resources in Terrestrial Hermit Crabs

Emma Yang, Age: *17*
The Brearley School, NY
Project Title: Designing a Synthetic Neural Network Layer for Image Classification

Jason Yang, Age: *17*
Belmont High School, MA
Project Title: On Updating and Querying Submatrices

Kaien Yang, Age: *18*
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

Lixin Yang, Age: *17*
North Carolina School of Science and Mathematics, NC
Project Title: The Effects of Small Molecules Jh-RE-06 and T2AA on Mutagenic Translesion Synthesis in *Arabidopsis thaliana*

Vivian Yee, Age: *17*
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

Julius Yoh, Age: *17*
Manhasset High School, NY
Project Title: The Optimization of Desalination and Ion-Removal Rate Through the Engineering of Novel Turbulent Modular Designs in an Electrodialysis System

Lucy Zha, Age: *17*
The Wheatley School, NY
Project Title: Investigating the Therapeutic Potential of Curcumin and Capsaicin: A Comparative Study on Neuroblastoma and Hypothalamic Cells

Alex Zhang, Age: *18*
Lower Merion High School, PA
Project Title: On Subalgebra-Forming Conditions of Rings of Formal Power Series

Jason Zhang, Age: *17*
The Carol Martin Gatton Academy of Mathematics and Science, KY
Project Title: The Photocatalytic Single-Electron Oxidative Cyclopropanation of Ene-Ynamides with 2, 6-Lutidine *N*-Oxide: Synthesis of Bicyclic Amides

Jessica Zhang, Age: *17*
Proof School, CA
Project Title: Classification of Tight Contact Structures on a Solid Torus

Sarah Zhang, Age: *17*
Thomas Jefferson High School for Science and Technology, VA
Project Title: Using Lock-In Detection to Reduce Glares in Low-Light Condition—A Useful Algorithm for Autonomous Driving Vehicles

Michael Zhang, Age: *17*
Lawrenceville School, NJ
Project Title: Development of Silver Nanoparticle Decorated Zinc Oxide Arrays for the Portable and Label-Free Detection of Opioids in Liquids

Aaron Zhao, Age: *18*
Harvard-Westlake School, CA
Project Title: Comparative Evaluation of Metal Chelators for the Reduction of Redox-Active Metal Concentration

Andrew Zhen, Age: *18*
North Carolina School of Science and Mathematics, NC
Project Title: Disentangling the Spatio-Temporal Heterogeneity of Alzheimer's Disease Using a Novel Deep Predictive Clustering Network

Alec Zhou, Age: *18*
Brentwood School, CA
Project Title: An Eddy Current Sensor for Low-Cost Smart Water Meter for Real-Time Water Management

Amy Zhou, Age: *17*
William P. Clements High School, TX
Project Title: Entropy of Amorphous Systems in Their Ground States

Alexander Zhou, Age: *17*
Episcopal Academy, PA

Project Title: SEIR Model Forecasting Active Coronavirus Cases In Philadelphia County

Jeremy Zhou, Age: *17*
Phillips Academy, MA
Project Title: Reconstructing Rooted Trees from Their Strict Order Quasisymmetric Functions

Beining Zhou, Age: *18*
St. Mark's School, MA
Project Title: High-Order Sensor Array Geometries for Improved Direction of Arrival Estimation in Signal Processing

Honglin Zhu, Age: *18*
Phillips Exeter Academy, NH
Project Title: Characters for Projective Modules in the BGG Category O for the Orthosymplectic Lie Superalgebra osp(3|4)

Alec Zhu, Age: *17*
Lexington High School, MA
Project Title: Investigation of Selenium Mediated Allylic and Propargylic Amination with Computational Chemistry

***Scholars ages listed as of 3/17/2021**