



### Animal Sciences AND Plant Sciences

#### 1ST

Sarah Kathryn Schubel (Smithtown High School East)

Smithtown High School East

*Loss of NMDA Receptor Signaling Results in Excess Proliferation of CNS and Neural Crest-Derived Cells*

#### 1ST

Soyoun Moon (Commack High School)

Commack High School

*Exploring Sexual Dimorphism and Sex Hormone Receptor Expression in the Bed Nucleus of the Stria Terminalis (BNST) in the Monogamous Prairie Vole*

#### 2ND

Madison Elias (Seaford High School)

Seaford High School

*Can Green Tea Extend the Memory for Extinction Training in the Great Pond Snail (*Lymnaea stagnalis*)?*

#### 3RD

Rehan Mujahid Mian (Smithtown High School West)

Smithtown High School West

*A study on the structure, function, and evolution of the  $\alpha 1$  and  $\alpha 2$  adrenoceptors in *Nematostella vectensis*, the starlet sea anemone.*

#### H.M

Mariam Nadeem Hassan (Half Hollow Hills West)

Half Hollow Hills West

*Effects of *CCDC11* on Caudal Fin Regeneration in *Danio rerio**

#### H.M

Chelsea Paige Russo (Seaford High School)

Seaford High School

*The Effects of the Non-Nutritive Sweeteners Acesulfame Potassium and Neotame on Anxiety in Planaria (Dugesia dorotocephala).?*

**H.M**

Michelle Betty Brown (John F. Kennedy High School)

John F. Kennedy High School

*The Concurrent Effects of Metformin and Dietary Restriction on Parkinson's Disease in a Drosophila melanogaster Model*

## **Behavioral and Social Sciences**

**1ST**

Han Byur (Hailee) Youn (Roslyn High School)

Roslyn High School

*Why We Vote: How Positive Descriptive Norms and Holding a Minority Political Viewpoint Increase Citizens' Intention and Responsibility to Vote*

**1ST**

Jacob Aaron Leshnower (Half Hollow Hills East)

Half Hollow Hills East

*Music and Emotion: The Intervallic Fallacy of the Major-Minor Dichotomy*

**1ST**

Kyle Arjun Kavully (Plainedge High School)

Plainedge High School

*American Dream or American Myth? A Linear Regression Analysis of American Attitudes as a Factor of Race and Ideology*

**2ND**

Angelina Marie Livigni (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Bad Medicine? An Analysis of Self-Advocacy Regarding Medical Malpractice Scenarios by High School Students*

**2ND**

Leigh Baratta (Smithtown High School East)

Smithtown High School East

*Beauty is in the Eye of the Beholder: The Impact of Beauty on Proliferation of Invasive Insect Species  
Lycorma delicatula, the Spotted Lanternfly*

**3RD**

Emily Yeh (Roslyn High School)

Roslyn High School

*The Effect of Genetically Modified Labeling of Plant and Animal Products on Consumer Perceptions*

**3RD**

Eli Weseley-Jones (North Shore High School)

North Shore High School

*Numeracy and the Communication of Medical Risk*

**3RD**

Gabrielle Joy Oliva (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*The Impact of Ascribed Gender Stereotypes on Public Perceptions of Sexual Assault Victims*

**H.M**

Katherine Yuan Wang (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Assessing the Correlation between Perceived Parent-Child Relationship Quality and Executive Functioning in Early Adolescents*

**H.M**

Siddharth Sandeep Desai (Syosset High School)

Syosset High School

*Resting-state functional connectivity of the medial dorsal nucleus in First-Episode Psychosis and its role in working memory*

**H.M**

Sabrina Guo (Syosset High School)

Syosset High School

*Efficacy of Mask Use in Reducing SARS-CoV-2 Infection Rates*

**H.M**

Abigail Lev (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*The Inadvertent Detrimental Effects of Caucasian Performative Activism on the Perceived Societal Marginalization of the African American Population*

**H.M**

Hannah Paulina Brooks (Paul D. Schreiber High School)

Paul D. Schreiber High School

*&ldquo;The War in Words&rdquo;: Effects of Demographic and Personal Differences on Reactions to Semantically Bleached Nazi Compounds*

**H.M**

Olivia Ives Bailey (Garden City High School)

Garden City High School

*Machine Learning Prediction and Analysis of COVID-19 Vaccine Rates by State*

## **Biochemistry AND Microbiology**

**1ST**

Lakxshanna Raveendran (Commack High School)

Commack High School

*Characterizing the Secretion of the Francisella tularensis Protein FTL\_1123*

**2ND**

Collin Steve Lung (Lynbrook High School)

Lynbrook High School

*In Silico Studies of Neonicotinoids with CYPs and nAChRs - Opportunities for the Design of Selective Pesticides*

**3RD**

Tyler Daniel Nagosky (Smithtown High School West)

Smithtown High School West

*Using Cnidarian nerve nets to visualize the excitotoxic effects of BMAA*

**H.M**

Anika G Petruccelli (East Hampton High School)

East Hampton High School

*Assessing the Potential of Phage Therapy to Combat Antibiotic Resistance with Mycobacterium smegmatis*

**H.M**

Chloe Chang (Herricks High School)

Herricks High School

*Investigating the Therapeutic Potential of Epigallocatechin Gallate and Theaflavin-3, 3'-digallate on Inhibiting ACE2-Spike Protein Binding and Mitigating Induced-Cellular Death by SARS-CoV-2*

## **Biomedical and Health Sciences AND Biomedical Engineering**

**1ST**

Griffin Hon (Syosset High School)

Syosset High School

*Repurposed Cephalexin Causes Multifaceted Pro-cancer Effects by Way of Wnt Signaling Pathway*

**1ST**

Christopher Prainito (John F. Kennedy High School)

John F. Kennedy High School

*Development of a Polydiacetylene-Based Paper Biosensor for Naked-Eye Detection of COVID-19 in*

Saliva

**1ST**

Natalia Pahlavan (Jericho High School)

Jericho High School

*Automatic Diagnosis of the 12-lead Electrocardiogram: Cardiac Arrhythmia Detection Using a Deep Learning Approach*

**2ND**

Maxx Yung (Roslyn High School)

Roslyn High School

*Activation of the Mu-Opioid Receptor on the Renin-Angiotensin System and Its Role In SARS-CoV-2 Treatment and Pathology*

**2ND**

Karly Chan (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*A User-Friendly and Non-Invasive Vocal Therapy Progress Tracker*

**3RD**

Stanley Kong (Manhasset High School)

Manhasset High School

*Dicaffeoylquinic Acids Inhibit SARS-CoV-2 Spike Protein-Induced Apoptosis: An In Silico and In Vitro Implication of a Novel Treatment to Mitigate Infection and Vaccine Side Effects*

**3RD**

Nathan Thomas Han (Syosset High School)

Syosset High School

*Elucidating the Molecular Mechanisms of Toxicaricoid A and Sulforaphene-Induced Colorectal Cancer Cell Death*

**3RD**

Olivia May Platt (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Determining The Regulatory Role of UFD1 in MYCN-driven Neuroblastoma*

**H.M**

Annette Park (North Shore High School)

North Shore High School

*SARS-CoV-2 Spike Proteins Induce a Pro-Inflammatory Cytokine Response in Macrophages*

**H.M**

Jessie Dong (Roslyn High School)

Roslyn High School

*Luteolin Targets Neuroblastoma and Lymphoma via Mitochondrial Complex 1*

**H.M**

Julie Theresa Moehringer (Sanford H. Calhoun)

Sanford H. Calhoun

*Retinal Ganglion Cell Functional Recovery After Intraocular Pressure Lowering Treatment Using Prostaglandin Analogs In Glaucoma Suspects*

**H.M**

Jeylin Elizabeth Lee (Herricks High School)

Herricks High School

*The Effect of Prophylactically Prescribed Anticoagulants and Dose Regimen on Prevalence of Venous Thromboembolism After COVID-19 Diagnosis*

**H.M**

Michael Khalfin (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Hemodynamics Model Illustrating Transradial Delivery of Anti-Tau Nanoparticle For Prodromal Alzheimer's Disease Intervention*

**Cellular and Molecular Biology**

## 1ST

Miah Christina Margiano (St Anthony's High School)

St Anthony's High School

*LncRNAs as a Potential Therapeutic Target for Neuroblastoma*

## 2ND

Ethan Masyn Abelev (George W. Hewlett High School)

George W. Hewlett High School

*The Role of Irisin in Human Reproduction*

## 3RD

Andrew Lee (Jericho High School)

Jericho High School

*A Cell-type-specific Expression and Protein Interaction Analysis to Identify Autism Risk Genes*

## 3RD

Ethan Wang (Jericho High School)

Jericho High School

*Gut microbiota and Alzheimer's disease: Investigating the role of copper and CCL11 dysregulation*

## H.M

Leo Zhang (Jericho High School)

Jericho High School

*Investigation of Rutin on Benzene-treated U937: A Focus on TNF- $\alpha$ ; and Superoxides*

## H.M

Anneliese Margot Baum (George W. Hewlett High School)

George W. Hewlett High School

*Profiling pathway dysregulation in ovarian and pancreatic cell lines upon the loss of CUL4 E3 Ligase activity using novel inhibitor KH-4-43*

## H.M



Benjamin Isaacson (Eastport South Manor Junior-Senior High School), Jane Brylewski (Eastport South Manor Junior-Senior High School), Fiona Schlegel (Eastport South Manor Junior-Senior High School)

Eastport South Manor Junior-Senior High School

*Structural Determination of the Native form of tRNA Methyltransferase (TrmD) from Mycobacterium paratuberculosis subspecies avium*

**H.M**

Sinchana Venkatesh (Herricks High School)

Herricks High School

*Assessing the Ability of Vitexin in Mitigating Neuroinflammation in Alzheimer's Disease.*

## Chemistry AND Materials Science

**1ST**

Alex Lin Wang (Syosset High School)

Syosset High School

*Computational Assessment of Macrocyclic Host-Guest Ion-Dipole Interactions with Negative Pores*

**2ND**

Erin Yim (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Rationalization of Simple Ring Intermolecular  $\pi$ - $\pi$  Stacking Interactions Investigated with DFT-d*

**3RD**

Cathrine Efsun Sakin (Walter G. O'Connell Copiague High School)

Walter G. O'Connell Copiague High School

*The Efficacy of Chitosan on the Construction and Function of Compostable Wind Turbine Blades*

**H.M**

Paul Vincent Pillitteri (West Islip High School)

West Islip High School

*Compositional Analysis of Oyster Shells Using Submicron Resolution X-Ray Spectroscopy*

**H.M**

Samuel Philip Jacobson (Roslyn High School)

Roslyn High School

*The Effectiveness of Self-Oscillating, Catalyzed Belousov-Zhabotinsky (BZ) Gel in Solving the Traveling Salesman Problem*

## **Computational Biology and Bioinformatics AND System Software**

**1ST**

Kevin Zhu (Jericho High School)

Jericho High School

*Investigating Recurrent Repeat Contractions in 10 Human Cancers*

**1ST**

Amber Kaixin Luo (Ward Melville High School)

Ward Melville High School

*RiboBayes: Assessing the Transcriptome-wide Expression of Ribosome Pause Sites in Ribosome Profiling Data With Bayesian Wavelet Thresholding*

**2ND**

Aaquib Ahmed Syed (Smithtown High School West)

Smithtown High School West

*Non-invasively Guiding Breast Cancer Chemotherapy Using Machine Learning with GLCM Textural Analysis*

**3RD**

David Liang (Ward Melville High School)

Ward Melville High School

*Beyond the Scales: A physics-informed machine learning approach for more efficient modeling of SARS-CoV-2 spike glycoprotein*

**3RD**

Shreya Kannan (Half Hollow Hills West), Bethany Siegel (Half Hollow Hills West), Marlene McKinney (Half Hollow Hills West)

Half Hollow Hills West

*Development of a Chromotherapy-based Mobile Game for Stress and Mood Management*

**H.M**

Chloe Chan (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Support Vector Machine for Autism Spectrum Characterization: Exploiting Brain Connectivities from fMRI, DWI, and a Combination of Both Modalities for Improved Diagnostic Accuracy*

**H.M**

Wafiq Khondkar (Herricks High School)

Herricks High School

*A Novel Framework for Evaluation and Parameter Tuning of Missing Value Imputation*

**H.M**

Brian Song (Roslyn High School)

Roslyn High School

*Detection of Northern Leaf Blight in Natural Environment Using Optimized YOLOv3*

## **Earth and Environmental Sciences**

**1ST**

Rebecca Cho (Jericho High School)

Jericho High School

*Reconstruction modeling using tectonics and climate of western North America*

**1ST**

Tarunika Sasikumar (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Assessing the Efficacy of the U.S Endangered Species Act through the Novel Quantification of Species*

*Charisma and Respective Population Trends*

**2ND**

Dylan Maxwell D'Agate (Half Hollow Hills East)

Half Hollow Hills East

*Climatological Impact of Sudden Stratospheric Warming Events on the Atmospheric Circulation and Nature of Extratropical Cyclones over Eastern North America*

**3RD**

roberto Antonio Lopez (Brentwood High School)

Brentwood High School

*EVALUATING PHRAGMITES AUSTRALIS WRACK ACCUMULATION IN A LONG ISLAND SALT MARSH ECOSYSTEM AND ASSESSING ITS EFFECT ON CARBON SEQUESTRATION, THE NITROGEN CYCLE, AND SEDIMENT BIOTA*

**H.M**

Ricardo Lopez (Brentwood High School)

Brentwood High School

*EVALUATING SALT MARSH RESTORATION AT SUNKEN MEADOW: ANALYSIS OF SEDIMENT LOSS AND ACCRETION.?? ??*

**H.M**

Kiera McKenna Darnell (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Modelling coastal erosion using future hurricane scenarios*

**H.M**

Kayla J Sohn (Herricks High School)

Herricks High School

*Biologically Inspired Material Design for Selective Removal of Estradiol Water Contaminants*

**Embedded Systems AND Robotics and Intelligent Machines**

**1ST**

James Nagler (Garden City High School)

Garden City High School

*Project Vision - Virtual environment through AI recognition*

**2ND**

Samay Lakhani (Jericho High School)

Jericho High School

*Applying Spatiotemporal Attention to Identify Distracted and Drowsy Driving with Vision Transformers*

**3RD**

Chigozirim Nodebechukwu Ifebi (Elmont Memorial)

Elmont Memorial

*How to Train Your Multi-view Cloth Classifier*

**H.M**

Kevin Holden Taylor (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Creating a "Third Eye" for the Visually Impaired with Object Detection*

**H.M**

Sreenand Mallisetty (Hauppauge High School)

Hauppauge High School

*Creating an Algorithm for a Handwritten Digit Recognition - Convolutional Neural Network Model by Optimizing Momentum, Weights, and Biases.*

## **Energy: Sustainable Materials & Design AND Engineering Technology AND Environmental Engineering**

**1ST**

Ava Malysa (Manhasset High School), Samantha Palmadessa (Manhasset High School)

Manhasset High School

*Electrocoagulation with Aluminum, Copper, and Zinc Electrodes for Aqueous Methylene Blue Dye*

*Remediation and Sustainable Energy Production*

**1ST**

Emily Kim (Jericho High School)

Jericho High School

*Synergistic removal of RB5 by activated carbon under UV irradiation*

**2ND**

Aavi Lund (East Meadow High School)

East Meadow High School

*The Utilization of a Tilt-rotor Mechanism to Minimize Forward Flight Drag of an H-shaped Quadcopter for Delivery Drone Applications*

**3RD**

Emily Theodosopoulos (Manhasset High School), Adam De Leeuw (Manhasset High School)

Manhasset High School

*Engineering the optimal dye-sensitized solar cell by comparing anthocyanin and chlorophyll dyes, dye immersion time, and counter electrodes.*

**H.M**

Ericka Lai (Manhasset High School), Christian Kim (Manhasset High School)

Manhasset High School

*Simultaneous Azo Dye Removal and Bioelectricity Generation by an Up-Flow Constructed Wetland-Microbial Fuel Cell with Biochar Substrate*

**H.M**

Allison Zhang (Manhasset High School)

Manhasset High School

*Design of a Soft Robotic Gripper Inspired by the Seahorse Skeleton*

**Mathematics AND Physics and Astronomy**

**1ST**

Daniel Salkinder (Half Hollow Hills East)

Half Hollow Hills East

*nxnrxn Rubik's Cubes and God's Number*

**2ND**

Kailly Elizabeth Nocera (Seaford High School)

Seaford High School

*Glacial and Fluvial Activity During Periods of High Obliquity in Arabia Terra*

**3RD**

Alice Tianxin Wang (Half Hollow Hills East)

Half Hollow Hills East

*A magic condition monochromator design for implementation at the NSLS-II*

**H.M**

Zachary Finger (Smithtown High School East)

Smithtown High School East

*Rare Isotope Production at the Electron Ion Collider*

**H.M**

Katherine Ranjbar (Earl L. Vandermeulen High School (Port Jefferson))

Earl L. Vandermeulen High School (Port Jefferson)

*Impact of Imperfection Spin Resonance Strength on Depolarization in RHIC*

## **Translational Medical Science**

**1ST**

Collin Li (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*SmartClick: A Novel Automated Segmentation Tool for Medical Images with Interactive Optimization Capabilities Designed for Liver Cysts*

**2ND**

Ethan Anthony Chiu (Syosset High School)

Syosset High School

*Developing a Self-Formed Ectodermal Autonomous Multi-Zone Organoid Model using Human Stem Cells to Examine the Effect of Doxycycline Treatment on Uveal Melanoma.*

**3RD**

Janice Rateshwar (Jericho High School)

Jericho High School

*Novel Small Molecule IT-848\* Treatment of Hematological Malignancies: IT-848-based Direct Inhibition of NF- $\kappa$ B and Combination Treatments*

**H.M**

Jessica Guo (Ward Melville High School)

Ward Melville High School

*Piperlongumine and Piperlonguminine Mitigate Rotenone Induced Neurotoxicity: Implications for a Novel Parkinson's Disease Treatment*

**H.M**

Sana Saleem Nabi (Herricks High School)

Herricks High School

*A Novel Assessment of Splenic Tissue Following Electrical Stimulation of the Dorsal Motor Nucleus of the Vagus in Murine Endotoxemia*