



### Animal Sciences

#### 1ST

Alexandra Claire D'Alessio (Half Hollow Hills West)

Half Hollow Hills West

*The Adverse Effects of Hunting on the Length of Bellows of American and Canadian Bison During Rut*

#### 2ND

Nicholas Borruso (Westhampton Beach High School)

Westhampton Beach High School

*Assessment of the Behavioral Impacts of PFAS on Danio rerio*

#### 2ND

Jack Ryan Levitt (John F. Kennedy High School)

John F. Kennedy High School

*The Supplementation of Probiotics via Yogurt Ameliorates Parkinson's Disease Phenotypes in a Drosophila melanogaster Model*

#### 3RD

Ishana Chadha (Commack High School)

Commack High School

*The Role of Oligophrenin1 and Pacsin2 in Modulating Radial Migration of Pyramidal Neurons During Brain Development*

#### 3RD

Evelyn Taylor Caputo (Wantagh High School)

Wantagh High School

*A Survival Analysis into the Interactions between Cardenolide-Toxic Milkweed and the Invasive Spotted Lanternfly*

#### H.M

Emilia Marie Miranda (West Islip High School)

West Islip High School

*Analyzing Microplastic Quantity and Chemical Composition in Farm-Raised vs Wild-Caught Shrimp for Human Consumption Using Infrared Spectroscopy*

**H.M**

Emaan Tehseen (Elmont Memorial)

Elmont Memorial

*Genetic interactions characterizing gene functions downstream of oncogenic GNAQ signaling in Uveal Melanoma using Drosophila melanogaster*

**H.M**

Jasmine Liu (Syosset High School)

Syosset High School

*Analysis of the Flavonoid Corylin's Impact on Aging in C. elegans*

## **Behavioral and Social Sciences**

**1ST**

Chloe Yerin Lee (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Exploring the Effects of Cannabidiol-Medium Chain Triglyceride Oil on Locomotion and Tap Withdrawal Response Using Caenorhabditis elegans as a Model for Alzheimer's Disease?*

**2ND**

Joshua Marc Kleyner (Syosset High School)

Syosset High School

*Neural Correlates During Human-Canine Face to Face Interactions*

**2ND**

Michael Benjamin Lyakhov (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*Predicting Schizophrenia via Cognitive Biomarkers: Development of a Machine Learning Algorithm for Early Diagnosis and Accessible Care*

**2ND**

Grace Chenxin Liu (Syosset High School)

Syosset High School

*Evaluating Gender Disparities Due to Decision-Making Under Uncertainty in Entrepreneurship: A Panel Data Analysis*

**2ND**

Sadelle Gelman Poulsen (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Exploring the Content Themes and Engagement Strategies Employed by First-Time Voters on TikTok*

**3RD**

Nyra Steffini Mehra (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Bilingualism, Executive Functions, and COVID-19*

**3RD**

Sarah Nicole Fernbach (Roslyn High School)

Roslyn High School

*Relationships Between Racial Socialization, Endorsement of a Racial Colorblind Ideology, and Perceptions of Race-Based Microaggressions Among Young Adults*

**3RD**

Gabriella Elliott (John F. Kennedy High School)

John F. Kennedy High School

*The Use of Diagnostic Coding Processes in the Analysis of Verbal Behaviors to Enhance Patient-Provider Connection*

**H.M**

Brice Chiu (New Hyde Park Memorial High School), Harmehar Kaur (Syosset High School)

New Hyde Park Memorial High School

*Investigating the Impact of Social Connectivity on Self-Reported Cardiovascular, Cognitive, and Mental Health: A Survey-Based Study*

**H.M**

Ava Ramsey (Roslyn High School)

Roslyn High School

*Clever or Conceited? Investigating the Effects of Gender and Self-Promotion on Perceptions of a Potential Employee*

**H.M**

Saswati Bhattacharya (Commack High School)

Commack High School

*The Impact of Social Media on the Glorification of Mental Illness Across Age Groups*

**H.M**

Aleeza Dhillon (Valley Stream North High School)

Valley Stream North High School

*Investigating the Impact of the Big 5 Personality Traits on Teacher Burnout and Job Satisfaction Among High School Educators*

**H.M**

Garrett Greenberg (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*A Novel Application of Machine Learning to Detect Indicators of Student Depression As a Tool for the Multi-tiered Systems of Support*

## **Biochemistry**

**1ST**

Natalie Osorio (H. Frank Carey)

H. Frank Carey

*Biophysical Investigations Into the Structure and Function of Pseudomonas aeruginosa Nitric Oxide*

*Signaling System*

**2ND**

Kevin Liu (Jericho High School)

Jericho High School

*Querying the Functional Properties of GEM Mutants Using in vitro FRET and NanoBiT Assays: Implications in Glucose Metabolism Disorders*

**3RD**

Ashka Shah (Jericho High School)

Jericho High School

*Regulating Cancerous Hyperactive Wnt Signalling Through a Novel GID8 Mechanism in Drosophila and Human Embryonic Kidney Cells*

**H.M**

Alex Matthew Silbert (Eastport South Manor Junior-Senior High School), Logan Jack Silbert (Eastport South Manor Junior-Senior High School), William Steinacher (Eastport South Manor Junior-Senior High School)

Eastport South Manor Junior-Senior High School

*Ballistic Barrage Against Beta Lactamases*

**H.M**

Gabrielle Victoria DeCapua (Connetquot High School), Michael Benedict Fabbri (Connetquot High School)

Connetquot High School

*Biomolecular Dynamics of Perfluoroalkyl Pollutants in Complex with Bovine Serum Albumin*

## **Biomedical and Health Sciences**

**1ST**

Sophia Antonina Tarasenko (Jericho High School)

Jericho High School

*Effects of Vitamin D Metabolites and Vitamin K2 on Menstrual Effluent-Derived Endometrial Stromal Cell Viability and Decidualization*

## 2ND

Leah Manshu Dong (Paul D. Schreiber High School)

Paul D. Schreiber High School

*The Role of Fe-S Cluster Biosynthesis in the Regulation of Fe-S Proteins, Fe-Metabolism, and Downstream Stress Responses In-Vivo*

## 2ND

Aryana Adur (Jericho High School)

Jericho High School

*Larazotide Acetate as a Novel Approach to Mitigate Food Allergy-Induced Intestinal Epithelial Cell Lining Damage*

## 3RD

Grace Rose Nolan (St Anthony's High School)

St Anthony's High School

*Cell-Type Contributions of the Myrf-1 Gene to Development in Caenorhabditis Elegans*

## 3RD

Ashna Muni (Herricks High School)

Herricks High School

*Asymptomatic Intracranial Hemorrhages Correlate with Poor Patient Outcomes and NIHSS Predictivity: A Retrospective Analysis of Post-Thrombectomy Ischemic Stroke Patients*

## 3RD

Abigail Kavinal Rajan (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*A Novel Link Between Chemotherapy-Induced Ryanodine Receptor 2 (RyR2) Dysfunction and Alzheimer's Disease Pathology*

## H.M

Emily Maria Podolska (West Islip High School)

West Islip High School

*Evaluating Herbal Supplements through Mineral Content and DNA Analysis*

**H.M**

Paul Santy (Syosset High School)

Syosset High School

*The Effect of Semaglutide Acetate on Lifespan and Reproductive Capacity in Caenorhabditis elegans*

**H.M**

Ryan Matthew Deegan (West Islip High School), Isabella Rose Tussie (West Islip High School)

West Islip High School

*Analyzing C. elegans as a Cancer Model using Infrared Microspectroscopy*

## **Biomedical Engineering**

**1ST**

Sandeep Sawhney (Herricks High School)

Herricks High School

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

**2ND**

Parshwa Shah (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*A Novel Unobtrusive Silent Speech Recognizer for Patients Suffering From Voice Disorders Using Machine Learning*

**3RD**

Hallie Lee (Herricks High School)

Herricks High School

*A Novel Evaluation of Transcatheter Mitral Balloon Valvuloplasty Preprocedural Analysis in Rheumatic Stenosed Patients Broadens Eligibility Through Cardiac Imaging*

**H.M**

Sara Shamail (Garden City High School)

Garden City High School

*Development of an Innovative Hydroxyapatite-Agarose Hydrogel Grid to Enhance Bone Stabilization and Regeneration*

**H.M**

Claudia Modica (Kings Park High School)

Kings Park High School

*A Comparative Analysis of the Effects of Low Intensity Vibrations on the Tibial and Femoral Properties of a Duchenne Muscular Dystrophy Mouse Model*

## **Cellular and Molecular Biology**

**1ST**

Daanish Bassi (Smithtown High School East)

Smithtown High School East

*Assessing Novel RIPK2-MKK7 Interaction Inhibitors in Prostate Cancer Cell Lines*

**2ND**

Lilly Sarah Horowitz (Jericho High School)

Jericho High School

*The Effect of Histone Modifications Induced by Ack sRNAs on Ac Transposable Elements*

**3RD**

Aafia Ahmed (Elmont Memorial)

Elmont Memorial

*The antioxidant role of JAK2/STAT3 signaling pathway against methylmercury-induced toxicity in a mouse astrocyte neuronal C8-D1A cell line*

**H.M**

Alicia Imani Madjido (Half Hollow Hills East)

Half Hollow Hills East



*Conditional elimination of a centriolar protein exhibits stage-specific cell cycle arrest in mouse embryonic fibroblasts.*

**H.M**

Serena J Chen (Herricks High School)

Herricks High School

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

## **Chemistry and Material Science**

**1ST**

Lucienne Keyoung (Manhasset High School), Isabel Rose Gonzalez (Manhasset High School)

Manhasset High School

*Ag-TiO<sub>2</sub>@HNT Nanotubes for Highly Efficient and Eco-Friendly Organic Pollutant Degradation*

**2ND**

Emily Rose Smukler (George W. Hewlett High School)

George W. Hewlett High School

*Aptamer-Mediated Biosensing using Self-Assembled DNA Nanomaterials*

**3RD**

Serin Jo (Roslyn High School)

Roslyn High School

*Characterization of Novel Amyloid- $\beta$ ; Peptide Coacervate Release Kinetics and Drug Loading for Doxorubicin*

**H.M**

Richard Chai (Smithtown High School East)

Smithtown High School East

*Optimizing the Nitro-Oxidation Process to Convert Lignocellulosic Waste into Fertilizers and Nanocellulosic Materials*

**H.M**

Julang Wang (Friends Academy)

Friends Academy

*Magneto-optical effects induced by chiral lattice vibrations in two-dimensional materials*

**H.M**

Liza Sophie Zelkin (Commack High School)

Commack High School

*The Antimicrobial Effects of Uniquely Coated Sutures on Staphylococcus epidermidis*

## Computational Biology and Bioinformatics

**1ST**

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

William A. Shine Great Neck South High School

*StAIR: Stepwise All-Atom Iterative Reconstruction of Large Coarse-Grained Protein Structures*

**2ND**

Melody Heeju Hong (General Douglas MacArthur High School)

General Douglas MacArthur High School

*A Bayesian Exploration Into More Flexible trans-Methylation Quantitative Trait Locus Mapping*

**3RD**

Tessla Chan (Roslyn High School)

Roslyn High School

*Investigating Synthetic Lethality as a Novel Treatment for 9p21.3 Deletion and MSI-H cancers*

**H.M**

Nicholas Tumelty (Waldorf School of Garden City)

Waldorf School of Garden City

*Improving kNN: Downsampling & Bootstrapping*

**H.M**

Evan Matthew Kolberg (John F. Kennedy High School)

John F. Kennedy High School

*Identification of Excitatory and Inhibitory E18 Neurons for Frequency Regulation of Network Activity via HD-MEAs*

## Earth and Environmental Sciences

**1ST**

Winston Zhou (Syosset High School)

Syosset High School

*Wavelet Based Parallel Hybrid Deep Learning Model for Forecasting El Nino-Southern Oscillation Cycles*

**1ST**

Taylor Maguire (Garden City High School)

Garden City High School

*Evaluating the Long Range UVA Blocking Abilities of an Eco-Friendly Sunscreen Substitute Derived From Musa acuminata on Girardia tigrina Locomotion and the Degree of UV-Induced Cellular Damage.*

**2ND**

Emily Zhao (Manhasset High School)

Manhasset High School

*Integrated Geospatial and Socioeconomic Analysis Forecasting Food Insecurity Under Climate Change*

**2ND**

Samantha Ruano Leon (East Hampton High School)

East Hampton High School

*Comparison of Microplastic Abundance and Composition Between Bivalves: Geukensia demissa, Mytilus edulis, Mercenaria mercenaria, Crassostrea virginica, and Argopecten irradians*

**2ND**

Tyler Michael Matukonis (Ward Melville High School)

Ward Melville High School

*Predictive Modeling of Vibrio Spp. Planktonic Growth and Biofilm Formation Under Environmental Stressors Using Machine Learning*

**3RD**

Kahela Jade Michel (Elmont Memorial)

Elmont Memorial

*Coral Geochemistry Reconstruction Predicts South Pacific Convergence Zone Dynamics in a Changing Climate*

**3RD**

Zohia Tahir (Brentwood High School)

Brentwood High School

*Assessing and Evaluating the Effects of Various Plastic Pollutants on Geukensia demissa Filtration Efficiency: An Investigation into Marine Pollution and Its Ecological Consequences*

**3RD**

Elizabeth Cruz (Brentwood High School)

Brentwood High School

*Evaluating Microfiber Emission from Domestic Laundering and Their Effects on the Filtration Rate of Geukensia demissa*

**H.M**

Noah Ryan Berlin (Half Hollow Hills East)

Half Hollow Hills East

*Evaluating the Relative Importance of the Causes of Hypoxia in the Eastern and Western Narrows Regions of the Long Island Sound*

**H.M**

Michelle E Leal (Brentwood High School)

Brentwood High School

*Evaluating the Effects of Ocean Acidification on Argopecten Irradians Using Advanced Analytical Techniques and Shell Morphology*

**H.M**

Graelyn Mar LoRusso (Westhampton Beach High School)

Westhampton Beach High School

*The Effects of Sunscreen Chemical Avobenzone in Seawater on the Development and Mortality of Juvenile M. mercenaria Shellfish*

**H.M**

Taylor Madison Carpentieri (Sayville High School), Adria Marina Vargas (Sayville High School)

Sayville High School

*Testing the Efficacy of Biofiltration Media for Stormwater Nitrate Filtration and Reduction*

### **Embedded, Technology Arts, Technology Engineering, and Energy Technology**

**1ST**

Alexander Thomas Singer (Ward Melville High School)

Ward Melville High School

*Novel CMOS Level Shifting Topologies for Signal Transmission Between Chiplelets of Different Voltages*

**2ND**

Bryan Cheng (William A. Shine Great Neck South High School), Yuhao (Henry) Xu (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Adaptive Optics Beam Steering System Utilizing Nematic Liquid Crystal & Machine-Learning Predictive Correction for Enhancing Fso Systems*

**3RD**

Abdullah Ahmed Ashrafi (George W. Hewlett High School)

George W. Hewlett High School

*Development of a Thermal Camera for Imaging Using Terahertz Radiation*

**H.M**

Noah Reid Kay (Half Hollow Hills East), Adithya Patnam (Herricks High School)

Half Hollow Hills East

*Adaptive Haptic Feedback Device for Observing the Delivery of Information in Time-Critical Human-Machine Interfaces*

**H.M**

Sean Matthew Skinner (Ward Melville High School)

Ward Melville High School

*Physics-Informed Machine Learning for Many-Objective Generative Design*

**H.M**

Daniel Sawicki (St Anthony's High School)

St Anthony's High School

*Waterless technology to clean dust from photovoltaic cells using additive manufacturing of Indium Tin Oxide Electrodes*

## **Energy and Environmental Engineering**

**1ST**

Alexandra Eileen Gregory (Garden City High School)

Garden City High School

*Novel Magnetic Device for Microplastic Capture via Van Der Waals Forces*

**2ND**

Kate H Adams (Walt Whitman High School)

Walt Whitman High School

*The Development of a Low-Cost Lycorma Delicatula Trap*

**3RD**

Samantha Liu Stoneking (Manhasset High School), Kristina Theodosopoulos (Manhasset High School)

Manhasset High School

*Enhancing Dye-Sensitized Solar Cell Performance: The Role of Gelled Electrolytes and Natural Dye Co-Sensitization*

**H.M**

Ryan Tae (Jericho High School)

Jericho High School

*Optimizing Silicon Anodes: Investigating Ultra-High Carboxyl Density Binders*

**H.M**

Sophie Hu (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Cost-efficient catalysis: Scaling and characterization of the SSZ-13 (CHA) zeolite synthesis process*

## Microbiology

**1ST**

Mehek Kaur Sawhney (Commack High School)

Commack High School

*Characterizing the Secretion Signal in the C-Terminus of the Francisella tularensis protein FTL\_1123: Insights for Type 1 Secretion and Therapeutics*

**2ND**

Cody Cheng (Syosset High School)

Syosset High School

*An analysis of truncated Sgs1 protein interactions with Mek1, Srs2, and Zip1 using the two-hybrid system in budding yeast*

**3RD**

Caitlin Avery Lee (Herricks High School)

Herricks High School

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

**H.M**

Alyssa Shuchen Huang (Syosset High School)

Syosset High School

*Assessment of wastewater exposure and horseradish peroxidase on the removal of bisphenol A by Chlorella vulgaris*

**H.M**

Maroska Ishak (Walt Whitman High School), Elizabeth Hsiao (Roslyn High School), Claire Parks (Huntington High School)

Walt Whitman High School

*The Effect of Glyphosate on Plant and Microbial Health*

## **Physics and Astronomy**

**1ST**

Gary Han (Syosset High School)

Syosset High School

*Discovery of the First Double Exocomet Using an Automated Deep Learning Convolutional Neural Network*

**2ND**

Vivian Chen (Manhasset High School)

Manhasset High School

*Probing Electron Spin Using Optically Detected Magnetic Resonance*

**3RD**

Mia Cavero (Sanford H. Calhoun)

Sanford H. Calhoun

*Calibration of a Laboratory Version of the NASA Mars 2020 Perseverance Rover PIXL micro-XRF Instrument*

**H.M**

Tiffany Chung (Smithtown High School East)

Smithtown High School East

*Methods of Surfactant Purification for Large-Scale Water-based Liquid Scintillator Neutrino Detection*

**H.M**



Zen Pinkenburg (Rocky Point HS), Om Patel (Rocky Point HS)

Rocky Point HS

*Deep Learning on sPHENIX Calorimeter Waveform Fits*

## Plant Sciences

### 1ST

Dora Fields (Northport High School)

Northport High School

*Effects of Nitrogen-Doped Carbon Dots on Germination and Growth in Solanum lycopersicum (tomatoes) Using Keratin-Based Hydroponic Substrates*

### 2ND

Ariel Sofia Greenberg (George W. Hewlett High School)

George W. Hewlett High School

*Identification and Characterization of a Mutant Tolerant to Na<sup>+</sup> and Ag<sup>+</sup> in Fern Ceratopteris richardii*

### 3RD

Kevin John Tritschler (Valley Stream South High School)

Valley Stream South High School

*Natural Pesticides: Assessing the Influence of Salinity Stress and Mitigation via B. Subtilis Application on the Development of Lamiaceae Botanicals and their Impact on the Natural Predator H. convergens*

### H.M

Mark Prainito (John F. Kennedy High School)

John F. Kennedy High School

*A Novel Evaluation of the Efficacy of Ulva spp. in Mitigating Ocean Acidification and Cochlodinium polykrikoides Toxicity in Mercenaria mercenaria and Crassostrea virginica Larvae*

### H.M

Cassel Claire Koss (Long Beach High School)

Long Beach High School

*Utilization of Bacillus megaterium and Pseudomonas fluorescens to Substitute Fertilizer Usage in the Hydroponic Cultivation of Lactuca Sativa*

**Robotics, Intelligent Machine, Software, and Math**

**1ST**

Arav Chand (Half Hollow Hills West)

Half Hollow Hills West

*Matrix Product Formulas for Generating Functions for p-adic Valuations of Generalized Binomial Coefficients*

**2ND**

Partap Singh Sidhu (Bethpage High School)

Bethpage High School

*Low-Cost, High-Performance Humanoid Upper Body for Automating Hazardous Tasks with Quasi-Direct Drive Actuators and Machine Learning*

**2ND**

Michael Petrizzo (Commack High School)

Commack High School

*Building a Conversational AI Medium to Enhance Psychotherapy Training with Virtual Patients*

**3RD**

Anish Pahari (Jericho High School)

Jericho High School

*High-Rank Elliptic Curve Generation: A Novel Algorithm with Cryptographic Applications*

**3RD**

Mohammad Wasim (Half Hollow Hills East)

Half Hollow Hills East

*Optimizing Quantum Support Vector Classifiers in Flood Prediction: Data Specific Quantum Kernel Training for Enhanced Feature Mapping Capabilities*

**H.M**

Alexandra Lindsay Miller (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Enhancing Policy Learning in Autonomous Robots through Multi-Perspective Visual Data Inputs via Imitation Learning*

**H.M**

Samvath Karanam (Hauppauge High School)

Hauppauge High School

*Ear-ly Detection: A Machine Learning Approach to Identification of Ear Infections*

**H.M**

Dean Chen (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Improving the Precipitation Distribution Around Synthetic Tropical Cyclone Tracks Using Radar, P-CLIPER Precipitation Model, and Deep Learning*

## **Translational Medical Science**

**1ST**

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

William A. Shine Great Neck South High School

*Automated Segmentation and Characterization of Hemorrhagic Cysts in Autosomal-Dominant Polycystic Kidney Disease: A Comparative Study of PKD1 and PKD2 Genotypes*

**2ND**

Mahin Ryan Gupta (Roslyn High School)

Roslyn High School

*Evaluating Readability Metrics in AI-Summarized Versus Standard Patient Education Materials: A Quantitative Analysis*

**3RD**

Ariel River (George W. Hewlett High School)

George W. Hewlett High School

*Characterizing miRNA Associated With Gastroesophageal Reflux Disease*

**H.M**

Misha Gujja (Jericho High School)

Jericho High School

*Spatial Transcriptomic Analysis of Human Dopaminergic Neurons and Breast Cancer Cells Co-cultured In Vitro: Implications for Perineural Invasion*

**H.M**

Emma Wen (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*AUM-302, A Novel Triple PIM/PI3K/mTOR Inhibitor, Offers Promising Potential in Reducing the Growth of Pancreatic Ductal Adenocarcinoma Spheroids and Organoids*