

### Animal Sciences

#### 1ST

Kaitlin Kaiting Ho (North Shore High School)

North Shore High School

*Cocoa's Cognitive Triumph: The Rescue of the Alzheimer's Model of Drosophila melanogaster with Theobroma cacao Supplementation*

#### 1ST

Katherine Lee (Jericho High School)

Jericho High School

*C-Fos and Reelin Protein Localization: Brain Fluorescence Imaging of Activity Pathways in Mice During Sensory Behavior Tasks*

#### 2ND

Nicole Lynn Yeroushalmi (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*The Effect of Diet on Galleria mellonella Larvae's Resistance to Bacillus thuringiensis*

#### 3RD

Kayla Palumbo (Sacred Heart Academy)

Sacred Heart Academy

*CAN MODERN BLUE LIGHT-BLOCKING TECHNOLOGY EFFECTIVELY SHIELD DROSOPHILA MELANOGASTER FROM HARM?*

#### 3RD

Yasmeen Antonia Muñoz (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Host Preference of the Spotted Lanternfly, Lycorma delicatula (Hemiptera: Fulgoridae), Throughout its Life Cycle: A Citizen Science Observational Analysis*

## H.M

Margit Tess Romero (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Estimating the Density of the Endangered Agile Gibbon (Hylobates agilis) Using Passive Acoustic Monitoring*

## H.M

Brenton Lee (Syosset High School)

Syosset High School

*The Effects of Astragalus membranaceus Derivatives on the Prevention of Neuron Degeneration Caused by Amyotrophic Lateral Sclerosis in C. elegans and Computational Protein Software*

## Behavioral and Social Sciences

### 1ST

Stasya Selizhuk (Half Hollow Hills East)

Half Hollow Hills East

*Design of Generic Epinephrine Auto-Injector Minimizes Administration Error and Fingerstick Injury*

### 1ST

Syon Khatter (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Investigating Impacts of Sucralose on Hedonic Feeding Behaviors in C. elegans as a Model for Prevention and Treatment of Obesity and Eating Disorders*

### 2ND

Ryan Joon Yong Lee (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Investigating the Effects of Emotional Parent-Child Communication and Perceived Parental Acculturation on the Coping-Self Efficacy of Adolescents*

### 2ND

Ashley-Ann Vinece Francis (Valley Stream South High School)

Valley Stream South High School

*Childhood Environment & Maternal vs. Paternal Role in Food Addiction Development: A Cross-Cultural Study*

**3RD**

Matthew Wang (Jericho High School)

Jericho High School

*Elucidating Adolescent Mental Health via Social Determinants of Mental Health Clusters*

**3RD**

Holly Rae Sternlicht (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Investigating the Influence of Closed Captions on Viewers' Advertisement Experience*

**3RD**

Eli Joshua Weseley-Jones (North Shore High School)

North Shore High School

*Improving Understanding of Conditional Probability in Medical Screening Tests*

**H.M**

Sarah Sun (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Cognitive Differences in the Optimization of Entrepreneurial Constructs and Opportunity Exploitation in Experienced vs. Novice Entrepreneurs*

**H.M**

Alexandra Kanner (Roslyn High School)

Roslyn High School

*The Effect of Logo and Board Representation on Perceptions of Autism Advocacy Organizations*

**H.M**

Damariz Irene McCrae (Plainedge High School)

Plainedge High School

*Predicting GOP Voter Preferences Through Sentiment, Polarity, and Word Cloud analyses of Political Rhetoric from The 2023 GOP Primaries; Implications on the Democratic Process*

**H.M**

Hannah Isabelle Rosenberg (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Christian Nationalism, Anti-Semitism, and Attitudes Toward the War in Ukraine*

## Biomedical and Health Sciences

**1ST**

Natasha Kulviwat (Jericho High School)

Jericho High School

*CLDN5 Downregulation and Albumin: Investigating Hallmarks of Blood-Brain Barrier Breakdown as Novel Biomarkers of Suicide Neuropathology*

**1ST**

Alena Tsai (Manhasset High School)

Manhasset High School

*Integrated In-silico and In-vitro Experimental Strategies for the Application of Carbon Quantum Dots in Alzheimer's Research*

**2ND**

Griffin Hon (Syosset High School)

Syosset High School

*Evaluating Differential Nutritional Regulation of Stem Cell Plasticity*

**2ND**

Hiuyi Cheng (Herricks High School)

Herricks High School

*Evaluating Border Associated Macrophages: A Novel Approach to Investigating Cerebral Blood Flow Dysregulation in APOE4 Mice*

### 3RD

Alaina Brooke Pinto (The Wheatley School)

The Wheatley School

*Microscopy of Claudin and Occludin Internalization in Brain Endothelial Cells After IL-32 Stimulation.*

### 3RD

Rebecca Bover (Herricks High School)

Herricks High School

*The Novel Effect of Rosuvastatin on Cholesterol 25-Hydroxylase (Ch25h) Oxysterol Metabolism and IL-6 in Response to LPS and ssRNA40 Stimulation*

### 3RD

Shayla Zheng (Roslyn High School)

Roslyn High School

*Cell Fusion as a Novel Mechanism Behind JQ1 Resistance in Triple-Negative Breast Cancer*

### H.M

Ashna Muni (Herricks High School)

Herricks High School

*A Novel Prognostic Assessment of an Anti-tumor Biomarker: An in silico Analysis of Tumor Infiltrating Lymphocytes in Melanoma*

### H.M

Evalina Lentini (Sacred Heart Academy)

Sacred Heart Academy

*Evaluation of Therapeutics to Target ?Stem Cell-Like Prostate Cancer*

### H.M

Lillian Wu (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*Developing an Organoid Model Using Mouse Intestinal Stem Cells To Examine the Effect of Retinoic Acid on Inflammatory Bowel Disease*

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## Cellular and Molecular Biology with Biomedical Engineering

### 1ST

Ava Brooke Goldsmith (John F. Kennedy High School)

John F. Kennedy High School

*Targeting of Epichaperome Downregulates HCFC1 Mediated Transcription of Oncogenes: Implications in Breast Cancer Therapy*

### 1ST

Rishi Aravind (Half Hollow Hills East)

Half Hollow Hills East

*A Novel Role for  $\alpha$ IIbB3 in the Development of Procoagulant Platelets via Phosphatidylserine (PS) Exposure*

### 2ND

Madeline Ella Rong (The Wheatley School)

The Wheatley School

*Investigating the Impacts of Dasatinib, Resveratrol and Gallic Acid on Non-Hodgkin's Lymphoma Cell Proliferation*

### 2ND

Anjali Anand (Jericho High School)

Jericho High School

*Fli1 and Galectin-3: Targets to Reduce Collagen Accumulation in Scleroderma.*

### 3RD

Hannah Rubin (Manhasset High School)

Manhasset High School

*Assessing the quality of 5% GelMA bioink*

### 3RD

Aasiya Zehra Zaidi (Roslyn High School)

Roslyn High School

*Reading the Book of Life, One Palindrome at a Time: Creating Novel Short Palindromic Sequence Detectors and High-Resolution Conservation Tools to Identify Important Sequence in C. elegans*

**H.M**

Sahil Nilesh Patel (St Anthony's High School)

St Anthony's High School

*Unraveling a Circrna-Mirna-Mrna Axis: A Potential Therapeutic Target for Non-small Cell Lung Cancer*

**H.M**

Aafia Ahmed (Elmont Memorial)

Elmont Memorial

*Investigating the JAK2/STAT3 Signaling Pathway in Methylmercury-Induced Toxicity in Mouse Astrocyte Neuronal C8-d1a Cell Line*

**H.M**

Ishana Chadha (Commack High School)

Commack High School

*The Effect of Metal Toxicity Induced mtDNA Mutations on Parkinson's Disease Pathology in Model Organism C. elegans*

## Chemistry and Material Science

**1ST**

Samyra Mahiba (Jericho High School)

Jericho High School

*DNA Crystallography: Exploring Small-Molecule Interactions With DNA for Nanoscale Drug Delivery*

**2ND**

Jolene Hanying Cao (Smithtown High School East)

Smithtown High School East

*Synthesis of Stable and Magnetically Tunable Cesium Lead Halide Perovskite Quantum Dots by Nano-Encapsulation*

### 3RD

Derek Zhang (The Wheatley School), Ashley Huang (Syosset High School)

The Wheatley School

*The Impact of Titanium Dioxide Nanoparticles on Keratinocyte Proliferation and Differentiation*

### H.M

Dylan Dale Butler (George W. Hewlett High School)

George W. Hewlett High School

*Synthesis of N2, N4-Disubstituted quinazoline-2,4-diamine Derivatives as inhibitors of Adenosine/Guanosine Nucleoside Hydrolase in Trichomoniasis*

### H.M

Aman Thawani (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Computational Solution of the Time-Independent Schroedinger Equation via a Finite Legendre Polynomial-based Spectral Expansion*

## Computational Biology and Bioinformatics

### 1ST

Tessla Chan (Roslyn High School)

Roslyn High School

*Utilizing Deep-Learning to Facilitate Diagnosis of Look-Alike Leukemia Subtypes*

### 2ND

Mannat V. Jain (Garden City High School)

Garden City High School

*A Deep Learning Algorithm to Identify and Predict Tissue Abnormality in Fetal Ultrasounds.*

### 3RD

Michael Ren (Syosset High School)

Syosset High School



*Elucidating Resistance Mechanisms in Staphylococcus epidermidis: A High-Performing MALDI-TOF MS-Based Proteomic Approach for Predictive Modeling*

**H.M**

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

William A. Shine Great Neck South High School

*Predicting Lobula Columnar Cell Responses in Drosophila*

**H.M**

Matt Yang (W.C. Mepham High School)

W.C. Mepham High School

*MultiFormer: Single-Cell ATAC to RNA Prediction Framework*

## **Earth and Environment with Environmental Engineering**

**1ST**

Yoav Zeev Muscal (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Using Machine Learning Species Distribution Modeling as a Novel Approach to Efficiently Predict Forest Development Suitability*

**1ST**

Dylan Yoon (Manhasset High School)

Manhasset High School

*The Enhancement of a Novel 3D-Printed Electrodialysis Device through the Implementation and Optimization of Spacer Designs*

**1ST**

Manfred Lim (Jericho High School)

Jericho High School

*From Data to Insights: Understanding Global Soil Respiration Through Machine Learning*

**2ND**

Allison Chen (Herricks High School)

Herricks High School

*The Accelerated Retreat of Andean Glaciers: Using Google Earth Engine and Landsat Satellite Imagery to Quantify the Imminent Threat to Water Security in Andean Communities*

**2ND**

Shuewei Chen (Manhasset High School), Sonali Patel (Manhasset High School)

Manhasset High School

*Adapted Algae-Powered Photovoltaic Cells Remediate Microplastics From Water: A Cost-Effective and Sustainable Solution*

**2ND**

Gunoo Shin (Smithtown High School West)

Smithtown High School West

*Erosia: A Fully Digitally Focused Application to Accurately Compute Soil Erosion in a Raster Format via GIS Based on the Universal Soil Loss Equation.*

**2ND**

Bradley Scott Kelton (Ward Melville High School)

Ward Melville High School

*Geochronologic and Dynamic Constraints on the Topographic Evolution and Critical Mineral Deposits of the Southwestern United States*

**3RD**

Andrew Michael Falco (Walter G. O'Connell Copiague High School)

Walter G. O'Connell Copiague High School

*The Use of Pueraria montana in the Production of a Biodegradable Low Density Polyethylene Plastic*

**3RD**

Emily Zhao (Manhasset High School)

Manhasset High School

*Novel Eutrophication Remediation Turbine For Piezocatalytic Inactivation Of Anabaena In Optimized*

*Turbulent Flow*

**3RD**

Dylan Jinghong Shen (Smithtown High School East)

Smithtown High School East

*A Novel Algorithm for Measuring Forest Incursions Using Pixelated Remote Sensing Data*

**3RD**

Tej Jonah Parekh (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Utilizing Artificial Intelligence for Categorizing Wildfire Origins through Satellite Image Analysis*

**3RD**

Yujay An (Ward Melville High School)

Ward Melville High School

*Understanding the Predictability of the U.S. Seasonal Surface Temperature with Convolutional Neural Networks Trained on CESM2 LENS*

**H.M**

Stephanie Pizano (Brentwood High School)

Brentwood High School

*The Development and Assessment of Anionic Resins for the Use in Mitigating Nitrogen in Sewage Drains and Agricultural Runoff*

**H.M**

Oscar Wang (Syosset High School)

Syosset High School

*Scale-Invariance of Trait Distribution Patterns in Tropical Trees: Consistency Across Spatial Scales*

**H.M**

Alenna Lin (Ward Melville High School)

Ward Melville High School

*AOP (Advanced Oxidation Process)/ARP (Advanced Reduction Process) for PFAS in Water Systems*

**H.M**

Grace Kathryn Orr (Westhampton Beach High School)

Westhampton Beach High School

*Calcium Hydroxide Enhances the Adaptive Ability of Coral Species E. Ancora, D. Actinodiscus, and M. Capricornis, Exposed to Decreased pH and Elevated Temperatures in an Ocean Simulated Environment*

**H.M**

Bethany Marie Kosinski (Valley Stream South High School)

Valley Stream South High School

*The Effect of Increased Oxygen and Temperature on Microalgae's Ability to Remove Phosphorous and Nitrogen From Water Samples*

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

**1ST**

Michelle Luo (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Anisotropic Ion Transport Properties of Thin-Film Solid Polymer Electrolytes*

**1ST**

James Nagler (Garden City High School)

Garden City High School

*Project Vision - Assisted Navigation & Waypoint Positioning through 3D Mapping*

**2ND**

Dylan Ann Cashin (East Hampton High School)

East Hampton High School

*Saccharina latissima in biofuel production: Identifying the ideal water conditions and their effect in biofuel production through a chemical extraction method*

**3RD**

Sarah Phinney (Garden City High School)

Garden City High School

*Using an Intraoral Scanner to Extract and Evaluate Contours of Oboe Reeds*

**H.M**

Vincent W. Huang (Syosset High School)

Syosset High School

*An Aerodynamic Analysis of Blended-Wing Body Aircraft with Nonplanar Wing Geometry*

## Math, Physics and Astronomy

**1ST**

Arav Chand (Half Hollow Hills West)

Half Hollow Hills West

*Extensions of Legendre's Formula and Fine's Theorem to the Fibonacci Factorial*

**2ND**

Nora Kathleen Kane (Lynbrook Senior High School)

Lynbrook Senior High School

*Analysis of Fourier Transforms Using a Combined Encoder-Decoder and Deep Neural Network Model: A Novel Method for Determining Chromaticity*

**3RD**

Cayden Shen (Roslyn High School)

Roslyn High School

*Using an Inexpensive Night Vision Camera as a Detector in NIR Spectroscopy*

**3RD**

Benjamin Hongxuan Zhang (Ward Melville High School)

Ward Melville High School

*Emulating Quenching in Galaxy Groups Using High-Resolution Cosmological Simulations*

**H.M**

Ethan Cole Berkowitz (Roslyn High School)

Roslyn High School

*The Strength of  $p$ -Coloring as a Knot Invariant*

**H.M**

Tiffany Zhang (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Resolving the Constraints Imposed by Chiral Effective Field Theory and Perturbative Quantum Chromodynamics on the Neutron Star Equation of State*

## Microbiology and Biochemistry

**1ST**

Mehek Kaur Sawhney (Commack High School)

Commack High School

*Secretion of the Francisella tularensis Protein FTL\_1123 by Escherichia coli Containing the HlyBD Operon*

**2ND**

Kiran Kaur Johar (Jericho High School)

Jericho High School

*Determination and Analysis of Apolipoprotein-L1 Binding Site Nature with Partnering Isoforms to Treat APOL1-Mediated Kidney Dysfunction*

**3RD**

Jayden Tucker Simon (John F. Kennedy High School)

John F. Kennedy High School

*The Utilization of Metagenomics to Determine the Effects of Plastic Polymer Types and a Temporal Gradient on Microbial Communities*

**H.M**

Zoe Naree Chinda (Bethpage High School)

Bethpage High School

*Evaluating the Effects of Plasmid Copy Number and Size on Bacterial Host Cell Fitness*

**H.M**

Nicole Kiaei (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*The Binding Affinity of Python-Derived 16 $\alpha$ -Hydroxylated Bile Acid 'Pythocholic Acid' to Human Bile Acid Receptors TGR5, FXR, and VDR*

**Plant Sciences**

**1ST**

Leah Irene Fromm (East Hampton High School)

East Hampton High School

*Growth promotion of hydroponic Lactuca sativa var. capitata and microgreen Raphanus sativus when exposed to Pseudomonas psychrotolerans consistently throughout the growth period*

**2ND**

Jessica Mary Curran (Westhampton Beach High School)

Westhampton Beach High School

*The Efficacy of Rhodophyta as a Seaweed Liquid Fertilizer through Okra and Arabidopsis Growth, Pigment Concentration, and Macronutrient/Micronutrient Distribution Using Tender Energy Spectroscopy*

**2ND**

Lilly Sarah Horowitz (Jericho High School)

Jericho High School

*The Role of DNA Methylation as an Epigenetic Silencing Mechanism of Ds1 and Ds2 Transposition in Maize*

**3RD**

Ariella Joy Golbin (George W. Hewlett High School)

George W. Hewlett High School

*Regulation of Mitogen-activated Protein Kinase Kinase 7 (MKK7) affects salt tolerance in the gametophytes of Ceratopteris richardii?*

### 3RD

Meredith Margaret Browne (East Hampton High School)

East Hampton High School

*Influence of mycorrhizal inoculants on mass, and water uptake in Lactuca sativa var. capitata under salt stress*

### H.M

Samuel Hsu (George W. Hewlett High School)

George W. Hewlett High School

*A Matrix Metalloproteinase (MMP) Regulated By Salicylic Acid (SA) And Lipopolysaccharide (LPS) Plays An Integral Role In Prothallial Development Of Gametophytes Of Ceratopteris richardii*

### H.M

Cameron Oliver Mitchell (East Hampton High School)

East Hampton High School

*Influence of common chemical phosphorus and nitrogen fertilizers with mycorrhizal fungi Rhizophagus and Glomus families on the growth of Pisum sativum legumes.*

## Robotics, Intelligent Machines and Software

### 1ST

Milan Lustig (Cold Spring Harbor High School)

Cold Spring Harbor High School

*A Configurable Compiled Programming Language With Integrated Transpilation*

### 2ND

Marcus Wu (Manhasset High School)

Manhasset High School

*Optimizing Measurement Error Mitigation to Account for Cross-Talk Errors in Superconducting Quantum Computers*

### 3RD

Alexander Y Xu (William A. Shine Great Neck South High School)



William A. Shine Great Neck South High School

*CARe-BERT: BERT-Powered Graph Augmentation for Context-Aware Radiology Report Retrieval*

**H.M**

Zabelle Bobelian (Cold Spring Harbor High School)

Cold Spring Harbor High School

*Deep Neural Nets for Imaging Systems*

**H.M**

Alex Lu (Manhasset High School), Johnny Liu (Manhasset High School)

Manhasset High School

*Context Is All You Need: Learning Context-Based Emotional Nuances From Uncontextualized Labels*

## Translational Medical Science

**1ST**

Sophia Antonina Tarasenko (Jericho High School)

Jericho High School

*Effects of Calcitriol on Menstrual Effluent-Derived Endometrial Stromal Cell Viability, Decidualization, and Proliferation*

**2ND**

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

William A. Shine Great Neck South High School

*Automated Volumetric Biomarker Segmentation and Combination for Superior ADPKD Progression Prediction using Machine Learning*

**3RD**

Alex Chen (Syosset High School)

Syosset High School

*Evaluating the Neuroprotective Effects of Spearmint Oil in the Caenorhabditis elegans Model of Alzheimer's Disease*

**H.M**

Jonathan Zhu (Carle Place High School)

Carle Place High School

*??Exploring the Potential Synergistic Antitumor Effect of L-Se-Methylselenocysteine and Sulforaphane on Human Cancer Cell Lines*

**H.M**

Amy Hong Xiao (Garden City High School)

Garden City High School

*A Novel Approach to Characterizing Pathogenicity of SLC25A13 Variants in Patients with Citrin Deficiency*