



### Animal Sciences

#### 1ST

William Hong Sun (Ward Melville High School)

Ward Melville High School

*Lipid Droplets in the Aging Brain*

#### 1ST

Katherine June St George (John F. Kennedy High School)

John F. Kennedy High School

*The Ketogenic Diet Ameliorates the Effects of Caffeine in Seizure Susceptible *Drosophila melanogaster**

#### 2ND

Maiya Ali Raghu (Syosset High School)

Syosset High School

*The Effect of Blue Light on Oxidative Stress in *C. elegans**

#### 2ND

Mahnoor Ayaz (Valley Stream South High School)

Valley Stream South High School

*The Use of Curcumin to Mitigate the Negative Effects of Nicotine on Diabetic Fruit Flies*

#### 3RD

Madison Marie Elias (Seaford High School)

Seaford High School

*Can Green Tea Alleviate the Effects of Stress Related to the Learning and Long-Term Memory of the Great Pond Snail?*

#### 3RD

Ashley Cammiso (John F. Kennedy High School)

John F. Kennedy High School

*The Effect of Cell-Cell Communication on the Polarization of Hair Cells on the Lateral Line of Zebrafish*

**H.M**

Michael Chacon (Commack High School), Defne Aktuna (Commack High School)

Commack High School

*Aversive Conditioning and Scent Discrimination in the Green Crab (Carcinus maenas)*

**H.M**

Mir Zayid Alam (Manhasset High School), Taylor Geeta Fox (Manhasset High School)

Manhasset High School

*Relating Major Depressive Disorder (MDD) to Circadian Signaling in Drosophila melanogaster*

**H.M**

Kayleigh Elizabeth O'Melia (Kings Park High School)

Kings Park High School

*Grooming Behavior and Social Hierarchy among Adult Female Trachypithecus phayrei (Phayre's leaf monkey)*

**H.M**

Saniya J Gaitonde (W. Tresper Clarke High School)

W. Tresper Clarke High School

*Bioinformatic Investigation of the Peculiarities of Long Intron Splicing in Hominidae*

## **Behavioral and Social Sciences**

**1ST**

Abishek T Ravindran (W. Tresper Clarke High School)

W. Tresper Clarke High School

*Implementation of Novel Sector Weight and Google Trends Data Objectives using MOEA/D Curtails Systematic Risk for Quintessential Investors*

**1ST**

Megan Gole (Half Hollow Hills East)

Half Hollow Hills East

*Analyzing the Foundation of Rhetorical Gender Inequality through Competitive High School Debating During Adolescence and the Connection to the Workplace*

**2ND**

James Zheng (Garden City High School)

Garden City High School

*Microbiome Composition and Environmental pH Modulate the Behavioral Effects of SSRIs in Larval Zebrafish (Danio rerio)*

**2ND**

Kira Elyse Conte (Smithtown High School East)

Smithtown High School East

*Think Positive! The Effect of Growth Mindset Training on Academic Attitudes*

**3RD**

Mariam Zaheera Quraishi (Ward Melville High School)

Ward Melville High School

*The Effect of Sibling Status of Adolescents with Autism Spectrum Disorder on Symptom Severity and Social Development*

**3RD**

Olivia Felice Viruet Quintero (Roslyn High School)

Roslyn High School

*The Effect of Accent and Accent Strength on Perceptions of Doctors*

**H.M**

Diya Kallimar Rai-Gersappe (Huntington High School), Ikshu Pandey (East Meadow High School)

Huntington High School

*Development of Novel Cerebral Aneurysm Embolization Method via Injection of Pluronic F-127 Multiblock Copolymer Hydrogel*

## H.M

Sanjana Ahmed (W. Tresper Clarke High School)

W. Tresper Clarke High School

*Volumetric Measurements Offer a Differential Diagnosis of Schizophrenia from Related Disorders.*

## H.M

Madeline Yang (Great Neck North High School)

Great Neck North High School

*Hyperscanning via fNIRS Reveals Eye Contact Engages Specific Neural Responses Within and Across Brains*

## H.M

Kreena Totala (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*A Novel Predictive Paradigm for Pediatric ADHD Behavior Through Thalamocortical White Matter Analysis*

## H.M

Feyi Sayo Rufai (Roslyn High School)

Roslyn High School

*Does That Make Me Crazy? The Effects of Type of Psychological Disorder and Treatment Sought on Person Perception*

## H.M

Alyssa Dioguardi (W.C. Mepham High School)

W.C. Mepham High School

*An Investigation of Hoodies on the Perception of Character*

## H.M

Ryan Joseph Pittman (W.C. Mepham High School)

W.C. Mepham High School

*The Financial Literacy of High School Students*

## H.M

Tyler John Ruvolo (Plainedge High School)

Plainedge High School

*A Regression Based Investigation Into Presidential Public Approval as a Factor of Political and Economic Policy*

## H.M

Feiyang Dai (Jericho High School)

Jericho High School

*Predicting Major Depressive Disorder Treatment Response: Examining Pretreatment Biomarkers GABA and Glx*

## Biochemistry

### 1ST

Melissa S Oz (Connetquot High School), Biprosasad Das (Connetquot High School), Anna Elizabeth Suske (Eastport South Manor Junior-Senior High School)

Connetquot High School

*Utilizing Protein Crystallography and X-Ray Diffraction to Determine the Structure of TrmD (Co-Crystallized with SAH) From Mycobacterium abscessus and Discover Possible Inhibitors via AutoDock VINA*

### 2ND

Shourav Binayak Saha (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*The Role of YY1 in the Modulation of the Podocyte Molecular Phenotype in High Glucose Conditions*

### 3RD

Jonathan Aaron Lederer (Hebrew Academy of the Five Towns and Rockaways), Abraham Balsam (Rambam Mesivta)

Hebrew Academy of the Five Towns and Rockaways

*The Effects of Graphene Oxide and Partially Reduced Graphene Oxide on the Enzymatic Activity of Thrombin*

## H.M

Rishitha Kudaravalli (Half Hollow Hills West)

Half Hollow Hills West

*GFP Tagged Mitochondrial IMG1 and BSCI Proteins Disrupt Normal Huntingtin Inclusion Body Formation in Saccharomyces cerevisiae*

## H.M

Fariyah Chowdhury (William Floyd High School)

William Floyd High School

*Structural Resolution of a New Ligand with Human Insulin*

## Biomedical and Health Sciences

### 1ST

Jacqueline Rose Albert (Syosset High School)

Syosset High School

*The Use of Curcumin to Mitigate the Inclusion of Alpha-synuclein in Transgenic Caenorhabditis elegans*

### 1ST

Nabiha Subzwari (Valley Stream South High School)

Valley Stream South High School

*Identifying Functional Disease Drivers in Lupus Nephritis Associated with Glomerular Remodeling*

### 2ND

Min Jee Kim (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Analysis of Pore Formation and Control in Gluconacetobacter Xylinus Through Organic Additives*

### 2ND

Chelsea Pan (Ward Melville High School)

Ward Melville High School

*Dysregulation of Dopamine-2 Receptor with Neuronal Deficits Underlies Loss of Control in Cocaine*

*Addiction*

**3RD**

Arpie Bakhshian (Lynbrook High School)

Lynbrook High School

*The Development of a CRISPR/Cas9 System with Nanoblades in Order to Study IBD-Related Genes in an in vitro Model*

**3RD**

Joelle Siong Sin (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Understanding the Role of Microbes in the Pathogenesis of Intestinal Tumor Development*

**H.M**

Angelica Abbondandolo (North Shore High School)

North Shore High School

*Elucidating the Role of Tenomodulin on IVD Homeostasis and Biomechanical Function*

**H.M**

Tristan Daniel Tran (West Islip High School)

West Islip High School

*Examining the Paracrine Effects of Adipose-Derived Mesenchymal Stem Cells in a Bovine Model of Osteoarthritis*

**H.M**

Kallista Zhuang (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Xenoestrogen Bisphenol-A's Neurotoxicity via Estrogenic Activity and Resulting Alzheimer's Disease Pathogenesis*

**H.M**

Enyo V Okeoma (Ward Melville High School)

Ward Melville High School

*Semen Extracellular Vesicles (SEVs) Contain Proteins that Inhibit HIV-1 Reverse Transcriptase RNA-dependent DNA Polymerization in vitro*

**H.M**

Antonia Mirra Pavek (Sachem High School East), Yousuf Suleman (Sachem High School East)

Sachem High School East

*The Effects of Ganoderma lingzhi and Lentinula edodes on the Longevity of Drosophila melanogaster and Regeneration Rates of Lumbriculus variegatus*

**H.M**

Seunguk John Baek (Herricks High School)

Herricks High School

*The Evaluation of the Therapeutic Potential of Orlistat on a Mouse Model of Hereditary Hemorrhagic Telangiectasia (HHT)*

## **Biomedical Engineering**

**1ST**

Sejal Gupta (Hicksville Senior High School)

Hicksville Senior High School

*Development of a Machine Learning Algorithm to Predict the Path of Joints for Gait Rehabilitation*

**2ND**

Jeremy Noah Bernstein (North Shore Hebrew Academy High School), Aaron Michael Baruch (North Shore Hebrew Academy High School), Joseph Abraham Masri (North Shore Hebrew Academy High School)

North Shore Hebrew Academy High School

*Addressing SIDS: Analyzing the Respiratory Rate of Infants Using Image Processing Algorithm*

**3RD**

Somya Pathak (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Depth-of-Interaction Resolution Improvement via Directional Control of Scintillator Light*



## H.M

Ike Zhang (Smithtown High School East)

Smithtown High School East

*Texture-based Radiomics of Peritumoral Tissue Predict Subsequent Progression into Cancer in Glioblastoma Multiforme*

## H.M

Alice Zhaoyi Chen (Jericho High School)

Jericho High School

*Estimating Rectal Cancer Response to Chemoradiation: Longitudinal MRI-based Radiomics*

## Cellular and Molecular Biology

### 1ST

Vyom Shah (Jericho High School)

Jericho High School

*Linking Diet and Cancer: Arachidonic Acid Augments Canonical Wnt Signaling to Enhance Stemness*

### 2ND

Kevin Chen (Smithtown High School East)

Smithtown High School East

*A Toxic Lunar Environment: Adverse Effects of a Lunar Soil Simulant (JSC-1A) on Alveolar Cellular Health and Genomic Integrity*

### 3RD

Damien Doran Edele (Eastport South Manor Junior-Senior High School), Christopher Matthew Jannotta (Eastport South Manor Junior-Senior High School), Danielle Levanti (Northport High School)

Eastport South Manor Junior-Senior High School

*The Complete Structural Refinement and Analysis of the Protein Anaplasma phagocytophilum tRNA (guanine-N1)-methyltransferase*

## H.M

Evan Joesph Miller (Valley Stream South High School)

Valley Stream South High School

*Protein X: A Novel Protein in Enhancing Anti PD-1 and Treating Cancer*

**H.M**

Nicole Julia Blattman (Roslyn High School)

Roslyn High School

*Optimized Methods for Personalized Detection of ctDNA in Plasma*

**H.M**

Maxline Delorme (Elmont Memorial)

Elmont Memorial

*Expression of Insulin Growth Factor 2 mRNA Binding Protein on the Regulation of Fidgetin Like 2*

**H.M**

Benjamin Levi Goldfried (Half Hollow Hills East)

Half Hollow Hills East

*Enhanced Cholinergic Interneuron Striatal Density Demonstrated in a SAPAP3 Knockout: An Indirect Quantification of Elevated Acetylcholine Levels in an OCD Mouse Model*

**H.M**

Ahmet Burak Buyukbayraktar (Sachem High School North)

Sachem High School North

*Targeting Dihydroceramide Desaturase 1 (DES1) as a Method to Overcome Anoikis Resistance in Basal Breast Cancer*

## Chemistry

**1ST**

Tong Ye (Half Hollow Hills East)

Half Hollow Hills East

*Investigations into the Significance of Epidermal Fatty Acid Binding Protein (FABP5) in Breast Cancer Survival and Design of Novel FABP5 Inhibitors*

## 2ND

Riya Patel (Jericho High School)

Jericho High School

*Next Generation Ultrafiltration for Wastewater Treatment: Characterization and Performance of Fouling-Resistant Polymeric and Lyocell Cellulose Nanofiber Membranes*

## 3RD

Celina Ma (Kings Park High School)

Kings Park High School

*The Synthesis of a Novel Streptogramin A-Benzoxaborole Conjugate and Its Potential as a Bivalent Ribosomal Inhibitor Against Staphylococcus aureus*

## H.M

Bryce Alexander Vitulli (Huntington High School), Ryan Terence Knowles (Huntington High School)

Huntington High School

*The Effect of Fruit-Based Super Absorbent Polymers on the Moisture Retention of Topsoil*

## H.M

Michelle Zeng (Great Neck North High School)

Great Neck North High School

*Addition of Cost Effective Common Materials for a More Accessible Method of Solar Distillation*

## H.M

Emma Yeung (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Synthesis and Temperature-dependent Phase Behavior of a Dendritic Dipeptide*

## H.M

Raymond Lin (Great Neck North High School)

Great Neck North High School

*Formation of Bilayer Sustainable Food Packaging Films*

## Computational Biology and Bioinformatics

### 1ST

Suchir Misra (Jericho High School)

Jericho High School

*Abstract Mining to Create Comprehensive Disease-disease Correlation Database*

### 2ND

Catherine Kim (Jericho High School)

Jericho High School

*Co-administration of Atorvastatin Blocks CYP3A4: Exacerbated Risk of Interstitial Lung Disease*

### 3RD

Danielle Lauren Gruber (Great Neck North High School)

Great Neck North High School

*A Game-Theoretic Model of Task-Positive Networks*

### H.M

Alyssa Fong (East Meadow High School)

East Meadow High School

*Analysis of APOBEC3 Hotspots in the Domains of Select Human Herpesvirus Immediate Early Proteins*

### H.M

Siean Benson (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*The Role of Delayed Rectifier Potassium Currents in Human Ventricular Cardiomyocyte Arrhythmogenesis*

## Earth & Environmental AND Environmental Engineering

### 1ST

Rithika Narayan (Elwood - John H. Glenn)

Elwood - John H. Glenn

*Coral Grief: Machine Learning on Crowd-sourced Data to Highlight an Ecological Crisis*

**1ST**

Maya Lillian Maciel-Seidman (Bethpage High School), Ruchitha Channapatna (Bethpage High School),  
Suchitha Channapatna (Bethpage High School)

Bethpage High School

*Soil Moisture Sensing Robot: A Novel Agricultural Device*

**2ND**

William Hu (Jericho High School)

Jericho High School

*Modeling Environmental Effects on Gulf of Maine Atlantic Herring (*Clupea harengus*) Using Generalized Additive Models*

**2ND**

Katherine Zhang (Jericho High School)

Jericho High School

*Dialdehyde Cellulose Nanocrystal Hydrogel Synthesis for Antibiotic Remediation*

**3RD**

Kyra Jamieson McCreery (North Shore High School)

North Shore High School

*Associations between the Slowdown in North Atlantic Tropical Cyclone Translation Speed and Intensifying Storm Precipitation*

**3RD**

Ethan Jacob Sontarp (Commack High School)

Commack High School

*Modeling Uranium Uptake in Fossilized Teeth and Bones: Insight into Potential for Long-Term Uranium Waste Storage in Phosphates*

**H.M**

Andrew John Brinton (John F. Kennedy High School)

John F. Kennedy High School

*Marsh Restoration: Ribbed Mussels (Geukensia demissa) as a Revival Mechanism to Rebuild the Coastal Salt Marshes of Long Island, New York*

**H.M**

Caitlin Jean Wilkinson (Smithtown High School East)

Smithtown High School East

*Rates and Traits: The Potential for Utilizing Above-ground Plant Traits to Predict Denitrification in Long Island Salt Marshes*

**H.M**

Yuktha Chiguripati (W. Tresper Clarke High School)

W. Tresper Clarke High School

*Pretreatment of Arachis hypogaea Seeds with a Coating of Trichoderma harzianum and Polymer 1 or Trichoderma harzianum and Chitosan Induces Greater Tolerance to Drought Conditions*

**H.M**

Blake Charles Lippman (George W. Hewlett High School), Tyler Bissoondial (John F. Kennedy High School)

George W. Hewlett High School

*Investigating the Use of Ceratopteris richardii as a Model Plant for the Phytoremediation of Cadmium*

**H.M**

Emma Michelle Foster (Sachem High School East), Julia Ashley Nadolne (Sachem High School East)

Sachem High School East

*Use of Mycorrhizal Fungi to Improve Soil Conditions for Agricultural Use*

**H.M**

Serena Zhao (Manhasset High School)

Manhasset High School

*Targeting Marine Plastic Pollution with Numerical Data Modeling: Predicting Plastic Transport in*

## Energy: Sustainable Materials & Design AND Materials Science

### 1ST

Samantha Chen (Manhasset High School), Emma Wang (Manhasset High School)

Manhasset High School

*The Creation and Optimization of a Plant Microbial Fuel Cell for Energy Generation with Brassica rapa*

### 2ND

Sanjna Kedia (Manhasset High School), Emily Ma (Manhasset High School)

Manhasset High School

*Remediation of Wastewater Using a Microbial Fuel Cell with Optimized Electricity Generation and an Algae Bioreactor*

### 3RD

Abdullah Ali (Valley Stream South High School)

Valley Stream South High School

*Flammability and Water Absorption of Banana Stem Fiber Reinforced Green Composites*

### H.M

Bhawan Kaur Sandhu (Lawrence High School), Christine Kong (Commack High School)

Lawrence High School

*A Novel Nafion-free Proton Transport Membrane for the Proton Exchange Membrane Fuel Cell*

## Engineering Mechanics

### 1ST

Ian Carlson Bailey (Garden City High School)

Garden City High School

*CAD Modeling, Simulation, and Prototyping of a Wave Energy Generation System for USVs*

### 2ND

Theresa Thulasidas (Bethpage High School), Ava Elizabeth Zingone (Bethpage High School)

Bethpage High School

*Dye Sensitized v.s. Monocrystalline: Most Cost Efficient Method for Energy Production*

**3RD**

Atif Khan (Connetquot High School)

Connetquot High School

*Using Polarized Light to Create a Cost-Effective Landmine Detector for Use in War-Torn Countries*

**H.M**

Alex Tang (George W. Hewlett High School)

George W. Hewlett High School

*Validation of High-Order Theories for Sandwich Beam Behavior Using Direct Image Correlation (DIC) Techniques*

**H.M**

Rachel Catherine Williams (Kings Park High School)

Kings Park High School

*The Design and Construction of a Stamping Die to Improve the Accuracy of Bending Orthopedic Implants*

## **Mathematics AND Physics and Astronomy**

**1ST**

Ella Rose Wesson (Manhasset High School)

Manhasset High School

*Engineering One Layer of a Two-Dimensional Acoustic Band Gap Material and Reconstructing the Sound Pressure Field Using Acoustic Holography*

**2ND**

Richard Hui Ren (Jericho High School)

Jericho High School

*An S-polarized Scattering Near-field Microscopy Probe Design for Nanoscale Dielectric Anisotropy*



## Analysis

### 3RD

Caitlin Alexandra Leodis (Smithtown High School East)

Smithtown High School East

*Solving the Neighboring Borders Problem: Conceptualizing a Mathematical Model with Number Sets*

### H.M

Michael Galardi (Plainedge High School)

Plainedge High School

*A Regression-Based Analysis of Salary as a Function of Individual Performance in Major League Baseball*

### H.M

Rohan Nagavardhan (Ward Melville High School)

Ward Melville High School

*Identifying Exoplanet Companions using Radial Velocity Data with Deep Learning*

## Microbiology

### 1ST

Poojan Pandya (Half Hollow Hills West), Leo Takemaru (Ward Melville High School)

Half Hollow Hills West

*CHMP2A and TSG101 Interact with the Novel ESCRT-III Recruiter CCDC11 in HIV-1 Viral Budding*

### 2ND

Marvia Jozie Pressoir (Elmont Memorial)

Elmont Memorial

*The Individual and Synergistic Effect of Combined Heavy Metal Exposure On Dopaminergic Neurodegeneration and Associated Behaviors in C. elegans as a Model for Parkinson's Disease*

### 3RD

Giselle Leah Rasquinha (Syosset High School)

Syosset High School

*Lipid-Conjugated Anti-HIV Fusion Inhibitor Exhibits Enhanced Potency and Stability*

**H.M**

Katherine (Lulu) Grace Morse (Hebrew Academy of the Five Towns and Rockaways)

Hebrew Academy of the Five Towns and Rockaways

*Prevention of Shiga-Toxin-Producing E.coli Outbreaks in Flour: The Elimination of E.faecium in Ruminant Probiotics*

**H.M**

Christopher Edward Alexander (Elmont Memorial)

Elmont Memorial

*Characterizing the Oncolytic Properties of the Avian Paramyxovirus Serotype 4 (APMV-4) in Comparison to Newcastle Disease Virus (NDV): Developing Oncolytic Therapies Based on Viral Cell Death*

**H.M**

Sarah Flynn Moran (North Shore High School)

North Shore High School

*Antiviral Capabilities of DABCO-hydrocarbon Molecules*

## **Plant Sciences**

**1ST**

Emily Gan (Jericho High School)

Jericho High School

*Insights into Biotic Light Manipulation: Microbial Characterization of Alkaline Model and Environmental Microalgae*

**2ND**

Sophia Seokyoung Jang (Syosset High School)

Syosset High School

*The Interactions of the ECT2 and CRY2 Pathways in Arabidopsis thaliana*

**3RD**

Jude Kristoffer Ramos Tomas (George W. Hewlett High School), Kelvin Reid Cheng (George W. Hewlett High School)

George W. Hewlett High School

*Regulation of a Temperature-Induced Lipocalin (TIL) by Cold Stress and Epibrassinolide in the Gametophytes of Ceratopteris richardii*

**H.M**

Oscar A Murga (Central Islip Senior High School), Leslie Clarice Mejia (Central Islip Senior High School)

Central Islip Senior High School

*The Effects of Rhizobacteria on Hydroponically Grown Arugula*

## **Robotics and Intelligent Machines AND Embed. Sys. AND Sys. Software**

**1ST**

Davesh Reddy Valagolam (Jericho High School)

Jericho High School

*Monitoring and Diagnosing Pathological Tremors Through Mobile and Neural Network Technology*

**2ND**

Yash Gupta (Half Hollow Hills West), Collin Li (William A. Shine Great Neck South High School), Atreya Rawat (Half Hollow Hills East)

Half Hollow Hills West

*A Proposal of Deep-learning-based Magic Mirror Modules to Identify Specific Health Aspects*

**3RD**

Christopher Hua Moore (Ward Melville High School)

Ward Melville High School

*Evaluating V-MAC: A Raspberry Pi Based Data-Centric MAC for Vehicular Video Transmission*

**H.M**

Kevin Douglas Gauld (Manhasset High School)

Manhasset High School

*Optimizing Classification Efficacy of Image Classifiers Through the Usage of Neural Style Transfer in Image Preprocessing*

**H.M**

Abdullah Bin Nauman (Ward Melville High School)

Ward Melville High School

*Mitigating Communication Bottlenecks in MPI-Based Distributed Learning*

## **Translational Medical Science**

**1ST**

Hailey Edelman (Syosset High School)

Syosset High School

*Exploring the Role of Cannabidiol in a Caenorhabditis elegans Model*

**2ND**

Farah Kabir (Garden City High School)

Garden City High School

*Integrated Expression Profiles of MiRNAs and GLUT1 in Murine Blood-Brain Barrier under Hyperglycemic Conditions*

**3RD**

Rachel Sydnie Bocian (Half Hollow Hills East)

Half Hollow Hills East

*A Novel Cationically Enframed High Density Aromatic Peptide, A2, Mitigates Mitochondrial Dysfunction and Promotes Cell Survival Via Reduction of ROS and Maintenance of Mitochondrial Inner Membrane Potential*