

## 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*

## 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*

## **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*

## **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*

## Biochemistry

### 1ST

Melissa S Oz (Connetquot High School), Biprosad 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**

Farihah Chowdhury (William Floyd High School)

William Floyd High School

*Structural Resolution of a New Ligand with Human Insulin*

## **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 Algal 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*

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## 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 Massachusetts Bay Through Flow Map Composition*

## 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)*

## 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*

## **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*

## **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 Brain*

**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*

**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*

## 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*

## **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*

## Animal Sciences

### 1ST

Maiya Ali Raghu (Syosset High School)

Syosset High School

*The Effect of EGCG on Oxidative Stress in C. elegans*

### 2ND

Jordyn Paige Krinsky (John F. Kennedy High School)

John F. Kennedy High School

*The Combinatorial Effects of Diet and Caffeine Mitigate Parkinson's Disease in a Drosophila melanogaster System*

**3RD**

Julia Mary Levine (John F. Kennedy High School)

John F. Kennedy High School

*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*

**H.M**

Mary Helen Menger (Sacred Heart Academy)

Sacred Heart Academy

*Canaries in the Coalmine: Evaluating the Effect of Petrochemical Contamination on the Cardiovascular Health of Daphnia Magna*

## **Behavioral and Social Sciences**

**1ST**

Isabella Souza (Syosset High School)

Syosset High School

*Seeing Through the Scan: The Impact of fMRI Evidence on Juror Satisfaction and Verdicts*

**1ST**

Nethmi Withanage (Smithtown High School East)

Smithtown High School East

*The Analysis of the Use of Color in Pandemic Artwork Using Digital Quantifications*

**1ST**

Carly Sara Friedman (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Education During a Pandemic: Exploring the Effectiveness of Synchronous versus Asynchronous E-learning From A Teacher's Perspective*

**2ND**

Aaliyah Naomi Bullen (Half Hollow Hills West)

Half Hollow Hills West

*The Prevalence of Energy Intake Methods in New York State Obesity Prevention Policies*

**3RD**

Erin Lynn Ye (Huntington High School)

Huntington High School

*Desde Casa: Examining the Correlation between Perception of Learning in a Virtual Model and Bilingual Vocabulary Knowledge in Spanish-Speaking ENL Students*

**H.M**

Jennie Dapice (Syosset High School)

Syosset High School

*The Influence of Political Party on the Extent of State E-cigarette Regulation*

**H.M**

Elianna Michelle Rivera (W. Tresper Clarke High School)

W. Tresper Clarke High School

*Measuring Opportunity for Immigrants Through the Creation of a Political Index: A Longitudinal Study*

## **Biomedical and Health Sciences**

**1ST**

Samantha Rose Radinsky (Paul D. Schreiber High School)

Paul D. Schreiber High School

*The role of bone lineage cells during digit tip regeneration in adult mice*

**1ST**

Yifang Zha (The Wheatley School)

The Wheatley School

*Curcumin and Capsaicin Synergistically Suppress Neuroblastoma Tumor Development*

**2ND**

Natalia Pahlavan (Jericho High School)

Jericho High School

*AcuRe: Third-Generation Machine Learning Cancer Detection Model Using Nanopore Read Alignments*

**3RD**

Akshay Malhotra (Ward Melville High School)

Ward Melville High School

*Impact of Body Mass Index on Clinical Presentation, Management, and Outcomes in Adults with Cardiac Arrest Undergoing Coronary Angiogram*

**H.M**

Rhea Rasquinha (Herricks High School)

Herricks High School

*Identifying the Prognostic, Tumor-suppressive and Immunologic Roles of IRF5 in Breast Cancer*

**H.M**

Andrew Khanin (Cold Spring Harbor High School)

Cold Spring Harbor High School

*Testing the Effects of Flavorant Propylene Glycol Acetals on the Locomotor Behavior of Drosophila Melanogaster Using the Rapid Iterative Negative Geotaxis (RING) Assay*

## **Cellular and Molecular Biology AND BioChemistry**

**1ST**

Neil Mehta (Ward Melville High School)

Ward Melville High School

*The Effect of IL-22 Stimulation on Paneth Cell Granule Morphology and Epithelial Cell Proliferation*

**2ND**

Kyle Pinzon (Herricks High School)

Herricks High School

*Screening and Modifying DEDDh Exonuclease Inhibitors for Targeting the SARS-CoV-2 nsp14 ExoN Catalytic Site*

**3RD**

Miah Christina Margiano (St Anthony's High School)

St Anthony's High School

*Synergy of Treatment: Therapeutic Vulnerabilities in Small Cell Lung Cancer*

## **Computational Biology and Bioinformatics**

**1ST**

Danielle Lauren Gruber (Great Neck North High School)

Great Neck North High School

*A Game Theoretic Model of the Resting State Brain*

**1ST**

Catherine Kim (Jericho High School)

Jericho High School

*Novel Prediction of Adverse Drug Reactions and Underlying Pathological Mechanisms via Hierarchical Classification*

**2ND**

Reid Fleishman (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Creation of a Machine Learning App to Facilitate Pancreatic Cancer Prediction*

**3RD**

Mir Zayid Alam (Manhasset High School)

Manhasset High School

*Identification of Genetic Biomarkers for Hepatocellular Carcinoma Using an Automated Microarray-Based Pipeline and Pathway Enrichment*

**H.M**

Chapin Luke Zerner (Commack High School)

Commack High School

*Using Machine Learning to Predict Features Related to the Adaptive Immune Response in COVID-19*

**H.M**

Michael Chu (Syosset High School)

Syosset High School

*CoronaXNet: Using Convolutional Neural Networks to Automate the Detection of COVID-19 from Chest X-Ray Images*

## **Earth and Environmental Sciences**

**1ST**

Ashley Katherine Roth (Lynbrook High School)

Lynbrook High School

*Aquatic Habitat Nitrate Levels on Long Island: The Effect of High Nitrate Levels on Anuran Species Abundance*

**1ST**

Rithika Narayan (Elwood - John H. Glenn)

Elwood - John H. Glenn

*Harnessing Deep Learning to Assess Coral Reef Health through Crowd-sourced Efforts*

**2ND**

Brianna Han (Commack High School)

Commack High School

*Markov chain Monte Carlo methods for estimating rainfall rate from dual-polarization weather radar*

**3RD**

Blessycilia Sebastian (W. Tresper Clarke High School)

W. Tresper Clarke High School

*Analyzing the Effect of Silver Nanoparticles on Aquatic Daphnia Magna*

## H.M

Rebecca Cho (Jericho High School)

Jericho High School

*Associations between the North Atlantic Subtropical High and Tropical Cyclone Movement and Precipitation*

## H.M

Noel F Manalil (East Meadow High School), Jayden Abraham (East Meadow High School)

East Meadow High School

*The Effects of Media and Hydraulic Retention time on Nitrogen Retention in Bioreactors for Wastewater Treatment*

## Embedded Systems AND Engineering Mechanics

### 1ST

Margaret Anne Gates (Wantagh High School)

Wantagh High School

*Autonomous Wildfire Detection and Containment System*

### 2ND

Ryan William Menier (Kings Park High School)

Kings Park High School

*The Electron Ion Collider and the Evaluation of Steering Magnets for the Polarized Electron Source Prototype*

## Translational Medical Science AND Biomedical Engineering

### 1ST

Janice Kirti Rateshwar (Jericho High School)

Jericho High School

*Molecular Mechanisms of Direct Inhibition of NF- $\kappa$ B Subunits by 9-chloro-8-(hexyloxy)-2H-chromeno[2,3-d] pyrimidine-2,4(3H)-dione (IT-848)*

### 2ND

Alice Zhaoyi Chen (Jericho High School)

Jericho High School

*MRgRT and delta radiomics: Early prediction of survival in pancreatic cancer*

## Systems Software

### 1ST

James Connor (Northport High School)

Northport High School

*Attributing State-backed Information Operations on Twitter through Machine Learning*

### 2ND

Steven Anthony Cayea (St Anthony's High School)

St Anthony's High School

*Efficiency of Data Compression Algorithms for Low-Cost Laser Transceivers*

## Chemistry AND Material Science AND Energy:Sustainable Materials & Design

### 1ST

Brian Insuhp Lee (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Evaluating the efficacy of repurposed and modified traditional eastern medicinal compounds on Coronavirus Family specific target structures.*

### 2ND

Nishanth Chinnadurai (East Meadow High School), Udithi Kothapalli (St Anthony's High School), Hugo Patrick Onghai (Earl L. Vandermeulen High School/Port Jefferson UFSD)

East Meadow High School

*Molecular-Imprinted Biosensor for SARS-CoV-2 Detection*

### 3RD

Benjamin Alex Sherman (George W. Hewlett High School)

George W. Hewlett High School

## **Robotics and Intelligent Machines**

### **1ST**

Ethan Horowitz (Manhasset High School)

Manhasset High School

*CET-CNN: Modular Hierarchical Image Classification Using Conditional-Execution Tree CNNs*

### **2ND**

Mark Shapiro (Half Hollow Hills East)

Half Hollow Hills East

*Analysis of Neural Network Community Structure: a Network-Theoretic Approach*

## **Microbiology**

### **1ST**

Giselle Leah Rasquinha (Syosset High School)

Syosset High School

*FD028: A Bifunctional HIV-1 Inactivator Acts Before Host Cell Entry*

### **2ND**

Christopher Edward Alexander (Elmont Memorial)

Elmont Memorial

*Avian Paramyxovirus Serotype 4 (APMV-4) Promotes Apoptotic Cell Death & Stimulated Immune Response in Malignant Melanoma and Relapse Cancers in respect to Newcastle Disease Virus (NDV): Characterization of a Novel Oncolytic Virus*

## **Plant Sciences**

### **1ST**

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

George W. Hewlett High School

*Lipopolysaccharide and Galactose Induce Cell Death in Prothallial Cells of Gametophytes of Ceratopteris richardii*

**2ND**

Leena Alzafarani (Brentwood High School)

Brentwood High School

*TURN TO NATURE: THE USE OF SALT WATER FOR THE MITIGATION AND CONTROL OF JAPANESE KNOTWEED, REYNOUTRIA JAPONICA*

## **Math AND Physics & Astronomy**

**1ST**

Kathryn Elizabeth Postiglione (Lynbrook High School)

Lynbrook High School

*Analyzing the Photometry of Star Cluster Messier 39: Creation of Color Magnitude Diagram, Age Calculation, and Distance Measurement*

**2ND**

Uma Arengo (Long Beach High School)

Long Beach High School

*Using Box-Counting Dimension to Quantify the Progressive Stages of Diabetic Retinopathy*

**3RD**

Sameer Singh (Valley Stream South High School)

Valley Stream South High School

*Exo2: An Investigation into a Novel Characterization Model for Transit Photometry*

## **Environmental Engineering**

**1ST**

Julius Yoh (Manhasset High School)

Manhasset High School

*The Optimization of Desalination and Ion-Removal Rate Through the Engineering of Novel Turbulent Modular Designs in an Electrodialysis System*

**2ND**

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

Bethpage High School

*Solar-Powered Soil Sensing Robot: A Novel Agricultural Device for Monitoring Moisture and pH*

## **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**

Lakshanna 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**

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*

**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*

## **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 Toxicarioside 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

## 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

**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*

## 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.*

## Mathematics AND Physics and Astronomy

### 1ST

Daniel Salkinder (Half Hollow Hills East)

Half Hollow Hills East

*nxn 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*