



### Animal Sciences

#### 1ST

Ibrahim Syed Qadri (Valley Stream South High School)

Valley Stream South High School

*The Ability of Vitamin E to Improve the Locomotor Fitness, Reproduction, and Metabolic Respiration of Nicotine-Induced D. melanogaster*

#### 2ND

Jennifer Zhong (Smithtown High School East)

Smithtown High School East

*A Larval Zebrafish Model for the Developmental Effects of Hypoxia on Survival and Behavior*

#### 3RD

Hiral Milind Chavre (George W. Hewlett High School)

George W. Hewlett High School

*NMDA Receptor Mutation and KCC2 Inhibition Induce Changes in Brain Development Associated with Neurodevelopmental Diseases*

#### H.M

JIn Ko (Commack High School)

Commack High School

*Behavioral Analysis on the discrepancies in Circadian Rhythms of Drosophila melanogaster and its mutational counterparts*

#### H.M

Devaanshi Kawatra (Bethpage High School)

Bethpage High School

*Investigating the Role of Sunlight in Regenerating Planarians*

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## Behavioral and Social Sciences

**1ST**

Mikayla Schwartz (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Occupational Stress and Mental Health Outcomes among the Emergency Medical Services Population*

**1ST**

Elif Koch (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*Impacts of Levodopa and Traditional Medicines on the Locomotion of Alpha-Synuclein Caenorhabditis elegans*

**1ST**

Holy Mary Zaher (Smithtown High School East)

Smithtown High School East

*The Correlation Between Peroxisome Levels and Short-Term Memory Loss in a PINK1 -/- Rat Model of Parkinson's Disease*

**2ND**

Zachary David Kam (Syosset High School)

Syosset High School

*Transformative Transactions: An Analysis of Factors Affecting ESG and Impact Investing Behaviors*

**2ND**

Sabrina Guo (Syosset High School)

Syosset High School

*Differential Emergency Contraceptive Use Among Young Women in the United States from 2006 to 2019*

**2ND**

Jacob Aaron Leshnower (Half Hollow Hills East)

Half Hollow Hills East

*Employing the Open Fifth to Determine Emotional Bias in Music's Major-Minor Dichotomy*

**3RD**

Jonathan Zhang (Commack High School)

Commack High School

*Differential Diagnosis of Sleep Disorder Subtypes with Neural Aperiodic Components*

**3RD**

Margaret H. Lin (Plainview-Old Bethpage JFK High School)

Plainview-Old Bethpage JFK High School

*The Effect of Eco-Labeling Methods on Food Packaging on Consumer Health Halos*

**3RD**

Sara Rosenbaum (Roslyn High School)

Roslyn High School

*The Effect of Image Manipulation on Social Comparison, Body Satisfaction, and Self-Esteem*

**H.M**

Sydney Flisser (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Verb Learning With and Without Modifiers in Autistic Toddlers*

**H.M**

Rena Geula (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*Comparison of Human Social Brain Activity During Eye-Contact With Another Human and a Humanoid Robot*

**H.M**

Samantha Altieri (Valley Stream North High School)

Valley Stream North High School

*Analyzing Adult Political Opinion Through Alternative Characterizations of the January 6th, 2021,*

*Capitol Attack*

**H.M**

Zainab Razia (Valley Stream South High School)

Valley Stream South High School

*Differences in the Emotional Interpretation of Whole-Body Expressions based on Immigrant Status and the Role of Cognitive and Affective Empathy.*

## **Bio Chemistry and Bio Medial Engineering**

**1ST**

Natalia Pahlavan (Jericho High School)

Jericho High School

*Bidirectional 12-lead Electrocardiogram and Electrogram Reconstruction Using a Cycle Generative Adversarial Network*

**2ND**

Alex L Wang (Syosset High School)

Syosset High School

*Spatially Multiplexed Gold Leaf Electrodes for Affordable Pathogenic Detection*

**3RD**

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

William A. Shine Great Neck South High School

*Neuroprotective Effects of Red Raspberry Extract and Brousoflavonol B in Alzheimer's Disease Models*

**H.M**

Abigail Smith (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Skin Cancer Detection with Raspberry Pi and TensorFlow*

**H.M**

Alice Tianxin Wang (Half Hollow Hills East)

Half Hollow Hills East

*A novel general method for in-liquid atomic force microscopy and near-field optical microscopy of photosensitive proteins*

## Biomedical and Health Sciences

**1ST**

Jake Ethan Konigsberg (Roslyn High School)

Roslyn High School

*Investigating the Anti-Inflammatory Effects of Famotidine*

**1ST**

Natasha Kulviwat (Jericho High School)

Jericho High School

*Claudin-5: A Novel Biomarker of Blood-Brain Barrier Breakdown to Predict and Prevent Suicide*

**2ND**

Andria Chen (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Investigating Genetic and Biological Differences between African American and Caucasian Endometrial Cancer Patients*

**2ND**

Benjamin Nyein Punzalan (Manhasset High School)

Manhasset High School

*Crosstalk between Alzheimer's disease and SARS-CoV-2 infection is mitigated by ginkgolides A and B in HTB-11 and U937 cell models*

**3RD**

Alexis Lauren Alfasi (Oceanside High School)

Oceanside High School

*The Effects of Mevastatin on 3p Loss and 3q Chromosome Gain*

### 3RD

Emelie Jada Nguyen (Roslyn High School)

Roslyn High School

*Global DNA Methylation Profiles of WTC-Associated Breast and Prostate Cancer Tissue*

### H.M

Amanda Gail Liswood (Roslyn High School)

Roslyn High School

*Effects of Cytokines on Lacrimal Gland Myoepithelial Cell Contractile Ability*

### H.M

Grace Motta (Elwood - John H. Glenn), Alexandra Nicole Ebanks (Harborfields High School)

Elwood - John H. Glenn

*Examining the Relationship between gC1qR and the PD-1/PD-L1 Axis in Hepatitis-C, HIV-1, and Cancer Cells.*

### H.M

Aleeza Naeem Mughal (Plainedge High School)

Plainedge High School

*An Examination of the American Smile: An Analysis of Dental Attendance Disparity Factors*

## Cellular and Molecular Biology

### 1ST

Lucas Evan Sher (Jericho High School)

Jericho High School

*Rethinking Pancreatic Ductal Adenocarcinoma (PDAC) Prognosis: Analysis of KRAS-dependent Biomarkers Across Subtypes*

### 2ND

Miah Margiano (St Anthony's High School)

St Anthony's High School

*Spontaneous Regression in Neuroblastoma: Analysis of Prognostic LncRNAs*

**3RD**

Dana Kagan (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Employing CRISPR Cas9 editing to correct the  $\Delta$ F508 mutation of the Cystic Fibrosis Transmembrane Conductance Regulator Gene*

**H.M**

Addison Miles Klebanov (John L. Miller Great Neck North High School)

John L. Miller Great Neck North High School

*Evaluating the Effect of  $\beta$ II Spectrin Knockout on Pyruvate Kinase Molecule 2 Expression and Hepatocellular Carcinoma Development*

**H.M**

Amelia Ilyse Abell (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Analyzing the interaction between HRAS, STAT3 and LRPPRC in the mitochondria*

## Chemistry and Material Science

**1ST**

Vincent W. Huang (Syosset High School)

Syosset High School

*An advanced computer app for simulating white-beam diffraction Laue patterns in modern X-ray crystallography?*

**2ND**

Jolene Hanying Cao (Smithtown High School East)

Smithtown High School East

*Periodic Arrays of PDMS for Light-Driven Reversible Printing and Encryption*

**3RD**

Ericka Lai (Manhasset High School)

Manhasset High School

*Phosphorylation of Cellulose Nanofibers for Ammonium Adsorption*

**H.M**

Asfar Chaudhry (West Islip High School)

West Islip High School

*Elemental Analysis of Lichens Through Tender Energy X-ray Spectroscopy*

**H.M**

Hannah Helen Van Son (Cold Spring Harbor High School)

Cold Spring Harbor High School

*The Mechano-synthesis of Yb<sup>3+</sup> Doped CsPbCl<sub>3</sub>.*

## **Computational Biology and Bioinformatics**

**1ST**

Kevin Zhu (Jericho High School)

Jericho High School

*Micro-Changing Short Tandem Repeats: Investigating A Novel Genomic Factor of Polymorphism in 10 Human Cancers*

**2ND**

Camryn Marisa Neches (Paul D. Schreiber High School)

Paul D. Schreiber High School

*The Identification and Analysis of Novel TP53 Hotspots and p53 Protein Structures*

**3RD**

Alexandre Tourneux (George W. Hewlett High School)

George W. Hewlett High School

*The Annotation of Novel Datasets for the Training of Cellori (Cell Origin) Spots, a Deep Learning Algorithm for RNA FISH Spot Detection*



## H.M

Reed Matthew Paltrow (Paul D. Schreiber High School)

Paul D. Schreiber High School

*Online Machine Learning of Platelet Dynamics via Massive Multiscale Modeling*

## H.M

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

William A. Shine Great Neck South High School

*Deep Learning Accelerated Lattice-Boltzmann Simulations for Multiscale Modeling of Thrombosis*

## Earth and Environmental Sciences

### 1ST

Joseph Daniel Sciotto (Ward Melville High School)

Ward Melville High School

*Laboratory studies of X-ray amorphous phases: Constraining the amorphous components in Martian Soils and Rocks*

### 1ST

Kevin Mauricio Leal (Brentwood High School)

Brentwood High School

*Cost-Effective Air Quality Monitoring Using Readily Available Programming Interfaces*

### 1ST

Emma D Fallon (West Islip High School)

West Islip High School

*Analysis of Microplastic Compositions in Salt and Freshwater on the South Shore of Long Island*

### 2ND

Christina Ziccardi (Kings Park High School)

Kings Park High School

*Projected spatial overlap of *Brevoortia tyrannus* with BOEM Wind Farm Lease Areas in the New York*

*Bight as influenced by time and water temperature changes*

**2ND**

Megan Cheng (Herricks High School)

Herricks High School

*Normalized Difference Vegetation Index and Gross Primary Productivity: Predicting Biogenic Carbon Fluxes in the New York City Metropolitan Area*

**2ND**

Gabrielle Hope Geller (Lynbrook Senior High School)

Lynbrook Senior High School

*The Effects of Ocean Acidification and Different Plastic Substrates on the Abundance of Pathogenic Vibrio in the Plastisphere*

**3RD**

Sophia Davis Marchioli (North Shore High School)

North Shore High School

*The Morning Cup of Joe is in Danger: A climate assessment of Ethiopia, Kenya, Tanzania, and Uganda in relation to coffee*

**3RD**

Zoe Naree Chinda (Bethpage High School)

Bethpage High School

*Minimizing Nitrogen Fertilizer Use for Residential Lawns*

**3RD**

Michelle Yu (North Shore High School)

North Shore High School

*Don't Count Your Styela plicata Eggs Before They Hatch: The Impact of Salinity on Fertilization*

**H.M**

Skye Louise Tanzmann (East Hampton High School)

East Hampton High School

*Estimating Oyster Reef Clearance Rates and Evaluating Reef Mortality*

**H.M**

Ryan Matthew Guzman (Kings Park High School)

Kings Park High School

*Using Artemia salina as a model to observe the effect of acidification on a marine ecosystem.*

**H.M**

Parisa Pitiranggon (Bethpage High School)

Bethpage High School

*The Effects of Fertilizers with Different Levels of Element Content on Soil pH*

## **Embedded Systems, Robotics and Intellectual Machines and System Software**

**1ST**

Imran Karim Gangat (Syosset High School)

Syosset High School

*A Novel Reinforcement Learning-Based Neural Network for Stock Portfolio Management*

**2ND**

Samay Lakhani (Jericho High School)

Jericho High School

*Fusing ConvNeXt and Histogram of Oriented Gradients (CNHOG) for Modular and Efficient Driver Distraction Detection*

**3RD**

James Nagler (Garden City High School)

Garden City High School

*Project Shadow - Custom Wireless Student Safety Tracker For Schools*

**H.M**

Anagh Gupta (Smithtown High School East)

Smithtown High School East

*Computational Modeling of Pedestrian Traffic Flow in a Suburban High School*

**H.M**

Mannat Vikramaditya Jain (Garden City High School)

Garden City High School

*Using Machine Learning to Translate Sign Language Gestures into Text and Speech*

## **Engineering: Sustainable Energy and Engineering Technology**

**1ST**

Emily Theodosopoulos (Manhasset High School)

Manhasset High School

*Production of Plasma-Enhanced SiO<sub>2</sub> films for optimizing photovoltaic cells*

**2ND**

Egan Robert Barzilay (East Hampton High School)

East Hampton High School

*Time-Averaged Flow Field Prediction Of Wind Turbine Wakes Using Autoencoder Convolutional Neural Networks*

**3RD**

Manav Gupta (Manhasset High School), William Charles Wesson (Manhasset High School)

Manhasset High School

*Application of Piezoelectrics to Solar Cells to Optimize Energy Harvesting Abilities via Exposure to Varying Weather Conditions*

**H.M**

Chelsea Lim (Manhasset High School)

Manhasset High School

*Optimizing the Conversion Efficiency of Dye-Sensitized Solar Cells Using Chlorophyll and Anthocyanins*

**H.M**

ivy li (The Stony Brook School)

The Stony Brook School

*Analysis and Design of Biomorphic Snake Robot*

## **Environmental Engineering**

### **1ST**

Sofia Eliza Maciel-Seidman (Bethpage High School), Riya Saha (Bethpage High School), Joy Kim (Bethpage High School)

Bethpage High School

*Developing a Hydroponic System With The Incorporation of an Arduino Uno Powered pH Sensor*

### **2ND**

Ankur Raghavan (Bethpage High School)

Bethpage High School

*Reduction of Agricultural Water Consumption through the Utilization of a Wireless Sensor Array*

### **3RD**

Ashley Lam (Herricks High School)

Herricks High School

*Novel Zinc Oxide/Nanocellulose Composite as a Low-Cost Photocatalyst for Water Purification*

### **H.M**

Dylan Yoon (Manhasset High School), Emily Zhao (Manhasset High School)

Manhasset High School

*Sustainable Sargassum Supercapacitive Microbial Desalination Fuel Cell for Improved Bioelectricity Production and Simultaneous Desalination*

### **H.M**

Shaan Merchant (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*Plant Guardian: Hybrid Drone System and Deep Learning Approach to Plant Disease Classification*

## **Math, Physics and Astronomy**

## 1ST

Yida Pan (William A. Shine Great Neck South High School), Luke Huang (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*VaSt-ID: Novel Application for Variable Star Identification and Classification using Machine Learning*

## 2ND

Kailly Elizabeth Nocera (Seaford High School)

Seaford High School

*An Analysis of Exoplanets WASP-33b, WASP-3b, CoRot-8b, and HAT-P-32b Using the Transit Method*

## 3RD

Brandon David Berkoff (Commack High School)

Commack High School

*Lunar Water Content as Determined by Crater Feature Analysis*

## H.M

Miraj Ketan Shah (Bethpage High School)

Bethpage High School

*The Impact of New Base Size on Major League Baseball Outcomes*

## H.M

Viti Chandra (Half Hollow Hills West)

Half Hollow Hills West

*Quantum Computing for Rotating, Charged, de Sitter, and String Black Holes*

## Microbiology

### 1ST

Sammer Soliman (John F. Kennedy High School)

John F. Kennedy High School

*Pioneering Microbial Communities and Biofilm Succession on Plastic in a New York City Waterway*

## 2ND

Jacob Tyler Gross (Roslyn High School)

Roslyn High School

*In Vitro Analysis Reveals Synergistic Interactions Among SARS-CoV-2 Neutralizing Antibodies*

## 3RD

Riley J Fowler (Lynbrook Senior High School)

Lynbrook Senior High School

*Establishing the Connection Between the Twin-Arginine Translocation A1 and Twin-Arginine Translocation A2 Protein Pathways in Acinetobacter baylyi as a Model Organism*

## H.M

Grace YS Na (Syosset High School)

Syosset High School

*Antibacterial Activity of Spice Essential Oils Against Escherichia coli*

## H.M

Cooper Alan Ceva (East Hampton High School)

East Hampton High School

*The Effect of pH on Growth and Hydrocarbon Metabolism of Alcanivorax Borkumensis sk2*

## Plant Sciences

### 1ST

Jack C Schultz (Westhampton Beach High School)

Westhampton Beach High School

*Alteration in Concentration and Spatial Distribution of Selenium, Copper, and Essential Physiological Micronutrients in Saccharina Latissima in a Dose-Response to Carbon Dioxide.*

### 2ND

Tyler Logan Bissoondial (John F. Kennedy High School)

John F. Kennedy High School

*Isolation and Characterization of a Class III High-Affinity Potassium Transporter (HKT) in the Seedless Vascular Fern *Ceratopteris richardii**

**3RD**

Landon Asher D'Agate (Half Hollow Hills East)

Half Hollow Hills East

*Seed Priming with Melatonin Improves Drought Tolerance in Maize*

**H.M**

Jessica Donna Penna (Smithtown High School East), Sanjivani Singh (Smithtown High School East)

Smithtown High School East

*Reducing Nitrogen Pollution from Chemical Fertilizers Through the Implementation of Nitrogen-Fixation-Inducing *Bacillus subtilis**

**H.M**

Mikayla Joseph (George W. Hewlett High School)

George W. Hewlett High School

*Orthologue of Root Hair Defective 3 (RHD3) in *Ceratopteris richardii* is affected by DNA Methylation and Regulates Rhizoid Development in Gametophytes*

## Translational Medical Science

**1ST**

Yifu Zuo (William A. Shine Great Neck South High School), Richard Li Xu (William A. Shine Great Neck South High School)

William A. Shine Great Neck South High School

*FetA.I.: A novel fetal health classification program using soft voting with deep and ensemble learning*

**2ND**

Ty Michael Gelman (John F. Kennedy High School)

John F. Kennedy High School

*The Concurrent Effects of Dietary Restriction and Exercise on a *Drosophila melanogaster* Model of Spinal Muscular Atrophy*



### 3RD

Rhea Sakaria (Jericho High School)

Jericho High School

*Identifying a Potent Wnt Compound to Enhance Stemness Post-Radiation through Activating the Canonical Wnt Signaling Pathway*

### H.M

Anna Louise Rohring (Commack High School)

Commack High School

*ssPERG Parameters Associated with Visual Field Global Indices and OCT Thickness Measurements in Glaucoma Suspects*

### H.M

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

William A. Shine Great Neck South High School

*Alpha-lipoic acid treatment of Drosophila melanogaster as a novel therapeutic method targeting mTOR-associated cognitive deficits in Fragile X Syndrome*