

The Charles Duggan

Long Island Science and Engineering Fair 2021



36th Year of Regional Affiliation
with the

Society for Science and the Public's
Regeneron International Science and Engineering Fair

LISEF Virtual Fair Event Schedule

Virtual Fair March 5th -21st, 2021

March 28, 2021 (Sunday) – LISEF Winners Posted

April 6, 2021 (Tuesday) - Mandatory ISEF Finalists and Liaison Meeting

www.LISEF.org

Welcome!!!

Dear LISEF Participants,

The LISEF Board of Trustees voted to hold a smaller, virtual fair to honor and continue the legacy of outstanding science research established by the gifted teachers and students of Long Island, in spite of the challenges our professional and personal communities face this year.

We welcome you to the Charles Duggan Long Island Science and Engineering Virtual Fair 2021! Charles Duggan brought the idea of Independent Research programs to Long Island and held the first Long Island Science Symposium thirty-three years ago; it was renamed as the LI Science and Engineering Fair in 1990. Mr. Duggan served as the first President of LISEF, Inc. The Long Island Science and Engineering Fair has become an extremely successful and professional event. This year fifty-six public schools and five private schools are participating in the 2021 virtual event which includes 185 projects, involving 206 students. At the LISEF 2021 Virtual Fair we have elected to combine some of ISEF's 21 categories based on our project registration into 15 categories with each category having at least one ISEF student project and 4 of the larger categories having two ISEF student projects. The twenty finalist projects will be eligible to compete in The Regeneron International Science & Engineering Fair (ISEF) 2021. ISEF will also take place virtually this year in order to keep finalists, volunteers, judges, and staff safe during the ongoing coronavirus pandemic. Only about 1,800 of the tens of millions of students that participate in science fairs around the globe earn the right to compete for nearly \$5 million awards bestowed each May at the Regeneron International Science and Engineering Fair (ISEF).

Remember, you are all winners! The opportunity to conduct a scientific investigation, is an enriching educational experience and that is a prize in and of itself. More than anything, by working on your research project you have become an expert in an aspect of science. So congratulations!

Angela Lukaszewski, Fair Director

LISEF Inc. Board of Directors

Angela Lukaszewski, President
Veronica Ade, Vice President
Heather Hall, Secretary
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Mary Hendrickson, Ph.D., Trustee
Joyce Hilgeman, Ph.D., Trustee
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Michael Lake, Ph.D., Trustee
MaryLou O'Donnell, Trustee
Starlyn O'Shea, Trustee
David Ralston, Ph.D., Trustee

Thank You!

LISEF would not be possible without the tremendous effort of many people.
LISEF, Inc. would like to thank all who helped, Special thanks to:

Fair Operations: 2020-2021

Angela Lukaszewski – LISEF Fair Director
Chris Pollatos – Treasurer
Veronica Ade – Web Liaison, Web Manager
Heather Hall –Judges Committee
Mary Hendrickson – Program
Joyce Hilgeman – Judges Co-Chair
Christopher Hoppner –Special Awards
Michael Lake – Judges Co-Chair
MaryLou O'Donnell - Special Awards Chair
Starlyn O'Shea - Judges Committee
David Ralston - Judges Committee

Judges Recruitment Committee: 2020-2021

Dr. Joyce Hilgeman (Co-Chair), Dr. Michael Lake (Co-Chair),
Ms. Lisa Benincasa, Ms. Maria Brown, Mr. Christopher Hoppner,
Ms. Angela Lukaszewski, Ms. MaryLou O'Donnell
Mr. Chris Pollatos, Dr. David Ralston, Ms. Jodie Spinale

2020-2021 IRB/SRC Review Committee:

Ms. Veronica Ade, Ms. Andrea Beatty, Ms. Lisa Benincasa, Dr. Terrence Bissoondial,
Ms. Jeanette Collette, Ms. Mary Ellen Fay, Dr. Stephanie Forsberg, Mr. David Friedman,
Ms. Heather Hall, Dr. Mary Hendrickson, Dr. Joyce Hilgeman, Mr. Christopher Hoppner,
Dr. Jeffrey Kramer, Ms. Mary Kroll, Dr. Michael Lake, Ms. Angela Lukaszewski,
Ms. Mary Lou O'Donnell, Ms. Starlyn O'Shea, Dr. Stephanie Piscitelli, Ms. Sandy Polan,
Mr. Chris Pollatos, Dr. David Ralston, Ms. Mary Simons, Dr. Lorraine Solomon

LISEF 2021 Grand Awards

At the LISEF 2021 Virtual Fair we have elected to combine some of ISEF's 21 categories based on our project registration into 15 categories with each category having at least one ISEF slot and 4 of the larger categories having 2 ISEF slots. The twenty finalist projects will be eligible to compete in The Regeneron International Science & Engineering Virtual Fair (ISEF) 2021.

First Place – Plaque, LISEF T shirt and Special Awards

Second Place – Certificate and Special Awards

Third Place - Certificate and Special Awards

Honorable Mention – Certificate and Special Awards

Regional Awards for Intel ISEF Affiliated Fairs

American Meteorological Society
American Psychological Association
ASM Materials Education Foundation
AWG Association for Women Geoscientists
Environmental Protection Agency (EPA)
MU Alpha Theta
NASA EARTH System Science Award
National Oceanic and Atmospheric Administration
Office of Naval Research - U.S. Navy / U.S. Marine Corps
Ricoh USA, Inc.
Society for In Vitro Biology
US Agency for International Development (USAID)
U.S. Metric Association
U.S. Stockholm Junior Water Prize
Yale Science and Engineering Association

Special Prizes

The Biophysical Society

*Thank You
To all of our Judges!!!
LISEF
Would Not Be a
Success Without You!*

A special Thank You to:

**Engineers Joint Committee of Long Island
The American Society of Mechanical Engineers
The Cornell Alumni Club of Long Island
The Harvard Club of Long Island
The Institute of Electrical and Electronic Engineers
Long Island Veterinary Medical Association
The MIT Club of Long Island**

Our Honored Judges

Sara Abrahams, MD Candidate	Hofstra University
Robert Adelson, B.E.	The Feinstein Institute for Medical Research
Harsha Adnani, MD	Northwell Health System
Nirav Agrawal, MD	Northwell Health System
Afrinash Ahamad, PhD Candidate	Stony Brook University
Umair Ahmed, MD	Northwell Health System
Sasha Alcon, B.A.	Zucker School of Medicine at Hofstra/Northwell
Saleh Aliyari, Ph.D.	Adelphi University
Zohaib Alvi, B.S.	Farmingdale State College
Trevor Andrunik, M.S.	Stony Brook University
Rita Austin, DHED	Farmingdale State College
Ahmadreza Baghaie, MD/PhD	New York Institute of Technology
Rosemary Bassey, Ph.D.	Hofstra University
Robert Bednarczyk, Ph.D.	SUNY/Old Westbury
David Benisch, MD	Northwell Health System
Betty Berbari, M.S.	SUNY/College at Old Westbury
Jase Bernhardt, Ph.D.	Hofstra University
Julie Bettke, PhD Candidate	Stony Brook University
Bonnie Blackwell, Ph.D.	RFK Science Research Institute & Williams College
Tejas Bouklas, Ph.D.	SUNY/Old Westbury
Eve Boyle, Ph.D.	National Science Foundation; George Washington University
Jacquelyn Bracco, Ph.D.	CUNY/Queens College
Mark Bridgen, Ph.D.	Cornell University
Rachel Brownlee, D.V.M.	Stony Brook University
Samuel Butensky, B.S.	Zucker School of Medicine at Hofstra/Northwell
Patrick Byers, Ph.D.	CUNY/Queensborough Community College
George Caporaso, Ph.D.	Lawrence Livermore National Laboratory
Megan Cassingham, PhD Candidate	University of Southern California
Ete Chan, Ph.D.	Stony Brook University
Visalam Chandrasekaran, MD	Long Island University/Post
Albert Chang, B.S.	New York Institute of Technology
Eric Chang, Ph.D.	Zucker School of Medicine at Hofstra/Northwell
Victor Chang, M.S.	Applied BioMath
Xiaoyin Chen, Ph.D.	Cold Spring Harbor Laboratory
Teri Cheng, PhD Candidate	Cold Spring Harbor Laboratory Watson School of Biological Sciences
Christine Chim, Pharm.D.	St. John's University
Rishabh Choudhary, Ph.D.	Northwell Health System
Cristianna Colella, M.A.	CUNY/Queens College
Anthony Conrardy, PhD Candidate	Northwell Health System
Raymond Czaja, M.S.	Stony Brook University

Peter Daniel, Ph.D.	Hofstra University
Hia Datta, Ph.D.	Molloy College
Rondi Davies, Ph.D.	CUNY/Queensborough Community College
Roche de Guzman, Ph.D.	Hofstra University
Jared Delrose, B.S.	Northrop Grumman
James Dilger, Ph.D.	Stony Brook University
Michael Does, Ph.D.	Hofstra University
Dennis Dougherty, D.V.M.	SUNY/Suffolk County Community College
David Durst, M.S.	New York University
Katherine Eacobacci, MD Candidate	Zucker School of Medicine at Hofstra/Northwell
Francine Federman, Ph.D.	Farmingdale State College
Joseph Fernandez, B.S.	Rockefeller University
Frank Ferrara, M.S.	SUNY/Polytechnic Institute
Susan Frank, Ph.D.	SUNY/Suffolk County Community College
Nicole Gallicchio, B.S.	SUNY/Suffolk County Community College
Nelson Gautier, B.S.	Stony Brook University
Daniel Gift, PhD Candidate	Stony Brook University
Scott Gilroy, M.Eng	Stony Brook University
Neil Glikin, M.A.	UC Berkeley
Robert Gluck, MD	Zucker School of Medicine at Hofstra/Northwell
Regina Goetz, Ph.D.	NYU Langone Health
Elizabeth Goldstein, MD	CUNY/York College
Lorraine Green, Ph.D.	Westbury Diagnostics, Inc
Yongjian Gu, Ph.D.	United States of Merchant Marine Academy
Sricharan Gumudavelli, MD Candidate	N.Y.I.T. College of Osteopathic Medicine
Laura Hagan, Ph.D.	Touro College
Julie Hemphill, MD Candidate	Zucker School of Medicine at Hofstra/Northwell
Lawrence Hobbie, Ph.D.	Adelphi University
Md.Shahadat Hossain, Ph.D.	CUNY/Queensborough Community College
Jessica Imperato, Ph.D.	Stony Brook University
Joseph Indelicato, Ph.D.	Touro College
Kara Jaremko, Ph.D.	Hofstra University
Seojung Jung, Ph.D.	SUNY/Old Westbury
Olga Kagan, Ph.D.	Molloy College
Mohamed Khalefa, Ph.D.	SUNY/College at Old Westbury
Marcus Khuri, Ph.D.	Stony Brook University
Youngjoo Kim, Ph.D.	SUNY/College at Old Westbury
Robert Klein, M.B.A.	Independent Practice/Consultant
Sharon Klein, B.A.	Zucker School of Medicine at Hofstra/Northwell
Katherine Kling, PhD Candidate	Stony Brook University
Kai Knight, B.A.	University of Southern California
Satoru Kobayashi, Ph.D.	New York Institute of Technology

David Komatsu, Ph.D.	Stony Brook University
Vivek Kumar, Ph.D.	Cold Spring Harbor Laboratory
Shinu Kuriakose, DHSc	New York Institute of Technology
Raymond Lam, Ph.D.	CUNY/Queensborough Community College
Andrew Lane, PhD Candidate	St. Joseph's College
Bin Li, Ph.D.	SUNY/Suffolk County Community College
Xun Lin, PhD Candidate	Stony Brook University
Lory Long, MD	Stony Brook University
Karthik Maniam, M.S.	ADH Health Products
David Martin, M.A.	Jericho Public Schools / Pace University
Fran McGibbon, DNP. FNP	New York Institute of Technology
Susan McLaughlin, Ph.D.	CUNY/Queensborough Community College
Christopher McManus, PhD Candidate	SUNY/College at Old Westbury
Taylor Medwig-Kinney, PhD Candidate	Stony Brook University
Elizabeth Melenbrink, Ph.D.	AAAS Science and Technology Policy Fellow
Alison Mello, Ph.D.	CUNY/Queensborough Community College
Carl Meshenberg, B.S.	Independent Practice/Consultant
Gabrielle Moody, PhD Candidate	Stony Brook University
Michael Moore, Ph.D.	Adelphi University
Georgios Moutsanidis, Ph.D.	Stony Brook University
Preetha Natesan, M.S.	IBM; SUNY New Paltz
Ashima Nayyar, Ph.D.	Northwell Health System
Eric Neufeld, MD Candidate	Zucker School of Medicine at Hofstra/Northwell
Jillian Nissen, Ph.D.	SUNY/College at Old Westbury
Edwin Ocasio, M.B.A.	Adelphi University
Doreen Olvet, Ph.D.	Hofstra University
Hugh Parkhurst, Ph.D.	Pall Corporation
Eva Pearson, PhD Candidate	Farmingdale State College
Nichole Pedowitz, M.S.	University of Southern California
Srinivas Pentyala, Ph.D.	Stony Brook University
Aleida Perez, Ph.D.	Brookhaven National Laboratory
Laura Perrone, PhD Candidate	Stony Brook University
Mary Jo Perry, M.S.	St. John's University College of Pharmacy and Health Sciences
Stuart Plotkin, D.P.M.	Stony Brook University
Angeliki Pollatou, Ph.D.	Columbia University
Kinning Poon, Ph.D.	SUNY/Old Westbury
Anupam Pradhan, Ph.D.	CUNY/Kingsborough Community College
Matthew Quigley, M.S.	Stony Brook University
Alyssa Quinlan, M.S.	St. John's University College of Pharmacy and Health Sciences
Louis Ragolia, Ph.D.	New York University Long Island School of Medicine
Lauren Raguette, PhD Candidate	Stony Brook University
Nicholas Ramer, Ph.D.	Long Island University/Post

Amrinder Rana, PhD Candidate	Mt Sinai
Joshua Roberts, MD Candidate	Zucker School of Medicine at Hofstra/Northwell
K.C. Rondello, MD	Adelphi University
Michael Rowles, B.Eng.	US Merchant Marine Academy
Jennifer Saleta, EdD	Northwell Health System
Vinaya Sampath, Ph.D.	Long Island University/Post
Rachel Schwartz, Ph.D.	St. Joseph's College
Dugwon Seo, Ph.D.	CUNY/Queensborough Community College
Zared Shawver, PhD Candidate	Stony Brook University
Kelly Singel, Ph.D.	SUNY/University at Buffalo
Stacey Singer-Leshinsky, M.S.	St. John's University College of Pharmacy and Health Sciences
Danielle Soberman, MD Candidate	Zucker School of Medicine at Hofstra/Northwell
Carolyn Springer, Ph.D.	Adelphi University
Vivek Srikrishnan, Ph.D.	Cornell University
Andrea Stadler, Ph.D.	St. Joseph's College
Andrew Stiegler, PhD Candidate	Hofstra University
Marta Szpak, M.S.	SUNY/Suffolk County Community College
Teresa Tannazzo, Ph.D.	St. Joseph's College
Mangala Tawde, Ph.D.	CUNY/Queensborough Community College
Gary Ten Eck, Ph.D.	New York University
Catherine Tolvo, D.O.	New York Institute of Technology
Jason Tyll, Ph.D.	Northrop Grumman
Stephen Vitkun, MD/PhD	Stony Brook University
Matt Wakeham, B.S.	Independent Practice/Consultant
Tiffany Wang, MD Candidate	Zucker School of Medicine at Hofstra/Northwell
Andrea Ward, Ph.D.	Adelphi University
Geffrey Waxman, EdD	St. John's University
Justyna Widera-Kalinowska, Ph.D.	Adelphi University
Thomas Wilson, M.S.	Stony Brook University
Huixin Wu, M.S.	CUNY/Queensborough Community College
Adi Zaltsman, Ph.D.	The Royal Alchemist
Ying (Kitty) Zhang, Ph.D.	Angion Biomedica Corp.
Yu Zhang, Ph.D.	SUNY/Suffolk County Community College
Thomas Zimmerman, D.V.M.	Stony Brook University

LISEF Participants

Bay Shore High School

PLNT796 Corinne O'Connor *Study of Metals and Translocation in Ammophila breviligulata on Fire Island*

Bethpage High School

CBIO527 Zaara Yakub *Designing Interpretable Hybrid Convolutional-Recurrent Networks for Regulatory Genomics*
CMSE840 Theresa Thulasidas *TiO₂ vs. ZnO: Most Cost-Efficient Semiconductor in the Blackberry Pigmented Dye Sensitized Solar Cell*
Ava Zingone
EAEV191 Sidh Chhabra *The Impact of Increasing Carbon Dioxide Along with Acid Rain Effects on the Growth of Raphanus sativus*
ENEV812 Maya Maciel-Seidman *Solar-Powered Soil Sensing Robot: A Novel Agricultural Device for Monitoring Moisture and pH*
Suchitha Channapatna
Ruchitha Channapatna

Brentwood High School

ANIM979 Jaden Jones *A Local and Global Analysis of Bee Diversity and Conservation*
MCRO793 Nabihah Ahsan *Plastic Pollution Survey Along a Long Island Beach and Development of a Novel Method for the Biodegradation of High-Density Polyethylene (HDPE) Using Aspergillus niger*
PLNT288 Leena Alzafarani *Turn to Nature: The Use of Salt Water for the Mitigation and Control of Japanese Knotweed, Reynoutria japonica*
PLNT643 Amber Connell *Assessing Regenerative Properties of Japanese Knotweed, Reynoutria japonica: a Root Viability Analysis*

Chaminade High School

ANIM205 John Terry *Effects of the BPA-Substitute Bisphenol S on Reproduction in C. elegans*
Mark Campbell
Benjamin Sasso
BEHA311 Michael Cinque *Social Isolation Resulting from the COVID-19 Pandemic and its Effects on the Mental and Physical Health of Various Demographic Groups within the General Population*

Cold Spring Harbor High School

BMED085 Andrew Khanin *Testing the Effects of Flavorant Propylene Glycol Acetals on the Locomotor Behavior of Drosophila Melanogaster Using the Rapid Iterative Negative Geotaxis (RING) Assay*
BMED509 Gabrielle Garra *Physical Aberrations and Physiologic Effects of Extended Use Medical Masks vs. N95 Respirators*

Commack High School

BEHA746 Rohan Surana *The Potential Impact of Police Activity on Children's Future Income in the United States*
CBIO665 Chapin Zerner *Using Machine Learning to Predict Features Related to the Adaptive Immune Response in COVID-19*
CEBC986 Sarah Levine *Cellular Asphyxiation and Neurotrophic Protein Hyperexpression in Glioblastoma Multiforme Pseudopalisade/ Necrosis Regions*
EAEV922 Brianna Han *Markov Chain Monte Carlo Methods for Estimating Rainfall Rate from Dual-Polarization Weather Radar*

Earl L. Vandermeulen High School/Port Jefferson UFSD

CMSE322 Hugo Onghai *Molecular-Imprinted Biosensor for SARS-CoV-2 Detection*
Nishanth Chinnadurai
Udithi Kothapalli

East Hampton High School

EAEV210	Anni Spacek	<i>The Role of Nymphaea in Nutrient Cycling and the Development of Harmful Algal Blooms in Fresh Pond on Shelter Island</i>
EAEV520	Gerald Simons	<i>The Population Densities of Ixodes scapularis and Correlation to Various Native and Invasive Plant Species</i>
MCRO138 BEHA041	Burton Garneau Aya Labnine	<i>Global Distribution and Association of Marine Nitrogen-fixers by Molecular Methods. The Effect of Chlorophytum Comosum on the Tunneling Behaviors of Pogonomyrmex Barbatus Exposed to Radiation</i>
CMSE322	Nishanth Chinnadurai Udithi Kothapalli Hugo Onghai	<i>Molecular-Imprinted Biosensor for SARS-CoV-2 Detection</i>
EAEV393	Noel Manalil Jayden Abraham	<i>The Effects of Media and Hydraulic Retention Time on Nitrogen Retention in Bioreactors for Wastewater Treatment</i>

Elmont Memorial

CBIO018	Malik Hyman	<i>Integrated Analysis of Single-Cell RNA-Seq Data to Identify Novel Markers for Anti Angiogenic Cancer Treatment</i>
CBIO062 EAEV926	Bryanna Scott Vivian Zhu	<i>Identification of a Bacterial Biomarker for SLE using Bioinformatics Analysis Investigation of the Effect of Air Quality on COVID-19 Cases in Ten New York State Counties</i>
MCRO539	Christopher Alexander	<i>Avian Paramyxovirus Serotype 4 (APMV-4) Promotes Apoptotic Cell Death & Stimulated Immune Responses in Malignant Melanoma and Relapse Cancers in respect to Newcastle Disease Virus (NDV): Characterization of a Novel Oncolytic Virus</i>

Elwood - John H. Glenn

EAEV445	Rithika Narayan	<i>Harnessing Deep Learning to Assess Coral Reef Health through Crowd-sourced Efforts</i>
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Garden City High School

CBIO038	Farren Martinus Jason Li Aidan Wu	<i>Exploring Connections Between Alzheimer's Disease and Other Biological Conditions</i>
EAEV626	Farah Kabir	<i>Cycloidal Modeling of Tidal Waves</i>

General Douglas MacArthur High School

CMSE524	Emily Zhang Sohan Shetty Amy Sharin	<i>Effect of pH on the Shear Modulus of Anion Exchange Membranes</i>
EAEV543	Mia Frattura Matthew Friedman	<i>From Philadelphia to Portland: The American Climate in 1897</i>

George W. Hewlett High School

CMSE425	Benjamin Sherman	<i>Size Optimization of Gold Nanoparticles Functionalized on PEMFC Interfaces to Increase Power Efficiency</i>
EAEV577	Alice Fried	<i>Evaluating the Effects of Tropical Storm Isaias on Water Quality in Selected Rural Areas of Vermont and New Hampshire, USA</i>
PLNT928	Blake Lippman Tyler Bissoondial	<i>Lipopolysaccharide and Galactose Induce Cell Death in Prothallial Cells of Gametophytes of Ceratopteris richardii</i>
ROBO097	Ethan Eisenberg	<i>Developing Machine Learning Models to Predict the Heat Capacities of Metal Oxides at Finite Temperatures</i>

Great Neck North High School

CBIO334	Danielle Gruber	<i>A Game Theoretic Model of the Resting State Brain</i>
CBIO531	Elon Litman	<i>SpykeCVA: A Deep Spiking Neurogenetic System for Early Contraindicationless Stroke Diagnosis Using 4D Spatio-and Spectro-temporal Data</i>
MAPH185	Albert Jan	<i>Discovering Rare Neutral-Carbon Absorbers with a Deep Neural Network to Probe Star-Forming Environments of the Early Universe</i>
MAPH242	Michelle Zbizika	<i>Assessment of Cosmic Explosion Threat for Exoplanets</i>

Half Hollow Hills East

CMSE524	Sohan Shetty Amy Sharin Emily Zhang	<i>Effect of pH on the Shear Modulus of Anion Exchange Membranes</i>
CMSE587	Alaina Lin	<i>Automating Kinetic Isotope Effect Calculations to Improve Photocatalytic Mechanisms in Solar Fuel</i>
ENEV542	Dylan D'Agate	<i>Synergistic Bioremediation of Eutrophic Freshwater using Duckweed (<i>Lemna minor</i>) and Freshwater Mussels (<i>Elliptio complanata</i>)</i>
ROBO289	Niyanth Ponnusamy	<i>Modeling to Predict Factors Influencing Relapse of Substance Abuse Treatment Using Machine Learning</i>
ROBO861	Mark Shapiro	<i>Analysis of Neural Network Community Structure: a Network-Theoretic Approach</i>

Half Hollow Hills West

BEHA915	Aaliyah Bullen	<i>The Prevalence of Energy Intake Methods in New York State Obesity Prevention Policies</i>
CBIO905	Joshua Jones	<i>Evaluation of Brain Structure and Function in Currently Depressed Adults with a History of Early Life Stress</i>
CEBC413	Temilolu Adeola	<i>Proteolytic Processing and Oligomerization of the Sevenless Receptor</i>

Harborfields High School

ROBO658	Terry Tao	<i>Effectiveness of Various Thermo-Pneumatic Artificial Muscles and their Fabrication Methods</i>
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Hauppauge High School

BEHA428	Alexeus Ruland Keertana Madhira	<i>Evaluation of Institutional Pathways for Receiving Help for Mental Health Assistance</i>
CMSE433	Jalaj Mehta	<i>Enhancing the Flame Retardancy of Biodegradable Poly(vinyl alcohol) Hydrogels with Resorcinol Bis(diphenyl phosphate) Coated Starch 8.6.1</i>
EAEV160	Varsha Saravanan	<i>Baseline Framework for Assessing Community Resilience Using a Balanced Index Approach and Spatial Autocorrelation in the Mill River Watershed, Nassau County, New York</i>
MAPH028	Aaryan Chandra	<i>Analyzing and Modelling NEO 481394 (2006SF6)</i>

Herricks High School

BMED826	Rhea Rasquinha	<i>Identifying the Prognostic, Tumor-suppressive and Immunologic Roles of IRF5 in Breast Cancer</i>
CBIO368	Preethi Krishnamoorthy	<i>Developing AI Models for Cancer Prognostics using TIL Spatial Maps Generated from Digital Whole Slide Images</i>
CEBC369	Kyle Pinzon	<i>Screening and Modifying DEDDh Exonuclease Inhibitors for Targeting the SARS-CoV-2 nsp14 ExoN Catalytic Site</i>
EAEV744	Prableen Kaur	<i>The Legacy Effects of a Defoliating Spring Frost Event on Species-Specific Leaf Level Photosynthesis</i>

Huntington High School

BEHA235	Erin Ye	<i>Desde Casa: Examining the Correlation between Perception of Learning in a Virtual Model and Bilingual Vocabulary Knowledge in Spanish-Speaking ENL Students</i>
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Jericho High School

BMED317	Natalia Pahlavan	<i>AcuRe: Third-Generation Machine Learning Cancer Detection Model Using Nanopore Read Alignments</i>
CBIO386	Catherine Kim	<i>Novel Prediction of Adverse Drug Reactions and Underlying Pathological Mechanisms via Hierarchical Classification</i>
EAEV464	Rebecca Cho	<i>Associations between the North Atlantic Subtropical High and Tropical Cyclone Movement and Precipitation</i>
TMBE362	Janice Rateshwar	<i>Molecular Mechanisms of Direct Inhibition of NF-κB Subunits by 9-chloro-8-(hexyloxy)-2H-chromeno[2,3-d] pyrimidine-2,4(3H)-dione (IT-848)</i> T
MBE666	Alice Chen	<i>MRgRT and Delta Radiomics: Early Prediction of Survival in Pancreatic Cancer</i>

John F. Kennedy High School

ANIM251	Jordyn Krinsky	<i>The Combinatorial Effects of Diet and Caffeine Mitigate Parkinson's Disease in a Drosophila melanogaster System</i>
ANIM298	Julia Levine	<i>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</i>
BMED853	Danielle Kacaj	<i>Retinal Ganglion Cell Dysfunction is Associated with Macular Microvascular Abnormalities in Pre-Perimetric Glaucoma</i>
EAEV578	Josh Farber	<i>Analyzing the Potential Impact of Seasonal Variability in the Carbonate System on Key Species in the Mid-Atlantic Bight Using a Slocum Glider</i>
PLNT928	Tyler Bissoondial Blake Lippman	<i>Lipopolysaccharide and Galactose Induce Cell Death in Prothallial Cells of Gametophytes of Ceratopteris richardii</i>

Kellenberg Memorial High School

ENEV864	Caitlin Noonan	<i>SR 4 LI: Swimming Robot to Monitor, Forecast, and Protect Long Island from Harmful Algal Blooms</i>
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Kings Park High School

ANIM621	Rhianna Schantz	<i>Ratios of Molar Teeth Areas of Different Populations of Onychomys leucogaster Related to Environmental Data</i>
BEHA797	Jolly Patel	<i>An Analysis of the Effects of Testosterone and Estrogen on the Memory of Male Rattus norvegicus</i>
EBEM662	Ryan Menier	<i>The Electron Ion Collider and the Evaluation of Steering Magnets for the Polarized Electron Source Prototype</i>
TMBE245	Julia Salatti	<i>Utilizing MR Imaging to Analyze Tumor Texture and Its Effects on Survival Length in Patients with Glioblastoma Multiforme</i>

Lawrence High School

CMSE524	Amy Sharin Emily Zhang Sohan Shetty	<i>Effect of pH on the Shear Modulus of Anion Exchange Membranes</i>
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Long Beach High School

MAPH847	Uma Arengo	<i>Using Box-Counting Dimension to Quantify the Progressive Stages of Diabetic Retinopathy</i>
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Lynbrook High School

BMED959	Alexandra Fox	<i>Quantifying Intravertebral Disc Degeneration Through the Disc Height Index Assay</i>
EAEV942	Ashley Roth	<i>Aquatic Habitat Nitrate Levels on Long Island: The Effect of High Nitrate Levels on Anuran Species Abundance</i>
EBEM408	Ryan Marrione	<i>An Analysis of the Aerodynamics through the Lift and Drag Coefficients of a Y-axis Morphing Airfoil</i>

MAPH843 Kathryn Postiglione *Analyzing the Photometry of Star Cluster Messier 39: Creation of Color Magnitude Diagram, Age Calculation, and Distance Measurement*

Manhasset High School

CBIO417 Barbara Timmerman *Elucidating the Roles of Subtypes of B cells and Fibroblasts in the Immune Response of Rheumatoid Arthritis Joint Synovial Tissue*

CBIO590 Mir Zayid Alam *Identification of Genetic Biomarkers for Hepatocellular Carcinoma Using an Automated Microarray-Based Pipeline and Pathway Enrichment*

EAEV954 Emma Wang *Investigating Potential Agro-Economic Benefits of Solar Pollinator Habitats*

ENEV472 Sanjna Kedia *Simulation of Solar-Powered Capacitive Deionization (CDI) for Removal of Bacteria, Viruses, and Heavy Metals from Water*

ENEV792 Julius Yoh *The Optimization of Desalination and Ion-Removal Rate Through the Engineering of Novel Turbulent Modular Designs in an Electrodialysis System*

ROBO145 Ethan Horowitz *CET-CNN: Modular Hierarchical Image Classification Using Conditional-Execution Tree CNNs*

Mineola High School

BEHA246 Yesenia Hanif *The Effect of The Schlachte Method on the Severity of Autistic Behaviors*

BMED712 Serena Koshy *An Investigation Into the Effects of Blue Light on the Oxidative Stress and Cell Viability of Retinal Cells Using Meta-Analysis*

BMED901 Isabella Polanco *Evaluating The Validity and Effectiveness of the Frenalytics Computer Program as a Novel Tool for Cognitive Rehabilitation through Statistical Analysis*

CBIO140 Wenny Cheng *Exploring the Gene Expression Profiles of Cisplatin Resistant Ovarian Cancer Patients*

North Shore Hebrew Academy High School

BEHA999 Chloe Ganjian *Investigating Auditory and Visual Memory and Sequencing- Exploring Strengthening Therapeutics for Alzheimer's Patients*

CEBC786 Ella Shusterman *Synergistic Effect of Rhamnolipids and Antibiotics Against Bacteria*

CEBC786 Abigail Mottahedeh

TMBE759 Shoshana Horn *Using SEIR-SIR Models to Predict and Prevent the Additional Spread of COVID through Game Theory and Statistical Analysis in the Future of the SARS-CoV-2 Pandemic*

North Shore High School

BEHA303 Lucia Martin *The Effect of Political Division on Compliance with COVID-19 Health Guidelines*

BEHA957 Giuliana Graziosi *Covid-19: Affecting the Mental Health and Alcohol Usage of New Yorkers*

BMED872 Anna Kulikowski *How Government Actions Influenced the Outcomes of the SARS-COV-2 Pandemic Globally*

EBEM364 Alexandra Stoff *MagnoSift: Retrieving Metal Objects with Ease*

SOFT348 James Connor *Attributing State-backed Information Operations on Twitter through Machine Learning*

Oceanside High School

ANIM689 Miranda Leibstein *Investigating the Effects of Different Soybean Products on Rumen Microbial Populations in Dairy Cows Using in vitro Fermentation*

EAEV543 Matthew Friedman *From Philadelphia to Portland: The American Climate in 1897*

EAEV721 Mia Frattura

EAEV721 Elizabeth Buerkle *Horseshoe Crab Barnacle Cover and Nitrogen Levels in the Long Island Area*

EAEV971 Drisana Shanthan *Effects of Habitat Fragmentation and Modification on Species Richness and Abundance of Anurans*

ENEV063 Rachel Weissman *Residential Small-Scale Composting Reactors with Consumer-Available Materials*

Oyster Bay High School

BMED638 Molly Kelly *The Effect of Variance in Environmental pH using H₂CO₃ and NAHCO₃ on the Effectiveness of Liposomal Uptake of GFP Plasmid in Saccharomyces cerevisiae*

EAEV200 Brianna Baugh *Denitrifying Bacteria and their Significance in Nitrate Pollution Reduction*

Paul D. Schreiber High School

BEHA451	Patrick Doyle	<i>An Analysis of the Trends of Domestic Transracial Adoption and Impact of MEPA-IEP in the Twenty-First Century</i>
BEHA881	Alexandra Salzman	<i>An Infodemic: Congressional Representatives' Reactions to COVID-19 Misinformation on Twitter</i>
BMED164 BMED983	Samantha Radinsky Hope Lane	<i>The Role of Bone Lineage Cells During Digit Tip Regeneration in Adult Mice</i> <i>Optimizing the Interconnectivity of the Liver Allocation Network to Minimize Death and Inequality using LivSim</i>
ROBO837	Daniel Ruskin	<i>Using Machine Learning to Predict Opioid Ordering and Prescribing Among Adolescents in the Emergency Department</i>
TMBE906	Zachary Hay	<i>Establishing a Method for in House Creation of Custom Surgical Guides and Examining its Potential as a Cost-Effective Alternative</i>

Plainedge High School

ENEV506	Christopher Jenco Brendan Pigott	<i>Modeling the Energy and Climate Impacts of Green Roof Architecture as a Global Climate Change Solution</i>
MAPH562	Aidan Andersen	<i>A Bijection Between Two Different Classes of Partitions Enumerated by $\nu(n)$</i>
MAPH966	Michael Galardi	<i>A Regression-Based Analysis of Salary as a Function of Performance in Major League Baseball</i>

Plainview-Old Bethpage JFK High School

BEHA813	Hannah Quintin	<i>The Unintended Consequences of Placing Heroism on Healthcare Workers Amid the COVID-19 Pandemic</i>
BEHA938	Carly Friedman	<i>Education During a Pandemic: Exploring the Effectiveness of Synchronous versus Asynchronous E-learning From A Teacher's Perspective</i>
CBIO006	Ronald Cheng	<i>Tackling the COVID-19 Data Crisis in NY State: Application of the Poisson Process with Considerations of Alternate Data Sources</i>
CBIO474	Benjamin Yacht	<i>Relation of Variant Burden of the Negative Regulation of B Cell Activation Pathway with Alzheimer's Disease</i>
CMSE586	Brian Lee	<i>Evaluating the Efficacy of Repurposed and Modified Traditional Eastern Medicinal Compounds on Coronavirus Family Specific Target Structures</i>
EAEV508	Lauren Eterno	<i>Analyzing Chlorophyll and Phosphorus Concentrations in Lake Hopatcong Through the Scope of Geography and Benthos</i>

Sachem High School East

EBEM429	Louis Augier	<i>Correlation Between the Max Thickness to Chord Ratio for an Airplane Wing</i>
ENEV823	Emma Foster Julia Nadolne	<i>Mycorestoration of Soils</i>
PLNT338	Hayley Birmingham Kimberly Montoya	<i>Improving Germination Rates of Crop Species Using <i>Musa acuminata</i> Peel and <i>Camellia sinensis</i> Extracts</i>

Sacred Heart Academy

ANIM963	Mary Menger	<i>Canaries in the Coalmine: Evaluating the Effect of Petrochemical Contamination on the Cardiovascular Health of <i>Daphnia Magna</i></i>
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Sanford H. Calhoun

CEBC927	Amanda Pratt	<i>Comparing Live Birth/Multiple Birth Percentages When Implanting One vs. Multiple Embryos</i>
MAPH019 SOFT838	Michelle Serban Jasper Seabold	<i>The Relationship between Factoring Certain Quadratics and the Fibonacci Sequence</i> <i>Proposed Decentralized System for Privacy-focused Peer-to-Peer Digital Pandemic Tracing</i>
TMBE441	Reza Aziz	<i>Determining Why Newborns Are Generally More Protected From an Increased Risk of Clotting Using a Mechanical Model</i>

Seaford High School

CBIO109	Julia Gambino	<i>An Integrated Model for Infection Resulting from Exposure to Extended-Spectrum Beta Lactamase (ESBL)-Producing Escherichia coli in Recreational Water Bodies</i>
	Kaylee Sanderson	
EAEV050	Rayann Ramoutar	<i>Analyzing Long-Term Trends in Land and Sea Surface Temperature (1836-2015) in the New York Metropolitan Area</i>

Sewanhaka High School

BEHA556	Seher Saleem	<i>The Influence of Cosmetic Education on Teenage Consumerism</i>
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Smithtown High School East

BEHA419	Nethmi Withanage	<i>The Analysis of the Use of Color in Pandemic Artwork Using Digital Quantifications</i>
BEHA809	Dylan McCreesh	<i>Investigating the Correlation of P/F Grading Systems and Student Academic Apathy</i>
CBIO558	Kaitlyn Brown	<i>Investigating the impact of ethnic and socioeconomic inequality on Covid-19 incidence rates in Suffolk County communities</i>

Smithtown High School West

ANIM661	Julia Savino	<i>Using the Sea Anemone, Nematostella vectensis, to Probe the Mechanism of Excitotoxicity</i>
ANIM885	Liza Lleshaj	
		<i>A Genomic, Behavioral, and Embryonic Analysis of RFamide-type Neuropeptides in the Sea Anemone, Nematostella vectensis</i>
CBIO444	Sidney Padmanaban	<i>An Analysis of the Evolution of Conserved Domains in ACE protein and ACE2 receptor protein Among Organisms</i>
TMBE733	Aaquib Syed	<i>Creating a Solution to Aid in the Stress Level Management of Students with ASD</i>

St Anthony's High School

CEBC780	Miah Margiano	<i>Synergy of Treatment: Therapeutic Vulnerabilities in Small Cell Lung Cancer</i>
CMSE322	Udithi Kothapalli	
	Hugo Onghai	<i>Molecular-Imprinted Biosensor for SARS-CoV-2 Detection</i>
	Nishanth Chinnadurai	
SOFT846	Steven Cayea	<i>Efficiency of Data Compression Algorithms for Low-Cost Laser Transceivers</i>

Syosset High School

ANIM911	Maiya Raghu	<i>The Effect of EGCG on Oxidative Stress in C. elegans</i>
BEHA557	Isabella Souza	<i>Seeing Through the Scan: The Impact of fMRI Evidence on Juror Satisfaction and Verdicts</i>
BEHA807	Jennie Dapice	
CBIO358	Michael Chu	<i>The Influence of Political Party on the Extent of State E-cigarette Regulation</i>
		<i>CoronaXNet: Using Convolutional Neural Networks to Automate the Detection of COVID-19 from Chest X-Ray Images</i>
CBIO748	Giovanna Napoleone	<i>Prediction Analysis of Glioblastoma Multiforme Tumor Spread</i>
MCRO736	Giselle Rasquinha	<i>FD028: A Bifunctional HIV-1 Inactivator Acts Before Host Cell Entry</i>

The Stony Brook School

CEBC827	Weiyang Zhang	<i>Construction and Expression of Adenoviral Shuttle Plasmids Carrying Different Kringles of Human Angiostatin in HEK293T Cells</i>
ROBO972	Xiao Huang	<i>Fetching Policy of Intelligent Robotic Arm Based on Multiple-agents Reinforcement Learning Method</i>

The Wheatley School

BMED327	Shawn Khilllan	<i>The Effects of Covid-19 on Cancer Patients</i>
BMED399	Yifang Zha	<i>Curcumin and Capsaicin Synergistically Suppress Neuroblastoma Tumor Development</i>

MAPH285 Viraj Jayam *Electron Plane Angle Correlations in Semi-Inclusive Parton (jet) Production in DIS at Small-x*

Uniondale High School

BEHA213 Harneet Singh *To What Degree Do TPS/FPS Video Games Affect the Memory/Spatial Perception, Visual Motor/Processing Speed, and Problem-Solving Skills of Adolescents?*
TMBE051 Marina Jean-Baptiste *How Does the Racial Background of Patients Affect the Time Before the Diagnosis of Celiac Disease?*

Valley Stream North High School

BMED538 Ahmya McMillan *The Association Between Father Presence and Support, Neighborhood Environment, and Preterm Birth in African American Women*
ROBO127 John McCarthy *Predicting Future Major League Baseball All-Stars Using Logistic Regression*
SOFT316 Kashmiraa Pandit *Creating Digital Braille: Using Mobile Vibration to Aid the Use of Virtual Devices by the Deaf-Blind*

Valley Stream South High School

BMED951 Amrit Pabla *Identifying Rho-Associated Coiled Kinase 2 as a Disease-Associated Node in Nonalcoholic Steatohepatitis with Fibrosis*
CMSE656 Abdullah Ali *Variation of Fibers to Create Viable Green Composites*
EAEV894 Ameena Qadri *The Effect of Moringa Seed Powder and Orange Peel Powder on the Purification of Natural Water Reservoirs*
MAPH652 Sameer Singh *Exo2: An Investigation into a Novel Characterization Model for Transit Photometry*

W. Tresper Clarke High School

BEHA008 Elianna Rivera *Measuring Opportunity for Immigrants Through the Creation of a Political Index: A Longitudinal Study*
BEHA551 Saniya Gaitonde *An Analysis of Competitive Political Party Behavior in 2020 Congressional Battleground Races*
CEBC815 Raheem Sheikh *Differential Expression Analysis of Neurosteroid Biosynthesis Pathways in the Mouse Brain*
EAEV400 Blessycicilia Sebastian *Analyzing the Effect of Silver Nanoparticles on Aquatic Daphnia Magna*

W.C. Mepham High School

BEHA582 Julia Collins *Perception of COVID Masks During a Global Pandemic*
BMED089 Matthew Grossman *The Effect of COVID-19 Infection on Hip Fracture Outcomes in a Large Urban Health Care System During the Coronavirus Pandemic*
BMED549 Samantha Green *The Cryptic Diagnosis: Physician Recognition of Weight Loss Due to Insulin Manipulation*
BMED811 Rafeya Hashmi *An Examination of Food Security's Connection to Smoking and Cardiovascular Disease.*

Walt Whitman High School

ANIM206 Rebecca Kurjanski *Interaction of Asterina Sea Stars and Coral in a Controlled Environment.*
EBEM970 Bryce Vorbach *Functional Prototype of a NFC Firearm Holster*

Walter G. O'Connell Copiague High School

CMSE468 Kiran Ahmad *The Remediation of Arsenic in Chromated Copper Arsenate Contaminated Sand Using Natural Zeolite Materials*

Wantagh High School

EBEM515 Margaret Gates *Autonomous Wildfire Detection and Containment System*
MCRO854 Austin Henglein *Removal of Nitrate From Aquaponic Pondwater by Chlorella vulgaris*

Ward Melville High School

BMED895	Akshay Malhotra	<i>Impact of Body Mass Index on Clinical Presentation, Management, and Outcomes in Adults with Cardiac Arrest Undergoing Coronary Angiogram</i>
CBIO398	Animesh Ghose	<i>Prognosis and Diagnosis of Alzheimer's Disease Using Graph Convolutional Neural Networks</i>
CEBC704	Neil Mehta	<i>The Effect of IL-22 Stimulation on Paneth Cell Granule Morphology and Epithelial Cell Proliferation</i>
SOFT749	Michael Coppi	<i>Utilizing Machine Learning Algorithms to Improve Comparative Market Analysis</i>

William A. Shine Great Neck South High School

ANIM623	Shehreen Siddiqui	<i>Wnt-hh Signaling Pathway Interaction after Reactive Oxygen Species Modulation of Wnt to Imitate and Treat Cancer-Like Effects in Planaria</i>
BEHA248	Emma Scher	<i>The Effects of Socioeconomic Status on Crime Rates in NYC</i>
CBIO344	Reid Fleishman	<i>Creation of a Machine Learning App to Facilitate Pancreatic Cancer Prediction</i>
SOFT167	Albert Hung	<i>Applying Natural Language Processing Models to Predict Degrees of Depression Based on Users' Facebook Posts</i>