



# LI Science & Engineering Fair, Inc.

Promoting Excellence in Scientific Inquiry and Discovery in LI Schools

## LISEF 2019 Grand Award Winners

	Award	Name	Category	Title
Bay Shore High School	Second	Kevin Connor Souhrada, Madison Rylee Esposito	Chemicals	<i>Identification of Micrometeorites Through Synchrotron Analysis</i>
Bellmore John F. Kennedy High School	Honorable Mention	Lauren Gabrielle Rakhimov	Translational Medical Science	<i>Genetic and Pharmacological Modulations of TOR Signaling can Enhance Resistance to Infection in Drosophila melanogaster</i>
Bethpage High School	Honorable Mention	Soham Maiti	Mathematics	<i>Derivation and Applications of Lorentz's Transform and Association with Einstein's <math>E=mc^2</math></i>
Brentwood High School	Third	Anthony Joshua Coelho	Earth and Environmental Sciences	<i>An Investigation of Harmful Algal Blooms: From Beta-Methylamino-L-alanine (BMAA) in Green Algae to Brevetoxins in Red Algae</i>
	Third	Brian Joel Torres, Danny Patrick Neri III	Earth and Environmental Sciences	<i>Fight Club: Investigations of Aggressive Interactions Between the Native Crabs Uca pugilator and Uca pugnax and the Invasive Crab Hemigrapsus sanguineus in a Long Island Salt Marsh: A Study of the Impact of an Invasive Species on an Ecosystem</i>
Central Islip Senior High School	Honorable Mention	Yu Zhu	Microbiology	<i>The Effects of Simulated Microgravity on the Production of Biofilm</i>

Commack High School	First	Sean Pak	Computer Sciences	<i>Receiver Noise Performance Optimization and Artificial Neural Network Based Target Localization Method for Multi-Static Passive Radar Systems</i>
	Third	Kathy Cao	Earth and Environmental Sciences	<i>The Development of a Machine Learning Model to Predict Tropical Cyclone Genesis from Mesoscale Convective Systems</i>
	Third	Pragati Muthukumar	Computational Biology and Bioinformatics	<i>Identifying Differential Expression and Conserved Alternative Splicing(AS) Events in Zea mays</i>
	Honorable Mention	Yasemin Ipek Sahin, Samuel Kim	Physics and Energy	<i>Steering Magnet Research and Development for use in an Electron-Ion Collider</i>
	Honorable Mention	Ethan Jacob Sontarp	Earth and Environmental Sciences	<i>U-Pb Geochronology of Fossilized Horse Teeth from the Barstow Formation, California</i>
Eastport South Manor Junior-Senior High School	Second	Maximilian T Carson, Danielle Levanti	Biomed and Cell	<i>Structural Determination of a New Space Group for tRNA (guanine-N1) methyltransferase from Anaplasma phagocytophilum</i>
Elmont Memorial High School	Second	Michael Lawes	Microbiology	<i>Metal and Hyperglycemia-Induced Neurotoxicity in a Caenorhabditis elegans RAGE Model</i>
Elwood High School	Honorable Mention	Rithika Narayan	Mathematics	<i>Orphaned by Laplace: A Tale of Two Cysts</i>
Friends Academy	First	Danielle Marie Kelly, Audrey Shine	Chemicals	<i>Application of Graphene Oxide and Electrospun Poly(acrylic acid)-Platinum/Carbon Catalyst Ink to Optimize Polymer Electrolyte Membrane Fuel Cell Performance</i>
Garden City High School	First	Ian Carlson Bailey	Animal Sciences	<i>The Cardiovascular Effects of Electronic Cigarette Components on Daphnia magna: An Investigation into Arrhythmia, Tachycardia, and Decreased Elasticity</i>

George W. Hewlett High School	Third	Samuel Benjamin Bogdanov	Microbiology	<i>Elucidating the Molecular Mechanism of Clostridium perfringens Epsilon Toxin (ETX) Cytotoxicity and the Requirement for the Myelin and Lymphocyte Protein MAL</i>
	Honorable Mention	Julia Beth Grossman	Earth and Environmental Sciences	<i>Use of Fluorine as a Proxy to Determine the Effect of Geothermal Fluids on Strain Rate, Effective Crustal Viscosity and Landscape Evolution in the Great Basin</i>
Great Neck South High School	Third	William L Cai	Physics and Energy	<i>Implications for the Detection of the Chiral Magnetic Effect Through Charge Separation Measurements in d+Au and Au+Au Collisions at the Relativistic Heavy Ion Collider</i>
	Third	Michelle Jia-Yi Zheng	Animal Sciences	<i>Identification of Lyme disease pathogens (Borrelia burgdorferi) Reservoir Host through DNA Barcoding Preparation of Ixodes scapularis</i>
	Honorable Mention	Jennifer Wang	Microbiology	<i>Localization of Proteins in Mycobacteria Using Compartment-Specific Labeling</i>
	Honorable Mention	William Yan	Chemicals	<i>Synthesis and Characterization of a Novel Dipeptide-Dendron Hybrid to Identify the Molecular Basis of Liquid Crystal Mesomorphism in Peptide Dendron Hybrids</i>
	First	Jared Steven Bank	Mathematics	<i>An Analysis of Boundary Growth Rates in One-Dimensional Cellular Automata</i>
	First	Matthew Ira Weltmann	Biomed and Cell	<i>Palbociclib Treated MDA-MB-231 Breast Cancer Cells Exhibit Increased Invasive Behavior in Zebrafish Xenograft Model</i>
	Second	Rinni Bhansali	Mathematics	<i>A Trust Model in Bootstrap Percolation</i>
	Third	Kaitlyn Petrina	Computational Biology and	<i>The Effect of Various Nucleation Mechanisms on Microtubule</i>

Half Hollow Hills East		Hoxha	Bioinformatics	<i>Aster Growth</i>
	Third	Tong Ye	BioChem and Engineering	<i>Characterizing the Role of Nuclear Flap Endonuclease 1 (FEN1) as a Mitochondrial Long Patch Base Excision Repair Enzyme in vitro</i>
	Honorable Mention	Dylan Maxwell D'Agate	Earth and Environmental Sciences	<i>Vinegar to the Rescue: Presoaking Maize Seeds in a Vinegar Solution Improves Germination and Drought Tolerance</i>
	Honorable Mention	Jay Nagpal	Material and Mechanics	<i>Mitigation of Swelling and Application of Filler-improved Biopolymers in Stabilized Soils</i>
Half Hollow Hills West	First	Poojan Pandya, Leo Takemaru	Microbiology	<i>Investigating the Role of the Novel ESCRT-III Recruiter CCDC11 in HIV Viral Budding: Identifying a Potential Target for Antiviral Therapy</i>
	Honorable Mention	Jillian Emma Parker, Jiachen Lee, Arooba Ahmed	Biomed and Cell	<i>CCDC11 Regulates Efficient Midbody Recruitment of IST1 Suggesting Impaired Organization of ESCRT Machinery</i>
Herricks High School	Second	Ankit Jain	Computational Biology and Bioinformatics	<i>Classifying Metabolic States from Vagal Activity in BALB/C Mice</i>
	Third	Seunguk John Baek	Animal Sciences	<i>The Effect of Inhibiting the NMDA Receptor During Different Developmental Stages Using MK-801 on Zebrafish Larvae</i>
	Third	Eish Maheshwari	Translational Medical Science	<i>Design of a Red Blood Cell-Based Drug-Delivery Platform for Improving Curcumin Pharmacokinetics and Bioavailability via Reengineered Silica Nanoparticles</i>
	First	Suchir Misra	Computational Biology and Bioinformatics	<i>Meta-Analysis of Cancer-related Gene Sets Reveals Connection between Craniosynostosis and Endometrial Cancer</i>
	First	Arianna	Computer	<i>Discretizing a Hybrid Cardiac Reconstruction: A Novel</i>

Jericho High School		Pahlavan	Sciences	<i>Simulation of Sustained Fibrillation</i>
	First	Shruthi Shekar	Biomed and Cell	<i>MALAT1 &amp; SOX: Understanding Metastatic Progression Post Application of Negative Pressure Wound Therapy on Cancer Resected Wound Beds</i>
	First	Madhav Subramanian	Biomed and Cell	<i>ETM* is Indispensable to Endothelial Behavior During Pathological Angiogenesis</i>
	First	Caroline Yu	Translational Medical Science	<i>Hexokinase Domain Containing 1 (Hkdc1): A Metabolic Regulator of Nonalcoholic Fatty Liver Disease (NAFLD)</i>
	Second	David Xu	Computer Sciences	<i>Dual Sensing: A Multi-modal Sensor for Pressure and Bending</i>
	Second	Audrey Zhong	Translational Medical Science	<i>Temporal Progression of Secondary Degeneration in Mice Substantia Nigra After Chronic Stroke</i>
	Third	Gabriella Shayani	Biomed and Cell	<i>FTO: Elucidating Roles in Cardiomyocyte Transcript Regulation and Angiogenic Function</i>
	Third	Katherine Zhang	Environmental Engineering	<i>Superabsorbent Polymers to Reduce Leachate Migration</i>
John L. Miller Great Neck North High School	Honorable Mention	Qingyuan Qian	Physics and Energy	<i>The M-sigma Relation of Intermediate-Mass Black Holes in Dwarf Galaxies</i>
	Honorable Mention	Sage Sherry	Behavioral and Social Sciences	<i>Talking with Touch: An Analysis of Neural Activation and Cross Brain Coherence During Non-Human and Human Interactions</i>
Kings Park High School	Honorable Mention	Nadia Prasad	Biomed and Cell	<i>Evaluating the Role of Possible Candidate KRAS Interacting Proteins Pancreatic Ductal Adenocarcinoma (PDAC)</i>
	Third	Yehoshua Auerbach, Miguel	BioChem and Engineering	<i>Reusable Surface Molecular Imprint Biosensors Aided by Naturally Occurring Surface Roughness Indices for</i>

Lawrence High School		Hulyalkar		<i>Point-of-Care Diagnostics</i>
	Third	Bhawan Kaur Sandhu, Tzipora Chana Schein	Chemicals	<i>Creating a Novel, Cost-Effective and Durable Proton-Conducting Membrane for Hydrogen Fuel Cells</i>
Lynbrook High School	First	Kaylie Sage Hausknecht	Physics and Energy	<i>Disentangling Spatial Correlations from Inhomogeneous Materials with Shift-Invariant Artificial Neural Networks</i>
	Third	Juliana Marina Condoleo	Behavioral and Social Sciences	<i>Investigating the Novel Role of the Activated Cdc-42-Associated Tyrosine Kinase (ACK1) in Learning and Memory using a Dack Null Allele in Drosophila melanogaster</i>
	Third	Pooja Shah	Biomed and Cell	<i>Analyzing the Loss of Thrombospondin-2 on Production of Extracellular Matrix Deposits in Diabetic Nephropathy</i>
	Honorable Mention	Kyle E Schneider	Animal Sciences	<i>Inducing Freeze Tolerance in Drosophila melanogaster Larvae by Implementing Warm Breaks and Shift Times between Constant Low Temperatures: A Potential Method for Cryopreservation</i>
MacArthur High School	Honorable Mention	Saajid N/A Chowdhury, Kevin Xu	Chemicals	<i>Varying Graphene Oxide Deposition Mass in Proton Exchange Membrane Fuel Cells to Optimize Cell Performance and Durability</i>
Manhasset High School	First	Serena Zhao, Samantha Chen	Environmental Engineering	<i>Optimizing the Removal of Methylene Blue from Contaminated Water Using Pumpkin Rind Waste and an Analysis of Desorption Efficiency and Material Reusability</i>
	Second	Baokun Gu	Physics and Energy	<i>Searching for Burst Gravitational Waves and Characterizing LIGO Detector Noise</i>
				<i>Reprogramming of Fibroblasts</i>

<b>Massapequa High School</b>	<b>Honorable Mention</b>	<b>Ariana Fang</b>	Biomed and Cell	<i>into Cancer-Associated Fibroblasts through CRISPR/Cas9</i>
<b>North Shore Hebrew Academy High School</b>	<b>Honorable Mention</b>	<b>Matan Atlas</b>	Translational Medical Science	<i>Morphological Evaluation of Skeletal Defects in Mice with Diamond Blackfan Anemia</i>
	<b>Honorable Mention</b>	<b>Aaron Lavi</b>	Biomed and Cell	<i>Role of AXL Receptor Tyrosine Kinase in Resistin-Induced Effect on Epithelial to Mesenchymal Transition (EMT) in Breast Cancer</i>
	<b>Honorable Mention</b>	<b>Dylan Makani</b>	Biomed and Cell	<i>The Effects of Sera from Autoimmune Encephalitis Patients on Endothelial Cell Transcytosis at the Blood Brain Barrier</i>
	<b>Honorable Mention</b>	<b>Ruben Prawer, Ari Ostrow, Adriel Kohananoo</b>	Material and Mechanics	<i>The Robotic De-Icer</i>
	<b>Honorable Mention</b>	<b>Menachem Mendel Rabizadeh, Yonatan Khakshoor</b>	Computer Sciences	<i>The Smart Glove - Addressing Bicep And Hand Conditions Relating To Weight Lifting And Physical Therapy</i>
<b>North Shore High School</b>	<b>Second</b>	<b>John Anthony Labbate</b>	Biomed and Cell	<i>Examining the Role of Accumulating Fumarate in Diffuse Large B-cell Lymphomas</i>
	<b>Third</b>	<b>Kyra McCreery</b>	Earth and Environmental Sciences	<i>Assessing Regional North Atlantic Hurricane Landfall Frequencies Through Poisson Regression Modeling and Probability Simulations</i>
	<b>Third</b>	<b>Jack Henry Rosencrans</b>	Animal Sciences	<i>The Effect of Location Along Long Island's Coast on Invertebrate Settlement and Presence: Developing Affordable Methods for Studying Marine Invertebrate Settlement</i>
	<b>Honorable Mention</b>	<b>Kate Weseley-Jones</b>	Behavioral and Social Sciences	<i>For Pits' Sake: The Effect of Breed Labels on Perceptions of Shelter Dogs</i>
		<b>Maxwell Liam</b>	Animal	<i>The Effect that Signs of Infestation of the Southern Pine</i>

Northport High School	Second	DeBrino	Sciences	<i>Beetle Have on the Behavior of Backyard Birds</i>
	Third	Katie Marie Sierra	Animal Sciences	<i>Effects of Multiple Stressors on Survivorship and Growth in Juvenile Mytilus edulis</i>
Oceanside High School	Honorable Mention	Sera D Eviner	Environmental Engineering	<i>Niobium Pentoxide as a Promoter for Vanadium Pentoxide in the Oxidation of Carbon Monoxide</i>
Oyster Bay High School	Honorable Mention	Thomas Eric Coor	Material and Mechanics	<i>Analysis of Reed Blade Shapes on Relative Decibel Levels of Overtones</i>
Paul D. Schreiber High School	First	Ryan Ethan Siegel	BioChem and Engineering	<i>Engineering Poly (lactic-co-glycolic acid) Nanoparticles with miR-663 to Target Squamous Cell Carcinoma</i>
	Second	Emma Rose Klein	Biomed and Cell	<i>The Characterization of the AR Signaling Pathway in Breast Cancer</i>
	Second	Emma Lilly Levin	Earth and Environmental Sciences	<i>Identifying United States Hurricane Risk With Changing Climate</i>
	Third	Zachary David Gruber	Computer Sciences	<i>Synthsizing Stealthy Attacks on ICDs</i>
	Third	Joseph Melkonian	Mathematics	<i>Modifying the T-value to Better Approximate Player Value in Cooperative Games</i>
	Honorable Mention	Kushal Roy Upadhyay	Computer Sciences	<i>An Extension of A+D Net for Rapid Shadow Detection in Video</i>
	First	Jessica Michelle Goldstein	Behavioral and Social Sciences	<i>The Novel Volumetric Quantification of the Chemobrain Phenomenon within a Pediatric Population</i>
	Second	Julia Catherine Brandenstein	BioChem and Engineering	<i>The Development of a Novel Prediction Model for Bipolar-I Disorder Utilizing Radiomic Analysis and Machine Learning</i>
				<i>The Effect of Geometry on the</i>



Plainview Old Bethpage JFK High School	Third	Sean G Liner	Material and Mechanics	<i>Wetting Properties in the Cassie-Baxter State</i>
	Third	Stefan Philip	Behavioral and Social Sciences	<i>Forecasting the Progression of Temporal Orientation Through the Language of Social Media Using Machine Learning</i>
	Honorable Mention	Lindsay Hannah Brenner	Behavioral and Social Sciences	<i>Manipulating the Levels of Guided Instruction to Enhance Intellectual Curiosity and Metacognitive Skills</i>
	Honorable Mention	Emily Chen, Minjee Kim, Eshwin Varghese	BioChem and Engineering	<i>Optimizing Bacterial Cellulose Fibril Properties and Cleaning Processes Utilizing Polyvinyl Alcohol (PVA) Scaffolds and Salt Gradients</i>
Roslyn High School	First	Jeffrey Y Yu	Material and Mechanics	<i>Designing a Universal Liquid 3-Dimensional Printer</i>
	Second	Lindsey Loren Rust	Behavioral and Social Sciences	<i>Baseball Diamonds Are Not A Girl's Best Friend The Effect of Sport, Coach Gender, and Participant Gender on Attitudes Towards and Perceived Salaries of Coaches</i>
	Third	Adrian Ke	Behavioral and Social Sciences	<i>The Enticement of Embellishment: The Effect of Graph Embellishment on Comprehension, Memorability, and Perceptions of Trustworthiness</i>
	Third	Justin Daniel Schiavo	Material and Mechanics	<i>The Effect of the Aerospike Nozzle on the Hybrid Rocket Engine</i>
	Honorable Mention	Asher Jacob Evan Bykov	Behavioral and Social Sciences	<i>Do Actions Really "Speak Louder" Than Words? The Effect of Power Posing, Gestures, and Gender on Perceptions of Competence and Likability</i>
Sachem North High School	Honorable Mention	Amy De Lury, Joseph Bisulca	Computational Biology and Bioinformatics	<i>Correlation between Cortical Thickness and Cognitive Impairment in Early Onset Multiple Sclerosis</i>
Sacred Heart Academy	Honorable Mention	Somaia Saba	BioChem and Engineering	<i>Andirobin/Resveratrol Drug Combination in Alzheimer's</i>

				Disease
<b>Sanford H. Calhoun High School</b>	<b>Honorable Mention</b>	<b>Matthew Condenzio</b>	Animal Sciences	<i>Post Restoration Analysis of Hatches Harbor Estuary, Provincetown, MA</i>
<b>Sayville High School</b>	<b>Honorable Mention</b>	<b>Alexander Maxwell Urmaza</b>	Earth and Environmental Sciences	<i>Effects of Roundup™ on the Respiration of E. fetida</i>
<b>Smithtown High School East</b>	<b>First</b>	<b>Anthony Joseph D'Amore</b>	Animal Sciences	<i>Habitat Preference Drives Brain Shape in Crocodylomorphs</i>
	<b>First</b>	<b>Matthew Mullahy</b>	Behavioral and Social Sciences	<i>Brain Inflammatory Responses Compromise NG2-Glial Homeostasis During Depression</i>
	<b>Second</b>	<b>Meleni Maria Sarantos</b>	Environmental Engineering	<i>An Investigation into the Identity of NirS and NirK Microbes in Nitrogen-Removing Biofilters from Sequencing Data</i>
	<b>Third</b>	<b>Alexis Lauren McCauley-Pearl</b>	Environmental Engineering	<i>Lead Ion Remediation of Contaminated Water Using Biomass</i>
	<b>Honorable Mention</b>	<b>Kevin Chen</b>	Biomed and Cell	<i>The Regulation of DNA Base Excision Repair Endonucleases Upon Neuronal Cell Differentiation</i>
	<b>Honorable Mention</b>	<b>Alexa June Hickey</b>	Animal Sciences	<i>Different Rates of Evolution for Cerebellar Lobules Help Explain the Nature of Primate and Human Intelligence</i>
<b>Smithtown High School West</b>	<b>Second</b>	<b>Elizabeth Amanda Yaboni, Lara Kolya Suazo Cain</b>	Animal Sciences	<i>Modulation of Peristalsis in Nematostella vectensis by the Nervous System and Microbiome as a New Model for Gastrointestinal Diseases</i>
	<b>Honorable Mention</b>	<b>Julia Marie Savino, Sidney Dorita Padmanaban, Shannon Elizabeth Alptekin</b>	Animal Sciences	<i>The Effect of Acetylcholine and its Inhibitors on the Rate of Peristalsis in Nematostella vectensis</i>
	<b>Honorable</b>		Earth and	<i>Power Plants: Modeling how Plant Sediment Oxidation</i>

	<b>Mention</b>	<b>Calvin Wong</b>	Environmental Sciences	<i>Influences Denitrification in Salt Marshes</i>
<b>South Side High School</b>	<b>Honorable Mention</b>	<b>Luke Christopher Botta, Matthew Jacob Friedman</b>	Animal Sciences	<i>Malaclemys terrapin Nest Predation: Peak to Post Nesting Season in Varied Locations</i>
<b>Syosset High School</b>	<b>Third</b>	<b>Joshua Maximus Lee</b>	Biomed and Cell	<i>Enhanced Cellular Responses of Bone-like Scaffold for Bone Tissue Engineering Under Fluid Dynamics</i>
	<b>Third</b>	<b>Michael Wang</b>	Biomed and Cell	<i>Investigating the Neuroprotective Effects of Taurine and Synthetic Taurine Derivatives for the Treatment of Alzheimer's Disease</i>
	<b>Honorable Mention</b>	<b>Avneet Kaur Chhabra</b>	Behavioral and Social Sciences	<i>The Advancement of Human Development Through U.S. Aid</i>
<b>The Wheatley School</b>	<b>Third</b>	<b>Manav Bansal</b>	Biomed and Cell	<i>Developing an In Vitro Model to Study MPI Deficiency in Human Stellate Cell Activation and Underlying Mechanisms</i>
	<b>Third</b>	<b>Brandon M Zhu</b>	Computer Sciences	<i>Efficient Zero Knowledge Using Garbled Circuits in the Plain Model</i>
	<b>Honorable Mention</b>	<b>Avinash Kumar Reddy, Chapin Luke Zerner, Kyle Patrick Dunn</b>	Environmental Engineering	<i>The Effect of Increased Salinities and Introduction of Phytotoxic Pesticides Roundup and Spectracide Triazicide on the Health and Phytoremediation of Lemna minor L.</i>
<b>Valley Stream South High School</b>	<b>Third</b>	<b>Anne Hwang</b>	Translational Medical Science	<i>Circulating Biomarker Levels are Diagnostic of Hepatocellular Carcinoma in a Murine Model of Non-Alcoholic Steatohepatitis</i>
<b>W. Tresper Clarke High</b>	<b>First</b>	<b>Yuktha Chiguripati</b>	Earth and Environmental Sciences	<i>Pretreatment of Brassica rapa with Pyrabactin Increases Tolerance to Drought</i>
	<b>Second</b>	<b>Makaeel Shahjehan</b>	Earth and Environmental	<i>Analysis of the Detoxification of 5-Chloro-2-(2,4-dichlorophenoxy)</i>

<b>School</b>		<b>Sheikh, Eshan Shakrani</b>	Sciences	<i>phenol through Peroxidase-Mediated Reactions</i>
	<b>Honorable Mention</b>	<b>Sanjana Ahmed</b>	Computational Biology and Bioinformatics	<i>What are the Effects of Single Nucleotide Polymorphisms on Factors of Vasculitis?</i>
<b>Walt Whitman High School</b>	<b>Honorable Mention</b>	<b>Liam Noel Rea</b>	Computer Sciences	<i>Inexpensive Online Multi-User VR Hardware and Software Environment Design Hosted Through a Microcomputer Server</i>
<b>Ward Melville High School</b>	<b>First</b>	<b>Kelsey Yan Ge</b>	Earth and Environmental Sciences	<i>Multidecadal Trends in Tropical Cyclone Behavior within Tropical North Atlantic Sub-basins</i>
	<b>Second</b>	<b>Elizabeth Jocelyn Grace Orlando</b>	Material and Mechanics	<i>Environmentally Benign Low Temperature Degradation of Muslin Cloth</i>
	<b>Honorable Mention</b>	<b>Mark Lenard Bodik</b>	Biomed and Cell	<i>Morphological Changes in Pyramidal Neurons During Postnatal Development of Mouse Gustatory Cortex</i>