

### Region V Science & Engineering Fair Winners

Congratulations to all students & teachers for their hard work!

Projects and Proposals were scored and ranked separately, please see proposals below. Awards checks will be mailed out to you as soon as possible. Certificates will be emailed to you.

Make sure that you read the email from us with information on how to register for MSEF.

The deadline for MSEF registration is April 7.

#### First Place Projects

Woojoo Kim	Wayland High School	Obtaining 3a NS5A protein of Hepatitis C Virus to prevent hepatic diseases
Alice Khomski	Boston University Academy	Short-Chain Fatty Acid Production: Predictive Functional and Genomic Analysis of the Microbiota in Crohn's Disease for Novel Plasmid-Based Therapy
Christian Nichols	Brockton High	Identifying Invertebrate Fossils in the Field Utilizing Machine Learning with a Novel 3D Augmentation Approach
Aditi Deokar & Aparna Deokar	Boston University Academy	Identifying Differentially Expressed Genes between COVID-19, Influenza, and Healthy Patients
Elizabeth Leshner	Newton Country Day School	Effects of Individual NPIs on COVID-19 Epidemic Intensity: a Population-Based, Retrospective Study of U.S. Urban Areas

**Second Place Projects**

Nicholas Hu	Newton South High	Molecular Dynamics Approach to Studying Defect Lifetimes in Active Nematics
Daniel Nguyen	Hanover High	The Implementation of Coupling Rods and Independent Finger Control in Forearm Prosthesis
Frank Liu	Newton South High	Antimicrobial Recombinant Spider Silk
John Matters	Milton Academy	An Investigation of Dark Matter in M31 Andromeda Based on Stellar Density and Rotational Velocity
Samuel Kellogg	Falmouth Academy	Investigations into Atmospheric Water Harvesting
Pablo Flores Munoz	North Quincy High	Is Leaf Decomposition Rate of Tilia chordata (Tiliaceae) Higher in Areas with More Diversity of Plants and Invertebrates?
Linus Munn	Martha's Vineyard Regional High	Making a Solar Hot Water Heater
Amelia Dasari	Sharon High	Automated detection of stereotypic behaviors, their characterization and their relation to sensory input and cardiovascular activity using wearable sensors and ML/DL techniques
Arthi Vijayakumar	Sharon High	Modeling Precipitation Levels in Massachusetts to Help Visualize Historic Risk Areas of EEE
Rohit Paradkar	Newton South High	Analysis of Lower-Grade Gliomas in MRI Through Segmentation and Genomic Cluster/Shape Feature Correlation

### Third Place Projects

Emily Addona	Newton Country Day School	Comparative analysis of the combinations of immunotherapy and chemotherapy to treat Extensive Stage Small Cell Lung Cancer.
Jeewoo Kim, Joonhyoung Kim & Melissa Kim	Milton Academy	Investigating Differential Gene Expression Between COVID-19 Patients with Mild Versus Severe Symptoms
Natalie Todd-Weinstein	Falmouth Academy	Dosage Reduction Models on Pogonomyrmex for the Treatment of Addiction
Stephanie Amanze	Brockton High	The Prevalence of Obesity in Brockton, MA 10th Grade Students
Sarah Thieler	Falmouth Academy	Distribution of Deep-Sea Red Crabs in Gilbert Canyon
Yvangi Jacques	Brockton Public Library	The Effect of Different UV Protective Items on UV-Activated Beads
Maia Donnelly	Martha's Vineyard Regional High	The Effect of Acids and Bases on Quick Bread
Isabelle Staco	Brockton High	Determining the Effectiveness of Data Augmentation in Glioblastoma Diagnosis and Treatment Planning Using Deep Learning
Amrik Eadara & Seyon Wijendran	Sharon High	The Future of Smart Recycling
Yinteer Yuan	Catholic Memorial High School	Face Rotation Render Based on AI and GAN Methods
Sana Dhillon	Ursuline Academy	Pediatric Probiotic Culture Survival Study using in Vitro Model
Zachary Crampton	Falmouth Academy	Studying the Presence of Microplastics in Cape Cod Oysters
Gus McGuire	Falmouth Academy	Efficiency of Stepped and Non-Stepped Planing Hulls
Piper Augat	Falmouth Academy	The Effect of Sunscreen on the Marine Microalga Isochrysis galbana
Eden Lei	Boston University Academy	Green Chemical Synthesis of Silver Nanoparticles for Public Health Application

**Honorable Mention Projects**

Natalie Pil	Falmouth Academy	Are Moths attracted to a certain LED light color?
Emily DeGowin	Bourne High School	Automatic Temperature Controlled Heat Lamp
Ben Gulmann	Falmouth Academy	Effects of a newly created coastal footpath on the profile of a dune
Anton Voronov & Nathaniel Waterman	Sharon High	The Mischief Detector
Elan Peng	Commonwealth School	Early Diagnosis of Asthma by Nano-Detection
Nikola Nikolov	Martha's Vineyard Regional High	Rebuilding a bicycle out of old parts and incorporating a motion powered light
Isabella Adarme	Newton Country Day School	The Effectiveness of Gene therapy
Molly Heeney	Newton Country Day School	Factors contributing to Spartina alterniflora recession in a tidal salt marsh area
Abigail Lott	Falmouth Academy	How Accurate are Weather Predictions?
Gabriella Hernandez	Newton Country Day School	Impacts of Mining in the Deep Sea
Om Sharma	Natick High	How Elastic are your Bands?
Nathan Ware & Sean Ware	Mashpee High	Light Propagation through a Medium: Particle-Wave Duality
Adele Francis	Falmouth Academy	What type of acid causes the most bone damage?
Spencer Goldsmith	Falmouth Academy	Rewiring a 1970 Volkswagen Bus
Emma Burt	Martha's Vineyard Regional High	Does Putting Additives in Wood Glue Make it Stronger?

**Honorable Mention Projects**

James Parry	Hanover High	The Effect of Ski Goggle Tint on Sunlight Transmission
Nora Grimes	Newton Country Day School	Blinded by the Light
Yanan Jiang	Milton Academy	Generalizing Ruth-Aaron Numbers
Adrienne Christy	Martha's Vineyard Regional High	Measuring The Levels of Caffeine in Variously Roasted Coffees
Anjali Reddy	Newton Country Day School	Immunotherapy: the Cancer Therapy of the Future

**Project Proposals**

<u>First Place</u> Xingyan Wang	Commonwealth School	Investigation of Potential tRNA Identity Elements Using Evolutionary Trace
<u>Second Place</u> Calista Adler & Elle Banach	Ursuline Academy	The Role of Serotonin in Alzheimer's Disease Using Dugesia Dorocephala Model
<u>Third Place</u> Anwita Revoori	Sharon High	The Therapeutic Effect of Herbal Drugs on Alzheimer's Disease
<u>Honorable Mention</u> Maille Hickey	Newton Country Day School	The Psychobiology of Deception in Antisocial Disorders

**The following projects will advance to MSEF, make sure that you read the email from us with information on how to register:**

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Maille Hickey	The Psychobiology of Deception in Antisocial Disorders
Saydee Straub	Short Term Memory Loss Effects
Maya DeLancey	Effect of Classical Music on Plant Growth
Theodore Luu	Project Proposal: Alternative Social Media Built on Blockchain