

# Western Mass Science & Engineering Fair

## High School Fair

March 7, 2025

Western New England University

Congratulations to all the students who worked on projects this year.

Thanks to all the teachers, parents, and volunteers who support this work.

Thanks to Western Gas + Electric and the Davis Foundation for sponsorship of the Western Massachusetts Science & Engineering Fair.

### Sanofi Grand Prize Winner

#### ISEF Delegate

#### MSEF Delegate

Smartbell: Chip-enabled and AI-driven dumbbells for optimized upper-body strength training

**Tim Wang**

Deerfield Academy

### First Place Winners

#### MSEF Delegates

#### MITRE Computer Science and Technology Excellence Award

A Machine Learning Approach to Improve the Optimization of the Traveling Salesman Problem and an Approach to Optimize Town Curbside Trash-Collection Truck Routes

**Katherine Ni**

Deerfield Academy

#### Alnylum Bioscience Excellence Award

Designing a Novel Peptide Nucleic Acid Disrupting mTORC1-RHEB Interaction

**Gia Bao Le**

Northfield Mount Hermon

#### Western New England Excellence Award

A Comparison of Mental Health Outcomes Among New and Seasoned Emergency Medical Service Workers

**Akul Agarwal**

Longmeadow High

#### MCTA Chemistry Excellence Award

Unlocking the Grain: Comparative Analysis of Glucose Release in Healthy Grain Varieties

**Mahima Ganesan**

Amherst Regional High

#### Massachusetts Life Sciences Center Trailblazer Award

Analyzing the Effects of Different Lighting Types on *Vanessa cardui* Butterflies

**Kaitlynn Goulette**

Westfield High School

## **Second Place Winners**

### **MSEF Delegates**

SkyProbe: A Thrust Vectoring UAV for Enhanced Inspection Performance Under Windy Conditions

**Jingxuan Zhou**  
Northfield Mount Hermon Sch

Mitigating Vibrations in High-Speed Helicopters: Model to Investigate an Electric Power Transmission System for a Vibratory Control Moment Gyroscope

**Jacob Lee**  
Berkshire School

Designing an Economical Multi-Purpose Care Blanket for Neonates Part III

**Emily Bulan, Luke Bulan**  
Westfield High School

Innovative and Cost-Effective Solutions to Prevent Cobalt Toxicity Exposure for Miners in DR Congo

**Seoyoung Chang**  
Deerfield Academy

Fermentation Time and pH-Driven Antimicrobial Effects of Kombucha on E. coli and S. epidermidis

**Joseph Yoon**  
Belchertown High School

An ABC Transporter Mutant of Mycobacterium smegmatis Resistant to a Membrane-Fluidizing Drug

**Jaelyn Luo**  
Williston Northampton School

How Different Hand Soaps Affect Bacterial Growth

**Elizabeth Coach, Hannah Callini**  
Westfield High School

Comparative Analysis of Sunscreen SPF Ratings and UV Protection

**Abigail Jemiolo, Makenzie Watt**  
Westfield High School

Optimizing an After-market Prototype that Operates a Window Remotely

**Brandon Guyott, Justin Romanelli**  
Westfield High School

## Third Place Awards

Leveraging Drone-Based Spectral Analysis of Plant Moisture to Combat Wildfire Risks

**Junwon Park**  
Williston Northampton School

ImmersiveBuild: Revolutionizing Construction Using VR Applications

**Richard Li**  
Longmeadow High School

Solar Umbrella

**Giovanni Santaniello**  
Westfield High School

Unmasking The Data: Evaluating the Effectiveness of Different Materials in Preventing Bacterial Growth

**Clara Hubbard**  
Westfield High School

Making It Accessible: Scientific Hand Models

**Gabriella Scottoni, Matthew Rothus**  
Westfield Technical Academy

Skin Deep: Investigating How Product Knowledge and Social Media Influences Decision-Making

**Teagan Chisholm-Godshalk**  
Westfield High School

Testing ice from local fast food restaurants for microbial contamination.

**Muhammad Chaudhry**  
Hopkins Academy

The Impact of Varied Environmental Temperatures on Neocaridina Davidi Reproduction Rate

**Scarlett Karwoski**  
Westfield High School

Skyglow: The Ignored Pollution

**Angela Dhimal, Ashley Deleon**  
West Springfield High School

Does Artificial Grass Infill Release Heavy Metals?

**Alec Piepergerdes, Zachary Maslar**  
Westfield High School

In a state of crisis, which type of water is optimal when filtered water is not available?

**Arianna Hopkins, Bradie Barrett, Melissa Rodriguez**  
West Springfield High School

