

# MSEF

Massachusetts Science  
+ Engineering Fair

MIDDLE SCHOOL FAIR 2024

POWERED BY **CABOT** 

## Middle School Award Winners

For Category Excellence and Special Awards go to page 8  
For Thermo Fisher Junior Innovators Challenge Finalists go to page 10  
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### Cabot Grand Prize Award

**Aarush Kulkarni** RJ Grey Junior High School, Acton *Enhanced Tumor Biopsy Analysis with DLSSN: A Novel Semantic Segmentation Based Tool For Tumor Microenvironment Assessment Using A Deep-Learning Based U-Shaped Network Methodology*

### Cabot Spotlight Award

**Anoushka Nikumbh, Priya Iyer** Ashland Middle School *Multi-component Assistive Smart TrEmor Reducer (MASTER)*

### First Place Awards

**Sapna Malhotra** Eliot K-8 Innovation School, Boston *Superbugs: Rise of the Resistance. An Assessment of Antibiotic Resistance Over the Past 30 Years*

**Carwen Simoneau** Boston Latin School *Staying Safe Against E-Coli*

<b>Soham Samanta</b>	Massachusetts Virtual Academy at Greenfield	Unfolding the Tesseract: Path Unfoldings of the 4D Hypercube's 2-Skeleton
<b>Aru Sharma</b>	North Attleboro Middle School	Does Music affect Memory
<b>Ethan Filip, Haoze Yuan, Karsten Petersen</b>	Dover-Sherborn Regional Middle School	Optimal Number of Blades on a Wind Turbine
<b>Daniel Korkin</b>	Sarah W. Gibbons Middle School, Westborough	Micro Hydroelectric Generator
<b>Bella Salamone, Charlotte Sullivan, Madeleine Milone</b>	Newton Country Day School	Caffeinated Caterpillars
<b>Xinwen Dai</b>	Boston Latin School	How Does the Amount of Stress A Person Receives Affect How Often They Will Experience Deja Vu?
<b>Ronita Shukla</b>	Acton-Boxborough Regional High	Comparison of the Effectiveness of Various Acne Products
<b>Aisha Zaheer</b>	Islamic Academy for Peace, Methuen	Smart Sensing Stick: Avoiding Waist-Up Injuries for the Visually Impaired Using an Ultrasonic Sensor

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### Second Place Awards

<b>Soleil Desai</b>	Eliot K-8 Innovation School, Boston	<i>Language of the Brain</i>
<b>Esma Boztas, Safa Ubaidu</b>	Islamic Academy for Peace, Methuen	<i>Does the Mandela Effect Vary Among Different Brain Dominance</i>
<b>Connor Martel</b>	St. Francis Xavier School, Acushnet	<i>How do the Shape of the Fins of a Model Rocket affect the Altitude?</i>

<b>Caleb Halberstadt</b>	FAITH Co-op, Framingham	<i>The Breaking Point</i>
<b>Miftah Sifat</b>	Oak Middle School, Shrewsbury	<i>What Factors Affect the Vitamin C Content Degradation Overtime?</i>
<b>Harit Sree Charan Suraparaju</b>	Grafton Middle School	<i>Investigating Varying Electrolyte Concentrations in Fuel Cells for Renewable Energy</i>
<b>Alexander Juo, Jay Kulkarni</b>	Dover-Sherborn Regional Middle School	<i>Effects of Different Strengths of Voltage in Electric Currents on Plant Growth (Electroculture)</i>
<b>Kaushik Satheesh Kumar</b>	Oak Middle School, Shrewsbury	<i>Generating Voltage in Sucrose Crystals through Piezoelectricity</i>
<b>Yahya Junaid Siddiq</b>	Islamic Academy for Peace, Methuen	<i>Nurturing Life</i>
<b>Anish Gupta</b>	Oak Middle School, Shrewsbury	<i>How Various Liquids Affect Plant Growth</i>
<b>Casandra Ortiz Gonzalez, Diya Girdhar, Ruoyu Chen</b>	Newton Country Day School	<i>Clean Fast, Have a Blast!</i>
<b>Joshua Duarte</b>	St. Francis Xavier School, Acushnet	<i>How Does the Amount of Baking Powder Present in Batter Affect the Height of a Cake?</i>
<b>Tanvi Marri</b>	William Diamond Middle School, Lexington	<i>Assessing the Achievability of Etched Aluminum as a CO2 Capture Method</i>
<b>Ethan Mort, Shreyas Peddigari, Vikram Hiranandani</b>	Sarah W. Gibbons Middle School, Westborough	<i>Urban Farming</i>
<b>Nyla Jacob</b>	Littleton Middle School	<i>Testing the Conductivity of Acidic Fruits and Starchy Vegetables</i>

<b>Aadhira Satheesh</b>	The Acera School, Winchester	<i>Scheduly – An AI Powered Web Application that Helps Seniors Who Are Struggling with Memory Loss</i>
<b>Audrianna Krikorian</b>	Saint Augustine School, Andover	<i>How The Blood Brain Barrier Is Affected Based on Exposure</i>
<b>Anwita Wadekar</b>	Worcester Academy	<i>For the Love of Peat: An Eco-Friendly Growing Medium for Microgreens</i>
<b>Madden Pollard</b>	Holmes Innovation School, Boston	<i>How High Can a Robot Jump?</i>
<b>Rowan Plumer</b>	St Mary School, Bellingham	<i>Inheritance of Fingerprints</i>

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### Third Place Awards

<b>Siddhi Shandilya</b>	North Attleboro Middle School	<i>Which Gender Reacts More Intensely to Frustration?</i>
<b>Tomas Young</b>	Nantucket New School	<i>Which Glue Can You Truss...T?</i>
<b>Rajat Krishnan</b>	Oak Middle School, Shrewsbury	<i>Pantry Palate: The Best Way To Find Recipes</i>
<b>Bennett Cahill, Ryan Stimpson</b>	Littleton Middle School	<i>A Study of the Effect of Temperature on the Hatching of Artemia franciscana</i>
<b>Anika Gosukonda</b>	Littleton Middle School	<i>AlgaeBeGone</i>
<b>Prathamesh Gupta</b>	Ottoson Middle, Arlington	<i>Making a New and Cleaner Form of Air Transportation</i>
<b>Lana Nguyen, Seren Banner-Goodspeed</b>	Boston Latin School	<i>Physical vs. Digital: How Reading Online vs. on Paper Affects Your Memory</i>

<b>Leomar Ortiz</b>	Burncoat Middle School, Worcester	<i>Saldine Algorithmic Sheet Music Generator</i>
<b>Gwen Konieczny, Kate Baskin, Mia Ci</b>	Dover-Sherborn Regional Middle School	<i>Effect of Roundup on Daphnia</i>
<b>Pratham Pai</b>	Oak Middle School, Shrewsbury	<i>Toxic Takeout: Forever Chemical, PFAS in U.S Food Packaging</i>
<b>Francesca Martin</b>	Boston Latin School	<i>How Does Sodium Lauryl Sulfate Affect The Strength Of A Curly Weave?</i>
<b>Isaac Mayborn</b>	FAITH Co-op, Framingham	<i>How Low Will it Go?</i>
<b>Austin Wu, Jingyuan Luo</b>	P. Brent Trottier Middle School, Northborough	<i>Bloomed and Withered: A Scientific Survey at Rose and Carnation Lifespan</i>
<b>Ben Rosado</b>	West Tatnuck Elementary, Worcester	<i>Blinded by the Light</i>
<b>Veronika Wang</b>	Dover-Sherborn Regional Middle School	<i>Rescue Reach</i>
<b>Akshaya Panamakuri</b>	Foxborough Regional Charter School (Middle)	<i>Why Are Evergreen Leaves Green?</i>
<b>Srivibhu Piratla</b>	Sharon Middle	<i>Rain or Shine</i>
<b>Shaunak Sasmal</b>	Andover School of Montessori	<i>How Does the Design of the Wing of a Plane Affect How It Flies?</i>
<b>Dhatri Daggubati</b>	Foxborough Regional Charter School	<i>Reviving Hope for ESRD : Early Detection of Kidney Disease</i>
<b>Johan Coisman</b>	Weston Middle	<i>Lightning Walls (TM) - Using Bricks to Create Hybrid Supercapacitors</i>

<b>Leena Abou Mahmoud</b>	Islamic Academy for Peace, Methuen	<i>Does the Amount of Electricizer Added in Bioplastic Affect the Bioplastic?</i>
<b>Divija Bontala</b>	Oak Middle School, Shrewsbury	<i>The Healthiest Way to Dissolve a Kidney Stones</i>
<b>Shoubhit Murali</b>	Oak Middle School, Shrewsbury	<i>How Do Companies Make Apps Addictive and What Can We Do To Escape Their Grasp?</i>
<b>Zachary Soong</b>	Lesley Ellis School, Belmont	<i>What Is the Best Method of Water Purification?</i>
<b>Shyam Srinivasan</b>	North Attleboro Middle School	<i>Power From the Plants: Harvesting Energy from Plant Microbial Fuel Cells</i>

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### Honorable Mention

<b>Isabella Wu</b>	P. Brent Trottier Middle School, Northborough	<i>Brain Dominance Perspective</i>
<b>Dhanusha Ramadas, Mia Zhao , Shriya Prabhakar</b>	Sarah W. Gibbons Middle School, Westborough	<i>Promoting the Productivity of Daily Activities using Different Colored Lights</i>
<b>Daryn Do</b>	Hayes School, Brookline	<i>Can Our Rain Gears Harvest Energy?</i>
<b>Addison Colvin, Aviana Saimbert</b>	Hoosac Valley Middle High School, Cheshire	<i>Battery efficiency</i>
<b>Mirabella Milane</b>	Eliot K-8 Innovation School, Boston	<i>Sparkly Disease</i>
<b>Kelsey Reade, Yasmine Benelbaida</b>	Pioneer Charter School of Science II (PCSS-II)	<i>Life Span of Daphnia and Planaria in Water Pollution</i>
<b>Mariam Reda</b>	Andover School of Montessori	<i>Can Humans Tell the Difference Between AI and Human Writing?</i>

<b>Fiona Johnson</b>	St Mary School, Bellingham	<i>Fastest Acting Medicine</i>
<b>Sena Kaplan</b>	Islamic Academy for Peace, Methuen	<i>Which Has More Nutritional Value, Fresh, Frozen, or Organic Produce.</i>
<b>Talitha Fuller</b>	Millis Middle	<i>What Is the Effect of Music with or without Words on a Subject's Score on a Memory Test?</i>
<b>Shahed Alrashid</b>	Al-Noor Academy, Mansfield	<i>Staining Teeth</i>
<b>Hoda Britel</b>	Pioneer Charter School of Science II (PCSS-II)	<i>How Do Different Colored Lights Affect Plant Growth?</i>
<b>Krishiv Jayaswal</b>	Grafton Middle School	<i>Light Changing Photosynthesis</i>
<b>Rishi Balaji</b>	Stanford OHS, Acton	<i>Project Optimus Time: An Optimal, Intelligent, and Dynamic Scheduling Methodology to Reduce Stress-Induced Burnout in Students</i>
<b>Mahima Ganesan</b>	Amherst Regional Middle School	<i>Which White Rice Should I Eat? Unraveling Glucose Release in Boiled White Rice Through Amylase Treatment</i>
<b>Colleen Kearney</b>	St. Francis Xavier School, Acushnet	<i>Does the Presence of Plants Decrease Soil Erosion?</i>
<b>Aisiri Praveen, Navya Satishkumar, Yesha Samal</b>	Benjamin Franklin Classical Charter School	<i>Effect of Age on Reaction Time</i>
<b>Marlowe Bolton</b>	Eliot Innovation K-8 School, Boston	<i>Are People of Different Demographics Able to Tell the Difference Between Human and AI Better?</i>
<b>Jackson Lynch</b>	FAITH Co-op, Natick	<i>Dueling Solutes</i>
<b>Aditi Korrapati</b>	Raymond J Grey Junior High, Acton	<i>Predicting Produce Ripening Using Sensors and Machine Learning</i>

<b>Diego Luna</b>	Hoosac Valley Middle High School, Cheshire	<i>The Best Way to End Police Chases</i>
<b>Anshika Pradhan, Arina Mollaeian, Nicole Jabbour</b>	Sarah W. Gibbons Middle School, Westborough	<i>Rotor Blades and Wind Energy</i>
<b>Ashmita Vashisth</b>	North Attleboro Middle School	<i>What Type of Building Would Best Survive an Earthquake?</i>
<b>Tejas Gummadala</b>	North Attleboro Middle School	<i>Can Robots Help Put Out Wildfires?</i>
<b>Kylie O'Day</b>	Saint Augustine School (Andover)	<i>How Do Different Music Genres Affect a Child's Memory</i>
<b>Ananya Renjith, Meghna Kshirsagar, Rakshana Rajah</b>	Ashland Middle School	<i>Plants Vs. Plastics: The Silent Struggle</i>
<b>Chris Wong, Tyler Salomone, Zayne Rong</b>	Dover-Sherborn Regional Middle School	<i>How Well Do the Average Kitchen and Its Functions Fare Against the Standards Set by the Occupational Safety and Health Administration?</i>

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## Category Excellence Awards

### AMD Engineering Excellence Award

<b>Ethan Filip, Haoze Yuan, Karsten Petersen</b>	Dover-Sherborn Regional Middle School	<i>Optimal Number of Blades on a Wind Turbine</i>
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### Materion Computer Science, Math, and Physics Excellence Award

<b>Soham Samanta</b>	Massachusetts Virtual Academy at Greenfield	<i>Unfolding the Tesseract: Path Unfoldings of the 4D Hypercube's 2-Skeleton</i>
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### Behavioral and Social Science Excellence Award

<b>Aru Sharma</b>	North Attleboro Middle School	<i>Does Music affect Memory</i>
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## Entrada Therapeutics Biological Sciences Excellence Award

**Sapna Malhotra** Eliot K-8 Innovation School, Boston Superbugs: Rise of the Resistance. An Assessment of Antibiotic Resistance Over the Past 30 Years

## Cabot Chemistry Excellence Award

**Harit Sree Charan Suraparaju** Grafton Middle School *Investigating Varying Electrolyte Concentrations in Fuel Cells for Renewable Energy*

## WM Environmental Science Excellence Award

**Tanvi Marri** William Diamond Middle School *Assessing the Achievability of Etched Aluminum as a CO2 Capture Method*

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## Special Awards

### Broadcom Coding for Commitment® Award

**Aisha Zaheer** Islamic Academy for Peace *Smart Sensing Stick: Avoiding Waist-Up Injuries for the Visually Impaired Using an Ultrasonic Sensor*

### Lemelson Early Inventors Prize

**Diego Luna** Hoosac Valley Middle High School *The Best Way to End Police Chases*

### Pauline J. LaMarche Memorial G.R.I.T. Award

**Vivian Ngo** BCLA-McCormack Pilot School *Feel the Heat*

### Massachusetts Life Sciences Center Trailblazer Award

**Sena Kaplan** Islamic Academy for Peace *Which Has More Nutritional Value, Fresh, Frozen, or Organic Produce.*



Thermo Fisher Scientific  
**Junior Innovators  
Challenge**  
A program of Society for Science

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Anoushka Nikumbh, Priya Iyer	Ashland Middle School
Sapna Malhotra	Eliot K-8 Innovation School
Carwen Simoneau	Boston Latin School
Soham Samanta	Massachusetts Virtual Academy at Greenfield
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Tanvi Marri	Wm Diamond Middle School
Ethan Mort, Shreyas Peddigari, Vikram Hiranandani	Sarah W. Gibbons Middle School

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## **MSEF Middle School Teacher Award**

Sponsored by Sanofi

**Kris Grymonpre** BCLA- McCormack Pilot School