



Thermo Fisher Scientific

Junior Innovators Challenge

A program of Society for Science

+ Thermo Fisher Scientific
Junior Innovators Challenge 2024

TOP 300

Thermo Fisher Scientific Junior Innovators Challenge

The Thermo Fisher Scientific Junior Innovators Challenge (JIC), a program of Society for Science, is the premier national middle school science and engineering research competition, inspiring the next generation of scientists, engineers and innovators who will solve the world's most intractable problems. We believe middle school is a critical time when young people identify their personal passions, and if they discover an interest in Science, Technology, Engineering and Math (STEM), they can be inspired to follow those passions by pursuing STEM courses and learning experiences through high school and beyond.

As the only middle school STEM competition that leverages Society-affiliated science fairs as a critical component of the STEM talent pipeline, the Thermo Fisher JIC draws from the top 10% of 6th, 7th and 8th grade projects entered in Society-affiliated fairs around the country. After submitting the online application, the Top 300 Junior Innovators are selected by a panel of scientists, engineers and educators from around the nation.

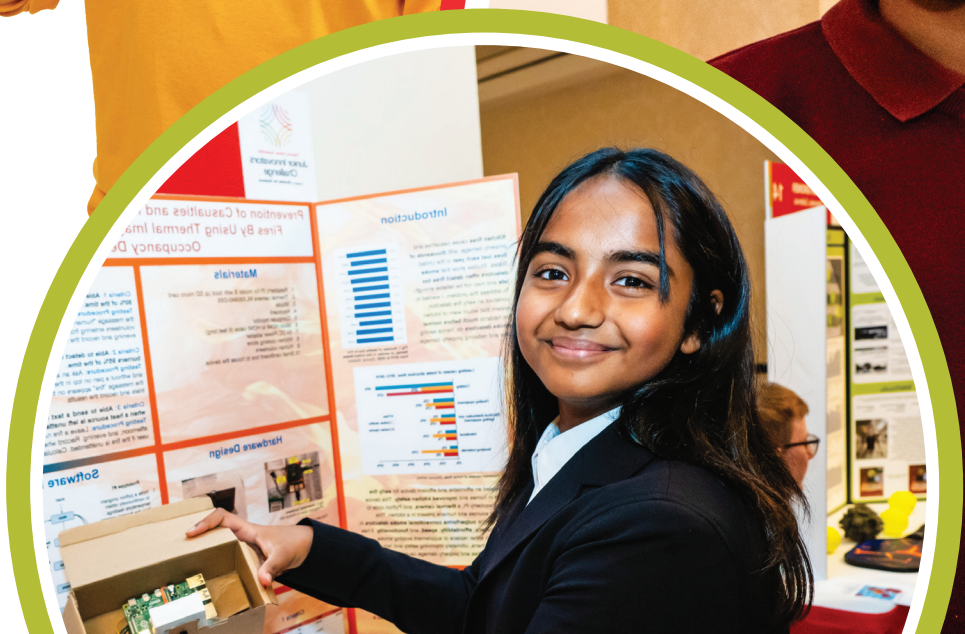
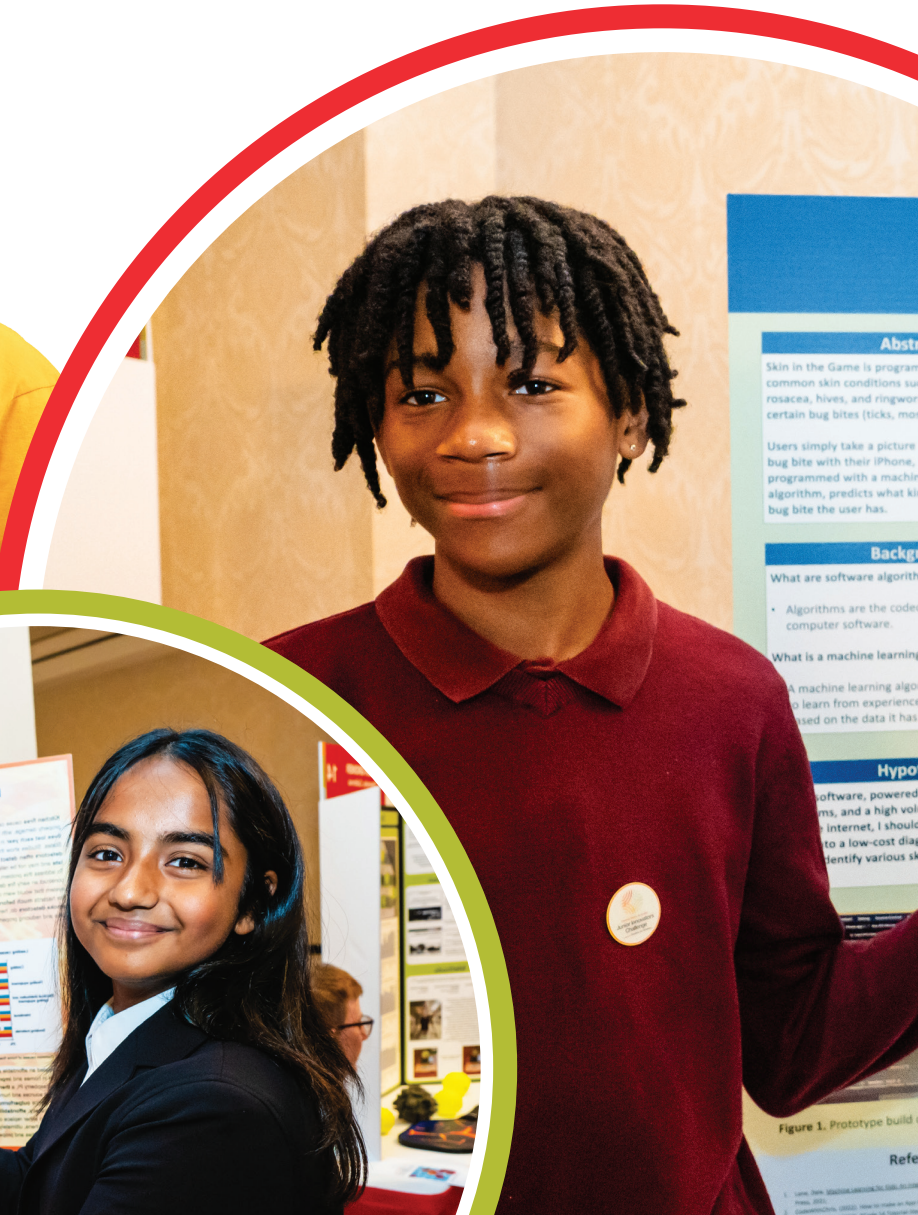
The Top 300 Junior Innovators are honored for their work with a \$125 cash prize through the Society's partnership with the U.S. Department of Defense as a member of the Defense STEM Education Consortium (DSEC). The Top 300 Junior Innovators also receive a prize package that includes an award ribbon,

a certificate of accomplishment, a backpack, a decal, a one-year subscription to Science News Explores magazine and a one-year subscription to Wolfram|Alpha Notebook Edition, courtesy of Wolfram Research. In recognition of the role that teachers play in the success of their students, each Top 300 Junior Innovator's designated teacher will also receive a Thermo Fisher JIC tote bag and a one-year subscription to Science News Explores magazine.

From the Top 300 Junior Innovators, 30 finalists are announced on September 18. They will present their research projects and compete as teams in STEM challenges to demonstrate their skills in critical thinking, collaboration, communication and creativity at the Thermo Fisher JIC Finals Week. Top awards include a \$25,000 grand prize, stipends for STEM summer camps and more.

Thermo Fisher Scientific and Society for Science thank the following partners for their support of the 2024 Thermo Fisher JIC:

- Broadcom Foundation
- DoD STEM
- Robert Wood Johnson Foundation
- The Lemelson Foundation
- TIES
- Wolfram Research
- Science News Explores
- Smithsonian Environmental Research Center
- Society for Science's Affiliated Regional and State Science and Engineering Fairs
- Parents, teachers and mentors of the nearly 2,000 Thermo Fisher JIC entrants



Top 300 Junior Innovators

Students are listed in order by school state, fair code, last name and school name based on information they provided. Students listed under a regional fair may also have qualified through their state fair, but are only listed under their regional fair in this book. Students conducting team projects were eligible, but each student entered individually and was judged based on the submitted written entry. The grade listed for each student is from spring 2024.

Visit findafair.societyforscience.org to look up Thermo Fisher Scientific JIC-affiliated fairs by state.

A # next to the name indicates previous selection as one of the Top 300 in the Society's middle school competition.

ARIZONA

USAZ03 Southern Arizona Research, Science and Engineering Fair

BABST, ISABELLE (GRADE 6)

Tucson, Arizona

Esperero Canyon Middle School

**Effects of Agrivoltaics and Water Stress on Arizona's Crops:
Co-Producing Food and Energy in a Drier Climate**

BRUECK, ELENA (GRADE 6)

Tucson, Arizona

Saint Elizabeth Ann Seton Catholic School

Effects of Liquid Type on Corrosion Rate of a Metal

MANN, TYLER D. (GRADE 8)

Tucson, Arizona

Twin Peaks K-8

Converting an Ornamental Windmill Into a Wind Turbine

USAZ50 Arizona Science and Engineering Fair

KANDASAMY, AMRIT (GRADE 8)

Chandler, Arizona

Arizona College Prep – Erie

Correlative Fractal Analysis: A Road to Quality Diagnosis

VOSS, AUDREY ANH (GRADE 8)

Chandler, Arizona

Arizona College Prep – Oakland

The Effect of Violin Mute Types on the Sound Intensity Level

CALIFORNIA

USCA01 Orange County Science and Engineering Fair

BOATSWAIN, ARDEN (GRADE 8)

Lake Forest, California

Serrano Intermediate

Automatic, Replenishing, Nourishing, Aquaponic System

MATHEW, JOCELYN (GRADE 8)

Yorba Linda, California

Fairmont Private School – Anaheim Hills Campus

Optimizing Microbiologically Contaminated Wastewater Treatment Using Microbial Fuel Cells

PONNACHANA, ATHARV (GRADE 8)

Santa Ana, California

Fairmont Private School

Creating a Versatile Mobile Device To Assist the Visually Impaired Using Object Detection

SMIRNOV, MATTHEW (GRADE 7)

Irvine, California

LePort School

HelioHeater: A Sun-Tracking, Compact, Highly Efficient Concentrated Solar Power System for Residential Water Heating

SREEDHAR, RHEA (GRADE 8)

Anaheim, California

Fairmont Private School – Anaheim Hills Campus

Closed Loop CO₂ Capture and Electricity Generation Using Algal Fuel Cells: A Comparative Study on Spirulina and Chlorella

USCA02 Los Angeles County Science and Engineering Fair

AN, AIDEN (GRADE 6)

North Hollywood, California

Walter Reed Middle School

The Reality of Corrosion: Finding a Better Way To Store Biofuels in Motor Vehicles

HAMILTON, ELLEN RENEE (GRADE 8)

Los Angeles, California

Gaspar De Portola Middle School

What Biofuel Has the Highest Energy Content?

HONARPOUR, NIKA (GRADE 7)

Los Angeles, California

The Archer School for Girls

Material vs. Matter: A Study of Different Material's Abilities To Block Secondhand Smoke Inhalation

LIANG, PATRICK (GRADE 7)

Tarzana, California

Portola Highly Gifted Magnet Middle School

Analyzing the Mutations in the Virus SARS-CoV-2 and the Practical Effects

RHEINHEIMER, KATHERINE AVA (GRADE 8)

Los Angeles, California

The Archer School for Girls

Material vs. Matter: A Study of Different Material's Abilities To Block Secondhand Smoke Inhalation

STUART, HENRY (GRADE 6)

North Hollywood, California

Walter Reed Middle School

Reducing Noise Pollution Underwater: Moving Towards Healthier Oceans

VARGHESE, SARAH (GRADE 8)

Rancho Palos Verdes, California

Ridgecrest Intermediate School

Identifying the Most Efficient Object Recognition Algorithm To Assist the Visually Impaired Using Machine Learning, Optimized for Mobile Applications

YENUGONDA, TANMAY (GRADE 8)

Woodland Hills, California

Hale Charter Academy

Harnessing Eco-Friendly Nano-Emulsions To Prevent Ocean Oil Spills

YU, EVALYN (GRADE 8)

Palos Verdes Estates, California

Palos Verdes Intermediate School

The Psoriasis Puzzle: Analyzing Changes in Mental and Physical Health in Psoriasis Patients Pre- and Post-Pandemic

USCA03 **Fresno County Science Fair**

MASSON, VARUN KUMAR (GRADE 8)

Fresno, California

Carden School of Fresno

Revolutionizing Emissions Control: Engineering a Sustainable Catalytic Converter Utilizing Abundant Metals

USCA05 **Greater San Diego Science and Engineering Fair**

CHEN, STEVEN (GRADE 8)

San Diego, California

Pacific Trails Middle School

Synthesizing Living Materials for Coral Reef Regeneration

COTTRELL, OLIVER NICOLAS (GRADE 6)

La Jolla, California

La Jolla Country Day School

Automatic Hockey Puck Passer Machine

PARTHASARATHY, JEYANTH NARAYAN (GRADE 8)

San Diego, California

Pacific Trails Middle School

Reducing Motion Sickness Caused by Regenerative Breaking Systems

SEN, RITAM (GRADE 8)

San Diego, California

Francis Parker School

Can Elemental Sulfur Influence the Growth of Different Plants in Lunar Regolith?

STERNSON, SAMUEL ALEXANDER (GRADE 8)

Encinitas, California

The Rhoades School

Passive Cooling With Infrared Reflective Crystals

USCA07 **Synopsys Silicon Valley Science and Technology Championship presented by the Santa Clara Valley Science and Engineering Fair Association**

BAHETY, VANSH (GRADE 8)

Santa Clara, California

Juan Cabrillo Middle School

StreetSafe: Reducing Fatalities on Crosswalks With Wearable ML-Incorporated Tech

BOKDE, PRANAY (GRADE 8)

Santa Clara, California

Juan Cabrillo Middle School

StreetSafe: Reducing Fatalities on Crosswalks With Wearable ML-Incorporated Tech

CHATTERJEE, RIYA (GRADE 8)

San Jose, California

The Harker School

Beneath the Tide: Unleashing the Power of Calcium Ions and Seaweed To Create Food-Safe Biofabric

JIN, TINA (GRADE 7)

San Jose, California

The Harker School

Turning Animal Bone Waste Into Water Filtration: Enhancing Accessibility of Clean Drinkable Water Through Innovation

LUM, SARIA AVRIL (GRADE 8)

San Jose, California

The Harker School

Beneath the Tide: Unleashing the Power of Calcium Ions and Seaweed To Create Food-Safe Biofabric

MISTRY, DEVSHREE MEHUL (GRADE 8)

San Jose, California

Challenger School – Shawnee

EcoBin: A Bin With Fill Level Detection That Uses an AI Machine Learning Model To Sort Recyclables From Non-Recyclables

RAO, CLAIRE (GRADE 7)

Palo Alto, California

Jane Lathrop Stanford Middle School

The Enhancement of Power Output From Living Plants Using Chemically Modified Electrodes

SONG, NOAH (GRADE 8)

Santa Clara, California

Juan Cabrillo Middle School

StreetSafe: Reducing Fatalities on Crosswalks With Wearable ML-Incorporated Tech

TONG, SOPHIE (GRADE 8)

Palo Alto, California

Challenger School

Investigating the Visual Information Degradation in Adverse Weather

VASHI, AARUSH (GRADE 8)

San Jose, California
Challenger School – Berryessa
AI-Powered Waste Sorter

YANG, BRADEN (GRADE 7)

San Jose, California
The Harker School
The Impact of Nutrients and Drugs on Planarian Regeneration, Learning and Memory: A Comprehensive Exploration

USCA08 **Contra Costa County Science and Engineering Fair**

SHI, JASPER (GRADE 8)

San Ramon, California
Windemere Ranch Middle School
Will Drugs Affect the Cognitive Functionality of Planarians: Regeneration vs. Offspring?

TRIVEDI, JAINIL (GRADE 7)

San Ramon, California
Gale Ranch Middle School
A Smart AI-Enabled IOT Solution for Detecting Toxic Gases in Low-Income and Industrial Communities

USCA09 **The Alameda County Science and Engineering Fair**

CHEN, OLIVIA (GRADE 6)

Newark, California
Challenger School – Ardenwood
Simulating Teeth Erosion With Eggshells and Common Drinks

GOEL, RUDRA (GRADE 7)

Pleasanton, California
Stratford Middle School
Increasing Earthquake Resilience Through Construction Column's Cross-Sectional Shapes and Patterns

KRIS, SANIKA (GRADE 7)

Pleasanton, California
Stratford Middle School
Empowering the Visually Impaired Through Smart Navigation

ROY, VAEDANTH (GRADE 7)

Fremont, California
Stratford Middle School
Incident Surfaces and Polarization by Reflection

SRIKRISHNA, SIA (GRADE 7)

Fremont, California

Stratford Middle School

**Let There Be Light: A Saltwater Battery Powered
Eco-Friendly Light**

TANDON, ANVI (GRADE 7)

Pleasanton, California

Stratford Middle School

Empowering the Visually Impaired Through Smart Navigation

WU, SAVANNAH (GRADE 6)

Newark, California

Challenger School – Ardenwood

**The Effect of Agar Hydrogel, Hydroxyethyl Cellulose (HEC)
Hydrogel and Agar + HEC Hydrogel Versus No Hydrogel Added
on the Relative Water Retention Abilities in Soil in Percentage**

USCA13

**San Bernardino, Inyo, Mono, (SIM) Science and
Engineering Fair**

GARG, SHREYAS (GRADE 6)

Chino, California

Edwin Rhodes Elementary School

**Balsa Brilliance: Which Type of Truss Tower Design Can Hold
the Most Weight?**

HUANG, LYDIA (GRADE 7)

Chino Hills, California

Canyon Hills Junior High School

Eggstraordinary Coasters

USCA15

Riverside County Science and Engineering Fair

AZAD, DELISHA (GRADE 8)

Eastvale, California

Dr. Augustine Ramirez Intermediate School

Understanding and Applying a Solar Powered Irrigation System

MEDATATI, SHREYANSH (GRADE 7)

Eastvale, California

Dr. Augustine Ramirez Intermediate School

Understanding and Applying a Solar Powered Irrigation System

USCA50 California Science & Engineering Fair

CHEN, LAVERNIE (GRADE 8)

Santa Clara, California

Juan Cabrillo Middle School

Creating a Headband To Detect Concussions and Notify Users Based on Impact

DIEP, EMILY (GRADE 8)

San Diego, California

Connect Academy @ Design 39 Campus

A Study of a Homemade Smart Bracelet Integrated With an AI-Driven Speech Therapy Game for Children With Speech Disorders

KELKAR, RUHI (GRADE 8)

Santa Clara, California

Juan Cabrillo Middle School

Constructing a Concussion Detecting Headband That Alerts a Concussion Based on Force of Impact

KIM, AUDREY (GRADE 8)

Irvine, California

Sierra Vista Middle School

Waste2Volt+: Enhancing a Piezoelectric Soccer Field With a Bio-Piezoelectric Energy Harvesting Generator From Food Waste for TumbleAlert, an Innovative Wearable Fall/Drop Monitoring and SMS Alerts

PAPADIMITRIOU, EVANGELOS (GRADE 7)

Palo Alto, California

Stratford School

Lift Them Up: A Pulley Stair Lift for Paraplegics

PATHAK, ADVIKA (GRADE 7)

Santa Clara, California

Juan Cabrillo Middle School

Efficiently Harvesting Solar Energy

RAISINGHANI, KIYAN ARUN (GRADE 8)

San Jose, California

Challenger School – Strawberry Park

Ionize, Magnetize, Energize

RAM, ADWITA (GRADE 8)

Santa Clara, California

Juan Cabrillo Middle School

Constructing a Concussion Detecting Headband That Alerts a Concussion Based on Force of Impact

TEJURA, JIYA (GRADE 7)
Santa Clara, California
Juan Cabrillo Middle School
Efficiently Harvesting Solar Energy

USCA78 Irvine Unified School District Fair

BUSKIN, MIKHAIL (GRADE 7)
Irvine, California
South Lake Middle School
Enhanced PAT FPV Inspection System: Cost-Efficient Arduino-Based FPV Pan and Tilt Camera System Controlled With Head Motion Tracking

CHU, ISABEL HANLIN (GRADE 6)
Irvine, California
Santiago Hills Elementary School
AI Micromobility Detector

FAN, AMY (GRADE 6)
Irvine, California
Santiago Hills Elementary School
AI Micromobility Detector

USCA80 San Mateo County Office of Education STEM Fair

YUN, AIDEN (GRADE 8)
San Mateo, California
The Nueva School
A DICOM Viewer for Radiologists Employing Bidirectional Siamese Masked Auto-Encoders: A Novel, State-of-the-Art Method of Lung Cancer Classification and Detection in Low-Dose CT Scans

YUNG, CAMILLE (GRADE 8)
San Carlos, California
Central Middle School
The Ultimat(um) Strategy: Staging a Tournament Between Different Strategies in a Game of Repeated Ultimatum and Simulating Evolution To Observe the Success of Said Strategies Over Time

ZARRIN, ARMAN (GRADE 7)
Daly City, California
Hilldale School
Catch It To Cool It: How Does the Quantity of Towers on a Wind Catcher Affect Its Capacity To Reduce Temperature

COLORADO

USCO09 Corden Pharma Colorado Regional Science Fair

RAMAN, TEJAS (GRADE 8)

Boulder, Colorado

Boulder Country Day School

Real-Time Processing of Data and Detection of Averages and Patterns From a Data Stream To Detect the Likelihood of an Earthquake in the Near Future

CONNECTICUT

USCT50 Connecticut Science & Engineering Fair

ABBAMONTE, BRENDAN (GRADE 7)

Manchester, Connecticut

Saint James School

Crusty n' Rusty – How Oxides Effect Metal Oxidation and Corrosion Rates

CHEVA, AARAV REDDY (GRADE 8)

Windsor, Connecticut

Academy of Aerospace and Engineering

Combining Optical Wireless Communications (OCW) and Neuromorphic Architecture for Large-Scale Computations

CLOTTEY, DUKE NIIAYI (GRADE 8)

Windsor, Connecticut

Academy of Aerospace and Engineering

Using Piezoelectric Sensors To Harvest Energy From Automobile Tires and Road Surface

KAALUND, MIKAH ELIZABETH (GRADE 8)

Greenwich, Connecticut

Central Middle School

The Synergistic Improvement of Indoor Air HEPA-Filtration Using Concurrent Dehumidification

MALKIN, TYLER (GRADE 8)

Greenwich, Connecticut

Central Middle School

Development of a Simple Salivary Rapid Diagnostic for the Detection of Iodine Deficiency

MANIKANDAN, PALANI ARJUN (GRADE 8)

Windsor, Connecticut

Academy of Aerospace and Engineering

Using Piezoelectric Sensors To Harvest Energy From Automobile Tires and Road Surface

STOWE, CAROLINE JORDAN (GRADE 8)

Greenwich, Connecticut

Central Middle School

Low-Cost Water Filtration Device via Phosphate and Nitrate Absorbency Pads in Combination With a Generic Paper Filter

SUREN, RITHVIK (GRADE 8)

Windsor, Connecticut

Academy of Aerospace and Engineering

Combining Optical Wireless Communications (OCW) and Neuromorphic Architecture for Large-Scale Computations

WILSON, MACKENSEY MCNEAL (GRADE 8)

Riverside, Connecticut

Eastern Middle School

Shedding Light on the Prevalence of Harmful Butylated Hydroxytoluene Preservative in Artificially Formulated Dog Foods

FLORIDA

USFL07 East Panhandle Science and Engineering Fair

OTZENBERGER, EMMALYNN (GRADE 7)

Valparaiso, Florida

Okaloosa STEMM Academy

Cooler House, Less Material

USFL09 Broward Regional Science & Engineering Fair

KALASHNYKOV, IVAN ALEXANDER (GRADE 8)

Plantation, Florida

American Heritage School

Assessing Clove's Neuroprotective Qualities in Zebrafish Induced With 6-OHDA To Model Parkinson's Disease

USFL13 Brevard South Science and Engineering Fair

LAUER, JACE (GRADE 6)

Melbourne, Florida

Homeschool

A Novel Analysis of Fibonacci Sequences

USFL15 South Florida Science and Engineering Fair

CONRAD, JULIE ASSIS (GRADE 8)

Sunny Isles Beach, Florida

Norman S. Edelcup Sunny Isles Beach K-8

The Application of Damped Sinusoids in Predicting Ripple Motion

DURHAM, THAI ARTHUR (GRADE 6)

Key Biscayne, Florida
Maritime and Science Technology Academy
Living Bricks

KIM, DANIEL (GRADE 8)

Sunny Isles Beach, Florida
Norman S. Edelcup Sunny Isles Beach K-8
The Application of Damped Sinusoids in Predicting Ripple Motion

PENA-ALCARAZ, SIMON JOSE (GRADE 6)

Miami, Florida
Howard D. McMillan Middle School
The Effect of Egg Cartons on Tomato Plant Growth

SCHÜRER, SARAH ISABELLE (GRADE 8)

Coral Gables, Florida
George Washington Carver Middle School
Unraveling Protein Complex Mysteries with AlphaFold-Multimer

SMITH, SOPHIE ELIZABETH (GRADE 6)

Key Biscayne, Florida
Maritime and Science Technology Academy
Spark Safe

USFL17 Dr. Nelson Ying-Orange County Science Exposition

ALVAREZ, ADRIAN (GRADE 8)

Orlando, Florida
Lockhart Middle School
Year I: Designing a Plant Disease Suppression Robot

BORKAR, GAURI (GRADE 7)

Orlando, Florida
Orlando Science School Middle/High Charter
Stock Market – The Unpredictable

STANLEY, JUDAH NATHANIEL (GRADE 8)

Winter Park, Florida
International Community School
The Road to Power

USFL21 St. Johns County STEM Fair

CHITTETI, NIKIT (GRADE 8)

St. Johns, Florida
Fruit Cove Middle School
ScanScription – An App That Scans Prescriptions to Create Reminders

- USFL23** **Seminole County Regional Science, Mathematics & Engineering Fair**
- MAITRA, ABHITI (GRADE 7)**
Oviedo, Florida
Jackson Heights Middle School
A New and Novel Approach To Calculate Interstellar Distances With Precision by Applying Geometric Ratios to a Square
- XU, AIDEN Z. (GRADE 8)**
Sanford, Florida
Sanford Middle School
AI-Assisted Mosquito Repellent Solution Invention and Experiment Validation
- USFL25** **Martin County Regional Science and Engineering Fair**
- CALHOUN, SAMUEL JOSEPH (GRADE 7)**
Stuart, Florida
Saint Joseph Catholic School
The Power of Water
- USFL27** **Hillsborough Regional Science Fair**
- PATEL, SAHIL (GRADE 8)**
Lutz, Florida
Martinez Middle School
The Ramifications of Fertilizers on the Microbiome of Garden Cress (*Lepidium sativum*)
- SABNIVEESU, ISHANVI (GRADE 8)**
Lutz, Florida
Sunlake Academy of Math and Science
Detecting Impurities in Wine With Sound Pattern Analysis
- USFL29** **Palm Beach Regional Science and Engineering Fair**
- GUPTA, ANYA (GRADE 8)**
Boca Raton, Florida
A.D. Henderson University Lab School
Machine Learning (ML) Model for Predicting E-Waste Toxicity [ML-PET]: Studying the Effects of Metallic Toxicants on *Daphnia magna*
- KIESLING, DYLAN (GRADE 8)**
West Palm Beach, Florida
The Greene School
VisionaryBot: Bridging Python and Object Detection Algorithm for Intelligent Robotics

MIKATI, GABRIEL (GRADE 8)

Delray Beach, Florida

American Heritage School Boca Delray

Testing the Efficacy of Nickel-Zinc Batteries in Picosatellites

PILLAI, SHIV (GRADE 8)

Delray Beach, Florida

American Heritage School Boca Delray

Advanced Deceleration Using a Porous Substance and Hydraulic Stoppers (ADUPS-HS) To Reduce the G-Force in Car Crashes

USFL30 Pasco Regional Science and Engineering Showcase

FARAG, MARY (GRADE 6)

New Port Richey, Florida

Seven Springs Middle School

Improving the CO₂ Capture of *Dracaena sanderiana* (Lucky Bamboo) Using Clinoptilolite Zeolite and Testing Different Methods of CO₂ Storage in Plants

USFL35 Clay Rotary Regional Science and Engineering Fair

ARANAGA, SOPHIE DIANE (GRADE 8)

Orange Park, Florida

Orange Park Junior High School

Got Insulin?

USFL50 State Science and Engineering Fair of Florida – Ying Scholars

AGARWAL, ADIA (GRADE 7)

West Palm Beach, Florida

Bak Middle School of the Arts

Investigating the Efficiency of the Hydrogen Energy Cycle

BOLTON, ARIANA (GRADE 8)

Vero Beach, Florida

Storm Grove Middle School

Global Warning! The Effects of CO₂ on Temperature and the Development of a Standardized Unit of Measurement to Compare Climate Change Solutions

HANISKO, LENNY (GRADE 8)

Boca Raton, Florida

Don Estridge High Tech Middle School

The Carbon Blues: Sequestering CO₂ With Submerged Aquatic Vegetation (SAV) Through Blue Carbon Farming

POPPE, COLTON (GRADE 6)

Plantation, Florida

American Heritage School

The Effects of Different Plant Extracts on the Removal of Microplastics From Salt Water

SAREH, ANDREW (GRADE 6)

Fort Myers, Florida

Paul Laurence Dunbar Middle School

Green Hydrogen: Electrolysis of Water by Photovoltaics

THOMASON, TAYLOR PENNINGTON (GRADE 7)

Upper Sugarloaf Key, Florida

Sugarloaf School

The Environmental Cost of Convenience: How Polyethylene Plastics Contribute to Ocean Acidification and Affect Marine Life

GEORGIA

USGA10 Houston Regional Science and Engineering Fair

BATTERSON, TANNER (GRADE 7)

Bonaire, Georgia

Bonaire Middle School

How Fins Change a Rocket's Altitude

USGA11 Gwinnett Regional Fair

JUNG, SUHEE (GRADE 8)

Buford, Georgia

Glenn C. Jones Middle School

Harvesting Usable Electricity From Noise

SUBASH, SIRISH (GRADE 8)

Lawrenceville, Georgia

Alton C. Crews Middle School

PestiSCAND: An AI-Based Handheld Pesticide Detector

USGA12 Rockdale Regional Science & Engineering Fair

BLOOMFIELD, ARIANA JAYLENE (GRADE 8)

Stockbridge, Georgia

General Ray Davis Middle School

The App That Helps Kids With Autism and Their Daily and Nightly Routines

USGA14 Cobb/Paulding Regional Science Fair

MAHAPATRA, SIDDHANT AJIT (GRADE 6)

Marietta, Georgia

Dodgen Middle School

Alzheimer's Chain: Target Protein Interaction Network and Molecular Docking

USGA50 Georgia State Science and Engineering Fair

MACHERI, ANAGHA (GRADE 8)

Bogart, Georgia

Malcolm Bridge Middle School

Assessing Heat Exposure Risks Around Athens

MISHRA, NEAL (GRADE 8)

Bogart, Georgia

Malcolm Bridge Middle School

Assessing Heat Exposure Risks Around Athens

MITRA-HOPE, ADISSON SHANKAR (GRADE 6)

Decatur, Georgia

Wadsworth Magnet School

Making the Red Planet Green: Can Earth Plants Grow on Mars?

SABLE, ANUSHKA (GRADE 8)

Decatur, Georgia

Wadsworth Magnet School

PS-Risk: Plastic Microparticle Pollution in Human Blood Affects Immune Cells and Leads to Tumor-Like Structure Formation in the 3D Cell Culture Assays

HAWAII

USHI05 Hawaii District Science and Engineering Fair

BALZOTTI, FINN (GRADE 8)

Hilo, Hawaii

Hilo Intermediate School

Weed Detection Using Remote Sensing and Machine Learning

TAO, JOANNA (GRADE 6)

Hilo, Hawaii

Waiakea Intermediate School

Investigation of a Safer Treatment for Cardiovascular Diseases Using the Antioxidant Properties of *Morinda citrifolia* (Noni)

TAO, LILLIAN (GRADE 8)

Hilo, Hawaii

Waiakea Intermediate School

**Investigation of a Safer Treatment for Cardiovascular Diseases
Using the Antioxidant Properties of *Morinda citrifolia* (Noni)**

USHI06 **Windward District Science and Engineering Fair**

MEDEIROS, WESLEY XIOU-CHENG (GRADE 6)

Kailua, Hawaii

Enchanted Lake Elementary School

**E-Car: An Efficient, Economical and Ecological Way
of Generating Energy**

USHI50 **Hawaii State Science and Engineering Fair**

COKER, MADILYN AIKO (GRADE 6)

Waialua, Hawaii

Saint Michael School

My Mess vs. My Robot

GODSEY, ALEXANDER (GRADE 8)

Honolulu, Hawaii

Punahou School

The Flammability of Native vs. Non-Native Grasses in Hawaii

HAISLER, NAOMI (GRADE 8)

Honolulu, Hawaii

Washington Middle School

**From *Spot it!* to Personalized Learning: Unveiling the Potential
of Finite Projective Planes**

ILLINOIS

**USIL06 **Illinois Junior Academy of Science Region V Science
and Engineering Fair****

DREWETT, GISELLE (GRADE 6)

Palo Alto, California

Homeschool

Quantitative Analysis of Epigenetic Influences by Gut Microbiota-Derived Short Chain Fatty Acids on RPI-1 Gene Expression in *C. elegans*: A Novel Investigation Into Dyslexia and ADHD Related Pathways

USIL51

IJAS State Expo

AGRAWAL, ISHAAN (GRADE 7)

Buffalo Grove, Illinois

Aptakisic Junior High School

Lotus Effect

AZHAR, MOHAMMAD HAMD (GRADE 7)

Buffalo Grove, Illinois

Aptakisic Junior High School

Lotus Effect

DONG, ANDY (GRADE 7)

Hinsdale, Illinois

Hinsdale Middle School

NoiseMapper: Empowering Communities to Monitor Noise Pollution

JONES, DARIUS (GRADE 8)

Chicago, Illinois

Whitney M. Young High School Academic Center

Structure in Primes

KIMMEL, ASHOK (GRADE 8)

Chicago, Illinois

Whitney M. Young High School Academic Center

Enhancing Division Efficiency Across Number Bases Using Pascal's Divisibility Theorems and Patterns in Divisibility Rules

LI, BOWEN (GRADE 7)

Buffalo Grove, Illinois

Aptakisic Junior High School

Lotus Effect

PATACSIL, RAPHAEL (GRADE 8)

Westmont, Illinois

Holy Trinity Catholic School

(Let It Grow) Let It Grow – Gibberellic Acid: Friend or Foe

RAJAN, AKSHARA (GRADE 8)

Chicago, Illinois
Whitney M. Young High School Academic Center
Why KNOT?

SHARIFF, ILIYAN CHRISTOPHER (GRADE 8)
Chicago, Illinois
Whitney M. Young High School Academic Center
**Enhancing Division Efficiency Across Number Bases Using
Pascal's Divisibility Theorems and Patterns in Divisibility Rules**

TIMPE, PAIGE (GRADE 7)
Palatine, Illinois
Quest Academy
**From Brew to Blue: A Comparative Study of Caffeine Removal
Methods**

WHITFORD-RODRIGUEZ, BEATRIZ (GRADE 7)
Chicago, Illinois
Skinner North Classical School
**Green Privilege: Analyzing Connections Between Tree Equity,
Air Quality, and Academic Performance in Chicago Public Schools**

YU, SOPHIE (GRADE 8)
Chicago, Illinois
Whitney M. Young High School Academic Center
Why KNOT?

INDIANA

USIN20 Hoosier Science and Engineering Fair Region 1

SISSON, ADAM JAMES (GRADE 8)
Newburgh, Indiana
Castle North Middle School
Magnetic Madness

USIN22 Hoosier Science and Engineering Fair Region 3

ALCANTARA, JOSHUA ALLEN (GRADE 7)
Indianapolis, Indiana
Sycamore School
Aloft! Airfoil Aerodynamics: Predicting Relative Airfoil Lift During

Wind Tunnel Testing With Laminar Flow

JULIUS, NATHANIEL (GRADE 6)

Greenwood, Indiana

Center Grove Middle School North

Autism Risk Identification Using Machine Learning

NAMBIAR, CHINMAY (GRADE 8)

Fishers, Indiana

Fishers Junior High School

How Do Compound and Element Gases Affect an Electric Field?

NUTHAKKI, ROHITH (GRADE 8)

Carmel, Indiana

Homeschool

W-EYE Wound Monitoring and Classification System To Detect Early Infection

USIN25

Hoosier Science and Engineering Fair Region 6

SPEER, LEIF (GRADE 7)

Terre Haute, Indiana

Honey Creek Middle School

Does a Dendroclimatic Reconstruction of the Southern Hemisphere Show a "Hockey Stick Curve"?

XU, SOPHIE YALI (GRADE 8)

Bloomington, Indiana

Jackson Creek Middle School

Telehealth: A Friend or Foe? A Novel Analysis of the Impact of Telehealth on Patients and Public Health

KENTUCKY

USKY02

Louisville Regional Science and Engineering Fair

JOAQUIN, HARPER GRACE (GRADE 7)

Louisville, Kentucky

Saint Francis of Assisi Catholic School

Determining the Effect of Aspartame on Growing Brains

KEELEY-FINE, ELENA (GRADE 8)

Louisville, Kentucky

Saint Francis of Assisi Catholic School

Exploring Plastic Leachate Effects on Learning and Memory

NAIDU, VERA (GRADE 7)

Louisville, Kentucky
Saint Francis of Assisi Catholic School
Improving a Medical Robot With Haptics and a High-Resolution
IR Camera

USKY03 Dupont Manual High School Regional Fair

PARMAR, RHEA (GRADE 8)
Louisville, Kentucky
Meyzeek Middle School
Benefiting Breast Cancer Diagnosis While Using AI

SARAVANAN, RISHIK (GRADE 8)
Louisville, Kentucky
Meyzeek Middle School
CareBot – Frugal Desktop Patient Assistant Robot Using
Real-Time Object Detection AI

SARAVANAN, TEJESH (GRADE 6)
Louisville, Kentucky
Meyzeek Middle School
CareBot – Frugal Desktop Patient Assistant Robot Using
Real-Time Object Detection AI

USKY05 Central Kentucky Regional Science and Engineering Fair

TIBREWAL, AARAV (GRADE 6)
Lexington, Kentucky
Beaumont Middle School
Isolating the Effects of Zipf’s Law to Dictionary Selection Through
Random Text

USKY50 Kentucky Science and Engineering Fair

PARK, OWEN THOMAS MCGEENEY (GRADE 6)
Louisville, Kentucky
Saint Francis of Assisi Catholic School
Exploring Regolith-Metal Static Attraction in a Martian
Atmosphere

LOUISIANA

**USLA02 Bossier Parish Community College Louisiana Region I
Science
and Engineering Fair**

DODLA, ARYAN (GRADE 7)

Shreveport, Louisiana

Caddo Parish Middle Magnet School

**Does Soil Bulk Density Affect Optimum Planting Depth
for Germination?**

TRUTSCHL, ANYA MARIE (GRADE 7)

Shreveport, Louisiana

Caddo Parish Middle Magnet School

**Low-Cost Adaptable Computer Vision Laundry Assistance for the Visually
Impaired**

MARYLAND

USMD03 ScienceMontgomery

BALAJI, DEVEN (GRADE 8)

Rockville, Maryland

Robert Frost Middle School

Scout: An AI Assistant for the Visually Impaired

USMD05 Prince George's Area Science Fair

LU, CHRISTINA (GRADE 8)

Greater Landover, Maryland

Kenmoor Middle School

Balancing pH Levels Using Rocks and Soil

MASSACHUSETTS

USMA01 Massachusetts Region V Science Fair

DO, DARYN (GRADE 7)

Brookline, Massachusetts

Roland Hayes School

Using Triboelectric Nanogenerators on Rain Gear To Harvest Energy From Rain

WANG, VERONIKA YIRU (GRADE 8)

Dover, Massachusetts

Dover Sherborn Middle School

Rescue Reach

USMA05 Massachusetts Region II State Science Fair

SATHEESH KUMAR, KAUSHIK (GRADE 8)

Shrewsbury, Massachusetts

Oak Middle School
Generating Voltage in Sucrose (Sugar) Crystals Using
Piezoelectricity

WADEKAR, ANWITA (GRADE 8)

Worcester, Massachusetts
Worcester Academy

For the Love of Peat: An Eco-Friendly Growing Medium for
Microgreens

USMA50 Massachusetts State Science & Engineering Fair

JUO, ALEXANDER (GRADE 8)

Dover, Massachusetts
Dover Sherborn Middle School

The Effects of Electric Currents on Plants

KORKIN, DANIEL (GRADE 8)

Westborough, Massachusetts
Sarah W. Gibbons Middle School

Design of a Portable Hydroelectric Generator for Natural
Water Flows

KULKARNI, JAY (GRADE 8)

Dover, Massachusetts
Dover Sherborn Middle School

Effects of Different Strengths of Voltage in Electric Currents
on Plant Growth

SAMANTA, SOHAM (GRADE 7)

Greenfield, Massachusetts
Massachusetts Virtual Academy at Greenfield

Unfolding the Tesseract: Path Unfoldings of the 4D Hypercube's
2-Skeleton

SIFAT, MIFTAH ABRAR (GRADE 7)

Shrewsbury, Massachusetts
Oak Middle School

What Factors Affect the Vitamin C Content Degradation Over
Time?

MICHIGAN

USMI02 Science and Engineering Fair of Metropolitan Detroit

CHEN, MICHAEL (GRADE 7)

Bloomfield Hills, Michigan
Cranbrook Boys Middle School
Is Stanley Cup the Winner?

CHERNOLUTSKIY, MAYA (GRADE 7)

Troy, Michigan
Larson Middle School
Exploring AI To Improve Athletic Performance

HWANG, EVAN (GRADE 8)

Troy, Michigan
Larson Middle School
Monitoring Water Pollutants With Fluorescence From a Drone Platform

SHAH, VIVAAN (GRADE 7)

Troy, Michigan
Baker Middle School
A Navigational Solution to Assist the Visually Impaired Using Machine Learning

SHARMA, SMAYAN (GRADE 8)

Troy, Michigan
Baker Middle School
Intelligent Portable Real-Time Handheld Cordless Braille Translator

USMI03 Flint Regional Science & Engineering Fair

HUANG, EMMA (GRADE 8)

Midland, Michigan
Jefferson Middle School
Controlled Drug Delivery With Alginate Beads and Hydrogel Capsules

NIX, GABRIEL THOMAS (GRADE 8)

Midland, Michigan
Jefferson Middle School
Water When You Need It – Hydrogels With Conservation Farming

MINNESOTA

USMN07 Rochester Regional Science & Engineering Fair

SOOD, SIA (GRADE 7)

Rochester, Minnesota
John Adams Middle School
Does High Technology Use Correlate With Stress in Middle School Students?

USMN50 Minnesota Academy of Science State Science & Engineering Fair

BILEK, LILLY MARIE (GRADE 7)

White Bear Lake, Minnesota

Magnuson Christian School
Factors Affecting Anode Efficiency in an Algal/Metal/Carbon/ FeCl_3
Circuit

FORTIN, DOMINIK ERNST (GRADE 6)

Prior Lake, Minnesota
Hidden Oaks Middle School
Pickup Game Starter (PUG)

KASPAR, SAMUEL CHRISTOPHER (GRADE 8)

Rochester, Minnesota
John Adams Middle School
Transforming Radiology and Patient Experiences Using Cloud
and Machine Learning

KOKOTOVICH, ALEK JAMAN (GRADE 6)

Prior Lake, Minnesota
Hidden Oaks Middle School
Pickup Game Starter (PUG)

MOHEET, EMAAN (GRADE 8)

Fridley, Minnesota
Al-Amal School
Developing and Testing Permeable Pavement Material To Prevent
Urban Flooding

MISSISSIPPI

USMS50 **Mississippi Science and Engineering State Fair**

KALLURU, ISHAAN (GRADE 8)

Long Beach, Mississippi
Long Beach Middle School
It's Not Rocket Science: Analyzing the Effects of Rocket Length
on Flight Trajectory

MISSOURI

USMO09 **Mastodon Art/Science Regional Fair**

FISCHER, JAKOB (GRADE 7)

Rolla, Missouri
Saint Patrick Catholic School
The Effect of Different UV Protectors on the Intensity of UV-A Light

MONTANA

USMT50 Montana Science Fair

DOBROWSKI, ZEALAND MURPHY (GRADE 8)
Missoula, Montana
Missoula International School
Dehydration Observation: Can Hyperspectral Remote Sensing Be Used To Estimate Fuel Moisture Content?

NEVADA

USNV02 Beal Bank USA Southern Nevada Regional Science & Engineering Fair

ANAND, AVI ATHARV (GRADE 8)
Henderson, Nevada
Coral Academy of Science Las Vegas — Sandy Ridge Campus
AI-Powered Recycle and Trash Sorting Robot

BANGALORE, SAMIR (GRADE 6)
Las Vegas, Nevada
Challenger School — Silverado
What is the Effect of the Color of Window Tint on the Temperature of Car on a Hot, Sunny Day?

NGUYEN, MILA BEATRICE (GRADE 7)
Las Vegas, Nevada
Challenger School — Silverado
Can Fibonacci Make Solar Synergy? Can Positioning Solar Mirrors Rotated at Specific Varied Angles Following a Fibonacci Sequence Derived Golden Angle, Improve Their Ability To Generate Renewable Solar Heat Energy In a Concentrating Solar-Thermal Power (CSP) Technology Model When Compared to Solar Mirrors Positioned in a Singular Horizontal Arrangement?

NEW JERSEY

USNJ02 Jersey City Medical Center/Barnabas Health STEM Showcase

BLUM, SASHA (GRADE 8)

Jersey City, New Jersey
Hudson Montessori School
The Effects of Floating Wetlands on Water Quality

STRZODKA, MIRA (GRADE 7)

Jersey City, New Jersey
Hudson Montessori School
The Effects of Floating Wetlands on Water Quality

USNJ79 Bergen County Academy Science Challenge

HOU, SOPHIA (GRADE 8)

Livingston, New Jersey
Newark Academy
The Effect of Methylcobalamin on *Vigna radiata* Germination Under Heat Stress

HUANG, OLIVIA (GRADE 7)

Englewood Cliffs, New Jersey
Englewood Cliffs Upper School
Enhancing the Efficacy of Ingested Lactase by Altering Gastric pH

LAU, BENJAMIN (GRADE 8)

Englewood Cliffs, New Jersey
Englewood Cliffs Upper School
Designing a Plant-Based Biodegradable Absorbent for Cleaning Oil Spills

VANAMALA, EESHA (GRADE 8)

Parsippany, New Jersey
Brooklawn Middle School
Psyche: A Novel Arduino-Based Method Using Probabilistic Reward Task and EEG Signaling for Major Depressive Disorder Detection

NEW MEXICO

USNM01 Central New Mexico Regional Science and Engineering Challenge

MADRID LARRANAGA, MATEO (GRADE 7)

Albuquerque, New Mexico

Jefferson Middle School

Coding an LED To Track a Tempo: Helping the Hearing Impaired and Musicians "See" a Tempo

PEARL, KONIK EMERSON (GRADE 8)

Albuquerque, New Mexico

Albuquerque Institute of Mathematics and Science

Using Flywheels in a Car To Conserve Energy During Motion

USNM50 New Mexico Science and Engineering Fair

WALD, ALISHA RIANA (GRADE 7)

Santa Fe, New Mexico

Mandela International Magnet School

Beyond Detection: Exploring the Science Behind Stealth Innovations

NEW YORK

USNY01 Dutchess County Regional Science Fair

OGINO, LION (GRADE 7)

Wappingers Falls, New York

Van Wyck Junior High School

GATORlantern Save People From Blackouts

USNY02 Long Island Science and Engineering Fair

ARBOLEDA, GABRIELLA (GRADE 8)

Westbury, New York

W.T. Clarke Middle School

The Effect of Varying Electron Donor Additions to Sediment in a Microbia Fuel Cell on the Amount of Energy Produced

BABU, ALISA MARY (GRADE 8)

Westbury, New York

W.T. Clarke Middle School

The Effect of Varying Electron Donor Additions to Sediment in a Microbia Fuel Cell on the Amount of Energy Produced

HEGDE, VAIBHAVI (GRADE 7)

Hauppauge, New York

Hauppauge Middle School

What Materials Work Best For Creating Biodegradable Plastic?

PRAMANIK, MANAAL HASSAN (GRADE 8)

Westbury, New York

W.T. Clarke Middle School

The Effect of Varying Electron Donor Additions to Sediment

in a Microbia Fuel Cell on the Amount of Energy Produced

SATHISH KUMAR, MIHIR (GRADE 7)

Hauppauge, New York

Hauppauge Middle School

BioPlastClean: An Eco Clean Solution for Microplastic Filtration

ZHUANG, ANDY (GRADE 8)

Great Neck, New York

Great Neck South Middle School

**Gene Expression Analysis of Febrile Seizure's Impact
on Mesial Temporal Lobe Epilepsy**

ZHUANG, ERIC (GRADE 8)

Great Neck, New York

Great Neck South Middle School

**Gene Expression Analysis of Febrile Seizure's Impact
on Mesial Temporal Lobe Epilepsy**

USNY78 Hunter College High School Science and Engineering Fair

BOBULESCU, CARINA ANDREEA (GRADE 7)

New York, New York

Hunter College High School

**Breaking the Wave: Tsunami Barrier Placement for Maximum
Wave Mitigation**

TANG-HOLMBERG, MONTSERRAT ANAIS (GRADE 7)

New York, New York

Hunter College High School

The Effects of Polyvinylidene Chloride on Silkworms

NORTH CAROLINA

USNC01 Charlotte-Mecklenburg Regional Science Fair

BHARADWAJ, AANYA (GRADE 7)

Charlotte, North Carolina

Randolph Middle School

**When Will Charlotte City Start Choking? Evaluating Current
Measures and Predicting Air Quality in Charlotte Using Novel
Machine Learning Application**

USNC50 North Carolina State Science Fair

GAZZANO-STERN, LASZLO (GRADE 7)

Asheville, North Carolina

Asheville Catholic School

What Type of Egg or Egg Substitute Best Insulates the Ice Cream in a Baked Alaska?

KHAIRE, REVA (GRADE 7)

Charlotte, North Carolina

Randolph Middle School

A Novel Machine Learning Approach To Predict Post-Fire Tree Mortality Using Normalized Burn Ratio (NBR) and Palmer Drought Severity Index (PDSI) Integration

MEHTA, YASH (GRADE 8)

Durham, North Carolina

Durham Academy

Using Motors to Simulate Braille

NGUYEN, ANDREW (GRADE 8)

Winston Salem, North Carolina

Hanes Magnet Middle School

Time Judged All

NORTH DAKOTA

USND03 Southeast North Dakota Regional Science and Engineering Fair

CHAMBERS, EVELYN (GRADE 8)

West Fargo, North Dakota

Homeschool

Cockroach Neuroscience: A Gateway to Human Communication

USND05 Northeast North Dakota Regional Science and Engineering Fair

YU, CHE (GRADE 7)

Grand Forks, North Dakota

South Middle School

Face Recognition for Home Security

OHIO

USOH10 University of Cincinnati Science and Engineering EXPO

MOY, CASEY (GRADE 6)

Cincinnati, Ohio
Cincinnati Classical Academy
When Cells Are Starving

PARANTHAMAN, SAMHITA (GRADE 8)

Mason, Ohio
Mason Middle School
A Novel Two-Pronged Approach To Control Harmful Algal Blooms (HABs) and Mitigate Microcystin Levels in a Freshwater Ecosystem

USOH51 State Science Day (Ohio)

PATEL, SAMIPA (GRADE 8)

Solon, Ohio
Solon Middle School
The Effects of Various Substances on Tannin-Rich Plants

OKLAHOMA

USOK02 Bartlesville District Science Fair

LAI, JONATHAN (GRADE 8)

Bartlesville, Oklahoma
Central Middle School
Go Solar, Go Green, Go Smarter: Optimizing Energy Output of Solar Panels

OREGON

USOR04 Beaverton-Hillsboro Science Expo

DORF, HAYDEN (GRADE 7)

Beaverton, Oregon
Meadow Park Middle School
Adaptive Brake Light Operator: Stopping Rear End Collisions by Revolutionizing Automobile Braking To Improve Vehicle Safety

USOR50 Northwest Science Expo

EOM, HWAEUM ABRAHAM (GRADE 8)

Beaverton, Oregon
Whitford Middle School

The Effects of Interaction Dependency in Activities and 40 Hz Auditory Stimulation on Cognitive Performance

HOU, AUDREY (GRADE 8)

Portland, Oregon

Tumwater Middle School

Math Model for Assisting the Design of Backup Power Against Inclement Weather

LIU, ALBERT (GRADE 6)

Beaverton, Oregon

Willamette Valley Academy

Nanotip Innovation: Revolutionizing Drug Delivery for Precision Cellular Interventions in Public Health Safety

MA, ANDREW (GRADE 8)

Portland, Oregon

Tumwater Middle School

Solar-to-H₂: Enhancing Green Hydrogen Generation Through PEM Electrolysis Powered by IoT-Integrated Smart Algorithm Based Solar Tracking System

MARLA, ISHA (GRADE 7)

Portland, Oregon

Tumwater Middle School

Ecogel: A Sustainable Alternative to Plastic-Based Produce Packaging Using Biodegradable Hydrogels

WHEELER, EZEKIEL (GRADE 7)

Portland, Oregon

Homeschool

An Affordable Portable Orbital Desktop Satellite Tracker

YENDURI, DAIVIK EASHAN (GRADE 8)

Portland, Oregon

Stoller Middle School

Integrating Machine Learning With Active, Dual Axis Solar Tracking for Enhanced Energy Harvesting Efficiency

PENNSYLVANIA

USPA03 Delaware Valley Science Fairs

AGGARWAL, KUSH KAPIL (GRADE 8)

Kennett Square, Pennsylvania
Charles F. Patton Middle School
Ionic Thrusters: Propelling Our Future

BANERJEE, ADWIK (GRADE 8)
Allentown, Pennsylvania
Springhouse Middle School
Sugar Overload: Effect of High Sugar Diet on the Health of *Drosophila melanogaster*

BENCKERT, CHASE (GRADE 6)
Margate City, New Jersey
Eugene A. Tighe Middle School
Energy Vampires

DUDDA, RADIKA (GRADE 7)
Voorhees, New Jersey
Voorhees Middle School
How Medicinal Herbs Benefit Gut Microbiome; Prediction Model for Drug Development

GANDHI, VEDA (GRADE 8)
Allentown, Pennsylvania
Springhouse Middle School
Powerful Plastics: The Effect of Glycerin on a Bioplastic Made With Sargassum Seaweed

IYENGAR, TYLER (GRADE 8)
Macungie, Pennsylvania
Lower Macungie Middle School
The Effect of Pesticides vs. Genetically Modified Corn on Terrestrial Invertebrates (*Acheta domesticus*) and Aquatic Invertebrates (*Caecidotea communis*)

IYENGAR, VEDANTH (GRADE 8)
Hatfield, Pennsylvania
Pennfield Middle School
Health Effects of Different Flavors of E-Cigarettes

JALANI, AYUSH (GRADE 8)
Allentown, Pennsylvania
Springhouse Middle School
A Novel Idea To Harness Electricity: A Step Towards

a Cleaner Future

JEON, SEAN (GRADE 8)

Allentown, Pennsylvania

Springhouse Middle School

**Antibiotic Resistance in *E. coli* Through Repeated Exposure:
A Comparative Study of Ampicillin, Tetracycline and Ciprofloxacin**

KANTEREZHI-GATTO, ALEXANDRA (GRADE 8)

Toms River, New Jersey

Toms River Intermediate East

Which Subspecies of *Dracaena trifasciata* Will Absorb the Most Carbon Dioxide?

RAJESH, ATHARV (GRADE 8)

Exton, Pennsylvania

Lionville Middle School

Rolling Into the Future With Piezoelectricity

SETHU, VISHAHAN VIGNESH (GRADE 7)

Exton, Pennsylvania

Lionville Middle School

Beating the Bull Market With Artificial Intelligence

YANG, LUCAS YOULIANG (GRADE 8)

Allentown, Pennsylvania

Springhouse Middle School

**Enhancing Visual Inclusivity: A Mathematical Model for Assessing Color Sets
for Those With Color Blindness**

USPA04 Pittsburgh Regional Science & Engineering Fair

ALDOUS, FELICITY (GRADE 8)

Pittsburgh, Pennsylvania

Colfax K-8

Data Analysis of Vaccine Hesitancy After the COVID-19 Pandemic

KRISHNAMURTHY, RISHABH (GRADE 7)

Pittsburgh, Pennsylvania

Dorseyville Middle School

Can Crowdsourced Weather Monitoring Work?

PUERTO RICO

TEPR05 Humacao Regional Science Fair

CRUZ TORRES, DARIANA AERIS (GRADE 7)

Canovanas, Puerto Rico

Francisco "Paco" Davila Specialized Bilingual School

Repelled Maglev Train

TEPR10 **SESO Regional Science Fair**

RODRÍGUEZ, PAOLA VICTORIA (GRADE 8)

Mayagüez, Puerto Rico

Southwestern Educational Society

The Effect of Different Amounts of Emulsifier on Processed Cheese

TEPR12 **Puerto Rico Metropolitan Science Fair**

COLLAZO, LUIS CARLOS (GRADE 8)

San Juan, Puerto Rico

Colegio San Ignacio de Loyola

How Do Different Building Structure Materials Affect the Wireless Data Signals

a Mobile Phone Receives?

LLENÍN LAVERGNE, JOSÉ ENRIQUE (GRADE 8)

San Juan, Puerto Rico

Colegio San Ignacio de Loyola

The Effect of Colors on the Attraction Potential of *Aedes aegypti* (Mosquitoes)

SOUTH CAROLINA

USSC03 **Low Country Science Fair**

HENN, ADRIANNA (GRADE 7)

Bluffton, South Carolina

H.E. McCracken

Hydraulic vs. Pneumatic Crane

TENNESSEE

USTN04 **Southern Appalachian Science and Engineering Fair**

MOOR, KRISTEN (GRADE 8)

Knoxville, Tennessee

Christian Academy of Knoxville

Limiting Lunchroom Loudness: Testing Different Sound Dampening Materials for Their Effectiveness With a Goal of Reducing Noise Levels in Loud Areas

TEXAS

USTX01 Beal Bank Dallas Regional Science and Engineering Fair

GAUTHAM, APOORVA (GRADE 8)

Irving, Texas

Uplift North Hills Preparatory

Boosted Biotics With Microbial Alchemy: A Low Cost, Scalable, Translational Approach To Propagate Probiotic Supplements in Fermented Food Matrices To Mitigate Malabsorption in Developing Countries

MANIKANDAN, GAUTAM ESVAR (GRADE 8)

McKinney, Texas

Imagine International Academy of North Texas

Emergency Response Assist Service for the Missing and Exploited

NIRMAL, AARAV (GRADE 8)

Frisco, Texas

Pioneer Heritage Middle School

Analyzing Music From the Perspective of Mathematics

SHARMA, ARYAN (GRADE 8)

Frisco, Texas

Lawler Middle School

SunSync

WANSAPURA, HIRUNI (GRADE 8)

Plano, Texas

Robinson Middle School

Sycamore Seed Inspired Fan Blade Design for a Portable Air Purifier

USTX02 Sun Country Science Fair

FERNANDEZ, ALEJANDRO DUILIO (GRADE 8)

El Paso, Texas

SSG Manuel R. Puentes Middle School
Discovering Patterns in the Distribution of Galaxies Throughout
the Night Sky

USTX03 Fort Worth Regional Science and Engineering Fair

JAWORSKI, BRODY (GRADE 6)

Keller, Texas

Indian Springs Middle School

Chemically Transforming Dead Leaves Into Adhesives

PADALA, TANVI (GRADE 8)

Flower Mound, Texas

McKamy Middle School

Enhancing Independence – A Next-Gen Switch-Adapted Pourer
for Older Adults and Individuals With Developmental and
Intellectual Disabilities

USTX04 Rio Grande Valley Regional Science and Engineering Fair

MONTELONGO, GARY ALLEN (GRADE 8)

La Joya, Texas

Lorenzo De Zavala Middle School

Rock Til' You Drop: Investigating a Train's Harmonic Rock and Roll

USTX05 Science Engineering Fair of Houston

BHODA, YASH REDDY (GRADE 8)

The Woodlands, Texas

McCullough Junior High School

Spotting the Spots: Skin Cancer Classification Using Machine
Learning

CHEN, CHRISTIAN (GRADE 7)

Houston, Texas

Homeschool

FerroFlow: Optimizing Maglev Technology Through the Integration
of Ferrofluid

CHHEDA, RONIT JUBEN (GRADE 7)

Sugar Land, Texas

Fort Settlement Middle School

What is the Next Technological Breakthrough in Batteries
for Energy Storage?

CHIDAMBARAM, RHEA (GRADE 8)

Houston, Texas

The Village School

From Landfill to Lab: Unveiling the Biodegradable Potential of Everyday Materials for Packaging

CHOI, KEVIN (GRADE 7)

Houston, Texas

Homeschool

FerroFlow: Optimizing Maglev Technology Through the Integration of Ferrofluid

KALE, SANA (GRADE 8)

The Woodlands, Texas

Creekside Park Junior High School

Identifying the Effects of Biomarkers on Breast Cancer Development Using Machine Learning

LOPEZ, ALEXA (GRADE 8)

Friendswood, Texas

Brookside Intermediate School

Modifying the Bass Drum Pedal for the Disabled

MADOF, MAX JULIUS (GRADE 8)

Houston, Texas

The Emery/Weiner School

A Temporally Calibrated Infrared Thermometric Method for Detecting Ocean-Surface Microplastics

PATEL, MAAN MAMTA-SANJAY (GRADE 8)

The Woodlands, Texas

McCullough Junior High School

MYopia: The Optical Ciliary Muscle Training App

RICE, SOPHIA OLIVIA (GRADE 8)

The Woodlands, Texas

McCullough Junior High School

Can Positive Peer Mentorship Improve Anxiety?

SUSARLA, JAIRAM (GRADE 7)

Sugar Land, Texas

The Honor Roll School

Evaluating Various ML Models to Efficiently Uncover Exoplanets

USTX11 Alamo Regional Science and Engineering Fair

AMADOR, DELILAH ISABELLA (GRADE 8)

San Antonio, Texas
Young Women's Leadership Academy
Effects of Planetary Atmospheres on the Lift of a Rotorcraft Device

USTX13 Greater Austin Regional Science and Engineering Fair

BASHARAHIL, IMAN (GRADE 7)

Austin, Texas
Renaissance Academy
Effectiveness of Natural Substances To Retain Moisture on the Skin

HIRSAVE, ARYA GOWRI (GRADE 6)

Austin, Texas
Canyon Vista Middle School
Effect of Various Antibiotics on Digestive Enzyme Activity

MAHADEVAN, SAMVITH (GRADE 7)

Austin, Texas
Canyon Vista Middle School
Novel Application of Olfactory Sensor Arrays in the Detection of Food Allergens Using Artificial Intelligence

MAHAPATRA, RAHUL (GRADE 8)

Austin, Texas
Pearson Ranch Middle School
Effect of Barley Straw and Duckweed To Control Harmful Algal Blooms

NISENFELD, SIDNEY MAXWELL (GRADE 7)

Austin, Texas
Austin Jewish Academy
Modifying Personal Electronic Behavior: A Mathematical Analysis of CO₂ Emissions

SARAF, ARNAV (GRADE 7)

Austin, Texas
Canyon Vista Middle School
Unveiling Harmonics: An Exploration of Hidden Notes in the Tanpura

SARKAR, ELINA M. (GRADE 7)

Austin, Texas

Long-View Micro School
The Rise of Thermotolerant Pathogenic Fungi

VENKATARAGAVAN, DIYA (GRADE 8)

Austin, Texas
Pearson Ranch Middle School
Advanced Weapon Detection: Enhancing Security Systems With Multi-Model Machine Learning

WANG, LIVIO (GRADE 6)

Austin, Texas
Kealing Middle School
Effects of Electroculture on *Lycopersicon lycopersicum* (Red Robin Tomato)

USTX50 Texas Science and Engineering Fair

TRIPATHI, ADYA (GRADE 6)

San Antonio, Texas
Jose M. Lopez Middle School
Using Novel, Affordable, and Sustainable Additives to Stabilize Soil: A Better Way To Prevent Structural Damage

UTAH

USUT04 Central Utah STEM Fair

BLOOD, CHARLIE (GRADE 7)

Heber City, Utah
Timpanogos Middle School
Music: A Memory Magnifier?

BOGGS, SIENA (GRADE 6)

Lehi, Utah
Challenger School – Traverse Mountain
The Effect of the Number of Angles of a Windmill Blade on the Amount of Electrical Power Generated by the Windmill

GINOS, PARKER ALAN (GRADE 6)

Lehi, Utah
Sego Lily Elementary
Magnetic Electricity

KUNDOJJALA, SRIVALLI (GRADE 7)

Lehi, Utah

Challenger School – Traverse Mountain
Waste to Whaaatt?

SHETTY, TANISH CHIRAG (GRADE 8)

Lindon, Utah

Karl G. Maeser Preparatory Academy

**Utilizing Novel Machine Learning Models To Quickly and Easily
Diagnose Malignant Breast Cancer Cells With Data Obtained From
Minimally-Invasive Methods**

USUT05 University of Utah Science and Engineering Fair

FULLER, CATHERINE (GRADE 6)

Sandy, Utah

Challenger School

Under Pressure

HABIB, DALIA (GRADE 7)

Salt Lake City, Utah

Challenger School – Salt Lake

Biomass to Biofuel

KIM, PETER MIN (GRADE 8)

Salt Lake City, Utah

West High School

**Can Cannabis Legalization for Adults Lead to a Rise in Adolescent
Cannabis Use?**

KINSEY, ROWAN JAMES (GRADE 6)

Millcreek, Utah

Canyon Rim Academy

**What Common Household Materials Filter Roof-Harvested
Rainwater the Best?**

MANDIWAL, AASHITA (GRADE 7)

Salt Lake City, Utah

West High School

Using Fractal Analysis to Detect Abnormalities in Cancerous Cells

SRIDHAR, ADITYA (GRADE 8)

Sandy, Utah

Challenger School

**Innovative Microplastics Removal: A Deep-Learning and Ferrofluid
Approach**

STOLL, LIAM EDWARD (GRADE 7)

Millcreek, Utah

Churchill Junior High
Airfoil Modifications To Improve Lift

XU, ALBERT MA (GRADE 8)

Sandy, Utah

Challenger School

Bioplastics With Red Cabbage Anthocyanins: Synthesis and Application as pH-Sensitive Sensors

ZHANG, SOPHIA YUXIN (GRADE 8)

Salt Lake City, Utah

Rowland Hall Middle School

Green Solution for Blue Gold: Examining Three Types of Biodegradable Hydrogels on Water Conservation in Irrigation

USUT07 Harold W. & Helen M. Ritchey Science and Engineering Fair of Utah

SHARMA, PRATHAM (GRADE 7)

North Logan, Utah

Thomas Edison Charter School

Solar-Powered Boat

VIRGIN ISLAND

TEVI02 Good Hope Country Day School Science Fair

ADAMS, AVERY (GRADE 7)

Kingshill, Virgin Island

Good Hope Country Day School

Science Friction

VIRGINIA

USVA01 Northern Virginia Science and Engineering Fair

AYALEW, MAEDOT TINSAE (GRADE 7)

Arlington, Virginia

Kenmore Middle School

The Effects of Seasonal Variation on the Kinematics of Coronal Mass Ejections Using the Solar and Heliospheric Observatory Satellite

LEANING, ALEXANDRA (GRADE 8)

Arlington, Virginia

Gunston Middle School
Rotating Rockets: A Comparative Analysis of 3D Printed Rocket
Fins
and Their Aerodynamic Influence

MIRABILE, MASON (GRADE 8)
Arlington, Virginia
Williamsburg Middle School
A Model of Acceleration in Sports Cars

USVA02 Virginia Piedmont Regional Science Fair

FLYNN, PARKER (GRADE 7)
Charlottesville, Virginia
Homeschool
Testing Corrosion: Types of Cathodic Protection of Steel

**USVA06 Prince William-Manassas Regional Science and
Engineering Fair**

LU, LILY (GRADE 7)
Haymarket, Virginia
Ronald Wilson Reagan Middle School
The Effect of Different Types of Bivalve Shell Filtration on Stream
Water Quality

WAHDAN, LANA SAMEH (GRADE 8)
Bristow, Virginia
Marsteller Middle School
Suture Self! Untying the Knot in Surgical Sutures

USVA09 Tidewater Science and Engineering Fair

ROSSI, ISABEL (GRADE 6)
Williamsburg, Virginia
James Blair Middle School
The Effect of the New WJCC Attendance Policy on the Spread
of Flu in Schools

**USVA78 Greater Northern Virginia Science and Engineering Fair for
Elementary and Middle School**

MUZAFFAR, NARGIZA (GRADE 7)

Chantilly, Virginia
Pinnacle Academy

Which Carrier Is Merrier? Whatever Breaks the Barrier! Evaluating the Efficiencies of Small Molecule Ligands as Potential Drug Carriers To Bind to the P-Glycoprotein Transport Modulator in Increasing Blood-Brain Barrier Penetrability

WASHINGTON

USWA50 **Washington State Science and Engineering Fair**

DEVARAJAN, VEDIKA (GRADE 7)

Redmond, Washington
Timberline Middle School

Project ASSURE: A Revolutionary Diagnostic Approach of Viable Biomarker Analyzation & Prevention of Epilepsy Misdiagnosis Through Machine Learning

KUTTY, SHRIYA (GRADE 7)

Redmond, Washington
Timberline Middle School

ScaNose: Development of a Non-Invasive Device for Blood Glucose and COPD Risk Estimation

NGUYEN, LILY (GRADE 8)

Seattle, Washington
Madison Middle School

Efficient Encryption Using Large Primes for Secure Communication

NUNE, ROHAN NAGA (GRADE 8)

West Richland, Washington
Leona Marshall Libby Middle School

Powering the Future: Iron-Based Batteries for Sustainable Energy Storage

WISCONSIN

USWI50 **Badger State Science and Engineering Fair**

OLOWU, ADENIKE PRECIOUS (GRADE 7)

Milwaukee, Wisconsin
Golda Meir School

Development of a Literature-Based Methodology for Educating on Water Contamination and Filtration Using Common Household Materials

WYOMING

USWY50 **Wyoming State Science Fair**

RAMSANKAR, VAIGA (GRADE 8)

Laramie, Wyoming

Laramie Junior High School

**Herbicide vs. Native Plants: How Are Dark Septate Endophytes
of Native Plants Affected by Herbicide?**



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