TOP 300 MASTERS 2021

About Broadcom MASTERS

Broadcom MASTERS® (Math, Applied Science, Technology and Engineering for Rising Stars), a program of Society for Science, is the premier middle school science and engineering fair competition, inspiring the next generation of scientists, engineers and innovators who will solve the grand challenges of the 21st century and beyond. We believe middle school is a critical time when young people identify their personal passion, and if they discover an interest in STEM, they can be inspired to follow their passion by taking STEM courses in high school.

As the only middle school STEM competition that leverages Society-affiliated science fairs as a critical component of the STEM talent pipeline, the Broadcom MASTERS consists of the top 10 percent of 6th, 7th, and 8th grade projets entered in Society-affiliated fairs around the country. After submitting the online application, the Top 300 MASTERS are selected by a panel of scientists, engineers, and educators from around the nation.

The Top 300 MASTERS 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). Top 300 MASTERS also receive a prize package that includes an award ribbon, a Top 300 MASTERS certificate of accomplishment, a Broadcom MASTERS backpack, a Broadcom MASTERS decal, a one-year family digital subscription to *Science News* magazine, an Inventor's Notebook, courtesy of The Lemelson Foundation, a one-year subscription to Wolfram Mathematica software, courtesy of Wolfram|Alpha Notebook Edition, and a special prize from Jeff Glassman, CEO of Covington Capital Management. In recognition of the role that teachers play in the success of their students, each Top 300 MASTERS' designated teacher also will receive a Broadcom MASTERS tote bag, a one-year digital subscription to *Science News* magazine, and a booklet of *Science News for Students* Invention and Innovation articles, courtesy of The Lemelson Foundation.

From the Top 300 MASTERS group, 30 finalists are announced on September 14. They will present their research projects and compete as teams in STEM challenges to demonstrate their 21st Century skills in critical thinking, collaboration, communication and creativity at the Broadcom MASTERS finals. Top awards include a grand prize of $25,000, stipends for STEM summer camps and more.

Broadcom Foundation and Society for Science thank the following for their support of the 2021 Broadcom MASTERS:

- Samueli Foundation
- DoD STEM
- Robert Wood Johnson Foundation
- The Lemelson Foundation
- Jeff Glassman, CEO Covington Capital Management
- Robert John Floe, President Floe Financial Partners
- TIES
- Wolfram Research
- *Science News for Students*
- Smithsonian Environmental Research Center
- Society for Science's Affiliated Regional and State Science and Engineering Fairs
- Parents, teachers and mentors of the 1,841 Broadcom MASTERS entrants

2021 Top 300 MASTERS

Students are listed in order by school state, fair code, and name of school based on information provided by each student in their entry. Students listed under the regional fair may also have qualified through their state fair. 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 2021.

Visit **https://findafair.societyforscience.org** to look up Broadcom MASTERS affiliated fairs by state.

*** Top 300 MASTERS nominated by both regional and state fair.**
 # Next to the name indicates previous selection as a Top 300 Broadcom MASTERS

ALABAMA

USAL01 Greater East Alabama Regional Science and Engineering Fair

CHRISTOPHER VALERI (GRADE 7)
Prusa versus Voron: Printing PLA
East Samford School
Auburn, Alabama

USAL50 Alabama Science and Engineering Fair

ARIAN PHILLIPS (GRADE 8)
Don't Believe Everything You Smell: The Effects of Cooking Pollution on Human Vitals and Pulmonary Functions
Home School
Madison, Alabama

SAHISHNU SAHA (GRADE 8)
Machine Learning to Identify Near Earth Objects (NEOs)
Liberty Middle School
Madison, Alabama

ARIZONA

USAZ03 Southern Arizona Research, Science and Engineering Fair

SAM ROHRBACH (GRADE 6)
X-Rays vs. Altitude: Which Exposes You to More Radiation — A Trip to the Mountains or a Trip to the Dentist?
Home School
Tucson, Arizona

USAZ50 Arizona Science and Engineering Fair

ALEXIS RAI KELLEY (GRADE 8)
The Logic in Logos
Mesa Academy for Advanced Studies
Mesa, Arizona

MIKOLAS ALEXANDER SCHWICKERT (GRADE 6)
Effect of Wind Speed on Social Distancing
Arizona Virtual Academy
Glendale, Arizona

ADDISON JOSEPHINE SHELL (GRADE 6)
The Effect of Light Color on the Rate of Photosynthesis of a Spinach Leaf Disk
Arizona College Prep — Oakland
Chandler, Arizona

PRISHA SHROFF (GRADE 8) #
AI-Based Wildfire Prevention System
Accelerated Middle School at Basha High School
Chandler, Arizona

ARKANSAS

USAR05 Central Arkansas Regional Science and Engineering Fair

SOHAN SATEESH JAYAPPA (GRADE 7)
Effect of Smartphone Usage on Hand Grip and Pinch Strength: An Observational Study
LISA Academy — West
Little Rock, Arkansas

KARTIK JOSHI (GRADE 8)
Making the Most of Limited Tests: Pool It!
LISA Academy — West
Little Rock, Arkansas

CALIFORNIA

USCA01 Orange County Science and Engineering Fair

CLARA CHOI (GRADE 8)
EEG Study of Virtual Learning Demonstrates Worsened Learning Outcomes and Higher Mirror Neuron Activation
Orange County School of the Arts
Santa Ana, California

CHLOE ELZABETH DORMAN (GRADE 8)
Improving Vaccines with Tardigrade Biomimicry
Stratford School — Mission Viejo
Mission Viejo, California

HUSSEIN HIRANI (GRADE 7)
The Effect of Different Types of Blades on the Efficiency of a Wind Turbine
Serrano Intermediate
Lake Forest, California

ALEXANDRA IMESHEV (GRADE 6)
Disposable Facemasks Filter Micron-Sized Particles Better than Reusable Facemasks
Turtle Rock Elementary School
Irvine, California

PHOEBE K. MORRIS (GRADE 7)
Personality and Perceptions: How Being Extroverted/Introverted Affects the Accuracy of One's Self-Evaluation on One's Performance
Orange County School of the Arts
Santa Ana, California

TARINI NEELADARAN (GRADE 8)
The Design and Creation of a Solar Powered Trail Safety Device that Uses RF Signals
Serrano Intermediate
Lake Forest, California

LARA TSENG (GRADE 8) #
Eggshell Consumption in Different Reproductive Stages and Broods of the Western Bluebird, Sialia mexicana
Serrano Intermediate
Lake Forest, California

USCA02 Los Angeles County Science and Engineering Fair

SIMREN BINDRA (GRADE 6)
Hydroelectricity: Reclaiming Water in Cities to Generate Electricity
Chandler School
Pasadena, California

ANANYA GUPTA (GRADE 7)
Growing in the Dark: Measuring the Impact of Chronic Air Pollution on Vegetable Growth and Health
Geffen Academy at UCLA
Los Angeles, California

FRANCIS JACK LAWTON (GRADE 6)
Safer Shakes: Which Shape of House Takes the Least Damage in an Earthquake?
St. Timothy School
Los Angeles, California

NANAR SHAHINIAN (GRADE 8)
Sweet but Fatal: The Effect of Different Sugar Concentrations on the Lifespan of Drosophila melanogaster
Vahan and Anoush Chamlian Armenian School
La Crescenta, California

LILLIAN SHAMAMIAN (GRADE 8)
Testing the Performance of Different Face Masks
Vahan and Anoush Chamlian Armenian School
La Crescenta, California

ASTRID ZAMIR (GRADE 8)
The Effect of Sperm Whale Recordings on Dwarf Ceriths' Behavior
The Archer School for Girls
Los Angeles, California

USCA03 Fresno County Science Fair

ISABELLE ANN LUNA (GRADE 8)
Researching the Effectiveness of Botanical Substances on the Regeneration Rate of Planarian
Washington Academic Middle School
Sanger, California

JULIE LUNA (GRADE 6)
Effectiveness of Solar Distillation in Removing Pollutants from Contaminated Water
Reagan Elementary School
Sanger, California

USCA05 Greater San Diego Science and Engineering Fair

CHARLOTTE BIRCH (GRADE 6)
The Effect of Different Types of Fat on How Cakes Rise, Their Taste, Texture and Appearance
City Tree Christian School
San Diego, California

LOGAN BROWN (GRADE 8)
Visualizing Complex, Time-Dependent, Fourier Transform Functions in Three-Dimensions
High Tech Middle
San Diego, California

ARNAV DAGAR (GRADE 7)
A Study of AI Agents for Two Player Games
Pacific Trails Middle School
San Diego, California

SIDARTH ERAT (GRADE 8)
The Colonel Blotto Game: An Analysis and Extensions to Networks
Carmel Valley Middle School
San Diego, California

LEANNE FAN (GRADE 7)
Controlling Ear Infections Using the Light Spectrum
Mesa Verde Middle School
San Diego, California

SARAH GAO (GRADE 8)
Stop the Staph: Targeting Antibiotic Resistant Protein NorA
Pacific Trails Middle School
San Diego, California

ANIRUDH KALYANARAMAN (GRADE 8)
Optimization of Canard Configuration to Enhance Aircraft Carrier-Based Operations
Mesa Verde Middle School
San Diego, California

TANYA MANDYAM (GRADE 7)
How Jet Lag Affects Exercise Output
Mesa Verde Middle School
San Diego, California

ELLA ROBERTS (GRADE 7)
Memorable Music
Bonita Vista Middle School
Chula Vista, California

KATE XU (GRADE 8) *
Identifying Patterns in Kawasaki Disease Patients through Statistical Analysis and Machine Learning
Oak Valley Middle School
San Diego, California

KAYLEY XU (GRADE 6)
Cooling Straw
The Bishop's School
La Jolla, California

USCA06 Golden Gate STEM Fair

VIOLET RAE MACAVOY (GRADE 6)
Can Kelp Be the Future to Cleaner Oceans and Water Treatment?
William Crocker Middle School
Hillsborough, California

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

ANISH SRIRAM BHETHANABOTLA (GRADE 8) #
Advent — A Comprehensive Low-Cost Automatic Ventilator and Vital Signs Monitor
Joaquin Miller Middle School
San Jose, California

AVA TAN BHOWMIK (GRADE 7)
A Novel Home-Built Metrology to Visualize Oral Fluid Droplets and Quantify the Efficacy of Masks
The Harker School
San Jose, California

ORCHITA CHAKRABORTY (GRADE 6)
The Design of an Oil Boom with Magnets that Will Efficiently Clean Up Ocean Oil Spills Magnetized with Nanoparticles
Stratford School — Sunnyvale Raynor Middle School
Sunnyvale, California

CARINA GROSS (GRADE 6) *
Perfect Form: Using Audio Feedback to Maximize Athletic Performance
Terman Middle School
Palo Alto, California

ANANTH U. KINI (GRADE 8) *
Investigating the Effects of Hydroponics and Aquaponics on Plants
Juan Cabrillo Middle School
Santa Clara, California

PRANEEL ANIL SHAH (GRADE 8) #
Utilizing a Bioelectrochemical System with Phototrophic Bacteria to Generate Clean Water and Electricity
John F. Kennedy Middle School
Cupertino, California

SOWMYA SUNDAR (GRADE 7)
Reusing Greywater — Using Natural Materials to Remove Contaminants in Greywater
Challenger School — Berryessa
San Jose, California

ZAAINA SABEEL SYEDA (GRADE 8)
Investigating the Effects of Aquaponics and Hydroponics
Juan Cabrillo Middle School
Santa Clara, California

AADRIT TALUKDAR (GRADE 7)
Smart and Reusable Packaging Solution for Online Order Shipments
BASIS Independent Silicon Valley
San Jose, California

ZOE H. WONG (GRADE 7)
Characterizing Integer Sequences Using Empirical Statistical Laws
Sam H. Lawson Middle School
Cupertino, California

SAAMYA YADAV (GRADE 8)
Investigating the Effects of Aquaponics and Hydroponics
Juan Cabrillo Middle School
Santa Clara, California

USCA08 Contra Costa County Science and Engineering Fair

SANIA BIDURUKONTAM (GRADE 8) *
SpatialX: Training Tool to Improve Spatial Abilities
Gale Ranch Middle School
San Ramon, California

LUCAS KATZ (GRADE 7) #
Underwater Wireless Transmission of Data and Energy between an Underwater Robot and a Floating Base-Station
Joaquin Moraga Intermediate School
Moraga, California

USCA09 Synopsys Alameda County Science & Engineering Fair

DAYAKSHIN ARUMUGAM (GRADE 6)
Stay Focused When You Are on Toad!
Cottonwood Creek K–8 School
Dublin, California

ANGELINA CHEN (GRADE 8)
Danger in the Air: The Efficacy of Face Coverings Over Extended Usage
William Hopkins Junior High School
Fremont, California

RYKA C. CHOPRA (GRADE 7)
Does the Tail Wag the Dog, After All? Obesity Clusters & Their Influence on Predatory Location Choice of New Fast Food Chain Franchisees
William Hopkins Junior High School
Fremont, California

SAAHIRA DAYAL (GRADE 8) *
Use of Ferrofluids as a Water Purifier for Fertilizer and Microplastic Impurities
Challenger School — Ardenwood
Newark, California

MEERA IYER (GRADE 8)
The Effect of Various Carbohydrates and Oil on the Size of Curcumin Nanoparticles
BASIS Independent Fremont
Fremont, California

ADITI KIRAN (GRADE 8)
The Effect of Lithium Bromide as an Additive on the Energy Stored in an Aqueous Electrolyte-Based Supercapacitor
BASIS Independent Fremont
Fremont, California

SUHAANSAI THATIKONDA (GRADE 7)
What Is the Effect of Different Types of Light on Tardigrades?
Thornton Junior High School
Fremont, California

USCA13 San Bernardino, Inyo, Mono, (SIM) Science and Engineering Fair

AMBER LIN (GRADE 6) *
Fundamentals of Fog Formation and Measuring Cloud Opacity
Country Springs Elementary School
Chino Hills, California

USCA15 Riverside County Science and Engineering Fair

CORAL NOONAN (GRADE 6)
Down to the Roots
Santa Rosa Academy
Menifee, California

DIEGO ALEJANDRO RUIZ (GRADE 7)
Fire-Delaying Eggshells
Vista Heights Middle School
Moreno Valley, California

PALOMA VARGAS (GRADE 8)
Seeing with Sound
Vista Heights Middle School
Moreno Valley, California

USCA16 San Mateo County Office of Education STEM Fair

SONYA KOTHARI (GRADE 8)
Ideal Conditions: Bread Making
Central Middle School
San Carlos, California

LUCA YOUNES (GRADE 8)
Design and Construction of a Low-Cost, Small-Form Factor, Thin Film Thermal Deposition System
La Entrada Middle School
Menlo Park, California

USCA50 California Science & Engineering Fair

SERENA GANDHI (GRADE 7)
C.H.I.P (Covid Help Intelligent Patrol) — A Robot to Ensure Health and Safety of People in Public Places
Juan Cabrillo Middle School
Santa Clara, California

EAMON GORDON (GRADE 8)
Assessing the Effect of Voice Onset Time on the Perception of English Consonants
Goleta Valley Junior High School
Goleta, California

CHARLES HENRY GORMAN (GRADE 6)
Pump & Circumstance
Home School
Chula Vista, California

VICTORIA ELIZA HARDING BRADLEY (GRADE 7)
Food for Thought
Nativity Catholic School
Menlo Park, California

KINNOREE RABEYA PASHA (GRADE 6)
Soil Moisture and Light Sensor-Based Estimation of Water Requirement for Green Chili Plants in Indoor Condition
Fugman Elementary School
Fresno, California

ILESH SUNDAR (GRADE 7)
Radiation Station: What is the Effect of Material Type on the Amount of Particulate and Electromagnetic Radiation Blocked?
Challenger School — Berryessa
San Jose, California

CORA TALLMAN (GRADE 8)
Effects of Parking Lot Sediment Runoff on the Mortality Rates of Daphnia *at the Arcata Marsh*
Kneeland School
Kneeland, California

HIMA THOTA (GRADE 8)
Detecting Nutrient Deficiencies and Optimizing Plant Health Using Machine Learning
The Harker School
San Jose, California

ANNA VIRSIK (GRADE 7)
The Impact of Different Face Masks on Exercise
La Entrada Middle School
Menlo Park, California

USCA78 Irvine Unified School District Fair

SEBASTIAN RAE ALEXIS (GRADE 7) *
Quantifying the Effectiveness of Lockdown Measures Using Effective Reproduction Number (Rt) of SARS-CoV2
Sierra Vista Middle School
Irvine, California

HADISA ANSARI (GRADE 8)
The Peel Deal
South Lake Middle School
Irvine, California

CADEN JOSEPH BOLTON (GRADE 8)
The Peel Deal
South Lake Middle School
Irvine, California

VISHAALAKSHI NACHIAPPAN (GRADE 8)
The Peel Deal
South Lake Middle School
Irvine, California

CLORIS SHI (GRADE 8) *
Analysis of the Amino Acid Frequencies in the Receptor-Binding Domains of Six Coronaviruses (229E, NL63, HKU1, SARS-CoV, MERS, and SARS-CoV-2)
Jeffrey Trail Middle School
Irvine, California

HAILEY MIYA VAN (GRADE 8)
Multi-stressor Analysis of Carbon Dioxide on Oceanic Ecosystems: Using Climate Change Modeling to Study Hypoxia and Acidification
Jeffrey Trail Middle School
Irvine, California

JACQUELINE ZHOU (GRADE 8)
The Sound of Rescue: How a Sound's Frequency Affects Its Properties
Venado Middle School
Irvine, California

COLORADO

USCO09 Corden Pharma Colorado Regional Science Fair

CHLOE SEBEK (GRADE 8) * #
The Effect of Essential Oil on Ascorbic Acid Decay in Citrus Juice
Sacred Heart of Jesus School
Boulder, Colorado

KELLY YANG (GRADE 8) *
ABA-Lanced Response: The Effect of External Abscisic Acid on Plant Stress Conditions
Summit Middle Charter School
Boulder, Colorado

USCO50 Colorado Science and Engineering Fair

TIANYI EVANS YAN GU (GRADE 8)
Using Natural Language Processing to Analyze and Improve Communication
Summit Middle Charter School
Boulder, Colorado

CONNECTICUT

USCT50 Connecticut Science & Engineering Fair

ZARA HAQUE (GRADE 8)
Can Trust Kill? COVID-19 & Social Capital
Eastern Middle School
Riverside, Connecticut

SNIGTHA MOHANRAJ (GRADE 8) #
Implementation of Metal-Oxide-Induced Agglomeration and Electromagnetic Filtration for Removal of Microplastics
Engineering and Science University Inter-district Magnet School
Hamden, Connecticut

FLORIDA

USFL01 Heartland Regional Science and Engineering Fair

ELISA NOEL VIRKLER (GRADE 6)
Pitch Perfect
Hill-Gustat Middle School
Sebring, Florida

USFL05 Thomas Alva Edison Kiwanis Science and Engineering Fair

KURUKULASURIYA NISHINI FERNANDO (GRADE 7) *
Microplastic Interaction in Aquatic Primary Consumers: Potential for Biomagnification
Paul Laurence Dunbar Middle School
Fort Myers, Florida

ANIKA KOKA (GRADE 8)
The Effect of the COVID-19 Pandemic on the Mental Health of Teenagers
Canterbury School
Fort Myers, Florida

SOPHIA SMITH (GRADE 8)
How Does Wax Type Affect Burn Rate and Soot Concentration of Candles?
Saint Andrew Catholic School
Cape Coral, Florida

ANNELIESE HSIAO (GRADE 7)
The Effect of a Hot Car Interior on Hand Sanitizer Alcohol Content
American Heritage School
Plantation, Florida

USFL10 Northeast Florida Regional Science and Engineering Fair

MARCO ALEXANDER CHUA (GRADE 6)
Stop Cross-Contact: How Proper Washing of Shared Utensils Can Keep People with Food Allergies Safe
Saint Paul's Catholic School — Riverside
Jacksonville, Florida

USFL14 Brevard Intracoastal Regional Science and Engineering Fair

TWISHA BHATTACHARYYA (GRADE 7)
Pills, Pain-Relievers, pH: Effect of GI pH on OTC Pain Medicine Absorption
Edgewood Junior/Senior High School
Merrit Island, Florida

ENZO BLAKE CARTER (GRADE 7)
The Effectiveness of BBO Crystals in Quantum Ghost Imaging
Herbert C. Hoover Middle School
Indialantic, Florida

TRACEY QIAOXI CHEN (GRADE 8)
Seaweed Supplements for Agriculture?
Herbert C. Hoover Middle School
Indialantic, Florida

SHARANYA NATARAJAN (GRADE 7) *
Suppress that Algae: Mitigating the Effects of Harmful Algal Blooms through IoT to Aid in Preemptive Detection and Suppression
Edgewood Junior/Senior High School
Merritt Island, Florida

USFL15 South Florida Science and Engineering Fair

EMILY TSIROS (GRADE 8) *
Flames in Microgravity
Archimedean Middle Conservatory
Miami, Florida

USFL16 Big Springs Regional Science Fair

ALYNZA ISABELLA MCBRIDE (GRADE 8) *
Can Hydrologic Records Be Reconstructed Using Tree Rings from the Upper Withlacoochee River?
South Sumter Middle School
Webster, Florida

USFL17 Dr. Nelson Ying-Orange County Science Exposition

TIFFANI RAI GAY (GRADE 8)
MRTIE: Medically-Reliable Technologically-Improved Enclosure
Orlando Science School Middle/High Charter
Orlando, Florida

ATREYA MANASWI (GRADE 8) *
Finding the Best Novel, Safe, and Organic Treatment to Attract Small Hive Beetles and Improve Honey Bee Strength (Year 2 Study)
Orlando Science School Middle/High Charter
Orlando, Florida

ELLIET HARPER MCDERMED (GRADE 7)
How Florida Residents Can Help Solve the Algae Bloom Crisis
Trinity Preparatory School
Winter Park, Florida

USFL21 St. Johns County Science Fair

MARIA VITTORIA ELENA RUTHERFORD (GRADE 8) *
A Bright Idea for Treating Lung Infections: Studying the Propagation of UV Light in a Phantom Medium for Pulmonary Surfactant Lipids Using a Common Household Item
Palmer Catholic Academy
Ponte Vedra Beach, Florida

EMMA GRACE YORK (GRADE 6) *
Testing the Efficiency of Different Curvatures of the Blades of a Savonius Wind Turbine
Freedom Crossing Academy
Saint Johns, Florida

USFL23 Seminole County Regional Science, Mathematics & Engineering Fair

MOITRI SANTRA (GRADE 7) *
Innovative Engineering Tools for Controlling Harmful Algal Bloom (HAB): Year 2
Jackson Heights Middle School
Oviedo, Florida

ARVID CHARLES LARSSON VAIDYANATHAN (GRADE 8) *
Photometer Measurements of the Rayleigh Light-Scattered Intensity of Different Concentrations of COVID-19 Sized Nanoparticles
Sanford Middle School
Sanford, Florida

USFL25 Martin County Regional Science and Engineering Fair

NINA GOYAL (GRADE 6) #
Greenhouse Gases Showdown
Hidden Oaks Middle School
Palm City, Florida

VARUN SINGH (GRADE 7) *
Busted! Monitoring Hand Hygiene with Smart RFID Technology: Part 2
Dr. David L. Anderson Middle School
Stuart, Florida

USFL27 Hillsborough Regional Science Fair

TANISHKA B. AGLAVE (GRADE 6)
Screening of Alternative Hosts for Pestalotiopsis Disease in Strawberry and Its Validation through PCR
Williams Middle Magnet School
Tampa, Florida

MAKANA SALIM-UESI (GRADE 8) *
Designing a Sustainable Water Collection and Filtration System for Water-Stressed Communities
Turner/Bartels K-8 School
Tampa, Florida

USFL28 Brevard Mainland Regional Science and Engineering Fair

LEX HOOD (GRADE 7)
Environmental Conditions Affecting Corrosion of Ground Structures in a Launch Environment
Andrew Jackson Middle School
Titusville, Florida

USFL29 Palm Beach Regional Science and Engineering Fair

BIANCA BERNHARD (GRADE 6)
Comparing the Efficiencies of Different Methods of Biological and Technological Carbon Sequestration
The Weiss School
Palm Beach Gardens, Florida

BRIANNA MARTURANO (GRADE 8) #
Is Pseudomonas fluorescens *the Answer to Environmental Pollution?*
Home School
Wellington, Florida

USFL31 Indian River Regional Science and Engineering Fair

HUNTER COOK (GRADE 7) *
Masks, Masks, and More Masks
Sebastian Charter Junior High School
Sebastian, Florida

USFL50 State Science and Engineering Fair of Florida - Ying Scholars

KEERTHI CHANDRAN (GRADE 7)
Are Sugar Substitutes a Stretch?
North Naples Middle School
Naples, Florida

GIANNA CATHERINE FRINO (GRADE 8)
The Inhibitory Effects of Environmentally-Safe Essential Oil Compounds on the Proliferation of Cyanobacteria
Pine Ridge Middle School
Naples, Florida

RANI GUPTA (GRADE 6)
Does Adding Natural Starch Prevent Soil Erosion?
David C. Hinson Sr. Middle School
Daytona Beach, Florida

DHRUVA SHARMA (GRADE 8)
Protective Efficiency of Masks in Preventing the Spread of COVID-19: Comparing Different Types of Masks and the Optimal Positioning of the Mask on the Wearer's Face
Paul Laurence Dunbar Middle School
Fort Myers, Florida

GEORGIA

USGA06 Henry County Science and Engineering Fair

JONATHAN DORMINY (GRADE 8) #
Amateur Band Text Radio for Emergency Use, Year 3
Home School
McDonough, Georgia

USGA09 Griffin RESA Regional Science Fair

JONAH JERIMIAH BEGLEY (GRADE 7)
Pesticides: An Organic Approach to a Common Problem
Rising Starr Middle School
Fayetteville, Georgia

USGA10 Houston Regional Science and Engineering Fair

CHARLOTTE ANNIE WHITE (GRADE 7) *
Major vs. Minor Keys: The Emotional Response
Bonaire Middle School
Bonaire, Georgia

USGA11 Gwinnett Regional Fair

ALIANA ARIF DANDAWALA (GRADE 8)
Sinkhole Prevention Tactics
Alton C. Crews Middle School
Lawrenceville, Georgia

RHEA DENISH SHAH (GRADE 8)
Maximizing Clean Energy with a Dynamic Solar Panel
Richard Hull Middle School
Duluth, Georgia

USGA14 Cobb/Paulding Regional Science Fair

TEJAS KADADI (GRADE 8)
Using Mealworms to Biodegrade Plastic Pollutants
Marietta Middle School
Marietta, Georgia

USGA50 Georgia State Science and Engineering Fair

AARUSHI GUIN (GRADE 8)
Smart Slouch Arrester
Fulton Science Middle School
Alpharetta, Georgia

GUAM

TEGU01 Guam Island-Wide Science Fair

ANAIAH SKYE TAREYAMA (GRADE 6)
Analyzing Properties of Water from Plants Historically Used as Drinking Water on Guam
Luis P. Untalan Middle School
Barrigada, Guam

HAWAII

USHI05 Hawaii District Science and Engineering Fair

LEYA VARRICATT (GRADE 8)
Fumigation with Natural Substances: An Effective Method to Eliminate Avocado Lace Bugs (Pseudacysta perseae)
Hilo Intermediate School
Hilo, Hawaii

USHI08 Honolulu District Science & Engineering Fair

MICHAEL HUI (GRADE 8)
Gas Stove Catalytic Converter
Kaimuki Middle School
Honolulu, Hawaii

KEISUKE KWONG (GRADE 8) *
Would You Like a Cool Mask?
Washington Middle School
Honolulu, Hawaii

USHI50 Hawaii State Science and Engineering Fair

LEXI JO BREWER (GRADE 6)
Carbon Dioxide Concentration and Global Warming: Will Plants Absorbing CO_2 in My Terrarium Lower Overall Temperature?
Mokapu Elementary School
Kailua, Hawaii

JESSIE NEEL (GRADE 7)
Candy Shell Dye & the Rate of Diffusion
Kahuku High and Intermediate School
Kahuku, Hawaii

ILLINOIS

USIL01 Chicago Public Schools Student Science Fair

SIMONE BEATRICE GREICIUS (GRADE 7)
How Does Color Affect Perception of Taste
Thomas J. Waters Elementary School
Chicago, Illinois

USIL05 Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair

AARUSHI TIWARI (GRADE 8)
Designing Biologging Tag Form to Reduce the Hydrodynamic Loading on Marine Life
Aptakisic Junior High School
Buffalo Grove, Illinois

INDIANA

USIN20 Hoosier Science and Engineering Fair Region 1

MAHIKA SANJANA MALKANI (GRADE 7)
Emulsification Demystification
EVSC Virtual Academy
Evansville, Indiana

USIN22 Hoosier Science and Engineering Fair Region 3

ROHAN PRAKASH BHOSALE (GRADE 8)
COVID ImmunoMeter: Measurement of the Biological Immunity Against COVID-19 by Analyzing Complex Molecules in a Synthetic Serum
Carmel Middle School
Carmel, Indiana

USIN25 Hoosier Science and Engineering Fair Region 6

NORA BORNEMAN (GRADE 8)
Enhancing Photosynthesis Efficiency and Plant Growth Using Wavelength Optimized Ground Covers
Jackson Creek Middle School
Bloomington, Indiana

SEAN BORNEMAN (GRADE 8)
Machine Learning for Social Safety in the Pandemic: A Cyber-Physical Distancing Device
Jackson Creek Middle School
Bloomington, Indiana

IOWA

USIA02 Western Iowa Science and Engineering Fair

SHAILY PANDYA (GRADE 6)
Digital Distancing — A Safer Way to Use Electronic Devices
East Middle School
Sioux City, Iowa

USIA50 State Science and Technology Fair of Iowa

ANANYA BALAJI (GRADE 8)
Water Water Everywhere: Reducing Nutrient Pollution on Farmlands
Ames Middle School
Ames, Iowa

ANESSA MARIE MORRISON (GRADE 7)
Make Your Mark Count!
Miller Middle School
Marshalltown, Iowa

SHREYA SRINATH (GRADE 8)
Water Water Everywhere: Reducing Nutrient Runoff on Farmlands
Ames Middle School
Ames, Iowa

HARPER WILSON (GRADE 7)
Make Your Mark Count!
Miller Middle School
Marshalltown, Iowa

KANSAS

USMO04 Greater Kansas City Science & Engineering Fair

MICAH SHOUDAO LEE (GRADE 6)
Aerodynamics of Paper Airplanes
Christ Luther School
Overland Park, Kansas

KENTUCKY

USKY02 Louisville Regional Science and Engineering Fair

EMERSON WYATT (GRADE 8)
The Potential Synergistic Effects of Rose and Umibudo on a Representation of Cancer
Saint Francis of Assisi Catholic School
Louisville, Kentucky

USKY03 Dupont Manual High School Regional Fair

LUCY ANGEL TENG (GRADE 8)
The Effects of SARS-CoV2 Non-structural Proteins on Cytokine Induction
Meyzeek Middle School
Louisville, Kentucky

USKY04 Science and Engineering Fair of Northern Kentucky

NICK RODINO (GRADE 8) #
Using CBD Oil to Reduce Free Radicals and Prevent Cell Damage
Mary, Queen of Heaven School
Erlanger, Kentucky

USKY50 Kentucky Science and Engineering Fair

KARTHIKA HARIPRASAD (GRADE 7)
Environment-Friendly Disposable Gloves
Jessie M. Clark Middle School
Lexington, Kentucky

AISHWARYA RAMASAMY (GRADE 6)
Computational Simulation of Brain Activity During Sleep
Meyzeek Middle School
Louisville, Kentucky

LOUISIANA

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

WES DANIEL (GRADE 7) *
The Olfactory System's Vomeronasal Response in Cats
First Baptist Church School
Shreveport, Louisiana

MAINE

USME51 Maine State Middle School Science and Engineering Fair

ALEXANDER JOHN BUSKO (GRADE 8)
Microplastics in Bottled Water: Searching for a Common Correlation Between Bottle Size and Microplastic Concentration
James F. Doughty School
Bangor, Maine

MARYLAND

USMD03 ScienceMontgomery

SANJANA CHOUDHARY (GRADE 6)
Generating Electricity through Fruits and Vegetables
Hallie Wells Middle School
Germantown, Maryland

SHRIYADITA DE (GRADE 6)
Monitoring Our Local Watershed for Rapid Response
Takoma Park Middle School
Silver Spring, Maryland

PRANAV RAM KARTHIKEYAN (GRADE 8)
CARMEL: A Novel Feedback-Based Approach for the Identification of Cancerous Melanomas Using Machine Learning
Roberto Clemente MIddle School
Germantown, Maryland

ARJUN SAMAVEDAM (GRADE 7)
Improving Healthcare with Arduino-Based Smart Medicine Pill Box Reminder
Robert Frost Middle School
Rockville, Maryland

JOSEPH SIMAK (GRADE 8) #
Evaluation of Acute Toxicity of Common Motor Vehicle Water Pollutants in Artemia salina *Nauplii Model*
Takoma Park Middle School
Silver Spring, Maryland

EDITH YANG (GRADE 8)
Exercise and Healthy Diets Can Prevent Weight Gain in Adolescents Caused by COVID-19 Stress
Cabin John Middle School
Potomac, Maryland

YUN YEUNG (GRADE 8) #
Investigate the Deep-Learning Methods for Breast Cancer Prognosis
Takoma Park Middle School
Silver Spring, Maryland

USMD05 Prince George's Area Science Fair

ARLO JOHN L. PANGILINAN (GRADE 7)
Coat Me to Last
Saint Columba School
Oxon Hill, Maryland

MASSACHUSETTS

USMA05 Massachusetts Region II State Science Fair

RAGAV IYER (GRADE 8) #
Smart Helmet Insert for Early and Low-Cost Detection of Concussion [SHIELD-C]
Ashland Middle School
Ashland, Massachusetts

ANISH KULKARNI (GRADE 8) #
Smart Helmet Insert for Early and Low-Cost Detection of Concussion [SHIELD-C]
Ashland Middle School
Ashland, Massachusetts

AASHRITA NAIR (GRADE 7)
Smart Helmet Insert for Early and Low-Cost Detection of Concussion [SHIELD-C]
Ashland Middle School
Ashland, Massachusetts

MAYA SUSHKIN (GRADE 8)
Turning Car Exhaust Into Rocks — Let's Recycle CO_2 — Phase 2
Forest Grove Middle School
Worcester, Massachusetts

USMA06 Massachusetts Region VI Science Fair

WEIAN XUE (GRADE 6)
How Does Color Affect Memory?
Jackson/Mann K-8 School
Allston, Massachusetts

USMA50 Massachusetts State Science & Engineering Fair

PRANAV ADDANKI (GRADE 8)
Mutation Analysis of Novel Coronavirus (SARS-CoV-2) and Its Effects on Major Target Proteins: An In Silico *Study*
Galvin Middle School
Canton, Massachusetts

AVANISH GOWRISHANKAR (GRADE 8)
Developing Novel Composite Bioplastics with Enhanced Properties
R.J. Grey Junior High School
Acton, Massachusetts

MIRABELLE MEYERS (GRADE 7)
Look Again: GAN Generated Images vs. Real Ones
W.E.B. Du Bois Regional Middle School
Great Barrington, Massachusetts

ANGAD SINGH PANNU (GRADE 7)
Measuring Antioxidant Levels: The Immunity Booster
Oak Middle School
Shrewsbury, Massachusetts

MICHIGAN

USMI02 Science and Engineering Fair of Metropolitan Detroit

JUDY ELIANA BAI (GRADE 7)
Computational Prediction of COVID-19 Risky Genes Associated with Lung Cancer
Clague Middle School
Ann Arbor, Michigan

ACHYUT REDDY (GRADE 8)
Space Heater Safety Mechanism
West Bloomfield Middle School
West Bloomfield, Michigan

GAIA SPERONE (GRADE 7)
Do Pets Help Lower Stress in Middle School Students During the Pandemic?
Pierce Middle School
Grosse Pointe Park, Michigan

USMI03 Flint Regional Science & Engineering Fair

OLIVA WAGNER (GRADE 8)
Testing Filters and Hacking a BiPAP Machine to Circumvent a Ventilator Shortage for a COVID-19 Pandemic
Saginaw Arts and Sciences Academy
Saginaw, Michigan

MINNESOTA

USMN01 Northern Minnesota Regional Science Fair

MARYAM SHAHKHAN (GRADE 7)
Buoyancy Materials of the Underwater Remotely-Operated Vehicle (ROV): The Effect of Different Buoyancy Materials Incorporated into an ROV and the Efficiency of the ROV in Water: Pharma Pack
Al-Amal School
Fridley, Minnesota

USMN04 Twin Cities Regional Science Fair

COOLSJES B. SINGHVI (GRADE 8)
D-PREDICT: An Artificial Intelligence Model to Predict the Likelihood of Early Diabetes
Stillwater Junior High School
Stillwater, Minnesota

SRIRAM SURESHKUMAR (GRADE 8)
Impact of Chemicals and Pesticide Residue on Compost
Mahtomedi Middle School
Mahtomedi, Minnesota

USMN10 Western Suburbs Science Fair

HANNAH GROSSER (GRADE 7) *
If You Plant it, They Will Come: Planting for Pollinator Diversity in Gardens and Small Farms
Avail Academy
Edina, Minnesota

MISSISSIPPI

USMS06 Mississippi Region V Science and Engineering Fair

MAGGIE MARIE CARR (GRADE 8)
Are Essential Oils Actually Antifungal?
Starkville Christian School
Starkville, Mississippi

TREVYN K. SHIELDS (GRADE 7)
RFID Transmission: In a World of Tracking, Is Your Data Secure?
Home School
Steens, Mississippi

MISSOURI

USMO01 Southeast Missouri Regional Science Fair

JOSHUA RYAN HORRELL (GRADE 8)
Sand vs. Paper an Evaluation of Soybeans Based on Germination Method
Leopold R-3
Leopold, Missouri

USMO04 Greater Kansas City Science & Engineering Fair

ALEYAH BORSUTZKY (GRADE 6)
Cat Car Seat
Liberty Middle School
Liberty, Missouri

USMO05 Missouri Tri-County Regional Science and Engineering Fair

MATTHEW MCFARLAND (GRADE 8)
Measuring the Power Available for Energy Repurpose from CPU Waste Heat by Varying Computer User Activity in a System Designed to Capture and Convert CPU Waste Heat via a Thermoelectric Generator to Maintain a Battery Backup Charge
Home School
St. Charles, Missouri

USMO07 Academy of Science - Greater St. Louis Science Fair

HOLDEN FROST (GRADE 7)
Determining the Temperature Dependance and Order of Reaction of Kool Aid's Red Dye 40 Decomposition in the Presence of Metal
Queen of All Saints Catholic School
St. Louis, Missouri

HANNAH ELIZABETH MATHEW (GRADE 8)
Earth Friendly Plastics
Parkway Central Middle School
Chesterfield, Missouri

BECKY TURNER (GRADE 7)
Do the Right Thing
Living Word Christian Middle School
O'Fallon, Missouri

MONTANA

USMT50 Montana Science Fair

JAMES A. HOLMES (GRADE 8) #
Designing and Building a Control System for My Heated Dye-Sensitized Photovoltaic Cell
Butte Central Elementary and Middle School
Butte, Montana

NEBRASKA

USNE02 Greater Nebraska Science and Engineering Fair

TRENT DETLEFSEN (GRADE 7)
The Effect of Packaging on Banana Ripeness
Central City Middle School
Central City, Nebraska

NEVADA

USNV02 Beal Bank USA Southern Nevada Regional Science & Engineering Fair

LUKA ANTHONY NGUYEN (GRADE 6)
Slow the Flow: Can Improving the Tesla Valve Design Better Prevent Backflow and Help Develop a Valveless Bio-prosthetic Human Vein?
Challenger School — Silverado
Las Vegas, Nevada

NEW JERSEY

USNJ02 Jersey City Medical Center/Barnabas Health STEM Showcase

VICTOR NIKOLAEV (GRADE 7)
Bloom and Doom: The Effects of Eutrophication on Water Environments
Saint Francis Academy
Union City, New Jersey

USNJ79 Bergen County Academy Science Challenge

AVI PATEL (GRADE 6)
The B2B System for the Visually Impaired
Thomas Jefferson Middle School
Fair Lawn, New Jersey

SAMHITA POKKUNURI (GRADE 8)
A Novel Graph Neural Network for De Novo *Drug Discovery: A Case Study on Glioblastoma*
Carl Sandburg Middle School
Old Bridge, New Jersey

ANSH SEHGAL (GRADE 6)
Bike to Bike System for Visually Impaired
Thomas Jefferson Middle School
Fair Lawn, New Jersey

RAUNAK SINGH (GRADE 7) #
Apollo: A Beacon of Light
Memorial Middle School
Fair Lawn, New Jersey

NEW MEXICO

USNM01 Central New Mexico Regional Science and Engineering Challenge

AKILAN SANKARAN (GRADE 8) *
On the Exploration and Analysis of Highly Divisible Numbers
Albuquerque Academy
Albuquerque, New Mexico

USNM02 San Juan New Mexico Regional Science and Engineering Fair

ALEXANDRA BESSINGER (GRADE 8) * #
Food Carbs and Artificial Pancreas in Management of Prediabetes/Diabetes
Pinon Hills Academy
Farmington, New Mexico

NEW YORK

USNY06 Central New York Science and Engineering Fair

MANYA KUKKAR (GRADE 7)
Improving Gut Microbiome by Reducing Consumption of Processed Food and Antimicrobial Peptides (AMP) of Bat Microbiome: Potential Prevention and Treatment Strategy for COVID-19.
Vestal Middle School
Vestal, New York

USNY07 Greater Capital Region Science and Engineering Fair, Inc.

SAMUEL DIXSON (GRADE 6)
Bale Or Bail? A Study Evaluating Crops for Freeze Damage and Crop Viability
Greenwich Central School
Greenwich, New York

USNY79 Tri County Science & Technology Fair

TRISTAN ROALD BISSOONDIAL (GRADE 7)
Glycine Betaine Improves Tolerance to Cadmium in Lemna minor
Grand Avenue Middle School
Bellmore, New York

ANANYA SHAH (GRADE 7)
The Use of Triboelectric Nanogenerators (TENG) to Increase the Effectiveness of N-95 Masks by Blocking Aerosols Containing SARS-CoV-2
Edgemont Jr./Sr. High School
Scarsdale, New York

NORTH CAROLINA

USNC01 Charlotte-Mecklenburg Regional Science Fair

RADHIKA AMBIKA UNNIKRISHNAN (GRADE 8) *
Impact of Music on Children with Autism Spectrum Disorder: Concentration and Focus
Metrolina Regional Scholars Academy
Charlotte, North Carolina

USNC50 North Carolina State Science Fair

JACKSON BOUCHER (GRADE 7)
Is it Possible to Improve the Efficiency of Solar Panels Using Mirrors?
Mills Park Middle School
Cary, North Carolina

ADITI SAIRENU EDIGA (GRADE 6)
Power Road
Mills Park Middle School
Cary, North Carolina

DHIVIRAJU GANGARAJU (GRADE 7)
Is it Possible to Improve the Efficiency of Solar Panels Using Mirrors?
Mills Park Middle School
Cary, North Carolina

SARRAH KITCHELL (GRADE 8) #
Carbon Capture Concrete! Will NaOH, As an Additive to DIY Concrete Bricks, Help Lower Your Carbon Footprint?
Valle Crucis Elementary School
Sugar Grove, North Carolina

ANDERSON LAM (GRADE 7)
Bio Down the Plastic: Creating and Testing a Biodegradable Replacement for Single-Use Plastic
The Academy at Lincoln
Greensboro, North Carolina

SCOTT MCFARLAND (GRADE 8)
The Influence of Affluence on Effluents: Wealth and Watersheds Quality in New Hanover County
Myrtle Grove Middle School
Wilmington, North Carolina

SRIJA ROY (GRADE 7)
Machine Learning for Predicting Diabetes Among Humans
The Academy at Lincoln
Greensboro, North Carolina

AASTHA SHAH (GRADE 8)
Price or Design: Which Has the Bigger Impact?
Mills Park Middle School
Cary, North Carolina

ARYAMAN DIXIT SHUKLA (GRADE 7)
Green Pellets for Greener Lawns
Hanes Magnet Middle School
Winston-Salem, North Carolina

NORTH DAKOTA

USND05 Northeast North Dakota Regional Science and Engineering Fair

MADELYN BELLE STREYLE (GRADE 8)
To Leave or Not to Leave
South Middle School
Grand Forks, North Dakota

OHIO

USOH02 Northeastern Ohio Science and Engineering Fair

SHIVANI ARULSELVAN (GRADE 7)
Do Cell Phones Made Before 2015 Have Less Radiation than Phones Made in the Last Five Years?
Incarnate Word Academy
Parma Heights, Ohio

MADDIE NICOLE QUEEN (GRADE 7)
The Ply Effect
Saint Mary of the Falls
Olmsted Falls, Ohio

MAYA TANG (GRADE 8)
How Do Mask Types and Instrument Covers Affect Aerosol Spread and Sound Level During Music Performance?
Hathaway Brown School
Shaker Heights, Ohio

USOH07 Marion Area Science and Engineering Fair

TARUN BATCHU (GRADE 7)
Mathematically Employing Feasible Ideology to Develop an Asexually Propagated Hybrid Alga, Potent to Enhance the Planet's Oxygen Supply/ Accumulation and Termination of CO_2 Emissions via Algae by 33%
(←Symbiodinium + Aegagropila linnaei)
Olentangy Hyatts Middle School
Powell, Ohio

SHREYAS GORTHY (GRADE 7)
The Asexual Replication of Aegagropila linnaei *and* Symbiodinium
Olentangy Hyatts Middle School
Powell, Ohio

USOH10 University of Cincinnati Science and Engineering EXPO

LAASYA ACHARYA (GRADE 8) * #
Ceres: A Smart Device Utilizing Neural Networks to Detect Fruit Diseases Using Imaging
Mason Middle School
Mason, Ohio

USOH51 State Science Day (Ohio)

ADAM BUELL (GRADE 7)
How Do the Number of Air Holes and Surface Mass Affect the Functioning of a Hovercraft?
Kalida Middle School
Kalida, Ohio

DIEGO LEONARDO COUTINO GRANADOS (GRADE 8)
Chocolate Soft Lithography
Stanton Middle School
Kent, Ohio

TYLER FEIX (GRADE 7)
Juicing Up with Electrolytes: Comparing Electrolytes in Different Drinks
Bellbrook Middle School
Bellbrook, Ohio

CARSON A. JACKSON (GRADE 7)
A Posteriori Optimization and Visualization of an Electrostatic Atmospheric Ion Thruster Using Laser Deflection and Schlieren Optical Techniques
Tippecanoe Middle School
Tipp City, Ohio

PARKER JAMES KAIBAS (GRADE 8)
Shape of the Wind
Tippecanoe Middle School
Tipp City, Ohio

CHINMAY SANJAY KHARE (GRADE 8)
A Step in the Fight Against Cancer: Using Fluorescence to Study the Use of Oxidants and Antioxidants
Ottawa Hills Junior/Senior High School
Ottawa Hills, Ohio

ELIAS ADAMU STIENECKER (GRADE 7)
A Posteriori Optimization and Visualization of an Electrostatic Atmospheric Ion Thruster Using Laser Deflection and Schlieren Optical Techniques
Tippecanoe Middle School
Tipp City, Ohio

OKLAHOMA

USOK50 Oklahoma State Science and Engineering Fair

MAX LANDERS (GRADE 8)
Arteries and Blood Flow
Home School
Bartlesville, Oklahoma

DILLON MEHTA (GRADE 7)
Blown Away: A Comparison of Various Wind Turbines
Central Middle School
Bartlesville, Oklahoma

OREGON

USOR04 Beaverton-Hillsboro Science Expo

KUNDANA ADDALA (GRADE 6)
Using Machine Learning to Teach Kuchipudi to the Visually-Impaired
Stoller Middle School
Portland, Oregon

ARJUN AGARWAL (GRADE 7) * #
A Machine Learning-Based Innovative Approach for Early Detection and Forecasting of Harmful Algal Blooms (HABs)
Stoller Middle School
Portland, Oregon

ANAY AGGARWAL (GRADE 7) *
On the Use of a Machine Learning Model to Improve the Time Complexity of Finding the Inverse of a Square Matrix with Gauss-Jordan Elimination
Stoller Middle School
Portland, Oregon

AASHI DIXIT (GRADE 7) *
Configuration of Ultrasound in Multilayered Materials
Stoller Middle School
Portland, Oregon

ANIKA GANDIKOTA (GRADE 7) *
Shepherd's Purse: A Novel Catalyst Coagulant to Reduce Clotting Time when Treating Accident Victims
Stoller Middle School
Portland, Oregon

CHLOE SOPHIA MARGASON (GRADE 8)
A Study on Psychological Disorder Coping Mechanisms
Meadow Park Middle School
Beaverton, Oregon

MADDIE REJAB (GRADE 8)
The Effect of Catalase pH on Hydrogen Peroxide Decomposition Rates
Whitford Middle School
Beaverton, Oregon

SHREEMOYEE SAHA (GRADE 7) #
The Effect of Vinca Alkaloids in Chemotherapy-Induced Peripheral Neurotoxicity (CIPN) of Adenocarcinoma Patients: Using Whole-Slide Imaging via Archive Databases to Find the Action Mechanism in Chemotherapy-Induced Peripheral Neurotoxicity
Stoller Middle School
Portland, Oregon

NIVEDHA SATHISHKUMAR (GRADE 6)
FOOD D(i)e — Finding a Natural Alternative to Artificial Food Dyes
Stoller Middle School
Portland, Oregon

SOPHIA YOU (GRADE 8)
A Study on Psychological Disorders: Coping Mechanisms
Meadow Park Middle School
Beaverton, Oregon

USOR06 CREST-Jane Goodall Science Symposium

NIYATI BHASKAR (GRADE 6)
Designing a Van De Graaff Generator to Reduce Smoke Particles from Air
Meridian Creek Middle School
Wilsonville, Oregon

AASHA PATEL (GRADE 8)
Project Isolation
Inza R. Wood Middle School
Wilsonville, Oregon

USOR50 Northwest Science Expo

AUTRI APARAJITA DAS (GRADE 8) #
Cost-Effective Dilute Electrolyte for Vanadium Redox Flow Batteries
Stoller Middle School
Portland, Oregon

SOHAN GOVINDARAJU (GRADE 7)
A Novel Mathematical Approach to Predict the Spread of a Wildfire Using the SIR-Based Model
Stoller Middle School
Portland, Oregon

CASEY HERMANSON (GRADE 8)
The Effect of Copper Sulfate Concentration on Garbanzo Bean Plant Growth
Bend Science Station
Bend, Oregon

AH-LEE HINE-LEE (GRADE 8)
What's for Tea?
Bend Science Station
Bend, Oregon

VIHAAN PALIWAL (GRADE 6)
Don't Drive That Way, Have Another Day!
Carden Cascade Academy
Hillsboro, Oregon

SANA REVATI SHAH (GRADE 8)
FaceMaskNet: An AI-Based Face Mask Detection and Alerting System
Catlin Gabel School
Portland, Oregon

PENNSYLVANIA

USPA01 Capital Area Science and Engineering Fair

JACKSON HAROLD KANE (GRADE 8)
How Does PPE Affect Sound Intensity?
Saint Theresa School
New Cumberland, Pennsylvania

NIHARIKA SHUKLA (GRADE 7)
Early-Stage Autism Spectrum Disorder (ASD) Diagnostic Tool Using Auditory Biomarkers through Artificial Intelligence and Microprocessor Device
Mountain View Middle School
Mechanicsburg, Pennsylvania

USPA02 North Museum Science and Engineering Fair

AMÉLIE BREUNINGER (GRADE 8) #
Analyzing the Impact of the Global COVID-19 Lockdown on Airborne Microplastics
Lancaster Country Day School
Lancaster, Pennsylvania

USPA03 Delaware Valley Science Fairs

BRANDON J. CAI (GRADE 8)
Designing a Thermal Rectifier with Complex 3D-Printed Shapes Using Common Material
Springhouse Middle School
Allentown, Pennsylvania

ROWAN CHETTY (GRADE 7)
Understanding Enzyme Kinetics
Tredyffrin-Easttown Middle School
Berwyn, Pennsylvania

SIERRA MARIE DEAN (GRADE 8)
The Effect of Temperature on Latent Fingerprints
Saint Agnes School
West Chester, Pennsylvania

KATHERINE GILCHRIST (GRADE 7)
Dress for Success: Which Fabric Drapes Best?
Orefield Middle School
Orefield, Pennsylvania

LILY GAIA GILROY WILDEN (GRADE 8)
Inattentional Blindness: Did You See That?
Cedarbrook Middle School
Wyncote, Pennsylvania

ANSH JAGGI (GRADE 6)
Enhancing Plant Sustainability through Fruit Peels
Voorhees Middle School
Voorhees, New Jersey

JACK MCGRATH (GRADE 7)
Supersuits for Mars
Newtown Middle School
Newtown, Pennsylvania

TUSHAR MEHTA (GRADE 7)
Enhanced Human Ear Perception Using Acoustic Masking
Orefield Middle School
Orefield, Pennsylvania

POOJA MENON (GRADE 8)
Bio-Based and Bio-Degradable Plastic to Save the Planet
Fugett Middle School
West Chester, Pennsylvania

ANISH K. PALLOD (GRADE 7)
A Low-Cost Device That Utilizes Thermography and an Optimized Neural Network Model to Diagnose Breast Cancer
Springhouse Middle School
Allentown, Pennsylvania

ANAND SHAH (GRADE 8)
The Presence of SARS-CoV-2 on the Surface of Fruits and Vegetables
Charles F. Patton Middle School
Kennett Square, Pennsylvania

TARIQ SHAHID (GRADE 8)
Computational Analysis of the Effect of Absorbents on CO_2 Using COMSOL Multiphysics Simulation Engine
Springhouse Middle School
Allentown, Pennsylvania

KAI UNWIN-WISNOSKY (GRADE 7)
How Does the Wind Speed Affect the Amount of Electricity Produced by a Micro-Vertical-Axis Savonius Wind Turbine?
Pennsylvania Leadership Charter School
West Chester, Pennsylvania

USPA04 Pittsburgh Regional Science & Engineering Fair

ZAIN ALI AHMAD (GRADE 6)
Are Cloth Masks as Effective as Surgical Masks in Preventing Spread of Infections?
Bala Cynwyd Middle School
Bala Cynwyd, Pennsylvania

LILIANA MARIA CLADITIS (GRADE 8)
Which Type of Microbead Has the Greatest Effect on the Heart Rate of Daphnia magna?
Freeport Area Middle School
Sarver, Pennsylvania

SHAUN FERNANDO (GRADE 7)
"Potamoi": A Revolutionized Concept to Build a Multi-sensor Device to Present Water Quality Metrics Using a Data Driven Mobile App
Home School
Sewickley, Pennsylvania

MASON ROBERTS (GRADE 8)
How Do Variations in a Police Lineup Affect Eyewitness Identification Accuracy?
The Campus School of Carlow University
Pittsburgh, Pennsylvania

USPA05 Reading and Berks Science and Engineering Fair

ROWAN RICE (GRADE 7)
Microplastic Pollution in the Tulpehocken Creek Watershed
Conrad Weiser Middle School
Robesonia, Pennsylvania

SOUTH DAKOTA

USSD02 Eastern South Dakota Science and Engineering Fair

ALEXIS GRACE RUST (GRADE 8)
Musical Memory
Sioux Valley Middle School
Volga, South Dakota

TENNESSEE

USTN05 Memphis-Shelby County Science and Engineering Fair

NIPUN RAJAN (GRADE 8)
Personalizing Masks for Optimal Results Using Computer Algorithms
Houston Middle School
Germantown, Tennessee

TEXAS

USTX01 Beal Bank Dallas Regional Science and Engineering Fair

ARYAN PARAG BANGAD (GRADE 8)
Magnet Strength vs. Heat
Robinson Middle School
Plano, Texas

ISHIKA KOTHARI (GRADE 8)
I Spy to Classify: Revolutionize Waste Management Using Image Recognition
Rice Middle School
Plano, Texas

KYLE ALFERINK (GRADE 7)
Don't Get Burned
Jerry Knight STEM Academy
Mansfield, Texas

USTX05 Science Engineering Fair of Houston

INU BAEK (GRADE 8)
Reducing Energy Consumption with Condition-Based Illumintaion
Knox Junior High School
Spring, Texas

LEA FARAH (GRADE 7)
Twisted Light and Its Application in Quantum Computing
Fort Settlement Middle School
Sugar Land, Texas

MELINA ESHA KUMAR (GRADE 8) *
Reducing the Risk of Diabetes: A Novel Approach for the Development of a Sensitive Glucagon Elisa
Brookside Intermediate School
Friendswood, Texas

ADITI VENKATARAMAN (GRADE 7)
How the Temporary Loss of Sight Affects Hearing Ability
McCullough Junior High School
The Woodlands, Texas

USTX11 Alamo Regional Science and Engineering Fair

LYLA MICHELLE ARNOLD (GRADE 8) #
Bioluminescent Responses to LED Stimuli on Pyrocystis fusiformis
Young Women's Leadership Academy
San Antonio, Texas

ELIZABETH REILLY (GRADE 7) * #
The Role of Leech Saliva and SHISHO in the Inflammation and Healing of Diabetic Wounds
Saint Matthew Catholic School
San Antonio, Texas

JOSEPHINE E. SCHULTZ (GRADE 8) *
Effect of Light Pollution on Chrysalis Stage of Painted Lady Butterfly
Bradley Middle School
San Antonio, Texas

MIGUEL WORREN SMILEY (GRADE 8)
MIND Craft
NEISD STEM Academy at Nimitz Middle School
San Antonio, Texas

EKATERINI KALLIOPE VALLAS (GRADE 7)
How Does Culture with Community & Beliefs Affect Our Thinking?
Young Women's Leadership Academy
San Antonio, Texas

USTX12 Central Texas Science and Engineering Fair

GABRIELA GUERRA SANCHEZ (GRADE 7)
Can You Hear That? What Do You See?
Tennyson Middle School
Waco, Texas

USTX13 Austin Energy Regional Science Festival

VIBHA ADITI HIRSAVE (GRADE 7) #
DeteX: A Python-Based Machine Learning Algorithm to Diagnose Pneumonia
Canyon Vista Middle School
Austin, Texas

ARYA SHIVA KUMAR (GRADE 7)
EchoVision: A Novel Wearable to Locate and Respond to Above and Below the Waist Obstacles Leveraging a Self-Developed Ultrasonic Sensor Ensemble and Multi-pronged Haptic and Auditory Alert System
Murchison Middle School
Austin, Texas

RAM SIVARAMAN (GRADE 8)
A New Method for Secure Password Generation Using Mel-frequency Cepstral Coefficients
Canyon Vista Middle School
Austin, Texas

UMA STHANU (GRADE 7)
Sayffer: Building a Safer Community for K-12 Parents, Students & Staff through a Collaboration Platform that Digitizes & Compliantly Shares Health Data
Pearson Ranch Middle School
Austin, Texas

USTX50 Texas Science and Engineering Fair

ARIEL ASARE (GRADE 8)
Utilizing Databases for Identification of Unknown Allergens via a Mobile App
China Spring Middle School
Waco, Texas

RAMYA ELANGOVAN (GRADE 7)
Caring for the Caregivers: Effect of "Stress Management and Relaxation Techniques" (SMART); Mindfulness Meditation and Progressive Muscle Relaxation on Vital Signs and Short-Term Memory in Intensive Care Providers –A Three-Arm, Prospective, Randomized Conrolled Trial
T.H. Rogers Middle School
Houston, Texas

SHARMADA PALAKURTHI (GRADE 7)
A New Non-invasive Method of Testing Glucose for Diabetic Population
Marvin Baker Middle School
Corpus Christi, Texas

RAELEIGH ELAINE STOLLE (GRADE 7)
Utilizing Databases for Identification of Unknown Allergens via a Mobile App
China Spring Middle School
Waco, Texas

UTAH

USUT04 Central Utah STEM Fair

HANNAH COYNE (GRADE 7)
Meltdowns and Media: Does Technoference Have an Impact on Infant Behavior?
Valley View Middle School
Salem, Utah

CAITLYN HERBERT (GRADE 7)
Gender Bias in Virtual Science Fairs
Karl G. Maeser Preparatory Academy
Lindon, Utah

JOSHUA KILLPACK (GRADE 8)
How Safe are the Sensors Used in Autonomous Cars?
Centennial Middle School
Provo, Utah

USUT05 University of Utah Science and Engineering Fair

SAHIL RAJIV SHAH (GRADE 8) #
Little Cottonwood Paleodelta in Lake Bonneville: A Geologic Analog in Utah for the Perseverance Rover Landing Site at Jezero Crater on Mars
The Waterford School
Sandy, Utah

SIERRA ANNE SUN (GRADE 8)
Little Cottonwood Paleodelta in Lake Bonneville: A Geologic Analog in Utah for the Perseverance Rover Landing Site at Jezero Crater on Mars
The Waterford School
Sandy, Utah

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

ANGELA ZHAN (GRADE 8) #
Biological Transformer: Constructing Novel Microbial Cell Factories to Convert Plastic Wastes to Environmentally Friendly Bioplastic
Mount Logan Middle School
Logan, Utah

VIRGINIA

USVA01 Northern Virginia Science and Engineering Fair

ANNA GRACE MOHANTY (GRADE 8)
The Effect of the Electromagnetic Field Density on the Biomass of Chlorella vulgaris
Williamsburg Middle School
Arlington, Virginia

HENRY STIEVATER (GRADE 7)
The Effect of School Size, Per-Pupil Expenditures, and Percent of Teachers with Advanced Degrees on SOL Pass Rates
Swanson Middle School
Arlington, Virginia

USVA08 Western Virginia Regional Science Fair

JOHN MICHAEL JANIGA (GRADE 7)
Strength Analysis of the Addition of Plant-Based Protein to Bio-plastics
Hidden Valley Middle School
Roanoke, Virginia

USVA09 **Tidewater Science and Engineering Fair**

ROCKWELL T. LI (GRADE 8)
Performance Study of 3D-Printed Drone Propellers
Old Donation School
Virginia Beach, Virginia

USVA10 **Blue Ridge Highlands Regional Science Fair**

CLARA STROM (GRADE 8)
Downhill Mountain Bike Racing: A Data Science Project
Valley Classical School
Blacksburg, Virginia

USVA11 **Metro Richmond STEM Fair**

CAMELLIA SHARMA (GRADE 8) #
FishPopAI: Counting Fish Population Using Artificial Intelligence
George H. Moody Middle School
Henrico, Virginia

USVA78 **Fairfax County Elementary and Middle School Science and Engineering Fair**

VEERA ANAND (GRADE 7)
Weapon Detection System Using Artificial Intelligence
Nysmith School for the Gifted and Talented
Herndon, Virginia

WASHINGTON

USWA02 **South Sound Regional Science and Engineering Fair**

KEVIN SHEN (GRADE 8)
An Experimental UAV Utilizing Pivoting Wings to Exchange Efficiency with Maneuverability
NOVA Middle School
Olympia, Washington

USWA50 **Washington State Science and Engineering Fair**

VISHNU MANGIPUDI (GRADE 7)
Developing and Testing a Machine-Learning Based Approach to Detect Heart Arrhythmias Using Electrocardiograms
Odle Middle School
Bellevue, Washington

ZAIN MEHBOB SHARIFF (GRADE 6)
Analyzing the Depth and Width of the "Burning Issue"
Narrows View Intermediate School
University Place, Washington

WYOMING

USWY50 Wyoming State Science Fair

SHELBY SCOUT HOOBLER (GRADE 8) #
Soil Organic Carbon to Identify Ecosystem Health in Three Zones Surrounding Dry Creek
Carey Junior High School
Cheyenne, Wyoming

SHANTI ABIGAIL JUNKER (GRADE 7)
Moving, Mobbing, Mowing: Enhancing Carbon Sequestration through Holistic Grazing
Lander Middle School
Lander, Wyoming

BROADCOM® FOUNDATION

SOCIETY FOR SCIENCE

About Broadcom Foundation

Founded in April 2009, the Broadcom Foundation is a 501(c)(3) nonprofit with the mission of advancing science, technology, engineering and math (STEM) education by funding research, recognizing scholarship and increasing opportunity.

The foundation inspires young people to pursue careers in STEM and to develop 21st Century skills of critical thinking, collaboration, communication and creativity. It is a founding member of the National STEM Funders Network and plays a leadership role in the STEM Education Ecosystem Initiative in the U.S. and Israel.

The foundation's signature programs, the Broadcom MASTERS® and the Broadcom MASTERS® International, are the premier science and engineering competitions for middle school students around the United States and the world.

Learn more at **www.broadcomfoundation.org** and follow us on Twitter **(@BroadcomSTEM).**

About Society for Science

Society for Science is a champion for science, dedicated to expanding scientific literacy, effective STEM education and scientific research. Founded in 1921, we are a nonprofit 501(c)(3) membership organization focused on promoting the understanding and appreciation of science and the vital role it plays in human advancement. Through its acclaimed science research competitions, including the Regeneron Science Talent Search, the Regeneron International Science and Engineering Fair and the Broadcom MASTERS, and impactful outreach and equity programming, its award-winning magazine, *Science News* and digital media properties, *Science News for Students*, the Society is committed to inform, educate and inspire.

Learn more at **www.societyforscience.org** and follow us on Twitter **(@Society4Science).**