

# 2023 Colorado Science and Engineering Fair

## Grand Awards Press Release

### Junior Division Best of CSEF Project

#### First Place

Aanshi Shah 8th grade  
*Make Some Noise! An Innovative Method to Produce Electricity Using Sound*  
 Thunder Vista P-8 School Broomfield

#### Second Place

Diya Mehta 8th grade  
*Environmental Effects on the Embryonic Development of Sea Urchins*  
 Flagstaff Academy Longmont

#### Third Place

Charlie Danko 8th grade  
*An Affordable Robot for Dangerous Factories*  
 Flagstaff Academy Longmont

### Senior Division Best of CSEF Project

#### First Place

Margaret Arthur 11th grade  
*A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks*  
 Fairview High School Boulder

#### Second Place

Aditi Avinash 11th grade  
*Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown*  
 Rock Canyon High School Littleton

#### Third Place

Nathaniel Ellis 11th grade  
*MOON-OPOLY II: Employing Additive Manufacturing Technology for Lunar Construction with Waterless Concrete*  
 Durango High School Durango

#### Fourth Place

Carlos Ochoa-Marquez 12th grade  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*  
 Monte Vista High School Monte Vista

#### Fifth Place

Marissa Martinez 12th grade  
*The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture of Invasive American Bullfrog*  
 Monte Vista High School Monte Vista

### Junior Division Animal Sciences

#### First Place

Diya Mehta 8th grade  
*Environmental Effects on the Embryonic Development of Sea Urchins*  
 Flagstaff Academy Longmont

#### Second Place

Grace Marmorstein 8th grade  
*The Insect Repellent Properties of Nepetalactone*  
 Challenge School Denver

#### Third Place

Grace Jones 7th grade  
*I'm Not Yoking Around: Evaluating How the Food That Chickens Eat Affect The Width of The Egg Shell*  
 Wray Jr/Sr High School Wray

#### Honorable Mention

Ayra Memon 7th grade  
*Bioluminescence in Pyrocystis Fusiformis*  
 Crescent View Academy Aurora

#### Honorable Mention

Vivian Wolkow 6th grade  
*Does the Tail Remember What the Head Saw?*  
 North Middle School Colorado Springs

### Senior Division Animal Sciences

#### First Place

Marissa Martinez 12th grade  
*The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture of Invasive American Bullfrog*  
 Monte Vista High School Monte Vista

#### Second Place

Zoey Montoya 10th grade  
 Everett Ediger 11th grade  
*How Qualities of Soil Affect Where Aphonopelma Hentzi Burrows in the Colorado Grassland*  
 La Junta Jr/Sr High School La Junta

#### Third Place

Harrison Ruleman 12th grade  
*Do Snakes Avoid Certain Colors of Light?*  
 Evergreen High School Evergreen

### Junior Division Behavioral & Social Sciences

#### First Place

Sunand Bhandaram 7th grade  
*Do Phones Amongst Middle Schoolers Affect Their Grades?*  
 Campus Middle School Greenwood Village

#### Second Place

Ryler Horansky 8th grade  
 Liam Yee 8th grade  
*Does The Student-Teacher Ratio in Middle School Affect How Connected Students Feel To Their Teachers?*  
 Horizons K-8 School Boulder

#### Third Place

Samantha Goetz 6th grade  
*How Childproof Are Medication Bottles?*  
 St. Peter Catholic School Monument

# 2023 Colorado Science and Engineering Fair

## Grand Awards Press Release

### Honorable Mention

Ling-Ling Ryan	8th grade
<i>How Do Gender and Age Affect the Legibility of Handwriting?</i>	
Summit Middle Charter School	Boulder

### Senior Division Behavioral & Social Sciences

#### First Place

Elise Brodsky	12th grade
<i>The Effects of Perpetrator Race and Gender on the Reliability of Eyewitness Accounts</i>	
Nederland Middle-Senior High School	Nederland

#### Second Place

Cadence Casey	9th grade
<i>The Effects of Peer Pressure in Social Media</i>	
SkyView Academy	Highlands Ranch

#### Third Place

Evelyn Seevers	9th grade
<i>Analyzing Data of Data Analysis of Analyzed Data About Exoplanets</i>	
Conifer High School	Conifer

### Honorable Mention

Asia Alarid	11th grade
<i>Neuron My Mind: Analysis of Different Brain Altering Substances on Student Performance</i>	
Monte Vista High School	Monte Vista

### Junior Division Biomedical & Health Sciences

#### First Place

Emma Beeby	8th grade
<i>The Effect of Stress on the Amount of Carbon Dioxide Exhaled</i>	
Skinner Middle School	Denver

#### Second Place

Kapil Bhandaram	7th grade
<i>Is There A Relationship Between Meditation and Muscle Reaction Time?</i>	
Campus Middle School	Greenwood Village

#### Third Place

Lauren Gdanitz	8th grade
Scarlett Paulson	8th grade
<i>Applying Ionizing Radiation to DNA: Determining the Effectiveness of Different Protection Methods Against Ionizing Radiation</i>	
Wray Jr/Sr High School	Wray

### Honorable Mention

Terra McClure	7th grade
<i>Oh Snap!</i>	
Rocky Ford Jr/Sr High School	Rocky Ford

### Senior Division Biomedical & Health Sciences

#### First Place

Aditi Avinash	11th grade
<i>Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown</i>	
Rock Canyon High School	Littleton

#### Second Place

Jessie Hsu	11th grade
<i>Predicting Patient Disability in MS from MRI Brain Abnormalities Using Machine Learning</i>	
Fairview High School	Boulder

#### Third Place

Angelina Wang	10th grade
<i>The Bowman-Birk Inhibitor: The Peptide with Potential Improvement for the Oral Delivery of Insulin</i>	
Fairview High School	Boulder

### Junior Division Chemistry

#### First Place

Arath Carrazco	8th grade
<i>Amount of Caffeine in Coffee</i>	
Wiggins Middle School	Wiggins

#### Second Place

Jocelyn Kramer	6th grade
<i>The Exodus of Ca<sup>+</sup>: Does Container Material Affect Calcium Levels in Milk?</i>	
Good Shepherd Catholic School	Denver

#### Third Place

Tami Torgler	8th grade
<i>May the Force Be with You</i>	
Sargent Junior High School	Monte Vista

### Honorable Mention

River Wilson	6th grade
<i>The Magnificent Mastication Mechanism</i>	
Lamar Middle School	Lamar

### Honorable Mention

Maya Rokhlenko	7th grade
Olive Spohn	7th grade
<i>Water = Bad: Your Solution To Not Seeing in Rain</i>	
Flagstaff Academy	Longmont

### Senior Division Chemistry

#### First Place

Augustus Miller	11th grade
<i>Synthesizing Cellulose Acetate and Paper-Based Plastic from Cellulose Derivatives to Produce a Biodegradable 3D Printable Filament</i>	
Monte Vista High School	Monte Vista

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## Grand Awards Press Release

### Second Place

Daniel Saeb 11th grade  
*Investigating How Hydrogel Connectivity Influence Their Mechanical Properties*  
 Boulder High School Boulder

### Third Place

Victoria Balleau 12th grade  
*The Effectiveness and Toxicity of Various Chemicals When Removing Aerosol Oil-Based Spray Paints*  
 Evergreen High School Evergreen

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### Junior Division Earth & Environmental Sciences

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### First Place

Tyler Wise 8th grade  
*Does Crop Residue Affect Soil Water Retention*  
 Liberty School Joes

### Second Place

Mathangi Kurup 8th grade  
*The Effect of Microalgae Grown in Different Concentrations of Liquid Carbon on Atmospheric CO2 Levels*  
 Challenge School Denver

### Third Place

Kaycee Clark 7th grade  
*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*  
 Wray Jr/Sr High School Wray

### Honorable Mention

Grace Xue 8th grade  
*Using C. elegans To Determine Toxicity of Marshall Fire*  
 Summit Middle Charter School Boulder

### Honorable Mention

Varun Velmurugan 7th grade  
*Risk Assessment of Fluoride Contamination in Water: A Study Using Brine Shrimp Model*  
 Campus Middle School Greenwood Village

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### Senior Division Earth & Environmental Sciences

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### First Place

Jacob Ho 11th grade  
*How Abnormally Dry and Windy Were Days with Fires in Colorado's Front Range from 1984-2021? Towards Identifying Fire-Predictors for a Machine Learning Modeling System*  
 Fairview High School Boulder

### Second Place

Minna Most 12th grade  
 Teddy Blum 12th grade  
*Environmental Changes and the Effects of the SAM on Coccolithophores in the Southern Ocean*  
 Monarch High School Louisville

### Third Place

Landon Hartman 12th grade  
*Economic Impacts of Wolf Populations on Livestock Ranching and Big Game Hunting in the Northern Rockies*  
 Evergreen High School Evergreen

### Honorable Mention

Joshua Ho 11th grade  
*The Effects of Dissolved Organic Matter (DOM) on Emiliana Huxleyi*  
 Fairview High School Boulder

### Honorable Mention

Cami Wolkow 9th grade  
*Isolation of Fungi Capable of Antibiotic Bioremediation*  
 Palmer High School Colorado Springs

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### Junior Division Energy

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### First Place

Aanshi Shah 8th grade  
*Make Some Noise! An Innovative Method to Produce Electricity Using Sound*  
 Thunder Vista P-8 School Broomfield

### Second Place

Advait Jadhav 6th grade  
*Sweat It Out, The Green Way!*  
 Chinook Train Elementary School Colorado Springs

### Third Place

Vikram Raju 8th grade  
*Energenius: Clean Energy on the GO*  
 Aurora Quest K-8 School Aurora

### Honorable Mention

Euan Shorkey 8th grade  
*Embouchure Energy*  
 Colorado Early Colleges Fort Collins

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### Senior Division Energy

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### First Place

Natalie Muro 9th grade  
*Buoy Wave Energy Converters Capture of Ocean Wave Energy*  
 Palmer High School Colorado Springs

### Second Place

Wilson Moyer 12th grade  
*Applying Machine Learning to Forecast Solar Production and Reduce Reliance on Fossil Fuels*  
 Lakewood High School Lakewood

### Third Place

Shrey Rohilla 10th grade  
*Electrify Your Step - The Next Stride: Converting Foot Traffic into Renewable Energy Using Piezoelectric Transducers*  
 The Classical Academy Colorado Springs

# 2023 Colorado Science and Engineering Fair

## Grand Awards Press Release

### Honorable Mention

Keegan Gomez	12th grade
<i>Micro-renewable Energy</i>	
Centaurus High School	Lafayette

### Junior Division Engineering

#### First Place

Charlie Danko	8th grade
<i>An Affordable Robot for Dangerous Factories</i>	
Flagstaff Academy	Longmont

#### Second Place

David "Bear" Kent V	8th grade
<i>The Super Speaker: Using Digital Signal Processing To Improve Low-Quality Speakers</i>	
Eagleview Middle School	Colorado Springs

#### Third Place

Cuinn Archer	7th grade
<i>Colorado Air Conditioning</i>	
Mancos Middle School	Mancos

#### Honorable Mention

Patrick Thomas	8th grade
<i>Volatus Veritas: The Examination of Aircraft Wing Shape According To Two Different Speed Variables</i>	
Home School	Delta

#### Honorable Mention

Morgan Drullinger	6th grade
<i>Combining TPU and PLA to Make a Better 3D Printer Filament</i>	
Liberty School	Joes

### Senior Division Engineering

#### First Place

Nathaniel Ellis	11th grade
<i>MOON-OPOLY II: Employing Additive Manufacturing Technology for Lunar Construction with Waterless Concrete</i>	
Durango High School	Durango

#### Second Place

Rhys Hanson	12th grade
<i>The View From Above, Designing a High Power Rocket Glider to Expand Options for SAR, Mapping, and Military Applications</i>	
Conifer High School	Conifer

#### Third Place

Geo Raguraman	11th grade
<i>Regeneratus: An Adaptive, Regenerative Protection Suit for All Law Enforcement and Armed Personnel</i>	
Discovery Canyon High School	Colorado Springs

#### Honorable Mention

John Butler	9th grade
<i>Pecker Protector Egg Defender</i>	
West Grand High School	Kremmling

### Honorable Mention

Kenneth Zittel	11th grade
<i>R.O.T. Slide</i>	
Central High School	Pueblo

### Junior Division Environmental Engineering

#### First Place

Zoe Wang	8th grade
<i>Recycling by Zapping: Recyclability and Efficiency of Recycling Different Polyesters</i>	
Summit Middle Charter School	Boulder

#### Second Place

Toshiro Nagafuji	8th grade
<i>Alternatives to Sand in Concrete</i>	
The Logan School	Denver

#### Third Place

Theodore Chastang	8th grade
<i>Using Green Roofs to Absorb Floodwaters</i>	
Summit Middle Charter School	Boulder

#### Honorable Mention

Bode Monahan	6th grade
<i>Air Pollution Detection System</i>	
Liberty School	Joes

### Senior Division Environmental Engineering

#### First Place

Ella Seevers	12th grade
Cole Gropp	12th grade
<i>Energy Efficient Cooling of Buildings in the Mountains</i>	
Conifer High School	Conifer

#### Second Place

Amrita Saini	11th grade
<i>Investigating Natural Hydrogels to Sustain Bioluminescent Algae for Sustainable Lighting and CO2 Removal</i>	
Peak to Peak Charter School	Lafayette

#### Third Place

Alexander Zhang	10th grade
Stella Laird	10th grade
<i>Reprint: Closed-Loop Materials Flow in Additive Manufacturing</i>	
Fairview High School	Boulder

### Junior Division Mathematics & Computer Sciences

#### First Place

Liam Griffin	7th grade
<i>Running Low on Water: Formula for the Future</i>	
Sargent Junior High School	Monte Vista

#### Second Place

Helen Wan	8th grade
<i>Measuring the Particulate Matter in Air Quality with Raspberry Pi</i>	
Challenger Middle School	Colorado Springs

# 2023 Colorado Science and Engineering Fair

## Grand Awards Press Release

### Third Place

Lucca Tumbush 8th grade  
Seth Wilson 8th grade  
*Friend/Foe Light*  
Eagleview Middle School Colorado Springs

### Honorable Mention

Aidan McGuire 7th grade  
*How Does Background Clutter Affect Image Recognition*  
St. Peter Catholic School Monument

### Honorable Mention

Daniel Joshua 8th grade  
*Pattern Detection i+6/8\*n Rubik's Cubes*  
Southern Hills Middle School Boulder

## Senior Division Mathematics & Computer Sciences

### First Place

Margaret Arthur 11th grade  
*A Novel Phosphosite Localization Approach using Tandem  
Phosphoprotein Mass Spectra and Temporal Dilated Networks*  
Fairview High School Boulder

### Second Place

Michael Gao 10th grade  
*Long Short-term Memory Recurrent Neural Networks as a Novel  
Strategy for Designing Targeted Antibiotic Treatments*  
Fairview High School Boulder

### Third Place

Liam Sweeney 12th grade  
*American Sign Language Translator*  
Centaurus High School Lafayette

## Junior Division Micro & Molecular Biology

### First Place

Lilly Hirsch 7th grade  
*How Well Do Disinfectants Work?*  
Foundations Academy Brighton

### Second Place

Piper Reitz 7th grade  
*Inflection Reflection: An Inquiry on Antibiotic Resistance*  
Lamar Middle School Lamar

### Third Place

Trista Hartman 8th grade  
*Cleaning My School, One Bacterium At A Time*  
Hi-Plains School Seibert

### Honorable Mention

Makayla Milligan 8th grade  
*Does the Environment Matter?*  
Cardinal Community Academy Keenesburg

### Honorable Mention

Connor Knight 7th grade  
*Disinfecting with Boiling Water: Does It Make Objects Safe?*  
Corwin International Magnet School Pueblo

## Senior Division Micro & Molecular Biology

### First Place

Kylie Berg 11th grade  
*Effect of Ionic Zinc Availability on the Replication of Human  
Mammary Epithelial Carcinoma Cells*  
Fairview High School Boulder

### Second Place

Vanya Lavu 10th grade  
*Am I Effective?*  
The Classical Academy Colorado Springs

### Third Place

Armaan Gill 10th grade  
*Confirming E. coli Transformations Using PCR Assay Tests and  
Electrophoresis*  
Lamar High School Lamar

### Honorable Mention

Max Montoya 9th grade  
*Terrific Tardigrades*  
Ignacio High School Ignacio

## Junior Division Physics & Astronomy

### First Place

Lexi Oder 8th grade  
*How Does Asymmetry Affect Human Optics?*  
Summit Middle Charter School Boulder

### Second Place

Fischer Robbins 8th grade  
*The Affects of Ski Wax*  
Summit Middle Charter School Boulder

### Third Place

Hayden Forst 6th grade  
*From Ignition, Will Cotton, Wool or Polyester Burn the  
Longest?*  
Dove Creek Middle School Dove Creek

### Honorable Mention

Evelyn Lapp 6th grade  
*The Force Is Strong with This One*  
Brush Middle School Brush

## Senior Division Physics & Astronomy

### First Place

Abigail Ross 12th grade  
*Detecting Flares (Part 5)*  
Lamar High School Lamar

### Second Place

Alexandra Flint 12th grade  
*Effect of Different Rover Wheel Materials on Triboelectric  
Charge of Lunar Simulant Dust Particles*  
Peak to Peak Charter School Lafayette

# 2023 Colorado Science and Engineering Fair

## Grand Awards Press Release

### Third Place

Parker Stone	12th grade
Bailey Link	12th grade
<i>Performance of Pyramidal Airfoils in an Oscillating Wind Chamber</i>	
Brush High School	Brush

### Honorable Mention

Addison Mondragon	9th grade
<i>Flourenheit: Does the Type of Flour Effect Its Flammability?</i>	
Monte Vista High School	Monte Vista

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## Junior Division

### Plant Sciences

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### First Place

Levi Goncharov	8th grade
<i>Ascorbic Acid In Leaves As A Method of Determining Air Quality</i>	
Challenge School	Denver

### Second Place

Tessa Piñeiro	6th grade
<i>Plentiful Waterful: Which Propagation Solution Helps Plants Grow?</i>	
Good Shepherd Catholic School	Denver

### Third Place

Shary Batiz	6th grade
<i>Vita-Grow?</i>	
Alta Vista Charter School	Lamar

### Honorable Mention

Paisley Wiersma	6th grade
Ashlyn Mosher	6th grade
<i>How Fast Does Corn Mold?</i>	
Genoa-Hugo School	Hugo

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## Senior Division

### Plant Sciences

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### First Place

Carlos Ochoa-Marquez	12th grade
<i>The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae</i>	
Monte Vista High School	Monte Vista

### Second Place

Naomi Kruse	9th grade
<i>Finding Ferns: Defining the Microclimate That Enables Gametophyte Growth in the Santa Monica Mountains</i>	
Schullandheim Home School	Colorado Springs

### Third Place

Hannah Shelton	10th grade
<i>Warning! High Fire Danger! Observing the Relationship between the Fuel Moisture Levels of Pinyon Pine and Sagebrush to Observed Precipitation Levels</i>	
Centauri High School	La Jara

# 2023 Colorado Science and Engineering Fair

## Grand Awards Press Release

### Colorado Science & Engineering Fair

*Saved By the Light*

#### *Elemer Bernath Memorial Technical Writing Award*

Mathangi Kurup 8th grade  
certificate  
Challenge School Denver  
*The Effect of Microalgae Grown in Different Concentrations of Liquid Carbon on Atmospheric CO2 Levels*

Grace Xue 8th grade  
certificate  
Summit Middle Charter School Boulder  
*Using C. elegans To Determine Toxicity of Marshall Fire*

Kaycee Clark 7th grade  
\$100, certificate  
Wray Jr/Sr High School Wray  
*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*

#### *Poster Art Contest*

Zoey Montoya 10th grade  
\$100, certificate  
La Junta Jr/Sr High School La Junta

#### *Ralph Desch Memorial Technical Writing Award*

Margaret Arthur 11th grade  
certificate  
Fairview High School Boulder  
*A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks*

Marissa Martinez 12th grade  
certificate  
Monte Vista High School Monte Vista  
*The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture of Invasive American Bullfrog*

Alexander Zhang 10th grade  
Stella Laird 10th grade  
\$100, certificate  
Fairview High School Boulder  
*Reprint: Closed-Loop Materials Flow in Additive Manufacturing*

#### *Student Choice Award*

Patrick Thomas 8th grade  
\$100, certificate  
Home School Delta  
*Volatus Veritas: The Examination of Aircraft Wing Shape According To Two Different Speed Variables*

John Butler 9th grade  
\$100, certificate  
West Grand High School Kremmling  
*Pecker Protector Egg Defender*

### Pioneers of Science

#### *Burt Ratan*

Chase Buron 7th grade  
\$50, certificate, poster of pioneer scientist  
Vail Mountain School Vail

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### *Dian Fossey*

Vivian Wolkow 6th grade  
\$50, certificate, poster of pioneer scientist  
North Middle School Colorado Springs  
*Does the Tail Remember What the Head Saw?*

### *Donna Theo Strickland*

Lexi Oder 8th grade  
\$50, certificate, poster of pioneer scientist  
Summit Middle Charter School Boulder  
*How Does Asymmetry Affect Human Optics?*

### *Elizabeth Helen Blackburn*

Terra McClure 7th grade  
\$50, certificate, poster of pioneer scientist  
Rocky Ford Jr/Sr High School Rocky Ford  
*Oh Snap!*

### *George Tchobanoglous*

Bode Monahan 6th grade  
\$50, certificate, poster of pioneer scientist  
Liberty School Joes  
*Air Pollution Detection System*

### *Jack Kilby*

Berkely Ulibarri 8th grade  
\$50, certificate, poster of pioneer scientist  
St. John the Evangelist Catholic School Loveland  
*Using Probability To Model Radioisotope Dating*

### *James Patrick Allison*

Jaylee Rodriques 8th grade  
\$50, certificate, poster of pioneer scientist  
Sargent Junior High School Monte Vista  
*Rubby, Rub, Dub: What's in Your Tub?*

### *John Goodenough*

Jocelyn Kramer 6th grade  
\$50, certificate, poster of pioneer scientist  
Good Shepherd Catholic School Denver  
*The Exodus of Ca<sup>+</sup>: Does Container Material Affect Calcium Levels in Milk?*

### *Leon Festinger*

Eliana Feit 8th grade  
\$50, certificate, poster of pioneer scientist  
Summit Middle Charter School Boulder  
*Grip Strength: Increase Amount*

### *Luther Burbank*

Tenleigh Lorenzini 8th grade  
\$50, certificate, poster of pioneer scientist  
Wiggins Middle School Wiggins  
*Light IT grow*

### *Mary Ainsworth*

William Walker 8th grade  
\$50, certificate, poster of pioneer scientist  
Monte Vista Middle School Monte Vista  
*Is This for a Grade?*



# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### *Steven Chu*

Durae Naranjo 8th grade  
\$50, certificate, poster of pioneer scientist  
Sargent Junior High School Monte Vista  
*What Are We Really Drinking?*

### *Wangari Muta Maathai*

Adam Ouattara 7th grade  
\$50, certificate, poster of pioneer scientist  
La Junta Jr/Sr High School La Junta  
*Fires in the Comanche Grasslands*

### **Military**

#### **United States Air Force Reserve Officer Training Corps**

##### *Air Force ROTC Award*

Patrick Thomas 8th grade  
certificate, over-the-shoulder sling pack, power bank charger,  
dog tag USB flash memory drive, dual USB car charger  
Home School Delta  
*Volatus Veritas: The Examination of Aircraft Wing Shape  
According To Two Different Speed Variables*

Kane Schrock 6th grade  
certificate, over-the-shoulder sling pack, power bank charger,  
dog tag USB flash memory drive, dual USB car charger  
Arickaree School Anton  
*Wind Tunnel Tests of Airfoil Performance*

Ersel Serdar 10th grade  
certificate, over-the-shoulder sling pack, power bank charger,  
dog tag USB flash memory drive, dual USB car charger  
Cherry Creek High School Greenwood Village  
*Designing A More Efficient Altitude Compensating Rocket  
Nozzle*

Parker Stone 12th grade  
Bailey Link 12th grade  
certificate, over-the-shoulder sling pack, power bank charger,  
dog tag USB flash memory drive, dual USB car charger  
Brush High School Brush  
*Performance of Pyramidal Airfoils in an Oscillating Wind  
Chamber*

### **United States Navy & Marine Corps**

#### *Navy Science & Engineering Award*

Kane Schrock 6th grade  
letter of congratulations, certificate, ONR medallion  
Arickaree School Anton  
*Wind Tunnel Tests of Airfoil Performance*

Aidan McGuire 7th grade  
letter of congratulations, certificate, ONR medallion  
St. Peter Catholic School Monument  
*How Does Background Clutter Affect Image Recognition*

Aanshi Shah 8th grade  
letter of congratulations, certificate, ONR medallion  
Thunder Vista P-8 School Broomfield  
*Make Some Noise! An Innovative Method to Produce Electricity  
Using Sound*

Vikram Raju 8th grade  
same award  
Aurora Quest K-8 School Aurora  
*Energenius: Clean Energy on the GO*

Rhys Hanson 12th grade  
letter of congratulations, ONR medallion, certificate, ONR  
medallion, & \$50 gift card (response required from winner to  
process payment)  
Conifer High School Conifer  
*The View From Above, Designing a High Power Rocket Glider  
to Expand Options for SAR, Mapping, and Military Applications*

Ersel Serdar 10th grade  
letter of congratulations, ONR medallion, certificate, ONR  
medallion, & \$50 gift card (response required from winner to  
process payment)  
Cherry Creek High School Greenwood Village  
*Designing A More Efficient Altitude Compensating Rocket  
Nozzle*

Alexandra Flint 12th grade  
letter of congratulations, ONR medallion, certificate, ONR  
medallion, & \$50 gift card (response required from winner to  
process payment)  
Peak to Peak Charter School Lafayette  
*Effect of Different Rover Wheel Materials on Triboelectric  
Charge of Lunar Simulant Dust Particles*

### **Organizational**

#### **Air & Waste Management Association**

#### **Rocky Mountain States Section**

##### *Air & Waste Management Award*

Juakin Sawatzky 8th grade  
\$100, certificate  
Liberty School Joes  
*Analysis of Mine Tailing Run-Off for Mine Tailings*

Zoe Wang 8th grade  
\$200, certificate  
Summit Middle Charter School Boulder  
*Recycling by Zapping: Recyclability and Efficiency of Recycling  
Different Polyesters*

Siena Parr 10th grade  
Samantha Abate 10th grade  
\$100, certificate  
Dolores High School Dolores  
*Radon in Rural Colorado: The Not So Noble Gas*

Carlos Ochoa-Marquez 12th grade  
\$200, certificate  
Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum,  
Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants  
Inoculated with Mycorrhizae*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### American Association of University Women

#### *AAUW CO Award for Women in STEM*

Jocelyn Kramer 6th grade  
 \$100, certificate  
 Good Shepherd Catholic School Denver  
*The Exodus of Ca<sup>+</sup>: Does Container Material Affect Calcium Levels in Milk?*

Cami Wolkow 9th grade  
 \$100, certificate  
 Palmer High School Colorado Springs  
*Isolation of Fungi Capable of Antibiotic Bioremediation*

### American Industrial Hygiene Association, Rocky Mountain Section

#### *Excellence in Protection of Occupational Health and Safety*

Varun Velmurugan 7th grade  
 \$150, certificate  
 Campus Middle School Greenwood Village  
*Risk Assessment of Fluoride Contamination in Water: A Study Using Brine Shrimp Model*

Siena Parr 10th grade  
 Samantha Abate 10th grade  
 \$150, certificate  
 Dolores High School Dolores  
*Radon in Rural Colorado: The Not So Noble Gas*

### American Institute of Chemical Engineers, Rocky Mountain Section

#### *Excellence in Chemical Engineering Award*

Annthylea Bachicha 7th grade  
 \$150, certificate  
 Goodnight School Pueblo  
*To Filter or Not To Filter*

Benjamin Bagelman 8th grade  
 Dominic Osterholt 8th grade  
 \$200, certificate  
 Friends School Boulder  
*Enchanted Sand: A Device To Turn Sand into a Fluidized Bed*

Autumn Schulz 9th grade  
 \$150, certificate  
 Ignacio High School Ignacio  
*Presence of PFA's in Colorado Water*

Ella Seevers 12th grade  
 Cole Gropp 12th grade  
 \$200, certificate  
 Conifer High School Conifer  
*Energy Efficient Cooling of Buildings in the Mountains*

### American Statistical Association

#### Colorado/Wyoming Chapter

#### *David Young Memorial Award*

Parker Mitchell 7th grade  
 \$200, certificate, student membership in the American Statistical Association, acknowledgment at chapter spring meeting and on chapter web site  
 Sargent Junior High School Monte Vista  
*What Are You Breathing? Radon Levels in Schools*

Angelina Wang 10th grade  
 same award  
 Fairview High School Boulder  
*The Bowman-Birk Inhibitor: The Peptide with Potential Improvement for the Oral Delivery of Insulin*

### American Vacuum Society Rocky Mountain Chapter

#### *Excellence in Physical Sciences & Engineering Award*

Aanshi Shah 8th grade  
 \$50, certificate, \$50 matching award to teacher/sponsor  
 Thunder Vista P-8 School Broomfield  
*Make Some Noise! An Innovative Method to Produce Electricity Using Sound*

Toshiro Nagafuji 8th grade  
 \$100, certificate, \$100 matching award to teacher/sponsor  
 The Logan School Denver  
*Alternatives to Sand in Concrete*

Nathaniel Ellis 11th grade  
 \$50, certificate, \$50 matching award to teacher/sponsor  
 Durango High School Durango  
*MOON-OPOLY II: Employing Additive Manufacturing Technology for Lunar Construction with Waterless Concrete*

Kelly Yang 10th grade  
 \$100, certification, \$100 matching award to teacher/sponsor  
 Fairview High School Boulder  
*Skin PT: Pressure and Temperature Sensors for Electronic Skin*

### ASM International

#### *ASM Materials Education Foundation Award*

Ren Richards 7th grade  
 \$100, certificate  
 Hi-Plains School Seibert  
*Ice, Ice, Baby*

Kate Guengerich 7th grade  
 \$150, certificate  
 Peak to Peak Charter School Lafayette  
*Infill Percentage and Strength to Weight Ratio of 3D Printed Parts*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### Broadcom Foundation

#### *Coding with Commitment Award*

Helen Wan 8th grade  
certificate, \$250 gift certificate, Raspberry Pi Pico kit  
Challenger Middle School Colorado Springs  
*Measuring the Particulate Matter in Air Quality with Raspberry Pi*

### Colorado Biology Teachers Association

#### *CBTA Best Biology Project Award*

Vivian Wolkow 6th grade  
\$100, certificate  
North Middle School Colorado Springs  
*Does the Tail Remember What the Head Saw?*

Grace Marmorstein 8th grade  
\$150, certificate  
Challenge School Denver  
*The Insect Repellent Properties of Nepetalactone*

Marissa Martinez 12th grade  
\$150, certificate  
Monte Vista High School Monte Vista  
*The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture of Invasive American Bullfrog*

Aditi Avinash 11th grade  
\$200, certificate  
Rock Canyon High School Littleton  
*Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown*

### Colorado Bioscience Institute

#### *Future of Life Sciences Award*

Emma Beeby 8th grade  
\$25, certificate  
Skinner Middle School Denver  
*The Effect of Stress on the Amount of Carbon Dioxide Exhaled*

Aditi Avinash 11th grade  
\$75, certificate, student will be featured in the Institute's "Success Stories" in print, online, and on social media  
Rock Canyon High School Littleton  
*Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown*

### Colorado Chemistry Teachers Association

#### *CCTA Chemistry Award*

River Wilson 6th grade  
\$150, certificate  
Lamar Middle School Lamar  
*The Magnificent Mastication Mechanism*

Victoria Balleau 12th grade  
\$150, certificate  
Evergreen High School Evergreen  
*The Effectiveness and Toxicity of Various Chemicals When Removing Aerosol Oil-Based Spray Paints*

### Colorado Environmental Health Association

#### *Environmental Health Award*

Parker Mitchell 7th grade  
\$75, certificate  
Sargent Junior High School Monte Vista  
*What Are You Breathing? Radon Levels in Schools*

Autumn Schulz 9th grade  
\$150, certificate, invitation to exhibit at the CEHA Annual Educational Conference (valued at \$400)  
Ignacio High School Ignacio  
*Presence of PFA's in Colorado Water*

### Colorado Foundation for Agriculture

#### *Jack Fenwick Award for Agricultural Science*

Ayush Vispute 8th grade  
\$50, certificate  
Mountain Ridge Middle School Colorado Springs  
*Investigating Alternate Treatments of Acid Rain*

Alora Dible 8th grade  
same award  
Liberty School Joes  
*Dust in the Wind: A Wind Erosion Analysis*

Carlos Ochoa-Marquez 12th grade  
same award  
Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

Landon Hartman 12th grade  
same award  
Evergreen High School Evergreen  
*Economic Impacts of Wolf Populations on Livestock Ranching and Big Game Hunting in the Northern Rockies*

### Colorado Medical Society

#### *CMS Educational Foundation Award*

Kapil Bhandaram 7th grade  
\$100, invitation to the winners and their parents to exhibit at the Colorado Medical Society Annual Meeting and attendance at the Presidential Inaugural Dinner with a paid overnight stay  
Campus Middle School Greenwood Village  
*Is There A Relationship Between Meditation and Muscle Reaction Time?*

Aditi Avinash 11th grade  
\$100, invitation to the winners and their parents to exhibit at the Colorado Medical Society Annual Meeting and attendance at the Presidential Inaugural Dinner with a paid overnight stay  
Rock Canyon High School Littleton  
*Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### Colorado Mineral Society

#### *Best Earth Science Award*

Karleigh Kinn 6th grade  
\$35, mineral specimen, certificate, book  
St. Columba Catholic School Durango  
*Meteor Impact 101*

Alora Dible 8th grade  
\$50, mineral specimen, certificate, book  
Liberty School Joes  
*Dust in the Wind: A Wind Erosion Analysis*

### Colorado Mycological Society

#### *Excellence in Mycological Research Award*

Makenzie Consaul 8th grade  
\$25, CMS membership, certificate, signed copy of Vera  
Evenson's "Rocky Mountain Mushrooms"  
Sargent Junior High School Monte Vista  
*The Power of Pantego?*

Cami Wolkow 9th grade  
\$50, CMS membership, certificate, signed copy of Vera  
Evenson's "Rocky Mountain Mushrooms"  
Palmer High School Colorado Springs  
*Isolation of Fungi Capable of Antibiotic Bioremediation*

Carlos Ochoa-Marquez 12th grade  
\$100, CMS membership, certificate, signed copy of Vera  
Evenson's "Rocky Mountain Mushrooms"  
Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

### Colorado Native Plant Society

#### *Colorado Native Plant Society Award*

Kaycee Clark 7th grade  
\$100, certificate, 1-year membership to Colorado Native  
Plant Society, book on Colorado native plants  
Wray Jr/Sr High School Wray  
*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*

Carlos Ochoa-Marquez 12th grade  
\$200, certificate, 1-year membership to Colorado Native  
Plant Society, book on Colorado native plants  
Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

### Colorado Section of the American Chemical Society

#### *ACS Chemistry Award*

Tymbri Priestley 6th grade  
\$50, certificate  
Mancos Middle School Mancos  
*Key Leavening Agents in Baking*

Skyelyn Lefever 8th grade  
same award  
Peetz Jr/Sr High School Peetz  
*Gel Electrophoresis*

Maya Rokhlenko 7th grade  
Olive Spohn 7th grade  
same award to each student  
Flagstaff Academy Longmont  
*Water = Bad: Your Solution To Not Seeing in Rain*

Emma Smith 6th grade  
\$75, certificate  
Mancos Middle School Mancos  
*Apple Rot Test*  
Jocelyn Kramer 6th grade  
\$125, certificate  
Good Shepherd Catholic School Denver  
*The Exodus of Ca<sup>+</sup>: Does Container Material Affect Calcium Levels in Milk?*

Arath Carrazco 8th grade  
\$150, certificate  
Wiggins Middle School Wiggins  
*Amount of Caffeine in Coffee*

Natalie Tinoco 10th grade  
\$50, certificate  
Miami Yoder High School Rush  
*Cleaning Products and Their Effects on Household Surfaces*

Victoria Balleau 12th grade  
same award  
Evergreen High School Evergreen  
*The Effectiveness and Toxicity of Various Chemicals When Removing Aerosol Oil-Based Spray Paints*

Emilio Martinez 10th grade  
\$75, certificate  
Alamosa High School Alamosa  
*Project SP-8 (Sabatier Process to Infinity)*

Augustus Miller 11th grade  
\$125, certificate  
Monte Vista High School Monte Vista  
*Synthesizing Cellulose Acetate and Paper-Based Plastic from Cellulose Derivatives to Produce a Biodegradable 3D Printable Filament*

Daniel Saeb 11th grade  
\$150, certificate  
Boulder High School Boulder  
*Investigating How Hydrogel Connectivity Influence Their Mechanical Properties*

### Colorado State University

#### College of Agricultural Sciences

#### *Innovations in the Science of Agriculture Award*

Ayush Vispute 8th grade  
\$500, certificate  
Mountain Ridge Middle School Colorado Springs  
*Investigating Alternate Treatments of Acid Rain*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

Grace Jones 7th grade  
 \$500, certificate  
 Wray Jr/Sr High School Wray  
*I'm Not Yoking Around : Evaluating How The Food That Chickens Eat Affect The Width of The Egg Shell*

Valerie Goodland 11th grade  
 \$500, certificate  
 Monte Vista High School Monte Vista  
*You're Fired: An Analysis of Fire on Soil Sterilization and Hydrophobicity*

Aditi Avinash 11th grade  
 \$500, certificate  
 Rock Canyon High School Littleton  
*Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown*

John Butler 9th grade  
 \$500, certificate  
 West Grand High School Kremmling  
*Pecker Protector Egg Defender*

### Colorado State University Colorado Natural Heritage Program CNHP Conservation Award

Kaycee Clark 7th grade  
 pint glass, Wetlands of Colorado guidebook, certificate  
 Wray Jr/Sr High School Wray  
*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*

Landon Hartman 12th grade  
 pint glass, Wetlands of Colorado guidebook, certificate  
 Evergreen High School Evergreen  
*Economic Impacts of Wolf Populations on Livestock Ranching and Big Game Hunting in the Northern Rockies*

### Colorado State University Department of Agricultural Biology Agricultural Biology Award

Grace Marmorstein 8th grade  
 \$100, certificate  
 Challenge School Denver  
*The Insect Repellent Properties of Nepetalactone*

Tyler Wise 8th grade  
 \$100, certificate  
 Liberty School Joes  
*Does Crop Residue Affect Soil Water Retention*

Naomi Kruse 9th grade  
 \$100, certificate  
 Schullandheim Home School Colorado Springs  
*Finding Ferns: Defining the Microclimate That Enables Gametophyte Growth in the Santa Monica Mountains*

Zoey Montoya 10th grade  
 Everett Ediger 11th grade  
 \$100, certificate  
 La Junta Jr/Sr High School La Junta  
*How Qualities of Soil Affect Where Aphonopelma Hentzi Burrows in the Colorado Grassland*

### Colorado State University Department of Chemistry Excellence in Chemistry Award

Gwendolyn Hohl 7th grade  
 Joe White 7th grade  
 \$150, certificate  
 Genoa-Hugo School Hugo  
*Does pH Affect How Fast Water Freezes?*

Ainsley Soleta 12th grade  
 Luke Ferguson 12th grade  
 \$150, certificate  
 Brush High School Brush  
*Tensile Strength of Nylon 6, 10*

### Colorado State University Dept. of Horticulture & Landscape Architecture Excellence in Horticulture Award

Levi Goncharov 8th grade  
 \$100, certificate  
 Challenge School Denver  
*Ascorbic Acid In Leaves As A Method of Determining Air Quality*

Theodore Chastang 8th grade  
 \$100, certificate  
 Summit Middle Charter School Boulder  
*Using Green Roofs to Absorb Floodwaters*

Naomi Kruse 9th grade  
 \$100, certificate  
 Schullandheim Home School Colorado Springs  
*Finding Ferns: Defining the Microclimate That Enables Gametophyte Growth in the Santa Monica Mountains*

Carlos Ochoa-Marquez 12th grade  
 \$100, certificate  
 Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

### Colorado State University, Energy Institute Excellence in Energy Achievement Award

Wilson Moyer 12th grade  
 \$250, certificate  
 Lakewood High School Lakewood  
*Applying Machine Learning to Forecast Solar Production and Reduce Reliance on Fossil Fuels*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### Colorado Veterinary Medical Association

#### *Veterinary Science Award*

Vivian Wolkow 6th grade  
 \$100, certificate  
 North Middle School Colorado Springs  
*Does the Tail Remember What the Head Saw?*

#### *Veterinary Science Award*

Harrison Ruleman 12th grade  
 \$100, certificate  
 Evergreen High School Evergreen  
*Do Snakes Avoid Certain Colors of Light?*

### Colorado-Wyoming Society of American Foresters

#### *Excellence in Forestry Research Award*

Adam Ouattara 7th grade  
 \$200, certificate  
 La Junta Jr/Sr High School La Junta  
*Fires in the Comanche Grasslands*

#### *Excellence in Forestry Research Award*

Valerie Goodland 11th grade  
 same award  
 Monte Vista High School Monte Vista  
*You're Fired: An Analysis of Fire on Soil Sterilization and Hydrophobicity*

### Gromko Family

#### *Gerald Gromko Memorial Award*

Ersel Serdar 10th grade  
 \$250, certificate  
 Cherry Creek High School Greenwood Village  
*Designing A More Efficient Altitude Compensating Rocket Nozzle*

### Institute of Electrical and Electronics Engineers, High Plains Section IEEE Award

Charlie Danko 8th grade  
 \$125 cash card, certificate  
 Flagstaff Academy Longmont  
*An Affordable Robot for Dangerous Factories*

#### *IEEE Award*

Margaret Arthur 11th grade  
 \$175 cash card, certificate  
 Fairview High School Boulder  
*A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks*

### Lemelson Foundation

#### *Lemelson Early Inventor Prize*

Justin Bendixson 8th grade  
 Myles Marhofer 8th grade  
 \$100 (response required from winner to process), certificate  
 Pueblo School for Arts & Science- Pueblo  
 Fulton Heights  
*Driver Safety Tech*

### Little Shop of Physics

#### *Matthew McCausland Memorial Award*

Rhett Taylor 8th grade  
 science equipment/instruments  
 Centauri Middle School La Jara  
*Battle of the Tape: Which Tape Has the Strongest Tensile and Adhesive Strength?*

#### *Matthew McCausland Memorial Award*

Kane Schrock 6th grade  
 science equipment/instruments  
 Arickaree School Anton  
*Wind Tunnel Tests of Airfoil Performance*

#### *Matthew McCausland Memorial Award*

Aanshi Shah 8th grade  
 science equipment/instruments  
 Thunder Vista P-8 School Broomfield  
*Make Some Noise! An Innovative Method to Produce Electricity Using Sound*

#### *Matthew McCausland Memorial Award*

Parker Stone 12th grade  
 Bailey Link 12th grade  
 science equipment/instruments  
 Brush High School Brush  
*Performance of Pyramidal Airfoils in an Oscillating Wind Chamber*

#### *Matthew McCausland Memorial Award*

Keegan Gomez 12th grade  
 science equipment/instruments  
 Centaurus High School Lafayette  
*Micro-renewable Energy*

### Lockheed Martin

#### *Lockheed Martin Aerospace Award*

Vikram Raju 8th grade  
 \$150, certificate  
 Aurora Quest K-8 School Aurora  
*Energenius: Clean Energy on the GO*

#### *Lockheed Martin Aerospace Award*

Nathaniel Ellis 11th grade  
 \$350, certificate  
 Durango High School Durango  
*MOON-OPOLY II: Employing Additive Manufacturing Technology for Lunar Construction with Waterless Concrete*

### Morrow Family

#### *Dental & Forensics Award*

Elise Brodsky 12th grade  
 Nederland Middle-Senior High School Nederland  
*The Effects of Perpetrator Race and Gender on the Reliability of Eyewitness Accounts*

#### *Dental & Forensics Award*

River Wilson 6th grade  
 Lamar Middle School Lamar  
*The Magnificent Mastication Mechanism*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### *Dental & Forensics Award*

Terra McClure 7th grade  
Rocky Ford Jr/Sr High School Rocky Ford  
*Oh Snap!*

### **National Centers for Environmental Information**

#### *NCEI Award of Scientific Achievement*

Alora Dible 8th grade  
cash award provided by an anonymous donor, certificate  
Liberty School Joes

*Dust in the Wind: A Wind Erosion Analysis*

### **National Geographic Society**

#### *That's Geography! Cultivating Empathy for the Earth Award*

Minna Most 12th grade  
Teddy Blum 12th grade  
\$100 (response required from winner to process), certificate  
Monarch High School Louisville

*Environmental Changes and the Effects of the SAM on Coccolithophores in the Southern Ocean*

### **Platte River Power Authority**

#### *PRPA's Special Award for Energy Efficiency & Innovation*

Vikram Raju 8th grade  
\$200, certificate  
Aurora Quest K-8 School Aurora

*Energenius: Clean Energy on the GO*

#### *PRPA's Special Award for Energy Efficiency & Innovation*

Alex Mwangi Wachira 10th grade  
\$300, certificate  
Central High School Pueblo  
*Self-Powered Electric Cars*

#### *PRPA's Special Award for Environmental Responsibility*

Helen Wan 8th grade  
\$200, certificate  
Challenger Middle School Colorado Springs  
*Measuring the Particulate Matter in Air Quality with Raspberry Pi*

#### *PRPA's Special Award for Environmental Responsibility*

Keegan Gomez 12th grade  
\$300, certificate  
Centaurus High School Lafayette  
*Micro-renewable Energy*

### **Regeneron**

#### *Regeneron Biomedical Science Award*

Margaret Arthur 11th grade  
certificate, \$375 (response required from winner to process payment)  
Fairview High School Boulder  
*A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks*

### **Rocky Mountain Association of Geologists**

#### *Excellence in Earth Sciences Award*

Sylvia Daugherty 8th grade  
\$200, certificate  
Sargent Junior High School Monte Vista  
*Fuels of the Future*

#### *Excellence in Earth Sciences Award*

Keegan Gomez 12th grade  
\$200, certificate  
Centaurus High School Lafayette  
*Micro-renewable Energy*

#### *Excellence in Earth Sciences Award*

Siena Parr 10th grade  
Samantha Abate 10th grade  
\$200, certificate  
Dolores High School Dolores  
*Radon in Rural Colorado: The Not So Noble Gas*

#### *Excellence in Earth Sciences Award*

Wilson Moyer 12th grade  
\$400, certificate  
Lakewood High School Lakewood  
*Applying Machine Learning to Forecast Solar Production and Reduce Reliance on Fossil Fuels*

### **Rocky Mountain Water Environment Association**

#### *Water Research Award*

Ren Richards 7th grade  
\$50, certificate  
Hi-Plains School Seibert  
*Ice, Ice, Baby*

#### *Water Research Award*

Cassius Middlemist 7th grade  
Carson Stone 7th grade  
\$75, certificate  
Brush Middle School Brush  
*Retain the Rain*

#### *Water Research Award*

Autumn Schulz 9th grade  
\$75, certificate  
Ignacio High School Ignacio  
*Presence of PFA's in Colorado Water*

### **Science Toy Magic, LLC**

#### *Chemistry CO2 & Greenhouse Gas Reduction Award*

Vikram Raju 8th grade  
\$50, certificate  
Aurora Quest K-8 School Aurora  
*Energenius: Clean Energy on the GO*

#### *Chemistry CO2 & Greenhouse Gas Reduction Award*

Sylvia Daugherty 8th grade  
\$100, certificate  
Sargent Junior High School Monte Vista  
*Fuels of the Future*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### *Chemistry CO2 & Greenhouse Gas Reduction Award*

Wilson Moyer 12th grade  
\$50, certificate  
Lakewood High School Lakewood

*Applying Machine Learning to Forecast Solar Production and Reduce Reliance on Fossil Fuels*

### *Chemistry CO2 & Greenhouse Gas Reduction Award*

Amrita Saini 11th grade  
\$100, certificate  
Peak to Peak Charter School Lafayette

*Investigating Natural Hydrogels to Sustain Bioluminescent Algae for Sustainable Lighting and CO2 Removal*

### *Physics Classroom Demonstration Award*

Evelyn Lapp 6th grade  
\$50, certificate  
Brush Middle School Brush

*The Force Is Strong with This One*

### *Physics Classroom Demonstration Award*

Kane Schrock 6th grade  
\$100, certificate  
Arickaree School Anton

*Wind Tunnel Tests of Airfoil Performance*

### *Physics Classroom Demonstration Award*

Natalie Muro 9th grade  
\$50, certificate  
Palmer High School Colorado Springs

*Buoy Wave Energy Converters Capture of Ocean Wave Energy*

### *Physics Classroom Demonstration Award*

Parker Stone 12th grade  
Bailey Link 12th grade  
\$100, certificate

Brush High School Brush  
*Performance of Pyramidal Airfoils in an Oscillating Wind Chamber*

### *Physics CO2 & Greenhouse Gas Reduction Award*

Sylvia Daugherty 8th grade  
\$50, certificate  
Sargent Junior High School Monte Vista

*Fuels of the Future*

### *Physics CO2 & Greenhouse Gas Reduction Award*

Aanshi Shah 8th grade  
\$100, certificate  
Thunder Vista P-8 School Broomfield

*Make Some Noise! An Innovative Method to Produce Electricity Using Sound*

### *Physics CO2 & Greenhouse Gas Reduction Award*

Natalie Muro 9th grade  
\$50, certificate  
Palmer High School Colorado Springs

*Buoy Wave Energy Converters Capture of Ocean Wave Energy*

### *Physics CO2 & Greenhouse Gas Reduction Award*

Keegan Gomez 12th grade  
\$100, certificate  
Centaurus High School Lafayette

*Micro-renewable Energy*

### *Plant Sciences CO2 & Greenhouse Gas Reduction Award*

Pason Dible 6th grade  
\$50, certificate  
Liberty School Joes

*The Effect of Organic Fertilizer on Corn*

### *Plant Sciences CO2 & Greenhouse Gas Reduction Award*

Teagan Bruchez 8th grade  
\$100, certificate  
West Grand Middle School Kremmling

*Grass Matters!*

### *Plant Sciences CO2 & Greenhouse Gas Reduction Award*

Hannah Shelton 10th grade  
\$50, certificate  
Centauri High School La Jara

*Warning! High Fire Danger! Observing the Relationship between the Fuel Moisture Levels of Pinyon Pine and Sagebrush to Observed Precipitation Levels*

### *Plant Sciences CO2 & Greenhouse Gas Reduction Award*

Carlos Ochoa-Marquez 12th grade  
\$100, certificate  
Monte Vista High School Monte Vista

*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

## **Society for Mining, Metallurgy & Exploration, Colorado Section**

### *Award for Excellence in Mineral Science & Engineering*

Toshiro Nagafuji 8th grade  
\$200, plaque  
The Logan School Denver

*Alternatives to Sand in Concrete*

### *Award for Excellence in Mineral Science & Engineering*

Kaycee Clark 7th grade  
\$300, plaque  
Wray Jr/Sr High School Wray

*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*

### *Award for Excellence in Mineral Science & Engineering*

Siena Parr 10th grade  
Samantha Abate 10th grade  
\$300, plaque

Dolores High School Dolores  
*Radon in Rural Colorado: The Not So Noble Gas*



# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### *Award for Excellence in Mineral Science & Engineering*

Carlos Ochoa-Marquez 12th grade  
 \$500, plaque  
 Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

### **Society of Manufacturing Engineers, Colorado Chapter 354**

#### *Andy Keller Memorial Award*

Charlie Danko 8th grade  
 \$200, certificate, recognition by the local chapter  
 Flagstaff Academy Longmont  
*An Affordable Robot for Dangerous Factories*

#### *Andy Keller Memorial Award*

Wilson Moyer 12th grade  
 \$100, certificate, recognition by the local chapter  
 Lakewood High School Lakewood  
*Applying Machine Learning to Forecast Solar Production and Reduce Reliance on Fossil Fuels*

#### *Andy Keller Memorial Award*

Alexander Zhang 10th grade  
 Stella Laird 10th grade  
 \$150, certificate, recognition by the local chapter  
 Fairview High School Boulder  
*Reprint: Closed-Loop Materials Flow in Additive Manufacturing*

### **Society of Women Engineers, Rocky Mountain Section**

#### *SWE Award*

Kaycee Clark 7th grade  
 \$75, certificate  
 Wray Jr/Sr High School Wray  
*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*

#### *SWE Award*

Aanshi Shah 8th grade  
 \$100, certificate  
 Thunder Vista P-8 School Broomfield  
*Make Some Noise! An Innovative Method to Produce Electricity Using Sound*

#### *SWE Award*

Natalie Muro 9th grade  
 \$75, certificate  
 Palmer High School Colorado Springs  
*Buoy Wave Energy Converters Capture of Ocean Wave Energy*

#### *SWE Award*

Ella Seevers 12th grade  
 Cole Gropp 12th grade  
 \$100, certificate  
 Conifer High School Conifer  
*Energy Efficient Cooling of Buildings in the Mountains*

### **Soil & Water Conservation Society, Colorado Chapter**

#### *Natural Resources Conservation Award*

Kaycee Clark 7th grade  
 \$100, certificate  
 Wray Jr/Sr High School Wray  
*Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*

#### *Natural Resources Conservation Award*

Landon Hartman 12th grade  
 same award  
 Evergreen High School Evergreen  
*Economic Impacts of Wolf Populations on Livestock Ranching and Big Game Hunting in the Northern Rockies*

### **State of Colorado - Division of Reclamation, Mining and Safety**

#### *DRMS Outstanding Science Exhibit Award*

Juakin Sawatzky 8th grade  
 \$75, certificate, gift bag  
 Liberty School Joes  
*Analysis of Mine Tailing Run-Off for Mine Tailings*

#### *DRMS Outstanding Science Exhibit Award*

Carlos Ochoa-Marquez 12th grade  
 \$75, certificate, gift bag  
 Monte Vista High School Monte Vista  
*The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*

### **STEMGirls, LLC**

#### *STEMGirls Middle School Rising Star Award*

Emma Beeby 8th grade  
 \$100, certificate  
 Skinner Middle School Denver  
*The Effect of Stress on the Amount of Carbon Dioxide Exhaled*

### **The Biophysical Society**

#### *The Biophysical Society Award*

Kylie Berg 11th grade  
 cash award, certificate  
 Fairview High School Boulder  
*Effect of Ionic Zinc Availability on the Replication of Human Mammary Epithelial Carcinoma Cells*

### **The Sara Volz Family**

#### *Best Contribution to Fundamental Science Award*

Margaret Arthur 11th grade  
 \$300, certificate  
 Fairview High School Boulder  
*A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks*

#### *Best Contribution to Fundamental Science Award*

Abigail Ross 12th grade  
 \$300, certificate  
 Lamar High School Lamar  
*Detecting Flares (Part 5)*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### Trout Unlimited

#### *TU River Conservation Award*

Brandon Stup	12th grade
\$75, certificate	
Evergreen High School	Evergreen
<i>Mimicking Invasive Crayfish Feeding Behavior with the Northern Crayfish</i>	

#### *TU River Conservation Award*

Lilly Figueroa	12th grade
\$125, certificate	
Mancos High School	Mancos
<i>Environmental DNA Testing of Rural Aquatic Ecosystems for the Presence of Fish as Bioindicators</i>	

#### *TU River Conservation Award*

Kaycee Clark	7th grade
\$200, certificate	
Wray Jr/Sr High School	Wray
<i>Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion</i>	

### Wilkins Family

#### *Young Entrepreneur's Award*

Ella Seevers	12th grade
Cole Gropp	12th grade
\$750, certificate	
Conifer High School	Conifer
<i>Energy Efficient Cooling of Buildings in the Mountains</i>	

### Wojtaszek Family

#### *Paul Wojtaszek Memorial Award*

Aditi Avinash	11th grade
\$200, certificate	
Rock Canyon High School	Littleton
<i>Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown</i>	

### Zonta Club

#### *Amelia Earhart Award*

Kate Guengerich	7th grade
\$100, certificate	
Peak to Peak Charter School	Lafayette
<i>Infill Percentage and Strength to Weight Ratio of 3D Printed Parts</i>	

### Scholarships

#### Colorado School of Mines

##### *Colorado School of Mines CSEF Scholarship*

Aditi Avinash	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Rock Canyon High School	Littleton
<i>Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown</i>	

##### *Colorado School of Mines CSEF Scholarship*

Augustus Miller	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Monte Vista High School	Monte Vista
<i>Synthesizing Cellulose Acetate and Paper-Based Plastic from Cellulose Derivatives to Produce a Biodegradable 3D Printable Filament</i>	

##### *Colorado School of Mines CSEF Scholarship*

Jacob Ho	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Fairview High School	Boulder
<i>How Abnormally Dry and Windy Were Days with Fires in Colorado's Front Range from 1984-2021? Towards Identifying Fire-Predictors for a Machine Learning Modeling System</i>	

##### *Colorado School of Mines CSEF Scholarship*

Jessie Hsu	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Fairview High School	Boulder
<i>Predicting Patient Disability in MS from MRI Brain Abnormalities Using Machine Learning</i>	

##### *Colorado School of Mines CSEF Scholarship*

Nathaniel Ellis	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Durango High School	Durango
<i>MOON-OPOLY II: Employing Additive Manufacturing Technology for Lunar Construction with Waterless Concrete</i>	

##### *Colorado School of Mines CSEF Scholarship*

Amrita Saini	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Peak to Peak Charter School	Lafayette
<i>Investigating Natural Hydrogels to Sustain Bioluminescent Algae for Sustainable Lighting and CO2 Removal</i>	

##### *Colorado School of Mines CSEF Scholarship*

Margaret Arthur	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Fairview High School	Boulder
<i>A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks</i>	

##### *Colorado School of Mines CSEF Scholarship*

Daniel Saeb	11th grade
\$1,000 Mines scholarship, renewable for up to 3 additional years for use towards an undergraduate degree at CSM	
Boulder High School	Boulder
<i>Investigating How Hydrogel Connectivity Influence Their Mechanical Properties</i>	

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### Colorado State University, College of Agricultural Sciences

#### *Excellence in Agricultural Innovation Scholarship*

Luci Bruchez 10th grade  
Joseph Brobst 10th grade  
\$1,000 non-renewable scholarship to attend Colorado State University with a College of Agricultural Sciences major  
West Grand High School Kremmling  
*Pasture Plump*

### Colorado State University, Pueblo CSU Pueblo Scholarship

Amrita Saini 11th grade  
\$1,000 renewable scholarship to attend CSU Pueblo  
Peak to Peak Charter School Lafayette  
*Investigating Natural Hydrogels to Sustain Bioluminescent Algae for Sustainable Lighting and CO2 Removal*

### Society

#### American Psychological Association

#### *APA Achievement in Research in Psychological Science Award*

Juliet Huckabay 6th grade  
certificate, 1-year affiliate student membership in the APA  
Skinner Middle School Denver  
*The Effect of Visual Stimulus on Heart Rate Across Different Age Groups*

#### *APA Achievement in Research in Psychological Science Award*

Elise Brodsky 12th grade  
same award  
Nederland Middle-Senior High Nederland  
School  
*The Effects of Perpetrator Race and Gender on the Reliability of Eyewitness Accounts*

### Association for Women Geoscientists

#### *AWG Excellence in the Geosciences Award*

Juakin Sawatzky 8th grade  
certificate  
Liberty School Joes  
*Analysis of Mine Tailing Run-Off for Mine Tailings*

#### *AWG Excellence in the Geosciences Award*

Siena Parr 10th grade  
Samantha Abate 10th grade  
same award  
Dolores High School Dolores  
*Radon in Rural Colorado: The Not So Noble Gas*

### NASA

#### *NASA Earth System Science Award*

Zoe Wang 8th grade  
certificate  
Summit Middle Charter School Boulder  
*Recycling by Zapping: Recyclability and Efficiency of Recycling Different Polyesters*

### *NASA Earth System Science Award*

Minna Most 12th grade  
Teddy Blum 12th grade  
same award  
Monarch High School Louisville  
*Environmental Changes and the Effects of the SAM on Coccolithophores in the Southern Ocean*

### National Oceanic and Atmospheric Administration

#### *Taking the Pulse of the Planet Award*

Ayush Vispute 8th grade  
certificate, invitation to a career exploration webinar in Summer 2023  
Mountain Ridge Middle School Colorado Springs  
*Investigating Alternate Treatments of Acid Rain*

### Ricoh

#### *Ricoh Sustainable Development Award*

Theodore Chastang 8th grade  
certificate  
Summit Middle Charter School Boulder  
*Using Green Roofs to Absorb Floodwaters*

#### *Ricoh Sustainable Development Award*

Toshiro Nagafuji 8th grade  
same award  
The Logan School Denver  
*Alternatives to Sand in Concrete*

### Society for In Vitro Biology

#### *Outstanding Achievement in In Vitro Biology Award*

Joshua Ho 11th grade  
certificate, membership in the Society, recognition in Society's news letter and on website  
Fairview High School Boulder  
*The Effects of Dissolved Organic Matter (DOM) on Emiliania Huxleyi*

#### *Outstanding Achievement in In Vitro Biology Award*

Valerie Goodland 11th grade  
same award  
Monte Vista High School Monte Vista  
*You're Fired: An Analysis of Fire on Soil Sterilization and Hydrophobicity*

### United States Agency for International Development

#### *USAID Science Champion Award*

Grace Marmorstein 8th grade  
certificate  
Challenge School Denver  
*The Insect Repellent Properties of Nepetalactone*

#### *USAID Science Champion Award*

Will Noble 10th grade  
same award  
Yuma High School Yuma  
*Turbine Efficiency in Small-Scale Hydropower*

# 2023 Colorado Science and Engineering Fair

## Special Awards Press Release

### United States Metric Association

#### *Outstanding Achievement in the Use of the International System Award*

Jocelyn Kramer 6th grade  
certificate, membership in the US Metric Association  
Good Shepherd Catholic School Denver  
*The Exodus of Ca+: Does Container Material Affect Calcium Levels in Milk?*

#### *Outstanding Achievement in the Use of the International System Award*

Ainsley Soleta 12th grade  
Luke Ferguson 12th grade  
certificate, membership in the US Metric Association  
Brush High School Brush  
*Tensile Strength of Nylon 6, 10*

### Water Environment Federation

#### *Stockholm Junior Water Prize*

Tyler Wise 8th grade  
certificate  
Liberty School Joes  
*Does Crop Residue Affect Soil Water Retention*

#### *Stockholm Junior Water Prize*

Liam Griffin 7th grade  
same award  
Sargent Junior High School Monte Vista  
*Running Low on Water: Formula for the Future*

#### *Stockholm Junior Water Prize*

Juakin Sawatzky 8th grade  
same award  
Liberty School Joes  
*Analysis of Mine Tailing Run-Off for Mine Tailings*

### Yale Science & Engineering Association

#### *Outstanding Achievement in Science & Engineering Award*

Augustus Miller 11th grade  
certificate, medallion (response required from winner to process)  
Monte Vista High School Monte Vista  
*Synthesizing Cellulose Acetate and Paper-Based Plastic from Cellulose Derivatives to Produce a Biodegradable 3D Printable Filament*

### Teacher

### Colorado Association of Science Teachers

#### *CAST Teacher Award*

Terri Paulson  
\$150, certificate, 1-year free CAST membership  
Sargent Jr/Sr High School Monte Vista  
*CAST Teacher Award*

Amy Melby  
same award  
Yuma High School Yuma

### Colorado Science & Engineering Fair

#### *Doug Steward Memorial Award*

Andrew Shelton  
\$75, certificate  
Centauri Middle School La Jara

#### *Doug Steward Memorial Award*

Eric Halingstad  
\$75, certificate  
Conifer High School Conifer

#### *Doug Steward Memorial Award*

Dave Hopcia  
\$75, certificate  
Dolores High School Dolores

### Lockheed Martin

#### *CSEF Teacher of the Year Award*

Andrew Shelton  
\$3,000 grant to use for their school's science fair program, certificate  
Centauri Middle School La Jara