

# 2020 Colorado Science and Engineering Fair Grand Awards Press Release

## Junior Division Animal Sciences

### First Place

Deena Safiulla 8th grade  
*The Mightiest Creatures of All*  
Challenge School Denver

### Second Place

Tatum Duvall 6th grade  
*A Study on the Prevalence of Salmonella in the Saliva of Vizsla Dogs Fed Raw vs. Cooked Diet*  
Thomas MacLaren School Colorado Springs

### Third Place

Annette Bechtolt 7th grade  
*Stifle Joint Replacement in Equines*  
St. Columba Catholic School Durango

### Honorable Mention

Bonnie Koehn 8th grade  
*SandRid: Does It Really Rid Sand?*  
Cardinal Community Academy Keenesburg

## Senior Division Animal Sciences

### First Place

Madison Miller 9th grade  
*Whoa! You're Stressing Me Out! The Effects of Transportation on a Horse's Stress Levels*  
Monte Vista High School Monte Vista

### Second Place

Anna Meunier 11th grade  
Olivia Gibson 11th grade  
*Drosophila melanogaster as a Model Organism for CBD Research as Indicated by Anxious Behavior*  
Rock Canyon High School Highlands Ranch

### Third Place

Blaine Gillespie 11th grade  
*Effect of Different Concentrations of Cannabidiol (CBD) on Terrestrial Snails*  
Monte Vista High School Monte Vista

## Junior Division Behavioral & Social Sciences

### First Place

Julianne Vega 6th grade  
*Who's Got the Upper Hand?*  
Dolores Elementary School Dolores

### Second Place

Kelly Young 8th grade  
*Multitasking in the Brain*  
Summit Middle Charter School Boulder

### Third Place

Malaika Burkholder 8th grade  
*Mental Music*  
St. John the Evangelist Catholic School Loveland

### Honorable Mention

Daota Cheesman 8th grade  
*Case of Mistaken Identity*  
Bromley East Charter School Brighton

### Honorable Mention

Aeneas McBrayer 7th grade  
*Misperceptions*  
St. Columba Catholic School Durango

## Senior Division Behavioral & Social Sciences

### First Place

Sierra Zeller 11th grade  
Helena Harezlak 11th grade  
*Stressmap: The Effect of a Coordinated Exam Schedule on Student Stress*  
Fairview High School Boulder

### Second Place

Ethan Gavin 9th grade  
*Analyzing the Effects of Micro-Sleep on Adolescent Brains Correlated to the Amount of Sleep Received*  
The Classical Academy Colorado Springs

### Third Place

Lilly Figueroa 9th grade  
*Ethical Responsibilities in Relation to Human-Pig Chimeras*  
Mancos High School Mancos

### Honorable Mention

Reese Titensor 11th grade  
Reagan Oates 11th grade  
*Identifying the Most Prevalent Sources of Stress in Adolescent Teens at Rock Canyon High School*  
Rock Canyon High School Highlands Ranch

## Junior Division Chemistry & Biochemistry

### First Place

Anjana Radha 8th grade  
*Coffee: An Amylase Activator or Inhibitor?*  
Peak to Peak Charter School Lafayette

### Second Place

Bradin Gurule 6th grade  
*Clean Cents*  
St. Columba Catholic School Durango

### Third Place

Moriah Ashley 8th grade  
*Oh Burn!*  
Ignacio Middle School Ignacio

### Honorable Mention

Emma Sewell 7th grade  
*The Heat Is On*  
Sargent Jr/Sr High School Monte Vista

Senior Division  
Chemistry & Biochemistry

**First Place**

Charles Wang 11th grade  
*Making AI Smarter: A Novel Approach to Creating a New Generation of Smart Chemical Sensors*  
Fossil Ridge High School Fort Collins

**Second Place**

Kylie Guiles 11th grade  
*Creating Crosslinking Compounds to Cure Cancer*  
Mancos High School Mancos

**Third Place**

Ana Barovic 12th grade  
*The Effect of Light on Black Tea*  
Colorado Springs Early Colleges Colorado Springs

**Honorable Mention**

Sophia Westerkamp 12th grade  
Carlina Wharton-Bucher 12th grade  
*Three Dimensional Surface Models: An Innovative Method of Thermodynamics Education*  
Monarch High School Louisville

**Honorable Mention**

Chinmay Jayanty 10th grade  
*Pure or Impure: Rapid Test for Adulteration in Milk-Part 2*  
Sargent Jr/Sr High School Monte Vista

Junior Division  
Earth & Space Sciences

**First Place**

Samantha Schaefer 8th grade  
*Cactus, Tree, or Flower . . . Which Has More CO<sub>2</sub> Reduction Power*  
The Classical Academy Colorado Springs

**Second Place**

Averi Ulibarri 8th grade  
*Schoolyard Resistivity: What Lies Beneath?*  
St. John the Evangelist Catholic School Loveland

**Third Place**

Benjamin Sundheim 7th grade  
*How Hot Are Your Rocks?*  
St John the Evangelist Catholic School Loveland

**Honorable Mention**

Angelina Foutz 7th grade  
*Hemp Hemp Hooray*  
St. Columba Catholic School Durango

Senior Division  
Earth & Space Sciences

**First Place**

Sarah Tang 12th grade  
*Orbit Determination and Projection of Potentially Hazardous Asteroid 12538 (1998 OH)*  
Fairview High School Boulder

**Second Place**

Rory Sweedler 12th grade  
*Investigating One of Colorado's Last Brontotheres*  
Monarch High School Louisville

**Third Place**

Leah Clayton 12th grade  
*Climate Is Changing & Permafrost Is Thawing*  
Evergreen High School Evergreen

**Honorable Mention**

Max Warnock 12th grade  
*Gravitational Field Mapping of the Bellvue Dome Fault with a Pendulum*  
PSD Global Academy Fort Collins

**Honorable Mention**

Kathryn Kummel 11th grade  
*Investigating Urban Heat Islands Using Mathematical Models, Satellite Data, and On-Site Measurements*  
Palmer High School Colorado Springs

Junior Division  
Energy

**First Place**

Megan Wagner 8th grade  
*Investigation of Electrode Materials for Batteries*  
Peak to Peak Charter School Lafayette

**Second Place**

Braeleigh MacAskill 7th grade  
*Raise the Roof*  
Holy Family Catholic School Grand Junction

**Third Place**

Diego Gutierrez- 7th grade  
*Turning Heat into Electricity*  
Escuela De Guadalupe Denver

Senior Division  
Energy

**First Place**

Julia Warnock 10th grade  
*Biomimetic Screen-Printed Photoanodes in Dye-Sensitized Solar Cells*  
PSD Global Academy Fort Collins

**Second Place**

Rithwik Mylavarapu 12th grade  
*Utilizing Deep Learning and Edge Cloud Computing for Efficient Road Surface Condition Classification*  
Fairview High School Boulder

**Third Place**

Jasmine Li 12th grade  
*Applying a Novel Hot-Casting Technique to Increase Perovskite Solar Cell Stability & Efficiency*  
Fairview High School Boulder

**Honorable Mention**

Mohamed Ibrahim 10th grade  
*Utilizing an Alkali Catalyst to Help Identify Alternative Feedstocks in Biodiesel Synthesis*  
Wiggins Jr/Sr High School Wiggins

Junior Division  
Engineering

**First Place**

Rithvik Ijju 8th grade  
*Neuroplasticity: Enabling Stroke Patients to Repair Motor Skills by Imitating Motion Between Hands*  
Challenge School Denver

**Second Place**

Genevieve Carter 8th grade  
*Effect of Tool Path on Strength of 3D Printed Parts*  
Home School Lafayette

**Third Place**

Nathaniel Ellis 8th grade  
*Human Biomechatronics: Strength Augmentation and Improving Muscle Communication*  
Escalante Middle School Durango

**Honorable Mention**

Owen Doherty 8th grade  
*Brace Yourself: Pipe Fence Brace Design Stability Comparison*  
Brason School Branson

**Honorable Mention**

Oliver Knowles 6th grade  
*The Effects of Wing Camber on Air Turbulence*  
Frontier Academy Greeley

Senior Division  
Engineering

**First Place**

Matthew Anderson 10th grade  
*Real-Time Seizure Forecasting for Epileptics on a Consumer Product*  
Cherry Creek High School Greenwood Village

**Second Place**

Siddharth Bharthulwar 11th grade  
*An Eye in the Fog: Development of a Novel Navigational and Visual Guidance System for Aircraft Operations in Low Visibility Conditions*  
Fairview High School Boulder

**Third Place**

Tate Schrock 10th grade  
*Autonomous Glider for Radiosonde Recovery*  
Arickaree School Anton

**Honorable Mention**

Max Witwer 11th grade  
Alexander Grisak 11th grade  
*Designing an Affordable EKG Using Neural Networks for Computer Aided Diagnoses*  
Caprock Academy Grand Junction

**Honorable Mention**

Steven Lewis 10th grade  
*Cybersecurity Engineering for Aircraft*  
Pine Creek High School Colorado Springs

Junior Division  
Environmental Sciences

**First Place**

Emily Hume 7th grade  
*Reduction of Nitrates in Drinking Water: What Works?*  
Walsh Jr/Sr High School Walsh

**Second Place**

Naomi Kruse 6th grade  
*I Speak for the Trees: The Use of Tree-Ring Analysis of Pinus ponderosa To Detect A Local Climate History*  
Schullandheim Colorado Springs

**Third Place**

Ezra Voth 8th grade  
*Measuring Water Flow Through Specific Placements of Rocks on Varying Slopes to Reduce Soil Attrition*  
The Classical Academy Colorado Springs

**Honorable Mention**

Cecelia Houseweart 8th grade  
*Temperatures Affect Microscopic Organisms*  
Hotchkiss K-8 School Hotchkiss

**Honorable Mention**

Liam Doherty 6th grade  
*Ice Ice Baby: A Comparison of Stock Tank Ice Formation Reduction Methods*  
Branson School Branson

Senior Division  
Environmental Sciences

**First Place**

Andres Villa 11th grade  
*Analysis of Gambel's Oak Spread and Influence within Gunnison's Sage-grouse Habitat, Poncha Pass, CO*  
Monte Vista High School Monte Vista

**Second Place**

Mikailah Feinman 10th grade  
Nathan Nash 10th grade  
*Shifting to a New Normal: A Statistical Analysis of Colorado's Observed Climatological Variability from 1895 to the Present*  
Primero Jr/Sr High School Weston

**Third Place**

Alden Kruse 11th grade  
*Mysteries in the Mud: Tracking Human Impact and Environmental Change By Heat Pressure Extracted Pond Sediment Core*  
Schullandheim Colorado Springs

**Honorable Mention**

Katy Sun 12th grade  
*Source Apportionment Using 7-Wavelength Aethalometer Measurements*  
Monarch High School Louisville

**Honorable Mention**

Estelle Brewer 12th grade  
Cody Martin 12th grade  
*Beef Cattle Methane Emissions in Feedlots: A Sequestration Plan Utilizing Pressure Swing Adsorption*  
Nederland Middle-Senior High School Nederland

Junior Division  
Mathematics & Computer Sciences

**First Place**

Margaret Arthur 8th grade  
*Creating More Efficient Neural Networks Used to Find  
Exoplanets Using SVD and Compression Techniques*  
Summit Middle Charter School Boulder

**Second Place**

Sam Forsberg 8th grade  
*From Sadsness to Gladness!*  
Good Shepherd Catholic School Denver

**Third Place**

Nathan Yang 8th grade  
*Prioritization of Type 2 Diabetes Genetic Risk Factors Based  
on Functional Relevance*  
Challenge School Denver

**Honorable Mention**

Kai Morton 8th grade  
*Chemical Problem? Chemical Solution.*  
The Classical Academy Colorado Springs

**Honorable Mention**

Shurya Hooda 7th grade  
Abhinav Krishna 7th grade  
*You Sunk My Battleship! Examining Probability Density in  
Battleship*  
Challenge School Denver

Senior Division  
Mathematics & Computer Sciences

**First Place**

Siddarth Ijju 12th grade  
*Predicting the Onset of Alzheimer's Disease Using Graph  
Neural Networks and Diffusion Tensor Imaging*  
Cherry Creek High School Greenwood Village

**Second Place**

Sara Nehring 11th grade  
*Predicting Geomagnetic Storms Using Artificial Intelligence*  
Monte Vista High School Monte Vista

**Third Place**

Austen Mazenko 12th grade  
*Feasibility of Determining Markov Model Dynamics from  
Equilibria*  
Cherry Creek High School Greenwood Village

**Honorable Mention**

Mikyla Bowen 12th grade  
*Applying Machine Learning Algorithms for Classification  
Using Breast Cancer Data Research Binder*  
Northridge High School Greeley

**Honorable Mention**

Edward Wawrzynek 10th grade  
*A Compiler Supporting the Differing Syntactic  
Representation of Programs*  
Fairview High School Boulder

Junior Division  
Medicine & Health

**First Place**

Geo Raguraman 8th grade  
*RUN For Your LIFE*  
Discovery Canyon Campus Colorado Springs

**Second Place**

Cedar Wine 8th grade  
Devin Farahani 7th grade  
*The Purr-fect Pet: The Relationship Between Pets and  
Human Blood Pressure*  
Friends Middle School Boulder

**Third Place**

Joshua Ho 8th grade  
*Here Comes the Sun Run!!!*  
Summit Middle Charter School Boulder

**Honorable Mention**

Asha Thompson 6th grade  
*Rub-a-Dub-Dub-Apple in the Tub*  
Limon Schools Limon

**Honorable Mention**

Christopher Wood 7th grade  
*Bug Off!*  
Flagstaff Academy Longmont

Senior Division  
Medicine & Health

**First Place**

Cooper Hanley 11th grade  
Liam Barnes 12th grade  
Cosmo Mitchell 12th grade  
*Applying Gold Nanoparticles to Denature Proteins  
Characteristic of Alzheimer's Disease*  
Monarch High School Louisville

**Second Place**

Evelyn Bodoni 12th grade  
*Novel Preventative Strategies for Acute Kidney Injury &  
Chronic Kidney Disease*  
Cherry Creek High School Greenwood Village

**Third Place**

Krithik Ramesh 12th grade  
*Determining Gene Interactions in Congenital Heart Disease  
for Development of a Comprehensive Fetal Cardiac  
Diagnostics Platform*  
Cherry Creek High School Greenwood Village

**Honorable Mention**

Cora Schrock 9th grade  
*A CAE Case Study: EEG & ECG Correlation*  
Arickaree School Anton

**Honorable Mention**

Tyler Gregg 10th grade  
*Bos Taurus Protein Deterioration (Frozen vs. Refrigerated)*  
Miami-Yoder School Rush

Junior Division  
Microbiology & Molecular Biology

**First Place**

Chloe Pennington 6th grade  
*Baffling Bacteria*  
Friends Middle School Boulder

**Second Place**

Daniel Strevett 8th grade  
*An Analysis on the Effect of Varied Tooth Disinfectants on Streptococcus Mutans*  
The Classical Academy Colorado Springs

**Third Place**

Autumn Schulz 6th grade  
*Can A D.I.Y. Filter Make River Water Safe To Drink?*  
Ignacio Middle School Ignacio

**Honorable Mention**

Garret Drullinger 7th grade  
*Does Treated Seed Corn Effect Soil Microbes?*  
Liberty School Joes

**Honorable Mention**

Armaan Gill 7th grade  
*Coliphage to the Rescue*  
Lamar Middle School Lamar

Senior Division  
Microbiology & Molecular Biology

**First Place**

Gitanjali Rao 9th grade  
*A Novel Approach To Early Directional Diagnosis of Prescription Opioid Addiction*  
STEM School Highlands Ranch Highlands Ranch

**Second Place**

Chloe Henry 12th grade  
*Using Bioreactors to Eliminate Hazards to Coral Reefs*  
Golden High School Golden

**Third Place**

Harrison Whittemore 12th grade  
*Studying the Effects of Use of Chemically Synthesised crRNA on CRISPR-Cas12a Nucleic Acid Detection*  
Fairview High School Boulder

**Honorable Mention**

Sarah Bian 11th grade  
*Targeting Threonine Kinases in Enterobacteriaceae Using CRISPR cas9*  
Cherry Creek High School Greenwood Village

**Honorable Mention**

Riley England 12th grade  
Camryn Allen 11th grade  
Shelbie Johnson 12th grade  
*The Effect of Microplastic Water Contamination on Phagocytosis in Tetrahymena thermophila*  
Rock Canyon High School Highlands Ranch

Junior Division  
Physics

**First Place**

Ayan Vaishnav 8th grade  
*What's Up Th-air? Utilizing a Simulation to Design the Impeccable Airfoil for a Commercial Airliner*  
Campus Middle School Greenwood Village

**Second Place**

Quinn Burns 8th grade  
*Tennis Ball Bounce*  
Peak to Peak Charter School Lafayette

**Third Place**

Bryan Williams 8th grade  
*Walking the Planck of Quantum Mechanics*  
Hoehne Jr/Sr High School Hoehne

Senior Division  
Physics

**First Place**

Eleanor Gentry 12th grade  
*How the Toroidal Magnetic Field Distribution in a Hot Accretion Flow Affects the Flow's Evolution*  
Peak to Peak Charter School Lafayette

**Second Place**

Olivia Odle 11th grade  
Brady Sanchez 11th grade  
*Dancing Drops*  
Brush High School Brush

**Third Place**

Mark Reamon 10th grade  
*The Ponderomotive Force of Plasmas and the Conversion Potential of Low Ionization Energies*  
Fairview High School Boulder

**Honorable Mention**

Eastin Hastings 11th grade  
*Beyond the Weld*  
Liberty School Joes

Junior Division  
Plant Sciences

**First Place**

Jordan Rockey 8th grade  
*Does Purple Skin Affect Greening In Potatoes?*  
Sargent Jr/Sr High School Monte Vista

**Second Place**

Kate Bachrach 8th grade  
*Algae and Nutrients: Bloom or Doom?*  
Summit Middle Charter School Boulder

**Third Place**

Karson Harbison 6th grade  
*Plant Senses: Exploring How Plants Sense Water*  
St. Columba Catholic School Durango

**Honorable Mention**

Grant Weaber 8th grade  
Aiden Adams 8th grade  
*Fast and Furious Growth*  
Eaton Middle School Eaton

Senior Division  
Plant Sciences

**First Place**

Derek Fearon 12th grade  
Hope James 12th grade  
Sage Wheeler 12th grade  
*Nitrogen Fixation Efficacy of Trifolium repens with Various Rhizobia Inoculant Treatments*  
Rock Canyon High School Highlands Ranch

**Second Place**

Carlos Ochoa-Marquez 9th grade  
*Growing Growing Gone!: Chemical Leaching and Its Effects on Plant Life*  
Monte Vista High School Monte Vista

**Third Place**

Peyton Leyendecker 12th grade  
Hunter Leyendecker 12th grade  
*Enriched Cyanoacrylate as a Transdermal Nutrient Transfer and Attachment Method for Gracilaria sp.*  
SkyView Academy Highlands Ranch

Junior Division  
Best of CSEF Project

**First Place**

Margaret Arthur 8th grade  
*Creating More Efficient Neural Networks Used to Find Exoplanets Using SVD and Compression Techniques*  
Summit Middle Charter School Boulder

**Second Place**

Rithvik Ijju 8th grade  
*Neuroplasticity: Enabling Stroke Patients to Repair Motor Skills by Imitating Motion Between Hands*  
Challenge School Denver

**Third Place**

Julianne Vega 6th grade  
*Who's Got the Upper Hand?*  
Dolores Elementary School Dolores

Senior Division  
Best of CSEF Project

**First Place**

Matthew Anderson 10th grade  
*Real-Time Seizure Forecasting for Epileptics on a Consumer Product*  
Cherry Creek High School Greenwood Village

**Second Place**

Sarah Tang 12th grade  
*Orbit Determination and Projection of Potentially Hazardous Asteroid 12538 (1998 OH)*  
Fairview High School Boulder

**Third Place**

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Hope James 12th grade  
Sage Wheeler 12th grade  
*Nitrogen Fixation Efficacy of Trifolium repens with Various Rhizobia Inoculant Treatments*  
Rock Canyon High School Highlands Ranch