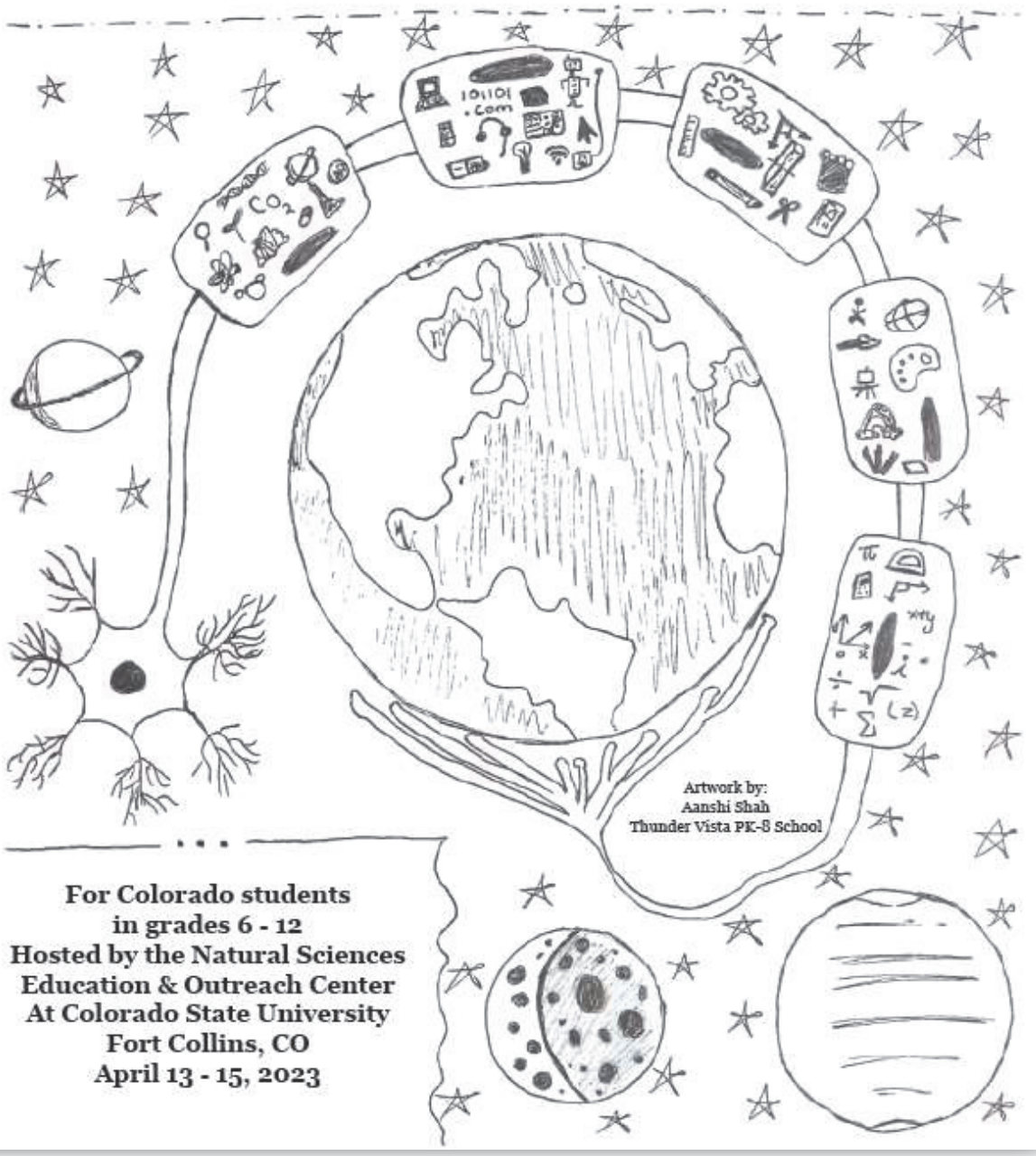
COLORADO

Science and Engineering Fair



For Colorado students
in grades 6 - 12
Hosted by the Natural Sciences
Education & Outreach Center
At Colorado State University
Fort Collins, CO
April 13 - 15, 2023

COLORADO SCIENCE AND ENGINEERING FAIR
EDUCATION
CREATIVITY
COMPETITION

College of Natural Sciences
Education & Outreach Center

Welcome to the 2023 Colorado Science & Engineering Fair

Congratulations to this year's CSEF student researchers. The dedication displayed by each and every participant is commendable. Each of you is already a winner, having completed a self-directed scientific research project and earned the opportunity to represent your region at the state level. We are all here to celebrate your success and applaud your parents, teachers and mentors for their enthusiastic support. From start to finish, and at all levels of participation, the science and engineering fair experience is one not only of competition, but also of camaraderie, creativity and education. Well done!

This is my 24th year as the director of the CSEF and I must say these last few years have been quite something. In 2020, we had three weeks to switch from in-person to a virtual fair and amazingly, we did it! Then in 2021, we made the decision early to just plan for a virtual CSEF and add back the special awards we weren't able to do the year before and we did that too! Last year we came back to an in-person event, but did not do the Saturday celebration. Now we are back to a regular CSEF and it seems like I am learning how to do things all over again – thanks to everyone for hanging in there with me!

The success of each year's CSEF is directly dependent upon the support of public and private organizations, government agencies, school districts and universities, as well as the efforts of hundreds of committed volunteers. I want to say thank you to the members of the Board of Directors who oversee the nonprofit organization, the members of the Advisory Council who aid me in making sure everything runs smoothly; the judges; and hundreds of on-site volunteers who do the actual work during the CSEF.

I would also like to say thank you for the support given to me by my colleagues in the Natural Sciences Education & Outreach Center (NSEOC) at Colorado State University. CSEF has called the NSEOC home for the past 24 years and we are proud to include the state science fair as one of its many outreach endeavors in the area of science, technology, engineering and mathematics education.

Each year, the CSEF sends the top senior division projects to compete in the Regeneron International Science and Engineering Fair, being held this year in Dallas, TX May 14 - 19, 2023. These students join the 20 or so other students who attend representing their regional science fair. I wish these students good luck and I know they will represent the state of Colorado well.

The top junior division projects are nominated to complete the application process for the Thermo Fisher Scientific Junior Innovators Challenge (formerly the Broadcom MASTERS) competition. Each year, 300 semi-finalists are chosen from the thousands who enter and from those, 30 finalists are awarded a trip to compete for up to $25,000 in scholarship funds.

Marissa Martinez, from Monte Vista High School, was named a Finalist for the Regeneron Science Talent Search this year and was awarded a trip to Washington, DC. Marissa and Gitanjali Rao, the other semi-finalist from STEM School Highlands Ranch in Colorado, received $2,000 for this honor and their schools also received $2,000.

Another milestone I would like to point out is that Lilly Figueroa from Mancos has participated in all 7 years that she has been eligible to attend and is graduating this spring. Congratulations Lilly!

Thank you so much for attending and I look forward to many more years as the CSEF Director.

Sincerely,

w

Courtney Butler
CSEF Executive Director

68th Annual Colorado Science & Engineering Fair

Thursday, April 13, 2023

Finalist Schedule

There will be NO on-site SRC interviews or paperwork fixes.

9:00 a.m. – 12:00 noon.	Staggered Junior and Senior Division Student Researcher Check-In (your region's check-in time will be emailed to you)	Grand Ballroom Foyer

Student Researchers MUST stay with their exhibit until Display & Safety Inspection has been done and an Official Photo has been taken. Students must be out of the exhibit areas by 12 noon

9:00 a.m. – 11:30 a.m.	Tour Ticket Pick-Up Students must pre-order tour tickets, there will be no on-site sign-ups.	Room 322
12:45 p.m. – 5:00 p.m.	Judging – ***Students must be at their exhibits for interviews.***	Grand Ballroom

Adult Schedule

1:00 p.m. – 2:00 p.m.	CSEF Scientific Review Committee Debrief and Discussion	Room 322
2:30 p.m. – 4:30 p.m.	NSEOC STEM Kit Lending Library Professional Development	Room 322

Judging Schedule

9:45 a.m.	Grand Awards Judge Captains/Assistant Captains' Briefing	LSC Theater
11:00 a.m.	Grand Awards Judges' Briefing	LSC Theater
11:45 a.m.	Grand Awards Judges' Luncheon	LSC Theater Lobby
12:45 p.m. – 4:30 p.m.	Grand Award Judging Interviews	Grand Ballroom
1:15 p.m. – 5:00 p.m.	Special Award Judging Interviews	Grand Ballroom
5:15 p.m.	Exhibit area is locked. Final judging continues. ***Only Judging Captains and SRC Members are permitted in the exhibit area at this time.***	

Friday, April 14, 2023

9:00 a.m. – 5:00 p.m.	CSEF Finalist Exhibits Open to the Public and the Media	Grand Ballroom
9:00 a.m. – 10:30 a.m.	Guest Speaker – Russ Schumacher, Colorado State Climatologist	LSC Theater
11:00 a.m. – 3:00 p.m.	Tours – *Registration is required.*	
2:00 p.m.	Finalist Ballots for Student Choice and Poster Contest are due.	Registration Booth
6:00 p.m.	CSEF Awards Ceremony	Timberline Church

Saturday, April 15, 2023

9:00 a.m. – 11:00 a.m.	Public Viewing – *ALL Student Researchers MUST be at their project.*	Grand Ballroom
9:00 a.m. – 10:00 a.m.	Regional Fair Directors Meeting	Room 322
11:00 a.m. – 12:00 p.m.	Pizza Party & Door Prizes (must be present to win)	Grand Ballroom
11:00 a.m. – 1:00 p.m.	Exhibit Tear Down – everything must be removed by 1:00 p.m.	Grand Ballroom
12:00 p.m. – 2:00 p.m.	Board of Directors Meeting	Room 322

Regeneron International Science & Engineering Fair: May 14 – 19, 2023 in Dallas, TX

69th Colorado Science & Engineering Fair: April 11 – 13, 2024 (dates subject to change)

2023 Colorado Science & Engineering Fair
Guest Speaker

Dr. Russ Schumacher
Colorado State Climatologist
The Past, Present, and Future of Colorado's Climate
April 14, 2023, 10:00 a.m.
Colorado State University Theater

About the Talk:
Colorado may have the most diverse climate of any state in the US: from high mountain ranges that accumulate snow and provide water to millions of people, to dry valleys, to everything in between. This presentation will discuss what types of observations we collect to characterize our state's climate, and what we can learn from that data. It will include a look at "average" conditions, and also some of the high-impact weather that we experience in Colorado. We also know that Colorado's climate is changing, and we will look at what changes have occurred, and what the future might hold.

About the Speaker:
Russ Schumacher joined the faculty at Colorado State in the fall of 2011. He received his B.S. with majors in meteorology and humanities from Valparaiso University in Indiana in 2001, and earned his M.S. in 2003 and Ph.D. in 2008 from the Department of Atmospheric Science at Colorado State University. Russ received an Advanced Study Program Postdoctoral Fellowship from the National Center for Atmospheric Research, and spent 2008-2009 at NCAR in Boulder. From 2009-2011, Russ was assistant professor in the Department of Atmospheric Sciences at Texas A&M University. He was selected to receive the Editor's Award for the journals *Monthly Weather Review* and *Weather and Forecasting* in 2015. In October 2017, Russ was appointed the director of the Colorado Climate Center and the Colorado State Climatologist. He received the Clarence Leroy Meisinger early-career research award from the American Meteorological Society in 2021.

2023 Colorado Science & Engineering Fair Tours

Friday, April 14, 2023

These tours and presentations require a ticket to attend.

CSU Anatomy/Physiology Lab

Participants are introduced to the study of anatomy through a general tour of the lab facility and a demonstration using isolated human organs such as heart, brain, liver, lung, etc. Tours are given by CSU Biomedical Sciences Students at 12 noon.

Fort Collins Historic Weather Station Tour

Participants tour of one of the longest operating weather stations in the western United States, showcasing the instruments that are used to measure temperature, humidity, precipitation, evaporation, winds, solar radiation and more. Participants will also learn how the data are used and how they can access the data for themselves. Tours are given by Noah Newman at 11 a.m. and 2 p.m.

Intro to Veterinary Medicine Presentation

The College of Veterinary Medicine and Biomedical Sciences is proud to present animal health care and Virtual Animal Anatomy (VAA) use in the classroom Participants will see how CSU students are using technology to learn how they can improve the health of animals, humans and the planet. Presentation is given by Wade Ingle at 1 p.m.

WWV Amateur Radio Club

The WWV Amateur Radio Club (WWVARC) exclusively promotes and celebrates the historic, scientific, and cultural importance of radio station WWV and amateur radio by conducting club educational programs and activities related to WWV, time and frequency measurement, and amateur radio. Presentations are given by Dave Schwartz at 11 a.m. and 12:30 p.m.

Journey Through Space and Time in 3D

Take a brief journey from the edge of our galaxy to the depths of our DNA, focusing on the artistic beauty of views of the natural world at greatly different scales in full color 3D. Presentations are given by Dr. Andrew Warnock at 11 a.m., 12:30 p.m. and 1:45 p.m.

CSU Greenhouse Tour

The tour will include the growth chamber, greenhouse bays and the conservatory where participants will get to see banana, pomegranate and coffee trees, a beautiful collection of orchids and even a turtle, fish and toad. Presentations will be given by Tammy Brenner at 1 p.m. and 2 p.m.

CSU Campus Tour

Participants will get an in-depth walking tour of campus that include stops at the historic Oval, the library, a classroom, campus rec center and a residence hall. Tours are given by CSU Student Ambassadors at 11 a.m., 12 p.m., 1 p.m. and 2 p.m.

Walter Scott, Jr. College of Engineering Tour

Take an in-depth tour of CSU's engineering facilities by visiting the Engineering Building and the Scott Bioengineering Building. Participants will learn more about the work being done in the exciting research-pod based facility. Tours are given by Engineering Student Ambassadors at 11 a.m., 12 noon, 1 p.m. and 2 p.m.

CSU Multifunctional Polymers & Composites Lab Tour

This group works on manufacturing with polymer and composite materials (including 3D printing). Participants will get to see some samples and live demos from their research. Tours are presented by Carter Dojan at 11 a.m., 12 noon, 1 p.m. and 2 p.m.

Vital Ice STEM Kit

Participants will learn about permafrost and ice cores from glaciers using model ice cores that let them explore real data collected at Denali National Park. The activity is presented by CSU STEM Educators at 11 a.m.

Star Lab

Experience the galaxy close up in this portable planetarium. Presentations are given by Timnath Elementary School students at 11 a.m., 12:15 p.m. and 1:15 p.m.

Gillette Museum of Arthropod Diversity

Participants will get to view one of the largest (nearly 5 million species) and most comprehensive (most orders of insects) collections in Colorado and the Rocky Mountain Region. Presentations are given by the CSU Entomology Club at 11 a.m. and 2 p.m.

These presentations are open to anyone, no ticket required, during the posted times.

Little Shop of Physics

Visit the world renown Little Shop of Physics' permanent hands-on display demonstrations of various scientific phenomenon on the 3rd floor of the Natural & Environmental Sciences Building from 11 a.m. – 2 p.m. No ticket required – just drop in any time!

Muscles Alive!

Learn how the brain communicates with muscles and how muscles communicate with the brain using kid-friendly equipment with the Muscles Alive! group from the Department of Exercise and Health Sciences. Visit them in Room XXX of the Lory Student Center from 1 – 3 p.m. No ticket required – just drop in any time!

2023 Colorado Science & Engineering Fair
Sponsors & Contributors

The Colorado State Science Fair, Inc. is an independent, nonprofit organization. For this reason, the Colorado Science & Engineering Fair only happens because of the generous donations of those private businesses, organizations, and individuals that provide support for the prize money, the ISEF trips, and other expenses. We thank you for encouraging Colorado's young scientists, engineers, and mathematicians through your generous support.

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Thanks to the many organizations and individuals that donated door prize items for the CSEF pizza party, being held Saturday, April 15th starting at 11 a.m.

Finalists MUST be present to win.

2023 Colorado Science & Engineering Fair
Vital Statistics

272 Finalist Participants with 238 Exhibits from 13 Regional Science Fairs
99 Senior Division Finalists with 84 Exhibits
173 Junior Division Finalists with 154 Exhibits

	-Overall-	---------Division---------		----------Grade----------						
Category	**Projects**	**Junior**	**Senior**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Animal Sciences	21	14	7	3	6	5	0	3	0	4
Behavioral & Social Sciences	26	13	12	3	4	6	5	1	4	2
Biomedical & Health Sciences	18	12	6	2	3	7	1	1	3	1
Chemistry	22	16	6	6	5	5	0	2	2	2
Earth & Environmental Sciences	32	19	13	3	9	7	4	1	4	4
Energy	14	8	6	1	1	6	1	3	0	2
Engineering	29	19	10	2	4	13	1	4	3	2
Environmental Engineering	10	4	6	1	0	3	2	1	2	1
Mathematics & Computer Sciences	14	11	3	0	4	7	0	1	1	1
Micro & Molecular Biology	15	10	5	0	7	3	1	2	1	1
Physics & Astronomy	23	16	7	6	5	5	2	0	1	4
Plant Sciences	15	12	3	4	2	6	1	1	0	1
TOTAL Exhibits	238	154	84	31	50	73	18	20	21	25
TOTAL Finalists	272	173	99	33	57	83	20	23	25	29

Schools/Teachers:

92 schools from throughout the state were represented, and 139 teachers and adults sponsored the students' projects. There were 38 high schools represented.

Grand Award Judges:

Over 125 professional scientists and engineers volunteered to interview the Finalists for the grand awards.

Special Awards:

At least 50 organizations, universities and individuals offered almost 200 individual special awards and scholarships worth over $50,000 to the finalists, judged by more than 100 professionals from those organizations.

2023 Colorado Science & Engineering Fair
Alphabetical List of Finalists

Samantha Abate	SR-EAEV-302
Adrian Adubato-Koch	SR-PHYS-301
Asia Alarid	SR-BEHA-001
Cuinn Archer	JR-ENGR-001
Teagan Archer	SR-ENGR-001
Margaret Arthur	SR-MACS-003
Anneke Ausema	SR-ENEV-001
*Aditi Avinash	SR-BMED-001
Anntheylea Bachicha	JR-EAEV-001
Benjamin Bagelman	JR-ENGR-301
Mae Baker	JR-BEHA-001
Victoria Balleau	SR-CHEM-001
Shary Batiz	JR-PLNT-001
Emma Beeby	JR-BMED-001
Joseph Benavides	SR-BMED-002
Justin Bendixson	JR-ENGR-302
Kylie Berg	SR-MCRO-001
Sydnie Berry	JR-ENGY-301
Kapil Bhandaram	JR-BMED-002
Sunand Bhandaram	JR-BEHA-002
Bryce Bickel	JR-ANIM-301
Teddy Blum	SR-EAEV-301
Reem Bouayad	JR-CHEM-001
Aedan Brandreth	JR-ENGR-002
Dillon Brann	SR-PHYS-001
Zander Braun	JR-MACS-303
Elise Brodsky	SR-BEHA-002
Joseph Bropst	SR-ANIM-301
Luci Bruchez	SR-ANIM-301
Teagan Bruchez	JR-PLNT-002
Alastair Buddin	SR-EAEV-005
Chase Buron	JR-ENGY-004
John Butler	SR-ENGR-002
Cristian Calvin	SR-BEHA-302
Marin Cantrell	JR-CHEM-301
Campbell Carlson	SR-ANIM-001
Arath Carrazco	JR-CHEM-002
Cadence Casey	SR-BEHA-003
Theodore Chastang	JR-ENEV-001
Kaycee Clark	JR-EAEV-002
Drake Coffield-Bamber	JR-ANIM-301
Makenzie Consaul	JR-PLNT-003
Charlie Danko	JR-ENGR-007
Sylvia Daugherty	JR-ENGY-002
Catherine Deacon	JR-BMED-003
Montserrat Delval Gomez	JR-CHEM-003
Colter Dennison	JR-EAEV-003
Ansley DePue	JR-CHEM-004
Jaden DePue	JR-BMED-010
Alora Dible	JR-EAEV-004
Pason Dible	JR-PLNT-004
Nathan Dinges	JR-PHYS-001
Kaitlyn Divelbiss	JR-BMED-004
Haydan Drullinger	SR-EAEV-002
Logan Drullinger	JR-CHEM-005
Morgan Drullinger	JR-ENGR-004
Lucy Dunkly	JR-ENGR-005
Everett Ediger	SR-ANIM-302
Nathaniel Ellis	SR-ENGR-003
Gaby Falter	JR-PLNT-011
Russell Fehr	JR-ANIM-303
Eliana Feit	JR-BEHA-003
Luke Ferguson	SR-CHEM-301
Lilly Figueroa	SR-EAEV-003
Quincy Flagg	JR-BEHA-301
*Alexandra Flint	SR-PHYS-002
Hayden Forst	JR-PHYS-002
Dillon Frueh	JR-MACS-001
Mykaela Fury	JR-BMED-005
Olivia Galm	JR-PHYS-003
Michael Gao	SR-MACS-001
Lauren Gdanitz	JR-BMED-301
Andrew George	JR-ENGR-006
Armaan Gill	SR-MCRO-002
Samantha Goetz	JR-BEHA-004
Keegan Gomez	SR-ENGY-001
Levi Goncharov	JR-PLNT-005
Valerie Goodland	SR-EAEV-004
Maggie Gorton	JR-MCRO-301
Liam Griffin	JR-MACS-002
Ty Griffith	SR-PHYS-302
Cole Gropp	SR-ENEV-301
Kate Guengerich	JR-ENGR-003
Hank Guiles	JR-MACS-003
Skylar Hampton	SR-BEHA-303
Rhys Hanson	SR-ENGR-007
Landon Hartman	SR-EAEV-001
Taylor Hartman	JR-ENGY-301
Trista Hartman	JR-MCRO-001
Soraya Hassan	JR-BEHA-301
Kinleigh Hathorn	JR-PHYS-004
Kennedy Henschel	JR-MCRO-301
Lilly Hirsch	JR-MCRO-002
Jacob Ho	SR-EAEV-006
Joshua Ho	SR-EAEV-007
Gwendolyn Hohl	JR-CHEM-302
Braxton Hopper	JR-MACS-301
Ryan Horansky	JR-BEHA-302
Cody Howard	JR-ENGR-008
Jessie Hsu	SR-BMED-003
Juliet Huckabay	JR-BEHA-005
Tegan Huwa	JR-CHEM-301
Bella Ilgner	SR-BEHA-004
Majeed Issa	JR-ANIM-001
Advait Jadhav	JR-ENGY-001
Logan James	JR-ENGR-009
Jaelie Jaminet	JR-ANIM-002
Grace Jones	JR-ANIM-003
Daniel Joshua	JR-MACS-004
Rylee Kelly	SR-BEHA-301
David "Bear" Kent V	JR-ENGR-010
Sage Ketels	JR-PHYS-005
Karlene Kindvall	JR-BEHA-006

2023 Colorado Science & Engineering Fair
Alphabetical List of Finalists

Karleigh Kinn	JR-PHYS-015
Jayce Kisamore-Saldana	JR-PHYS-006
Beckett Kite	JR-BMED-006
Rowan Kittrell	SR-BEHA-005
Connor Knight	JR-MCRO-003
Madhav Kowdle	SR-BEHA-006
Jocelyn Kramer	JR-CHEM-006
Naomi Kruse	SR-PLNT-001
Mathangi Kurup	JR-EAEV-005
Stella Laird	SR-ENEV-302
Evelyn Lapp	JR-PHYS-011
*Vanya Lavu	SR-MCRO-003
Bella Laydon	JR-MCRO-004
Skyelyn Lefever	JR-CHEM-013
*Bailey Link	SR-PHYS-303
Julian Lochte-Bono	JR-PHYS-016
Ryker Lockhart	JR-MCRO-005
Tynan Lohman	JR-PHYS-008
Tenleigh Lorenzini	JR-PLNT-006
Myles Marhofer	JR-ENGR-302
Grace Marmorstein	JR-ANIM-004
Avalyn Martinez	JR-ANIM-005
Emilio Martinez	SR-CHEM-005
*Marissa Martinez	SR-ANIM-002
Maria Martos	SR-EAEV-008
Alijah Mattson	SR-BEHA-302
Ian McClure	JR-PHYS-009
Terra McClure	JR-BMED-008
Aidan McGuire	JR-MACS-005
Diya Mehta	JR-ANIM-006
Ayra Memon	JR-ANIM-007
Cassius Middlemist	JR-EAEV-301
Augustus Miller	SR-CHEM-003
Emma Miller	SR-BEHA-007
Lucas Miller	JR-PHYS-010
Makayla Milligan	JR-MCRO-006
Layla Mitchell	JR-BEHA-007
Parker Mitchell	JR-EAEV-006
Bode Monahan	JR-ENEV-002
Addison Mondragon	SR-PHYS-003
Max Montoya	SR-MCRO-004
Selia Montoya	JR-MCRO-009
Zoey Montoya	SR-ANIM-302
Ashlyn Mosher	JR-PLNT-301
Minna Most	SR-EAEV-301
Wilson Moyer	SR-ENGY-002
Grady Mundell	JR-PLNT-007
*Natalie Muro	SR-ENGY-003
Alex Mwangi Wachira	SR-ENGY-006
Toshiro Nagafuji	JR-ENEV-003
Durae Naranjo	JR-EAEV-007
Gunner Nestor	SR-BEHA-302
Landon Nestor	SR-BEHA-303
Will Noble	SR-ENGY-004
Carlos Ochoa-Marquez	SR-PLNT-002
Lexi Oder	JR-PHYS-007
Dominic Osterholt	JR-ENGR-301
Adam Ouattara	JR-EAEV-008
Kandace Pargin	JR-ANIM-302
Kimberly Pargin	JR-ANIM-302
Siena Parr	SR-EAEV-302
Scarlett Paulson	JR-BMED-301
Adaline Pedersen	JR-BEHA-008
Emma Perry	SR-ENEV-002
Tessa Piñeiro	JR-PLNT-008
Colby Piper	JR-ENGR-011
Jax Poss	JR-EAEV-009
Addison Powers	JR-PLNT-009
Grace Prast	JR-BMED-009
Tymbri Priestley	JR-CHEM-007
Geo Raguraman	SR-ENGR-005
Om Rajasekharan	SR-BMED-004
Vikram Raju	JR-ENGY-007
*Nayla Ramos Vega	SR-ANIM-003
Dakota Reid	JR-BMED-007
Piper Reitz	JR-MCRO-007
Ren Richards	JR-CHEM-008
Sky Richards	SR-EAEV-009
Rylan Richmann	JR-ANIM-303
Fischer Robbins	JR-PHYS-012
Evan Roberts	SR-ENEV-003
Michelangelo Rocha	JR-MACS-006
Jaylee Rodriques	JR-MCRO-008
*Shrey Rohilla	SR-ENGY-005
Maya Rokhlenko	JR-CHEM-303
Connor Rosling	JR-ENGR-012
Abigail Ross	SR-PHYS-004
Rylen Ross	JR-ENGR-303
Lawrence Roy	JR-ENGR-013
Harrison Ruleman	SR-ANIM-004
Ling-Ling Ryan	JR-BEHA-009
Daniel Saeb	SR-CHEM-004
*Amrita Saini	SR-ENEV-004
Fares Abisai Sanchez-Parada	JR-MACS-301
Ainsley Sauer	JR-BEHA-010
Juakin Sawatzky	JR-EAEV-010
Ivan Schefter	JR-PLNT-010
Kane Schrock	JR-PHYS-013
Karl Schuenemann	SR-MCRO-005
Autumn Schulz	SR-ENEV-011
Ella Seevers	SR-ENEV-301
*Evelyn Seevers	SR-BEHA-008
*Claire Seger	SR-ENGR-006
Ersel Serdar	SR-ENGR-004
Aanshi Shah	JR-ENGY-005
Gintri Shaw	JR-EAEV-011
Hannah Shelton	SR-PLNT-003
Euan Shorkey	JR-ENGY-006
Rhegan Sitzman	SR-BEHA-301
Emma Smith	JR-CHEM-009
Peyton Smith	SR-PHYS-301
Wyatt Smith	JR-ANIM-008
Ainsley Soleta	SR-CHEM-301

2023 Colorado Science & Engineering Fair
Alphabetical List of Finalists

Olive Spohn	JR-CHEM-303
Carson Stone	JR-EAEV-301
*Parker Stone	SR-PHYS-303
Brandon Stup	SR-ANIM-005
*Liam Sweeney	SR-MACS-002
Rhett Taylor	JR-PHYS-014
Brooke Terryberry	JR-CHEM-010
Naomi Thomas	JR-EAEV-012
Patrick Thomas	JR-ENGR-014
Natalie Tinoco	SR-CHEM-002
Tami Torgler	JR-CHEM-011
Lucca Tumbush	JR-MACS-302
Berkely Ulibarri	JR-MACS-007
Harley Vaughn	JR-EAEV-013
Varun Velmurugan	JR-EAEV-014
*Vignesh Velmurugan	SR-BMED-005
Paisley Vezeau	JR-ENGR-015
Zaiden Villagomez	JR-ENGR-303
Ayush Vispute	JR-EAEV-015
William Walker	JR-BEHA-011
Armoni Walsh	SR-BEHA-301
Angelina Wan	JR-EAEV-016
Helen Wan	JR-MACS-008
Angelina Wang	SR-BMED-006
Zoe Wang	JR-ENEV-004
Joshua Wells	JR-MACS-303
Annalena Werner	JR-ENGR-016
Henry Westfall	SR-BEHA-009
Zoey Wheeland	JR-BMED-011
Joe White	JR-CHEM-302
Myer Wickham	SR-PHYS-302
Paisley Wiersma	JR-PLNT-301
River Wilson	JR-CHEM-012
Seth Wilson	JR-MACS-302
Tyler Wise	JR-EAEV-017
Zackary Wojtalik	SR-ENGR-008
Cami Wolkow	SR-EAEV-010
Vivian Wolkow	JR-ANIM-010
Grace Xue	JR-EAEV-018
Kelly Yang	SR-ENGR-009
Liam Yee	JR-BEHA-302
Ariana Yoder	JR-ANIM-011
Isabella Yoder	JR-ENGY-003
Kynley Yzaguirre	JR-ANIM-009
Alexander Zhang	SR-ENEV-302
*Kenneth Zittel	SR-ENGR-010

*Regional Science Fair Regeneron International Science & Engineering Fair Finalist

2023 Colorado Science & Engineering Fair
Senior Division Finalists

Animal Sciences

SR-ANIM-001 *A Comparison of the Acoustic Energy Produced by Beluga and Narwhal Echolocation Clicks*
Campbell Carlson - 12th grade **-** Evergreen High School **–** Evergreen **-** Stephanie Seevers

SR-ANIM-002 *The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture of Invasive American Bullfrog*
Marissa Martinez - 12th grade - Monte Vista High School - Monte Vista - Loree' Harvey

SR-ANIM-003 *The Effect of Light and Fertilizer Exposure on Planaria Regeneration*
Nayla Ramos Vega - 10th grade **-** Yuma High School **–** Yuma **-** Amy Melby

SR-ANIM-004 *Do Snakes Avoid Certain Colors of Light?*
Harrison Ruleman - 12th grade **-** Evergreen High School **–** Evergreen **-** Stephanie Seevers

SR-ANIM-005 *Mimicking Invasive Crayfish Feeding Behavior with the Northern Crayfish*
Brandon Stup - 12th grade **-** Evergreen High School **–** Evergreen **-** Stephanie Seevers

SR-ANIM-301 *Pasture Plump*
Luci Bruchez - 10th grade - West Grand High School – Kremmling - Penny Bruchez
Joseph Bropst - 10th grade - West Grand High School – Kremmling - Penny Bruchez

SR-ANIM-302 *How Qualities of Soil Affect Where Aphonopelma Hentzi Burrows in the Colorado Grassland*
Zoey Montoya - 10th grade **-** La Junta Jr/Sr High School **-** La Junta **-** Julia Barta
Everett Ediger - 11th grade **-** La Junta Jr/Sr High School **-** La Junta **-** Julia Barta

www.goodfreephotos.com/vector-images/bullfrog-vector-clipart.png.php

2023 Colorado Science & Engineering Fair
Senior Division Finalists

Behavioral & Social Sciences

SR-BEHA-001 *Neuron My Mind: Analysis of Different Brain Altering Substances on Student Performance*
Asia Alarid - 11th grade - Monte Vista High School - Monte Vista - Loree' Harvey

SR-BEHA-002 *The Effects of Perpetrator Race and Gender on the Reliability of Eyewitness Accounts*
Elise Brodsky - 12th grade - Nederland Middle-Senior High School – Nederland - Alberto Real

SR-BEHA-003 *The Effects of Peer Pressure in Social Media*
Cadence Casey - 9th grade - SkyView Academy - Highlands Ranch - Javier Negron

SR-BEHA-004 *How Does Color Affect Mood?*
Bella Ilgner - 9th grade - West Grand High School – Kremmling - Emmylou Harmon

SR-BEHA-005 *Science Fair Stress*
Rowan Kittrell - 10th grade - West Grand High School – Kremmling - Emmylou Harmon

SR-BEHA-006 *Using A Cluster Analysis Framework to Explain Voter Behavior and Election Outcomes: The Colorado Case*
Madhav Kowdle - 11th grade - Mountain Vista High School - Highlands Ranch - Brent McRae

SR-BEHA-007 *The Power of Suggestion*
Emma Miller - 9th grade - Genoa-Hugo School – Hugo - William Mallory

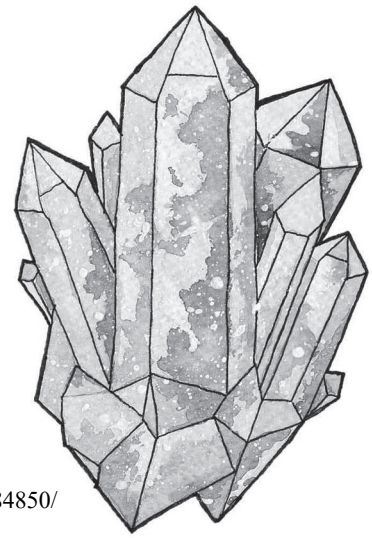
SR-BEHA-008 *Analyzing Data of Data Analysis of Analyzed Data About Exoplanets*
Evelyn Seevers - 9th grade - Conifer High School – Conifer - Stephanie Seevers

SR-BEHA-009 *Investigating Political Polarization on Social Networks Through Human Experiments and Agent-Based Simulation (Part II)*
Henry Westfall - 12th grade - Fairview High School – Boulder -Paul Strode

SR-BEHA-301 *What School Test Makes Your Anxiety and Heartrate Go Up the Most?*
Rylee Kelly - 9th grade - Genoa-Hugo School - Hugo - William Mallory
Rhegan Sitzman - 9th grade - Genoa-Hugo School – Hugo - William Mallory
Armoni Walsh - 9th grade - Genoa-Hugo School - Hugo - William Mallory

SR-BEHA-302 *Aphantasia: A 20/20 Look Into the Mind's Eye*
Alijah Mattson - 11th grade- Genoa-Hugo School - Hugo -William Mallory
Cristian Calvin - 12th grade - Genoa-Hugo School – Hugo -William Mallory
Gunner Nestor - 11th grade - Genoa-Hugo School - Hugo -William Mallory

SR-BEHA-303 *The Crystal Companion?*
Landon Nestor - 11th grade - Limon High School – Limon - Becky Thompson
Skylar Hampton - 11th grade - Limon High School – Limon - Becky Thompson



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2023 Colorado Science & Engineering Fair
Senior Division Finalists

Biomedical & Health Sciences

SR-BMED-001 *Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown*
Aditi Avinash - 11th grade - Rock Canyon High School - Littleton - Padma Avinash

SR-BMED-002 *The Inhibitory Effects of Platinum Compounds on K12 E. coli Growth*
Joseph Benavides - 12th grade **-** Monte Vista High School **-** Monte Vista **-** Loree' Harvey

SR-BMED-003 *Predicting Patient Disability in MS from MRI Brain Abnormalities Using Machine Learning*
Jessie Hsu - 11th grade **-** Fairview High School – Boulder **-** Ryan Langendorf

SR-BMED-004 *Binding Habits of Ubiquitin*
Om Rajasekharan - 11th grade **-** Fossil Ridge High School **-** Fort Collins **-** Vishnu Rajasekharan

SR-BMED-005 *Evaluating the Performance of Natural and Commercial Moisturizers for Dry Skin: A Study Using Agar Agar Skin Model*
Vignesh Velmurugan - 9th grade **-** Cherry Creek High School **-** Greenwood Village **-** Kalpana Velmurugan

SR-BMED-006 *The Bowman-Birk Inhibitor: The Peptide with Potential Improvement for the Oral Delivery of Insulin*
Angelina Wang - 10th grade - Fairview High School – Boulder - Yanyu Peng

Chemistry

SR-CHEM-001 *The Effectiveness and Toxicity of Various Chemicals When Removing Aerosol Oil-Based Spray Paints*
Victoria Balleau - 12th grade **-** Evergreen High School – Evergreen **-** Stephanie Seevers

SR-CHEM-002 *Cleaning Products and Their Effects on Household Surfaces*
Natalie Tinoco - 10th grade **-** Miami Yoder High School – Rush **-** Angela Grimes

SR-CHEM-003 *Synthesizing Cellulose Acetate and Paper-Based Plastic from Cellulose Derivatives to Produce a Biodegradable 3D Printable Filament*
Augustus Miller - 11th grade - Monte Vista High - School - Monte Vista - Loree' Harvey

SR-CHEM-004 *Investigating How Hydrogel Connectivity Influence Their Mechanical Properties*
Daniel Saeb - 11th grade **-** Boulder High School – Boulder **-** Daniel Mydans

SR-CHEM-005 *Project SP-8 (Sabatier Process to Infinity)*
Emilio Martinez - 10th grade **-** Alamosa High School – Alamosa **-** Diego Martinez

SR-CHEM-301 *Tensile Strength of Nylon 6, 10*
Ainsley Soleta - 12th grade **-** Brush High School – Brush **-** Erik Stone
Luke Ferguson - 12th grade **-** Brush High School – Brush **-** Erik Stone

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2023 Colorado Science & Engineering Fair
Senior Division Finalists

Earth & Environmental Sciences

SR-EAEV-001 *Economic Impacts of Wolf Populations on Livestock Ranching and Big Game Hunting in the Northern Rockies*
Landon Hartman - 12th grade - Evergreen High School – Evergreen - Stephanie Seevers

SR-EAEV-002 *The Effects of Agricultural Chemicals on Soil Microorganisms*
Haydan Drullinger - 9th grade - Liberty School – Joes - Linda Niccoli

SR-EAEV-003 *Environmental DNA Testing of Rural Aquatic Ecosystems for the Presence of Fish as Bioindicators*
Lilly Figueroa - 12th grade - Mancos High School - Mancos - Sensa Wolcott

SR-EAEV-004 *You're Fired: An Analysis of Fire on Soil Sterilization and Hydrophobicity*
Valerie Goodland - 11th grade - Monte Vista High School - Monte Vista - Loree' Harvey

SR-EAEV-005 *Riparian Morphology and Its Effects on Trout Population*
Alastair Buddin - 12th grade - Evergreen High School – Evergreen - Stephanie Seevers

SR-EAEV-006 *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*
Jacob Ho - 11th grade - Fairview High School - Boulder - Ronnie Abolafia-Rosenzweig

SR-EAEV-007 *The Effects of Dissolved Organic Matter (DOM) on Emiliania Huxleyi*
Joshua Ho - 11th grade - Fairview High School - Boulder -Lane Allen

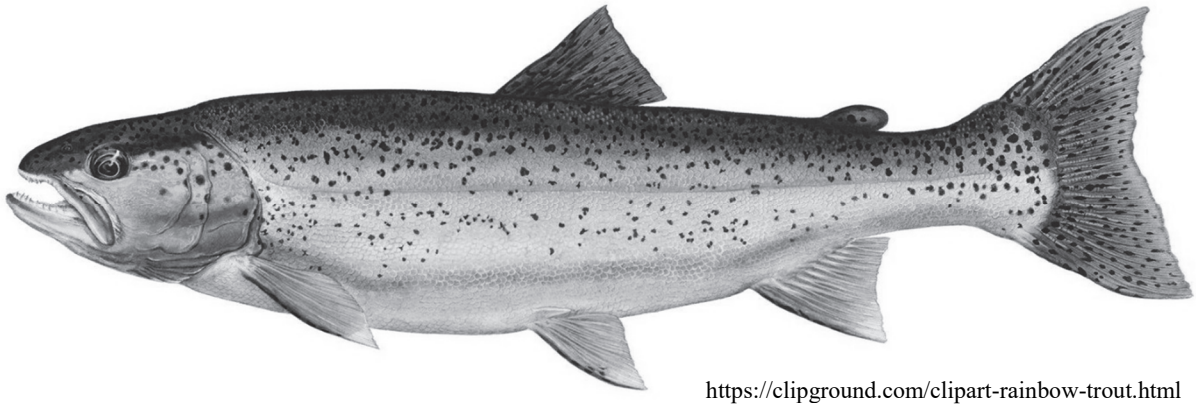
SR-EAEV-008 *Bet on the Compost*
Maria Martos - 11th grade - La Junta Jr/Sr High School - La Junta - Julia Barta

SR-EAEV-009 *To Reuse or Not To Reuse: That Is the Question*
Sky Richards - 9th grade - Hi-Plains School - Seibert - Kayla Daniel

SR-EAEV-010 *Isolation of Fungi Capable of Antibiotic Bioremediation*
Cami Wolkow - 9th grade - Palmer High School - Colorado Springs - Tom Wolkow

SR-EAEV-301 *Environmental Changes and the Effects of the SAM on Coccolithophores in the Southern Ocean*
Minna Most - 12th grade - Monarch High School - Louisville - Katharine Ellis
Teddy Blum - 12th grade - Monarch High School - Louisville - Katharine Ellis

SR-EAEV-302 *Radon in Rural Colorado: The Not So Noble Gas*
Siena Parr - 10th grade - Dolores High School - Dolores - Dave Hopcia
Samantha Abate - 10th grade - Dolores High School – Dolores - Dave Hopcia



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2023 Colorado Science & Engineering Fair
Senior Division Finalists

Energy

SR-ENGY-001 *Micro-renewable Energy*
Keegan Gomez - 12th grade **-** Centaurus High School **–** Lafayette **-** Nicholas Cady

SR-ENGY-002 *Applying Machine Learning to Forecast Solar Production and Reduce Reliance on Fossil Fuels*
Wilson Moyer - 12th grade - Lakewood High School – Lakewood - Andrew Schultz

SR-ENGY-003 *Buoy Wave Energy Converters Capture of Ocean Wave Energy*
Natalie Muro - 9th grade **-** Palmer High School **-** Colorado Springs **-** Nathaniel Lohmann

SR-ENGY-004 *Turbine Efficiency in Small-Scale Hydropower*
Will Noble - 10th grade - Yuma High School – Yuma - Amy Melby

SR-ENGY-005 *Electrify Your Step - The Next Stride: Converting Foot Traffic into Renewable Energy Using Piezoelectric Transducers*
Shrey Rohilla - 10th grade - The Classical Academy - Colorado Springs - Paritosh Rohilla

SR-ENGY-006 *Self-Powered Electric Cars*
Alex Mwangi Wachira - 10th grade **-** Central High School **–** Pueblo **-** Jamie Withnell

Engineering

SR-ENGR-001 *Dress for Less Air Resistance*
Teagan Archer - 10th grade - Mancos High School – Mancos - Brady Archer

SR-ENGR-002 *Pecker Protector Egg Defender*
John Butler - 9th grade - West Grand High School – Kremmling - Emmylou Harmon

SR-ENGR-003 *MOON-OPOLY II: Employing Additive Manufacturing Technology for Lunar Construction with Waterless Concrete*
Nathaniel Ellis - 11th grade - Durango high School – Durango - Michael Ellis

SR-ENGR-004 *Designing A More Efficient Altitude Compensating Rocket Nozzle*
Ersel Serdar - 10th grade - Cherry Creek High School - Greenwood Village - Ethan Dusto

SR-ENGR-005 *Regeneratus: An Adaptive, Regenerative Protection Suit for All Law Enforcement and Armed Personnel*
Geo Raguraman - 11th grade - Discovery Canyon High School - Colorado Springs - Beaulah Aloysius

SR-ENGR-006 *Utilizing 3D Printing Technology to Engineer Prosthetic Human Heart Valves*
Claire Seger - 10th grade - Monte Vista High School - Monte Vista - Loree' Harvey

SR-ENGR-007 *The View From Above, Designing a High Power Rocket Glider to Expand Options for SAR, Mapping, and Military Applications*
Rhys Hanson - 12th grade - Conifer High School - Conifer - Chris Hanson

SR-ENGR-008 *Aerofoil Edge Vortices*
Zackary Wojtalik - 12th grade **-** Centaurus High School **–** Lafayette **-** Nicholas Cady

SR-ENGR-009 *Skin PT: Pressure and Temperature Sensors for Electronic Skin*
Kelly Yang - 10th grade - Fairview High School - Boulder - Jianliang Xiao

SR-ENGR-010 *R.O.T. Slide*
Kenneth Zittel - 11th grade **-** Central High School **-** Pueblo **-** Jamie Withnell

2023 Colorado Science & Engineering Fair
Senior Division Finalists

Environmental Engineering

SR-ENEV-001 *For the Birds: What Type of Plastic Makes the Best Recycled Bird Feeders*
\# **Anneke Ausema -** 9th grade - Colorado Early Colleges - Fort Collins - Karen Karppinen

SR-ENEV-002 *Artificial Rain Indoors*
Emma Perry - 9th grade **-** South High School **–** Pueblo **-** Allison Hellman

SR-ENEV-003 *The Effectiveness of Edible Mushrooms As A Mycroremediation Agent*
\# **Evan Roberts -** 11th grade - Yuma High School – Yuma - Amy Melby

SR-ENEV-004 *Investigating Natural Hydrogels to Sustain Bioluminescent Algae for Sustainable Lighting and CO2 Removal*
\## **Amrita Saini -** 11th grade - Peak to Peak Charter School – Lafayette - Robert Hettmansperger

SR-ENEV-011 *Presence of PFA's in Colorado Water*
\## **Autumn Schulz -** 9th grade - Ignacio High School - Ignacio - Jeremy Schulz

SR-ENEV-301 *Energy Efficient Cooling of Buildings in the Mountains*
Ella Seevers - 12th grade **-** Conifer High School **–** Conifer **-** Eric Halingstad
Cole Gropp - 12th grade **-** Conifer High School **–** Conifer **-** Eric Halingstad

SR-ENEV-302 *Reprint: Closed-Loop Materials Flow in Additive Manufacturing*
\# **Alexander Zhang -** 10th grade **-** Fairview High School **-** Boulder **-** Yinghua Jin
\# **Stella Laird** - 10th grade **-** Fairview High School **-** Boulder **-** Yinghua Jin

Mathematics & Computer Sciences

SR-MACS-001 *Long Short-term Memory Recurrent Neural Networks as a Novel Strategy for Designing Targeted Antibiotic Treatments*
Michael Gao - 10th grade **-** Fairview High School **-** Boulder **-** Stephen Thomas

SR-MACS-002 *American Sign Language Translator*
Liam Sweeney - 12th grade **-** Centaurus High School **–** Lafayette **-** Nicholas Cady

SR-MACS-003 *A Novel Phosphosite Localization Approach using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks*
\## **Margaret Arthur -** 11th grade - Fairview High School – Boulder - Stephen Thomas

Micro & Molecular Biology

SR-MCRO-001 *Effect of Ionic Zinc Availability on the Replication of Human Mammary Epithelial Carcinoma Cells*
Kylie Berg - 11th grade **-** Fairview High School **–** Boulder **-** Amy Palmer

SR-MCRO-002 *Confirming E. coli Transformations Using PCR Assay Tests and Electrophoresis*
\#### **Armaan Gill -** 10th grade - Lamar High School – Lamar - Robin Staker

SR-MCRO-003 *Am I Effective?*
Vanya Lavu - 10th grade **-** The Classical Academy **-** Colorado Springs **-** Alexander Chang

SR-MCRO-004 *Terrific Tardigrades*
Max Montoya - 9th grade **-** Ignacio High School **-** Ignacio **-** Crystal Redman

SR-MCRO-005 *Increasing the Efficiency of Brewing*
Karl Schuenemann - 12th grade **-** Evergreen High School **–** Evergreen **-** Stephanie Seevers

2023 Colorado Science & Engineering Fair
Senior Division Finalists

Physics & Astronomy

SR-PHYS-001 *Sunspot Weather Correlation*
Dillon Brann - 9th grade **-** Ignacio High School – Ignacio **-** Crystal Redman

SR-PHYS-002 *Effect of Different Rover Wheel Materials on Triboelectric Charge of Lunar Simulant Dust Particles*
\# **Alexandra Flint -** 12th grade - Peak to Peak Charter School – Lafayette - Robert Hettmansperger

SR-PHYS-003 *Flourenheit: Does the Type of Flour Effect Its Flammability?*
Addison Mondragon - 9th grade **-** Monte Vista High School **-** Monte Vista **-** Loree' Harvey

SR-PHYS-004 *Detecting Flares (Part 5)*
Abigail Ross - 12th grade - Lamar High School – Lamar - Robin Staker

SR-PHYS-301 *Chapped Golf*
Adrian Adubato-Koch - 11th grade **-** Central High School – Pueblo **-** Jamie Withnell
Peyton Smith - 11th grade **-** Central High School – Pueblo **-** Jamie Withnell

SR-PHYS-302 *Save Money Live Brighter*
Myer Wickham - 12th grade **-** Brush High School – Brush **-** Erik Stone
Ty Griffith - 12th grade **-** Brush High School – Brush **-** Erik Stone

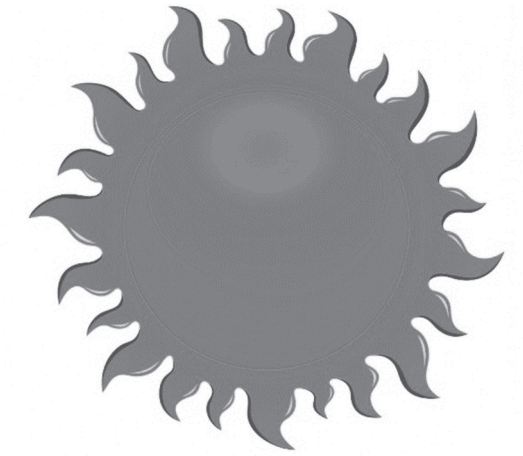
SR-PHYS-303 *Performance of Pyramidal Airfoils in an Oscillating Wind Chamber*
Parker Stone - 12th grade **-** Brush High School – Brush **-** Erik Stone
Bailey Link - 12th grade **-** Brush High School – Brush **-** Erik Stone

Plant Sciences

SR-PLNT-001 *Finding Ferns: Defining the Microclimate That Enables Gametophyte Growth in the Santa Monica Mountains*
Naomi Kruse - 9th grade - Schullandheim Home School - Colorado Springs - Tami Kruse

SR-PLNT-002 *The Effect of Heavy Metal Toxicity on Solanum tuberosum, Cucurbita pepo, Medicago sativa, and Capsicum annuum Plants Inoculated with Mycorrhizae*
Carlos Ochoa-Marquez - 12th grade - Monte Vista High School - Monte Vista - Loree' Harvey

SR-PLNT-003 *Warning! High Fire Danger! Observing the Relationship between the Fuel Moisture Levels of Pinyon Pine and Sagebrush to Observed Precipitation Levels*
\# **Hannah Shelton -** 10th grade - Centauri High School - La Jara - Andrew Shelton



2023 Colorado Science & Engineering Fair Exhibit Hall

Senior Division

Senior Animal Sciences

Senior Earth & Environmental Sciences

		EAEV 003	EAEV 004	EAEV 005	EAEV 006	EAEV 007	EAEV 008	EAEV 301	EAEV 302
		BMED 006	BMED 005	BMED 004	BMED 003	BMED 002	BMED 001	EAEV 010	EAEV 009

Senior Biomedical & Health Sciences

Senior Engineering

		ENGR 003	ENGR 004	ENGR 005	ENGR 006	ENGR 007	ENGR 008	ENGR 009	ENGR 010
		PLNT 002	PLNT 003	MCRO 005	MCRO 004	MCRO 003	MCRO 002	MCRO 001	

Senior Micro & Molecular Biology

Senior Plant Sciences

Senior Physics & Astronomy

		PHYS 001	PHYS 002	PHYS 003	PHYS 004	PHYS 301	PHYS 302	PHYS 303	

Senior Computer Science

		MACS 001	MACS 002						

		BEHA 302	BEHA 303	ENGY 006	ENGY 005	ENGY 004	ENGY 003	ENGY 002	ENGY 001

Senior Energy

Senior Behavioral & Social Sciences

		BEHA 008	BEHA 007	BEHA 006	BEHA 005	BEHA 004	BEHA 003	BEHA 002	BEHA 001
				CHEM 001	CHEM 002	CHEM 003	CHEM 004	CHEM 005	CHEM 301

Senior Chemistry

Senior Environmental Engineering

ENEV 301	ENEV 004	ENEV 003	ENEV 002	EAEV 001	EAEV 002				
				ENEV 005	ENEV 302				

Senior Math & Computer Sciences

		MACS 003	ENGR 001	ENGR 002	PLNT 001				

Senior Plant Sciences

Junior Division

Junior Biomedical & Health Sciences

Junior Physics & Astronomy

PHYS 012	PHYS 011	PHYS 010	PHYS 009	PHYS 008	PHYS 007	PHYS 006	PHYS 005	PHYS 004	PHYS 003	PHYS 002	PHYS 001
PHYS 013	PHYS 014	PHYS 015	PHYS 016	ENGY 001	ENGY 002	ENGY 003	ENGY 004	ENGY 005	ENGY 006	ENGY 007	ENGY 301

Junior Energy

Junior Behavioral & Social Sciences

BEHA 001	BEHA 002	BEHA 003	BEHA 004	BEHA 005	BEHA 006	BEHA 007	BEHA 008	BEHA 009	BEHA 010	BEHA 011	BEHA 301	BEHA 302

Junior Chemistry

CHEM 001	CHEM 002	CHEM 003	CHEM 004	CHEM 005	CHEM 006	CHEM 007	CHEM 008	CHEM 009	CHEM 301	CHEM 302	CHEM 303

Junior Engineering

ENGR 008	ENGR 007	ENGR 006	ENGR 005	ENGR 004	ENGR 003	ENGR 002	ENGR 001	CHEM 013	CHEM 012	CHEM 011	CHEM 010
ENGR 301	ENGR 302	ENGR 303	ENGR 009	ENGR 010	ENGR 011	ENGR 012	ENGR 013	ENGR 014	ENGR 015	ENGR 016	ENEV 001

Junior Mathematics & Computer Sciences

MACS 301	MACS 008	MACS 007	MACS 006	MACS 005	MACS 004	MACS 003	MACS 002	MACS 001	ENEV 004	ENEV 003	ENEV 002
MACS 302	MACS 303	MCRO 001	MCRO 002	MCRO 003	MCRO 004	MCRO 005	MCRO 006	MCRO 007	MCRO 008	MCRO 009	MCRO 301

Junior Micro & Molecular Biology

Junior Environmental Engineering

Junior Animal Sciences

ANIM 001	ANIM 002	ANIM 003	ANIM 004	ANIM 005	ANIM 006	ANIM 007	ANIM 008	ANIM 009	ANIM 010	ANIM 011	ANIM 301	ANIM 302
EAEV 009	EAEV 008	EAEV 007	EAEV 006	EAEV 005	EAEV 004	EAEV 003	EAEV 002	EAEV 001	EAEV 301	ANIM 303		

Junior Earth & Environmental Sciences

EAEV 010	EAEV 011	EAEV 012	EAEV 013	EAEV 014	EAEV 015	EAEV 016	EAEV 017	PLNT 006	PLNT 005			

Junior Plant Sciences

				PLNT 301	PLNT 011	PLNT 010	PLNT 009	PLNT 008	PLNT 007	PLNT 001	PLNT 002	PLNT 003	PLNT 004

Grand Ballroom
Lory Student Center

Entrance

Open to the Public
Friday 10 a.m. - 5 p.m.
Saturday 9 a.m. - 11 a.m.

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Animal Sciences

JR-ANIM-001 *Dirt Detectors: How Well Worms Can Find Dirt*
Majeed Issa - 7th grade - Colorado Early Colleges - Fort Collins - Karen Karppinen

JR-ANIM-002 *It's Getting Hot in Here*
Jaelie Jaminet - 6th grade - Sanford Elementary School – Sanford - Jenni Miller

JR-ANIM-003 *I'm Not Yoking Around: Evaluating How the Food That Chickens Eat Affect The Width of The Egg Shell*
Grace Jones - 7th grade - Wray Jr/Sr High School – Wray - Eric Oestman

JR-ANIM-004 *The Insect Repellent Properties of Nepetalactone*
Grace Marmorstein - 8th grade - Challenge School – Denver - John Wiley

JR-ANIM-005 *Superworms vs. Mealworms: Who Can Eat the Most Styrofoam?*
Avalyn Martinez - 8th grade - Challenge School – Denver - John Wiley

JR-ANIM-006 *Environmental Effects on the Embryonic Development of Sea Urchins*
Diya Mehta - 8th grade - Flagstaff Academy – Longmont - Jeana Wurth

JR-ANIM-007 *Bioluminescence in Pyrocystis Fusiformis*
Ayra Memon - 7th grade - Crescent View Academy – Aurora - Asma Memon

JR-ANIM-008 *Eat It Up*
Wyatt Smith - 6th grade - West Grand Middle School – Kremmling - Katie DeBell

JR-ANIM-009 *What Color Are Birds Attracted To?*
Kynley Yzaguirre - 7th grade - Wiggins Middle School – Wiggins - Peggie Neal

JR-ANIM-010 *Does the Tail Remember What the Head Saw?*
Vivian Wolkow - 6th grade - North Middle School - Colorado Springs - Tom Wolkow

JR-ANIM-011 *Wagyu vs. Angus*
Ariana Yoder - 8th grade - Wiggins Middle School – Wiggins - Brad Yoder

JR-ANIM-301 *3D Fly Trappas*
Drake Coffield-Bamber - 7th grade - La Junta Jr/Sr High School - La Junta - Julia Barta
Bryce Bickel - 8th grade - La Junta Jr/Sr High School - La Junta - Julia Barta

JR-ANIM-302 *Weight Watchers: Determination of Optimal Genetics or Best Quality Water Affect Average Daily Gain in Cattle*
Kimberly Pargin - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson
Kandace Pargin - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-ANIM-303 *What Is the Best Ever Saddle Pad?*
Rylan Richmann - 7th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson
Russell Fehr - 7th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Behavioral & Social Sciences

JR-BEHA-001 *Bullying*
Mae Baker - 8th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson

JR-BEHA-002 *Do Phones Amongst Middle Schoolers Affect Their Grades?*
Sunand Bhandaram - 7th grade - Campus Middle School - Greenwood Village - Ashlyn Wnek

JR-BEHA-003 *Grip Strength: Increase Amount*
Eliana Feit - 8th grade - Summit Middle Charter School – Boulder - Valerie Keeney

JR-BEHA-004 *How Childproof Are Medication Bottles?*
Samantha Goetz - 6th grade - St. Peter Catholic School – Monument - Victoria Goetz

JR-BEHA-005 *The Effect of Visual Stimulus on Heart Rate Across Different Age Groups*
Juliet Huckabay - 6th grade - Skinner Middle School – Denver - Kate Huckabay

JR-BEHA-006 *Are Your Taste Buds Tricking You?*
Karlene Kindvall - 7th grade - Firestone Charter Academy – Firestone - Sarah Kindvall

JR-BEHA-007 *Boys vs. Girls: Optical Illusions*
Layla Mitchell - 6th grade - Mancos Middle School – Mancos - Christina Evans

JR-BEHA-008 *Rise Up*
Adaline Pedersen - 8th grade - West Grand Middle School – Kremmling - Katie DeBell

JR-BEHA-009 *How Do Gender and Age Affect the Legibility of Handwriting?*
Ling-Ling Ryan - 8th grade - Summit Middle Charter School – Boulder - Valerie Keeney

JR-BEHA-010 *Organic vs. Non-Organic*
Ainsley Sauer - 7th grade - Wiggins Middle School – Wiggins - Scott Sauer

JR-BEHA-011 *Is This for a Grade?*
William Walker - 8th grade - Monte Vista Middle School - Monte Vista - Kristi Mathiesen

JR-BEHA-301 *The Taste of Color: The Relationship Between Color and Perceived Taste*
Quincy Flagg - 7th grade - Friends School – Boulder - Chelsea Flagg
Soraya Hassan - 7th grade - Friends School – Boulder - Chelsea Flagg

JR-BEHA-302 *Does the Student-Teacher Ratio in Middle School Affect How Connected Students Feel To Their Teachers?*
Ryan Horansky - 8th grade - Horizons K-8 School – Boulder - Caley Gallison
Liam Yee - 8th grade - Horizons K-8 School – Boulder - Caley Gallison

Biomedical & Health Sciences

JR-BMED-001 *The Effect of Stress on the Amount of Carbon Dioxide Exhaled*
Emma Beeby - 8th grade - Skinner Middle School - Denver -Julie Beeby

JR-BMED-002 *Is There A Relationship Between Meditation and Muscle Reaction Time?*
Kapil Bhandaram - 7th grade - Campus Middle School - Greenwood Village - Rhonda Yetter

JR-BMED-003 *Are You Positive You're Positive?*
Catherine Deacon - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-BMED-004 *Which Moisturizers Are Best?*
Kaitlyn Divelbiss - 7th grade - Goodnight School - Pueblo - Christina Lucero

JR-BMED-005 *Let's Get Fit!*
Mykaela Fury - 8th grade - Dove Creek Middle School - Dove Creek - Donella Fury

JR-BMED-006 *Are Protein Shakes Healthy and Helpful for Kids?*
Beckett Kite - 6th grade - Idalia Jr/Sr High School - Idalia - Kelli Kite

JR-BMED-007 *Runners Efficiency*
Dakota Reid - 8th grade - Springfield Jr/Sr High School - Springfield - Melissa Reid

JR-BMED-008 *Oh Snap!*
Terra McClure - 7th grade - Rocky Ford Jr/Sr High School - Rocky Ford - Julie McClure

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Biomedical & Health Sciences cont.

JR-BMED-009 *How Clean Is Mr. Clean?*
Grace Prast - 8th grade - St. John the Baptist Catholic School - Longmont - Rachel Arney

JR-BMED-010 *The Correlation Between Sleep and Obesogenic Tendencies*
Jaden DePue - 8th grade - Wray Jr/Sr High School - Wray - Eric Oestman

JR-BMED-011 *Run A Ton*
Zoey Wheeland - 6th grade - Good Shepherd Catholic School – Denver - Annette Humphrey

JR-BMED-301 *Applying Ionizing Radiation to DNA: Determining the Effectiveness of Different Protection Methods Against Ionizing Radiation*
Lauren Gdanitz - 8th grade - Wray Jr/Sr High School - Wray - Eric Oestman
Scarlett Paulson - 8th grade - Wray Jr/Sr High School - Wray - Eric Oestman

Chemistry

JR-CHEM-001 *How Do Acids Affect the Rate of Corrosion?*
Reem Bouayad - 8th grade - Crescent View Academy – Aurora - Egbal Elmagre

JR-CHEM-002 *Amount of Caffeine in Coffee*
Arath Carrazco - 8th grade - Wiggins Middle School – Wiggins - Michael Saulmon

JR-CHEM-003 *What Liquid Will Dissolve the Skittle the Fastest?*
Montserrat Delval Gomez - 8th grade - Wiggins Middle School – Wiggins - Peggie Neal

JR-CHEM-004 *Smelly World: Evaluating the Effect of Aromatherapy on Indoor Air Quality*
Ansley DePue - 6th grade - Wray Elementary School – Wray - Mycki Hall

JR-CHEM-005 *Let It Snow? The Affects of Components and Surface Area on Snow Melt*
Logan Drullinger - 6th grade - Liberty School – Joes - Linda Niccoli

JR-CHEM-006 *The Exodus of Ca+: Does Container Material Affect Calcium Levels in Milk?*
Jocelyn Kramer - 6th grade - Good Shepherd Catholic School – Denver - Annette Humphrey

JR-CHEM-007 *Key Leavening Agents in Baking*
Tymbri Priestley - 6th grade - Mancos Middle School – Mancos - Adam Priestley

JR-CHEM-008 *Ice, Ice, Baby*
Ren Richards - 7th grade - Hi-Plains School – Siebert - Kayla Daniel

JR-CHEM-009 *Apple Rot Test*
Emma Smith - 6th grade - Mancos Middle School – Mancos - Toi Smith

JR-CHEM-010 *Which Sports Drinks Have the Most Electrolytes?*
Brooke Terryberry - 7th grade - West Grand Middle School – Kremmling - Katie DeBell

JR-CHEM-011 *May the Force Be with You*
Tami Torgler - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-CHEM-012 *The Magnificent Mastication Mechanism*
River Wilson - 6th grade - Lamar Middle School – Lamar - Robin Staker

JR-CHEM-013 *Gel Electrophoresis*
Skyelyn Lefever - 8th grade - Peetz Jr/Sr High School – Peetz - Chandra Nelson

JR-CHEM-301 *Hot Topics*
Marin Cantrell - 7th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson
Tegan Huwa - 7th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson

JR-CHEM-302 *Does pH Affect How Fast Water Freezes?*
Gwendolyn Hohl - 7th grade - Genoa-Hugo School – Hugo - Ellen Emmerling
Joe White - 7th grade - Genoa-Hugo School – Hugo - Ellen Emmerling

JR-CHEM-303 *Water = Bad: Your Solution To Not Seeing in Rain*
Maya Rokhlenko - 7th grade - Flagstaff Academy – Longmont - Lauren Liedtke
Olive Spohn - 7th grade - Flagstaff Academy – Longmont - Lauren Liedtke

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Earth & Environmental Sciences

JR-EAEV-001 *To Filter or Not To Filter*
Anntheylea Bachicha - 7th grade - Goodnight School – Pueblo - Christina Lucero

JR-EAEV-002 *Putting Down Roots: The Study of How Poaceae Roots Affect Water Erosion*
Kaycee Clark - 7th grade - Wray Jr/Sr High School – Wray - Eric Oestman

JR-EAEV-003 *The Extinguisher*
Colter Dennison - 7th grade - Mancos Middle School – Mancos - Jeremy Dennison

JR-EAEV-004 *Dust in the Wind: A Wind Erosion Analysis*
Alora Dible - 8th grade - Liberty School – Joes - Linda Niccoli

JR-EAEV-005 *The Effect of Microalgae Grown in Different Concentrations of Liquid Carbon on Atmospheric CO2 Levels*
Mathangi Kurup - 8th grade - Challenge School - Denver - John Wiley

JR-EAEV-006 *What Are You Breathing? Radon Levels in Schools*
Parker Mitchell - 7th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-EAEV-007 *What Are We Really Drinking?*
Durae Naranjo - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-EAEV-008 *Fires in the Comanche Grasslands*
Adam Ouattara - 7th grade - La Junta Jr/Sr High School - La Junta - Julia Barta

JR-EAEV-009 *How Much Water Does It Take To Keep Water from Freezing?*
Jax Poss - 6th grade - Genoa-Hugo School – Hugo - Ellen Emmerling

JR-EAEV-010 *Analysis of Mine Tailing Run-Off for Mine Tailings*
Juakin Sawatzky - 8th grade - Liberty School – Joes - Linda Niccoli

JR-EAEV-011 *Dust Busters*
Gintri Shaw - 7th grade - Springfield Jr/Sr High School – Springfield - Jerri Shaw

JR-EAEV-012 *The Wisdom of Sushruta: The Examination of Water Quality in Relationship to Filter Mediums*
Naomi Thomas - 7th grade - Home School – Delta - Andrea Thomas

JR-EAEV-013 *Can the Density of Geodes Predict if They Are Hollow?*
Harley Vaughn - 6th grade - Liberty School – Joes - Linda Niccoli

JR-EAEV-014 *Risk Assessment of Fluoride Contamination in Water: A Study Using Brine Shrimp Model*
Varun Velmurugan - 7th grade - Camus Middle School - Greenwood Village - Velmurugan Balaiya

JR-EAEV-015 *Investigating Alternate Treatments of Acid Rain*
Ayush Vispute - 8th grade - Mountain Ridge Middle School - Colorado Springs - Pankaj Vispute

JR-EAEV-016 *Colorado's Precipitation and the Effects on Traffic Accidents*
Angelina Wan - 6th grade - Challenger Middle School - Colorado Springs - Selina Webb

JR-EAEV-017 *Does Crop Residue Affect Soil Water Retention*
Tyler Wise - 8th grade - Liberty School – Joes - Linda Niccoli

JR-EAEV-018 *Using C. elegans To Determine Toxicity of Marshall Fire Soil*
Grace Xue - 8th grade - Summit Middle Charter School – Boulder - Valerie Keeney

JR-EAEV-301 *Retain the Rain*
Cassius Middlemist - 7th grade - Brush Middle School – Brush - Erik Stone
Carson Stone - 7th grade - Brush Middle School – Brush - Erik Stone

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Energy

JR-ENGY-001 *Sweat It Out, The Green Way!*
Advait Jadhav - 6th grade - Chinook Train Elementary School - Colorado Springs - Sujit Jadhav

JR-ENGY-002 *Fuels of the Future*
Sylvia Daugherty - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-ENGY-003 *Nuclear Waste To Nuclear Power*
Isabella Yoder - 8th grade - Pueblo School for Arts & Sciences-Fulton Heights – Pueblo - Ashley Leinen

JR-ENGY-004 *Saved By the Light*
Chase Buron - 7th grade - Vail Mountain School – Vail - Brett Falk

JR-ENGY-005 *Make Some Noise! An Innovative Method to Produce Electricity Using Sound*
Aanshi Shah - 8th grade - Thunder Vista P-8 School – Broomfield - Parth Shah

JR-ENGY-006 *Embouchure Energy*
Euan Shorkey - 8th grade - Colorado Early Colleges - Fort Collins - Karen Karppinen

JR-ENGY-007 *Energenius: Clean Energy on the GO*
Vikram Raju - 8th grade - Aurora Quest K-8 School – Aurora - Srikanth Raju

JR-ENGY-301 *Electrolyzed by Electrolytes*
Taylor Hartman - 8th grade
Sydnie Berry - 8th grade - Hi-Plains School – Siebert - Kayla Daniel

Environmental Engineering

JR-ENGR-001 *Colorado Air Conditioning*
Cuinn Archer - 7th grade - Mancos Middle School – Mancos - Adayn Farrar

JR-ENGR-002 *Burn Those Calories*
Aedan Brandreth - 8th grade - Challenge School – Denver - John Wiley

JR-ENGR-003 *Infill Percentage and Strength to Weight Ratio of 3D Printed Parts*
Kate Guengerich - 7th grade - Peak to Peak Charter School – Lafayette - Brandon Nelson

JR-ENGR-004 *Combining TPU and PLA to Make a Better 3D Printer Filament*
Morgan Drullinger - 6th grade - Liberty School – Joes - Linda Niccoli

JR-ENGR-005 *Baffled By Sound*
Lucy Dunkly - 8th grade - Challenge School – Denver - John Wiley

JR-ENGR-006 *Moving Water with the Archimedes Screw*
Andrew George - 7th grade - Springfield Jr/Sr High School – Springfield - Carey George

JR-ENGR-007 *An Affordable Robot for Dangerous Factories*
Charlie Danko - 8th grade - Flagstaff Academy – Longmont - Jeana Wurth

JR-ENGR-008 *How Much Resistance Can A Hot-Air Engine Handle?*
Cody Howard - 8th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson

JR-ENGR-009 *The Eggcellent Egg Drop*
Logan James - 8th grade - Burlington Middle School – Burlington - Michael Steach

JR-ENGR-010 *The Super Speaker: Using Digital Signal Processing To Improve Low-Quality Speakers*
David "Bear" Kent V - 8th grade – Eagleview Middle School - Colorado Springs - David Kent IV

JR-ENGR-011 *The Golden Gate*
Colby Piper - 8th grade - Goodnight School – Pueblo - Christina Lucero

JR-ENGR-012 *Will It Snap?*
Connor Rosling - 8th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson

JR-ENGR-013 *Vex Robotics*
Lawrence Roy - 7th grade - Roncalli STEM Academy – Pueblo - Pauline Fraser

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Environmental Engineering

JR-ENGR-014 *Volatus Veritas: The Examination of Aircraft Wing Shape According To Two Different Speed Variables*
Patrick Thomas - 8th grade - Home School – Delta - Andrea Thomas

JR-ENGR-015 *Skyscrapers Built To Last*
Paisley Vezeau - 8th grade - Ignacio Middle School – Ignacio - Joseph Duffy

JR-ENGR-016 *Can You Hear It?*
Annalena Werner - 8th grade - Wiggins Middle School – Wiggins - Peggie Neal

JR-ENGR-301 *Enchanted Sand: A Device To Turn Sand into a Fluidized Bed*
Benjamin Bagelman - 8th grade - Friends School – Boulder - Diana Mercer
Dominic Osterholt - 8th grade - Friends School – Boulder - Diana Mercer

JR-ENGR-302 *Driver Safety Tech*
Justin Bendixson - 8th grade - Pueblo School for Arts & Science-Fulton Heights – Pueblo - Ashley Leinen
Myles Marhofer - 8th grade - Pueblo School for Arts & Science-Fulton Heights – Pueblo - Ashley Leinen

JR-ENGR-303 *Energy x Mass*
Rylen Ross - 6th grade - Monte Vista Middle School - Monte Vista - Kristi Mathiesen
Zaiden Villegmoez - 6th grade - Monte Vista Middle School - Monte Vista - Kristi Mathiesen

Environmental Engineering

JR-ENEV-001 *Using Green Roofs to Absorb Floodwaters*
Theodore Chastang - 8th grade - Summit Middle Charter School – Boulder - Valerie Keeney

JR-ENEV-002 *Air Pollution Detection System*
Bode Monahan - 6th grade - Liberty School – Joes - Linda Niccoli

JR-ENEV-003 *Alternatives to Sand in Concrete*
Toshiro Nagafuji - 8th grade
The Logan School – Denver - Pamela Nagafuji

JR-ENEV-004 *Recycling by Zapping: Recyclability and Efficiency of Recycling Different Polyesters*
Zoe Wang - 8th grade - Summit Middle Charter School – Boulder - Peter Teasdale

Mathematics & Computer Sciences

JR-MACS-001 *Microbit Conductor*
Dillon Frueh - 7th grade - Roncalli STEM Academy – Pueblo - Jennifer Hyslop

JR-MACS-002 *Running Low on Water: Formula for the Future*
Liam Griffin - 7th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-MACS-003 *Wanna Bet?*
Hank Guiles - 7th grade - Mancos Middle School – Mancos - Angela Guiles

JR-MACS-004 *Pattern Detection i+6/8*n Rubik's Cubes*
Daniel Joshua - 8th grade - Southern Hills Middle School – Boulder - Peter Laird

JR-MACS-005 *How Does Background Clutter Affect Image Recognition*
Aidan McGuire - 7th grade - St. Peter Catholic School – Monument - Ryan McGuire

JR-MACS-006 *Microbit Network - Pong*
Michelangelo Rocha - 8th grade - Roncalli STEM Academy – Pueblo - Pauline Fraser

JR-MACS-007 *Using Probability To Model Radioisotope Dating*
Berkely Ulibarri - 8th grade - St. John the Evangelist Catholic School – Loveland - Eric Ulibarri

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Mathematics & Computer Sciences cont.

JR-MACS-008 *Measuring the Particulate Matter in Air Quality with Raspberry Pi*
Helen Wan - 8th grade - Challenger Middle School - Colorado Springs - Annie Lynn

JR-MACS-301 *Microbit Alarm System*
Fares Abisai Sanchez-Parada - 8th grade
Braxton Hopper - 8th grade **-** Roncalli STEM Academy **–** Pueblo **-** Jennifer Hyslop

JR-MACS-302 *Friend/Foe Light*
Lucca Tumbush - 8th grade
Seth Wilson - 8th grade **-** Eagleview Middle School **-** Colorado Springs **-** Elizabeth Busler

JR-MACS-303 *Redefining Basketball Bank Shots by Applying Geometrical Mathematical Models*
Joshua Wells - 8th grade
Zander Braun - 8th grade **-** Weldon Valley School **–** Weldona **-** Krista Dunn

Micro & Molecular Biology

JR-MCRO-001 *Cleaning My School, One Bacterium At A Time*
Trista Hartman - 8th grade - Hi-Plains School – Seibert - Kayla Daniel

JR-MCRO-002 *How Well Do Disinfectants Work?*
Lilly Hirsch - 7th grade **-** Foundations Academy **–** Brighton **-** Emily Hickman

JR-MCRO-003 *Disinfecting with Boiling Water: Does It Make Objects Safe?*
Connor Knight - 7th grade **-** Corwin International Magnet School **–** Pueblo **-** Sharon Knight

JR-MCRO-004 *Put Your Hands in the Air*
Bella Laydon - 7th grade **-** Corwin International Magnet School **–** Pueblo **-** Holly Laydon

JR-MCRO-005 *Which Bread Will Mold Faster: Wet or Dry?*
Ryker Lockhart - 7th grade **-** Genoa-Hugo School **–** Hugo **-** Ellen Emmerling

JR-MCRO-006 *Does the Environment Matter?*
Makayla Milligan - 8th grade **-** Cardinal Community Academy **–** Keenesburg **-** Sarah Johnson

JR-MCRO-007 *Inflection Reflection: An Inquiry on Antibiotic Resistance*
Piper Reitz - 7th grade - Lamar Middle School – Lamar - Robin Staker

JR-MCRO-008 *Rubby, Rub, Dub: What's in Your Tub?*
Jaylee Rodriques - 8th grade **-** Sargent Junior High School **-** Monte Vista **-** Terri Paulson

JR-MCRO-009 *Do Antibacterial Cleaners Actually Work?*
Selia Montoya – 7th grade - Ignacio Middle School – Ignacio – Joseph Duffy

JR-MCRO-301 *Bacteria Busters*
Kennedy Henschel - 7th grade
Maggie Gorton - 7th grade **-** Hi-Plains School **-** Seibert **-** Kayla Daniel

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Physics

JR-PHYS-001 *Airsoft BB Price vs. Accuracy*
Nathan Dinges - 8th grade - Cardinal Community Academy – Keenesburg - Sarah Johnson

JR-PHYS-002 *From Ignition, Will Cotton, Wool or Polyester Burn the Longest?*
Hayden Forst - 6th grade - Dove Creek Middle School - Dove Creek - Charlotte Forst

JR-PHYS-003 *Microwave vs. Oven: Does Material Shrink Better in the Microwave or Oven?*
Olivia Galm - 7th grade - St. John the Evangelist Catholic School – Loveland - Katherine Galm

JR-PHYS-004 *Will It Stick?*
Kinleigh Hathorn - 7th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-PHYS-005 *Does Shot Size Matter? (2.0)*
Sage Ketels - 7th grade - Lamar Middle School - Lamar - Robin Staker

JR-PHYS-006 *Safe School*
Jayce Kisamore-Saldana - 6th grade - Alta Vista Charter School – Lamar - Marah Brase

JR-PHYS-007 *How Does Asymmetry Affect Human Optics?*
Lexi Oder - 8th grade - Summit Middle Charter School – Boulder - Peter Teasdale

JR-PHYS-008 *Does Wing Design Influence Force of Impact?*
Tynan Lohman - 7th grade - Liberty School – Joes - Linda Niccoli

JR-PHYS-009 *How Do Different Sizes and Shapes of Rocket Fins Affect How High the Rocket Flies?*
Ian McClure - 6th grade - Evangel Christian Academy - Colorado Springs - Olivia Pinson

JR-PHYS-010 *Does Temperature Affect How High a Tennis Ball Bounces?*
Lucas Miller - 7th grade - Genoa-Hugo School – Hugo - Ellen Emmerling

JR-PHYS-011 *The Force Is Strong with This One*
Evelyn Lapp - 6th grade - Brush Middle School – Brush - Mike Lapp

JR-PHYS-012 *The Affects of Ski Wax*
Fischer Robbins - 8th grade - Summit Middle Charter School – Boulder - Peter Teasdale

JR-PHYS-013 *Wind Tunnel Tests of Airfoil Performance*
Kane Schrock - 6th grade - Arickaree School – Anton - Deanna Schrock

JR-PHYS-014 *Battle of the Tape: Which Tape Has the Strongest Tensile and Adhesive Strength?*
Rhett Taylor - 8th grade - Centauri Middle School - La Jara - Andrew Shelton

JR-PHYS-015 *Meteor Impact 101*
Karleigh Kinn - 6th grade - St. Columba Catholic School – Durango - David Kinn

JR-PHYS-016 *Thermal Paste*
Julian Lochte-Bono - 8th grade - St. Columba Catholic School – Durango - Ryan Bono

2023 Colorado Science & Engineering Fair
Junior Division Finalists

Plant Sciences

JR-PLNT-001 *Vita-Grow?*
Shary Batiz - 6th grade **-** Alta Vista Charter School **–** Lamar **-** Marah Brase

JR-PLNT-002 *Grass Matters!*
Teagan Bruchez - 8th grade - West Grand Middle School – Kremmling - Katie DeBell

JR-PLNT-003 *The Power of Pantego?*
Makenzie Consaul - 8th grade - Sargent Junior High School - Monte Vista - Terri Paulson

JR-PLNT-004 *The Effect of Organic Fertilizer on Corn*
Pason Dible - 6th grade **-** Liberty School **–** Joes **-** Linda Niccoli

JR-PLNT-005 *Ascorbic Acid In Leaves As A Method of Determining Air Quality*
Levi Goncharov - 8th grade **-** Challenge School **–** Denver **-** John Wiley

JR-PLNT-006 *Light IT grow*
Tenleigh Lorenzini - 8th grade - Wiggins Middle School – Wiggins - Peggie Neal

JR-PLNT-007 *Are Polymers the Answer?*
Grady Mundell - 7th grade **-** Walsh Jr/Sr High School **–** Walsh **-** Desirae Mundell

JR-PLNT-008 *Plentiful Waterful: Which Propagation Solution Helps Plants Grow?*
Tessa Piñeiro - 6th grade **-** Good Shepherd Catholic School **–** Denver **-** Annette Humphrey

JR-PLNT-009 *Does the Water Matter?*
Addison Powers - 8th grade **-** Cardinal Community Academy **–** Keenesburg **-** Sarah Johnson

JR-PLNT-010 *Fight the Light: How Light Affects Plants' Natural Protection from UVB*
Ivan Schefter - 7th grade **-** Colorado Early Colleges **-** Fort Collins **-** Karen Karppinen

JR-PLNT-011 *The Chealation Effect: Maximizing Plant Growth*
Gaby Falter - 8th grade - Firestone Charter Academy – Firestone - Alex Falter

JR-PLNT-301 *How Fast Does Corn Mold?*
Paisley Wiersma - 6th grade - Genoa-Hugo School **–** Hugo **-** Ellen Emmerling
Ashlyn Mosher - 6th grade - Genoa-Hugo School **–** Hugo **-** Ellen Emmerling

2023 Colorado Science and Engineering Fair
School & Teacher Participants

Alta Vista Charter School
Marah Brase

Boulder High School
Daniel Mydans

Brush High School
Erik Stone

Burlington Middle School
Michael Steach

Campus Middle School
Ashlyn Wnek
Rhonda Yetter

Cardinal Community Academy
Sarah Johnson

Centauri Middle School
Andrew Shelton

Centaurus High School
Nicholas Cady
Brandon Nelson

Central High School
Jamie Withnell

Challenge School
John Wiley

Challenger Middle School
Annie Lynn
Selina Webb

Cherry Creek High School
Ethan Dusto

Colorado Early Colleges
Karen Karppinen

Conifer High School
Eric Halingstad

Corwin International Magnet School
Sharon Knight

Crescent View Academy
Amal Atwah
Egbal Elmagre

Dolores High School
Dave Hopcia

Eagleview Middle School
Elizabeth Busler

Evangelical Christian Academy
Olivia Pinson

Evergreen High School
Stephanie Seevers

Fairview High School
Paul Strode

Flagstaff Academy
Lauren Liedtke
Jeana Wurth

Foundations Academy
Emily Hickman

Friends School
Kevin Nugent

Genoa-Hugo School
Ellen Emmerling
William Mallory

Good Shepherd Catholic School
Annette Humphrey

Goodnight School
Christina Lucero

Hi-Plains School
Kayla Daniel

Horizons K-8 School
Caley Gallison

Ignacio High School
Crystal Redman

Ignacio Middle School
Joseph Duffy

La Junta Jr/Sr High School
Julia Barta

Lakewood High School
Andrew Schultz

Lamar Middle School
Terri Lira
Robin Staker

Liberty School
Linda Niccoli

Limon High School
Becky Thompson

Mancos High School
Sensa Wolcott

Miami-Yoder School
Angela Grimes

Monarch High School
Katharine Ellis

Monte Vista High School
Loree' Harvey

Monte Vista Middle School
Kristi Mathiesen

Mountain Vista High School
Brent McRae

Nederland Middle/Senior High School
Alberto Real

Palmer High School
Nathaniel Lohmann

Peak to Peak Charter School
Robert Hettmansperger

Pueblo School for Arts & Sciences - Fulton Heights
Ashley Leinen

Roncalli STEM Academy
Pauline Fraser
Jennifer Hyslop

Sanford High School
Jenni Miller

Sargent Junior High School
Terri Paulson

SkyView Academy
Javier Negron

South High School
Allison Hellman

St. John the Baptist Catholic School
Rachel Arney

Summit Middle Charter School
Valerie Keeney
Peter Teasdale

Vail Mountain School
Brett Falk

West Grand High School
Emmylou Harmon

West Grand Middle School
Katie DeBell

Wiggins Jr/Sr High School
Peggie Neal
Michael Saulmon

Wray Jr/Sr High School
Mycki Hall
Eric Oestman

p
Amy Melby

2023 Colorado Science & Engineering Fair Advisory Council

The CSEF Advisory Council includes all Regional Fair Directors, the CSSF, Inc. Board of Directors and many volunteers.

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Erin Comstock – Grand Awards Coordinator
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*Director Emeritus for outstanding contribution to the CSEF and more than two years of service as CSEF Director.

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Brian Beyer

Boulder Valley Regional Science Fair
Harry Waterman
Danielle Bird

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San Juan Basin Regional Science Fair
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2023 Colorado Science & Engineering Fair
Grand Awards Judges

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Kimberly Alexis, MS
Comcast

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University of Colorado, Boulder

Shelby Anderson, BS
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***Tori Anderson**, MS
Colorado State University

Gene Arts, BS
Medtronic (retired)

Adrian Aycock, BS
United States Department of Agriculture

John Bahr, BS
CableLabs

****Alan Beckett**, BS
DCP Midstream

Michael Bemski, BA
Navarro Research and Engineering, Inc.

Stephen Bernard, MBA, MEPM

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Vincent Bocchino, BS
Denver Public Schools

Randall Bonnell, MS
Colorado State University (student)

Donald Brandborg, BA

****Samuel Brill**, BS
Colorado State University (student)

***Christian Brown**, BS
CO Governor's Office of Information Technology

Amanda Broz, PhD
Colorado State University

***Rebecca Buchholz**, PhD
National Center for Atmospheric Research

Allison Cantwell, PhD
USDA Food & Nutrition Services

****Linda Cummings**, MA
University of Colorado, Colorado Springs

****Robert D'Adamo**, MS
United States Department of Agriculture

Martin David, DVM
IDEXX Laboratories

***Rob Davidson**, PhD
Colorado State University (retired)

David Debrech, BS
CableLabs

Heather Deel, PhD
United States Department of Agriculture

Sarah Dominey, MS
Broadcom

Carina Donne, MS
Colorado State University (student)

Catalina Dorin, PhD
Broadcom

****Peter Dratch**, PhD
US Fish & Wildlife Service (retired)

Nicholas Dummer, BS
Colorado Air Pollution Control Division

****Erin Finehout**, PhD, PM
PM Now

****Mike Fleischmann**, BS
Keysight Technologies

***Karl Ford**, PhD

***Jason Fraser**, MSEE
Lockheed Martin

^Stefan Gessler, BS

****Enakshi Ghosh**, PhD
Colorado State University

***Darby Gilfillan**, BS
Colorado State University (student)

Eric Ginter, BBME
University of Colorado, Boulder (student)

Marc Gonzalez, MS
NASA

***Claire Goodwin**, MS
City of Fort Collins

****Emerson Grey**, MS
University of Colorado, Boulder (student)

Amy Gurza, BS
National Lab for Genetic Resource Preservation

Lauren Habenicht, DVM
University of Colorado, Anschutz Medical Center

2023 Colorado Science & Engineering Fair
Grand Awards Judges

****Kyle Haefner**, PhD
CableLabs

Karina Hassell, MS
Colorado State University

***Jim Hatfield**, BA

Lisa Herickhoff, PhD
Membrane Protective Technologies, Inc.

Stephen Hibbs, MS
Functional Design

Steve Hiebert, BS

Callie Higgins, PhD
US Department of Commerce/NIST

***Jessica Hill**, PhD
Colorado State University

****Lorren Hudson**, DNP
Northern Colorado Anesthesia Professionals

Ruby Humphrey, BA
Banfield Pet Hospital

***Wade Ingle**, M.Ed
Colorado State University

Kaixuan Ji, BS
University of Colorado, Boulder (student)

Yinghua Jin, PhD
Rocky Tech Ltd.

Alison King, PhD
Colorado State University

Bryce Knutson, BA
University of Colorado, Boulder (student)

Rachel Konda-Sundheim, MD
Children's Hospital Colorado

Jonathan Kordell, PhD
Ansys

Kate Kostenkova, BS
Colorado State University (student)

David Krenek, MS

***William Kucharski**, BS
Oracle Corporation

Chris Kulbida, BSEE
Kulbida Consulting

Matthew Kwan, BE
University of Colorado, Boulder (student)

****Peter Laird**, BS
Salesforce

Sam Leuthold, MS
Colorado State University (student)

Youjian Liu, PhD
University of Colorado, Boulder

Byron Lopez, BS
Awesome Language LLC

Kenneth Mahrer, PhD

****Chrissy Marek**, BS
Medtronic

Elan Markov, MS
United Launch Alliance

Jonathan Martin, PhD

Emily Mason, MS
Terumo BCT

Abigail Mattern, BS
Broadcom, Inc.

****Edwin Maynard**, PhD, PE
Zynex Monitoring Solutions

***Frank McCormick**, PhD
US Forest Service

***Trevor McQuain, MA**
University of Colorado Health

Peter Modreski, PhD
US Geological Survey (retired)

***William Moninger**, PhD
University of Colorado, Boulder

Woody Moss, DO
Northern Colorado Anesthesia Professionals

Thang Nghiem, BS
DCP Midstream

****Tristan Nyman**, BA
Colorado State University

Jon Oiler, PhD
Broadcom

***Carlos Olivo**, PhD
Colorado State University

^Don Ostwald, DVM

German Parada, PhD
Colorado State University

2023 Colorado Science & Engineering Fair
Grand Awards Judges

John Patterson, MS
Neogen

Marcia Patton-Mallory, PhD
USDA Forest Service (retired)

****Jeffrey Pearson**, MS
NGL Energy

Mark Poletti, MS
CableLabs

Kenneth Posse, MS

Ethan Quinn, BS
Colorado State University (student)

Ritu Raj, BS
University of Colorado, Boulder (student)

****Vishnu Rajasekharan**, PhD
Hach

Rachelle Ramer, MS
Colorado State University

*^**Kristen Rasmussen**, PhD
Colorado State University

***Josh Redmore**, E.Eng.
CableLabs

****Liam Reilly**, BS
Colorado State University (student)

Richard Rew, BS

***William Ian Ridley**, PhD
US Geological Survey

***Tom Roberts**, MS
USDI Bureau of Land Management (retired)

David Roecker, MS
Broadcom

Joey Sankman, PhD
Analog Devices, Inc.

Maziar Sardashti, PhD

Lindsay Saunders, PhD
USDA Forest Service

James Schatzman, PhD
Augustus Aerospace Company

Brian Scriber, MS
CableLabs

Alan Scrivner, MS

*^**Paula Searcy**, BS, MBA
360 Product Management Consulting, LLC

Pete Sharpe, BS
Emerson Automation Solutions

Myles Shepherd, PhD
Membrane Protective Technologies, Inc.

Gary Skiles, MS
Broadcom Inc

Janice Skiles, ME
Broadcom Inc

Justin Stiles, BS
Charter Communications

***Erica Suchman**, PhD
Colorado State University

Drew Swanson, PhD
Broadcom Inc.

Katie Trese, BS
University of Colorado, Boulder (student)

****Okten Ungor**, PhD
Colorado State University

David Warren, BS

***Tracy Webb**, DVM, PhD
Colorado State University

Hannah Weppner, MS
University of Colorado, Boulder (student)

***RedLion York**, BS
Broadcom

Miho Yoshioka, MS
USDA Agricultural Research Service

*Judging Team Captains
**Judging Team Assistant Captains
^CSEF Alumni

2023 Colorado Science & Engineering Fair
Special Awards Program

Organizations

Air & Waste Management Association
American Association of University Women
American Industrial Hygiene Association
American Institute of Chemical Engineers
American Vacuum Society
ASM International
Broadcom Foundation
Colorado Biology Teachers Association
Colorado Bioscience Institute
Colorado Chemistry Teachers Association
Colorado Environmental Health Association
Colorado Foundation for Agriculture
Colorado Medical Society
Colorado Mineral Society
Colorado Mycological Society
Colorado Native Plant Society
Colorado Scientific Society
CO Section of the American Chemical Society
Colorado State University
College of Agricultural Sciences
Colorado Natural Heritage Program
Department of Agricultural Biology
Department of Chemistry
Energy Institute
Colorado Veterinary Medical Association
Colorado's Electric Cooperatives
Colorado-Wyoming Society of American Foresters
Department of Commerce Boulder Laboratories
Gromko Family
Institute of Electrical and Electronics Engineers
Lemelson Foundation
Little Shop of Physics
National Centers for Environmental Information
National Geographic Society
Platte River Power Authority
Regeneron
Rocky Mountain Association of Geologists
Rocky Mountain Water Environment Association
Science Toy Magic, LLC
Society for Mining, Metallurgy & Exploration
Society of Manufacturing Engineers
Society of Women Engineers
Soil & Water Conservation Society
CO Division of Reclamation, Mining & Safety
STEMGirls, LLC
The Biophysical Society
The Sara Volz Family
Trout Unlimited
United States Air Force
United States Metric Association
United States Navy & Marine Corps
Wilkins Family
Wojtaszek Family
Zonta Club

Scholarships

Colorado School of Mines
CSU College of Agricultural Sciences
Colorado State University, Pueblo

Teacher Awards

Lockheed Martin
Colorado Science Teachers Association
Doug Steward Memorial Award

2023 Colorado Science & Engineering Fair Volunteers

The following list of people deserves our most sincere thanks for volunteering their time to do a variety of jobs during the CSEF. When you see a person wearing a green "Volunteer" name badge, please take a moment to thank them for their efforts. The Colorado Science and Engineering Fair would not be possible without their dedication. An * indicates these are CSEF Alumni who are volunteering this year.

Lucy Adams
Kayla Ahr
Carol Bach
Mike Bemski
Airi Bowden*
Nikkie Brandborg
Eric Caprarola
Aaralyn Comstock
Corbin Comstock
Erin Comstock
Gavin Comstock
Rilyn Comstock
Ellen DeBacker
Katie DeBell
Tehya Dobrovolny
Barbara Ganong
Erin Golden
Lauren Gouldey
Nicholai Hagmann
Nancy Hampson
Emmylou Harmon
Loree' Harvey
Karina Hassell
Paula Herraez
Steve Hiebert
David Holm
Jane Holton
Kevin Hoskin
Wade Ingle
Vicky Jordan
Mary Jose
Mary Klass
Lorinda Kirk
Addie Kuettner
Peter Laird
Terri Lira
Julie McClure
Amy Melby
Kenzie Mesec
Amber Michel*
Madison Miller*
Darline Miner
David Miner
Carol Morrow*
Dolly Morrow
Robert Morrow*
Pamela Nagafuji
Noah Newman
Floyd Oaks
Jody Oaks
Kim Parr
Judy Prester
Kari Reuter
Mary Richmond
Heidi Rodriguez
Andrew Ruatti*
Samantha Sands
David Schwartz
Rod Simpson*
Larry Sveum
Sue Swift-Miller
Boo Thomas
Laura Ussery
Randy Vickery
Mike Viney
Rajshri Vispute
Andrew Warnock
Tracy Webb
Lynne Williams
Tom Wolkow
Mostafa Yourdkhani
Jane Zheng
Biomedical Sciences Honors Students
Engineering Student Ambassadors
Entomology Club
Office of Admissions Student Ambassadors
Timnath Elementary Schoolp

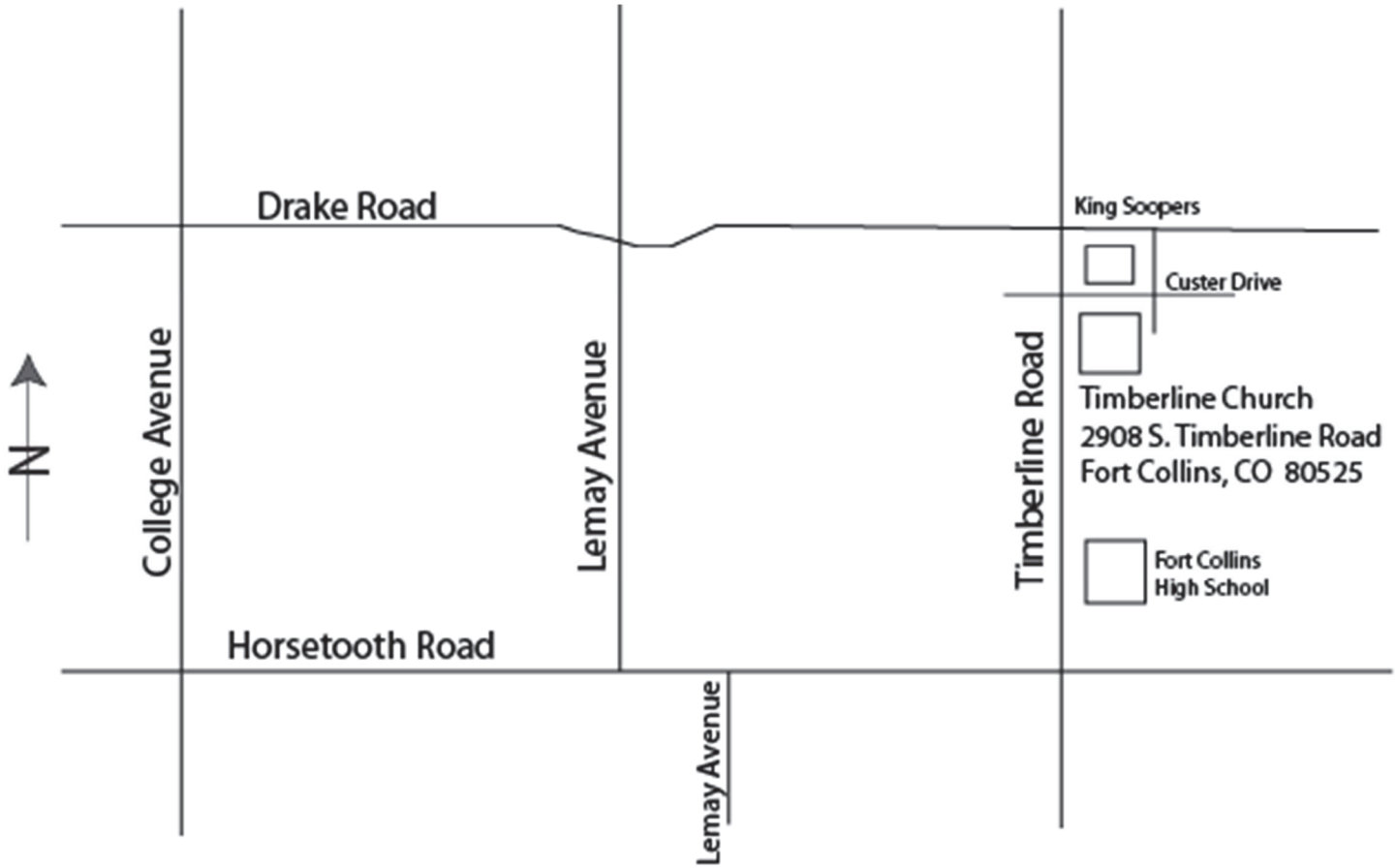
Thank You!!

2023 Colorado Science & Engineering Fair
Directions to Awards Ceremony Site

This year's CSEF Award Ceremony will be held at Timberline Church in Fort Collins, CO starting at 6 p.m. The address to use with GPS units is 2908 South Timberline Road Fort Collins, CO 80525. Please note that large vehicles should use the East side parking lot for dropping off passengers and parking. Attendees can use either side of the building to enter and the ceremony will be held in the South Auditorium.

Directions from Colorado State University Campus:
Head South on either College Avenue or Shields Street. Turn East (left) onto Drake Road. Take Drake to Timberline Road. Turn South (right) onto Timberline Road. Turn East (left) onto Custer Drive (first light). Take the first right (Illinois Drive) into the church parking lot.

Directions from I-25:
Take Harmony Road (exit 265) – turn West into town. Turn North (right) onto Timberline Road. Timberline Church will be past Horsetooth Road, but before Drake Road on the right hand side of the road. There are two entrances into the church parking lot prior to reaching Custer Drive.



Lory Student Center - 3rd Floor