

**68TH ANNUAL
CSEF AWARDS CEREMONY
APRIL 14, 2023**

COLORADO SCIENCE & ENGINEERING FAIR

2023 AWARDS CEREMONY

Welcome Ms. Courtney Butler, CSEF Director

Presentation of Teacher Special Awards

Announcer: Courtney Butler

Presenter: Josh Redmore

Colorado Association of Science Teachers

Doug Steward Memorial Award

CSEF Teacher of the Year Award

Presentation of Organizational Special Awards

Announcer: Samantha Sands

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

Announcing of National Organizational Special Awards*

Announcer: Samantha Sands

American Psychological Association	Society for In Vitro Biology
Association for Women Geoscientists	United States Agency for International Development
NASA	United States Metric Association
National Oceanic & Atmospheric Administration	Water Environment Federation
Ricoh	Yale Science & Engineering Association

*These awards will only be announced at the ceremony, and given to the students on Saturday.

COLORADO SCIENCE & ENGINEERING FAIR

2023 AWARDS CEREMONY

Presentation of CSEF Special Awards

Announcer: Dr. Carol Morrow

Pioneers of Science Awards*	Courtney Butler
Poster Art Contest	Courtney Butler
Student Choice Awards	Courtney Butler
Elemer Bernath Technical Writing Award	Courtney Butler
Ralph F. Desch Memorial Technical Writing Award	Courtney Butler

Presentation of Grand Awards

Announcer: Dr. Carol Morrow

Junior and Senior Division Category Awards	Erin Comstock	
Animal Sciences	Behavioral & Social Sciences	Biomedical & Health Sciences
Chemistry	Earth & Environmental Sciences	Energy
Engineering	Environmental Engineering	Mathematics & Computer Sciences
Micro & Molecular Biology	Physics & Astronomy	Plant Sciences

Presentation of Scholarships

Announcer: Dr. Carol Morrow

Colorado School of Mines	Michael Bemski
Colorado State University, College of Agricultural Sciences	Susan Brown
Colorado State University, Pueblo	Sylvester A. Kalevela

Presentation of CSEF Top Awards

Announcer: Dr. Carol Morrow

Junior Division Best CSEF Project Awards	Courtney Butler
Senior Division Best CSEF Project Awards	Courtney Butler

Colorado ISEF Finalist Recognition

Closing Remarks	Courtney Butler
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Thousands. I could see thousands of brilliant minds. I was on the stage at the awards ceremony, looking out at an ocean of people, the next generation of scientists, people who would go on to change the world. The music erupted around me, the spotlights raced about the hall, and names continued to be called; each one eliciting deafening cheers from the crowd. We were an unstoppable force gazing unflinchingly into the challenges of the future and forging ahead. With the powers of science and ingenuity, we were superhuman. Some of us developed more accurate diagnostics, others created affordable prosthetics, and still others probed the secrets of galaxies. The science fair scorched a vision of a bright tomorrow into my consciousness. As a scientist, I intend to help actualize this vision.

Logan Collins (CSEF Alumni 2013 - 2015)

*Please see pages 9 & 10 of the program for more information on these awards.

SPECIAL AWARDS ORGANIZATIONS

Air & Waste Management Association Rocky Mountain States Section

The Air & Waste Management Association is a non-profit, professional organization that enhances knowledge and expertise by providing a neutral forum for information exchange, professional development, networking opportunities, public education, and outreach to more than 8,000 environmental professionals in 65 countries. The AWMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society.

American Association of University Women

The American Association of University Women promotes equity for all women and girls through education, research and advocacy. In principle and practice, AAUW values and seeks a diverse membership. There shall be no barriers to full participation in the organization on the basis of gender, race, creed, age, sexual orientation, national origin or disability.

American Industrial Hygiene Association Rocky Mountain Section

The Rocky Mountain Section of the American Industrial Hygiene Association (AIHA-RMS) is dedicated to the prevention of workplace-related illness and injury.

American Institute of Chemical Engineers Rocky Mountain Section

The American Institute of Chemical Engineers, created in 1908, is the world's leading organization for chemical engineering professionals, with more than 40,000 members from over 90 countries. The Rocky Mountain Section of the AIChE encompasses a broad scope of industries including energy (traditional and alternative), biotechnology, microelectronics, and environmental.

American Statistical Association Colorado/Wyoming Chapter

The American Statistical Association is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical science through meetings, publications, membership services, education, accreditation, and advocacy. The ASA members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare. The David Young Memorial Award is named after a former professor from the University of Colorado at Denver, Department of Preventive Medicine and Biometrics. David's skills in both science and statistics allowed him to collaborate with medical investigators at the University of Colorado and help communicate research results.

American Vacuum Society Rocky Mountain Chapter

The American Vacuum Society was founded in 1953 and is organized into 10 technical divisions and 2 technical groups that encompass a range of established, as well as emerging, science and technology areas. The society promotes communication, dissemination of knowledge, recommended practices, research, and education in the use of vacuum and other controlled environments to develop new materials, process technology, devices, and related understanding of material properties for the betterment of mankind. The AVS divisions include advanced surface engineering, applied surface science, biomaterial interfaces, electronic materials and processing, magnetic interfaces and nanostructures, nanometer-scale science and technology, plasma science and technology, surface science, thin film and vacuum technology.

ASM International

ASM International was founded in 1913 as The Steel Treaters Club. ASM International serves materials professionals, nontechnical personnel, and managers worldwide by providing high quality materials information, education and training, networking opportunities, and professional development resources in cost-effective and user-friendly formats. ASM is where materials users, producers and manufacturers converge to do business. The materials engineering "family" plays a critical role in society, and serves nearly every industry, from basic manufacturing to nanotechnology and biomaterials.

Broadcom Foundation

The goals of the Broadcom Coding with Commitment are to education how STEM knowledge and innovation helps protect, preserve, save improve or promote quality of life or nature; advocate coding as both a language and design tool that all young people can use to advance their educational opportunities, careers and life choices; and inspire young people to think globally and act locally.

Colorado Association of Science Teachers

CAST (coloradocast.org) provides its members with opportunities to enhance their classroom instruction with mini-grants, free monthly webinars and other professional development opportunities. CAST also provides annual monetary and/or recognition awards for new, experienced and retired Colorado educators - both members and non-members.

Colorado Biology Teachers Association

The Colorado Biology Teachers' Association is dedicated to the improvement of biological science instruction at all educational levels. Our activities include a Spring Seminar and a Fall Workshop to improve teacher and student understanding of a variety of biological topics; co-sponsorship of the Colorado Science Conference for Professional Development each fall in Denver; mini-grants for the support of classroom activities; Outstanding Biology Teacher Award program; and a web site to keep teachers informed about a variety of activities designed to improve teaching.

Colorado BioScience Institute

The Colorado BioScience Institute is a non-profit that provides education, workforce and career development, innovation support and resources for life science professionals, companies, students and educators related to the life science industries in Colorado.

Colorado Chemistry Teachers Association

The Colorado Chemistry Teachers Association supports over 1300 chemistry teachers in the state of Colorado through email, newsletters, grants, and workshops. We also support CSEF with a monetary contribution each year.

Colorado Environmental Health Association

The Colorado Environmental Health Association is a nonprofit professional organization that was established in 1947 as the Rocky Mountain Section of the National Association of Sanitarians and enjoys an outstanding reputation statewide as an innovative, progressive organization dedicated to advancing the cause of general, professional or technical environmental health. The CEHA is educationally structured, providing scholarships, one-day trainings, and an Annual Educational Conference to educate and inform environmental health professionals.

Colorado Foundation for Agriculture

Since 1991, the Colorado Agriculture in the Classroom program seeks to advance agricultural literacy - an awareness, knowledge, and appreciation of the food and fiber system we all rely on every day. Colorado Agriculture in the Classroom is the lead agricultural literacy organization that serves the full spectrum of prekindergarten through 12th grade formal and informal education in Colorado.

Colorado Medical Society

The Colorado Medical Society, founded in 1871, is an association of physicians which promotes the science and art of medicine, the betterment of public health and the welfare of the medical profession and the patients it serves. The CMS is an advocate for its physician members, acting as a conduit for continuing medical education and physician liaison with managed care and health maintenance organizations and health insurance providers. The organization works to make the physician's practice more efficient and cost effective and to help physicians navigate the rapidly evolving practice environment. The CMS Education Foundation was founded in 1982 to support educational activities in Colorado, including the Colorado Science and Engineering Fair.

Colorado Mineral Society

The Colorado Mineral Society was founded in 1936 by a group of distinguished individuals within the mineralogical field with the purpose of promoting the study of minerals and other geologic materials, of encouraging mineral collecting as hobby, and of conducting public meetings, lectures, and field trips. The Colorado Mineral Society is the only NGO that has presented special awards during the entire 68-year history of the state science fair and we hope to continue doing so into the foreseeable future.

Colorado Mycological Society

The Colorado Mycological Society is a not for profit organization that was established in 1967 to advance the understanding of, and to stimulate interest in, the field of mycology. CMS members collect mushroom specimens for identification, preservation and study as well as for consumption. The CMS also provides consulting services to the Denver Botanic Gardens, the Rocky Mountain Poison Center, county agents and others.

Colorado Native Plant Society

The Colorado Native Plant Society is a non-profit organization dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy. We encourage education about plants and native ecosystems, gardening with native plants to help populations of pollinators and birds in our urban spaces, conservation of natural areas, and good land stewardship of native plant communities and ecosystems. We hope this award will inspire students to further their studies of plants and act as a stimulus for educators to encourage endeavors in the natural sciences.

Colorado Scientific Society

The Colorado Scientific Society was founded in Denver in 1882, six years after Colorado became a state. Founder S.F. Emmons of the US Geological Survey and 11 colleagues were interested in an exchange of observations and ideas on topics in earth science. The membership has since grown from the original 12 to more than 375 in 1992. Current members include representatives from many earth science organization, including Federal and State government agencies, universities throughout the region, private industry, and individuals. The society welcomes new members with a background and interest in the sciences.

Colorado Section of the American Chemical Society

The Colorado Section of the American Chemical Society (COACS) support the careers, activities and education of students in the State of Colorado. COACS is local section of the American Chemical Society, the largest professional organization for chemists and engineers in the world with about 155,000 members. The organization support activities that enhance the careers of its members and STEM education in general. We support education activities at the state science fair and the State of Colorado's high school students and teachers. We are delighted to contribute to celebrate the accomplishments of our young scientists carrying out chemical studies at the Colorado State Science Fair.

Colorado State University College of Agricultural Sciences

The College of Agricultural Sciences at Colorado State University is dedicated to the education of tomorrow's leaders in agricultural sciences through innovation and collaboration in a diverse and supportive environment. The science of agriculture needs to meet future global challenges in order to produce safe food, protect the environment and landscape, provide biofuels and energy sources, as well as confront the economic challenges of population and climate change. By the year 2050, the world population will have increased from the 7 billion of today to over 9 billion people. In order to feed those global masses, we must increase our global food production by 70%. This increase in food production needs to be accomplished with less land, less water and less resources. Existing technology cannot meet this challenge, so new science and technology needs to be developed. Young scientists need to be attracted into the fields of agriculture to create new ideas and ways of thinking to increase food production safely in a harmonious fashion with our environment. Some of the new technology can potentially be utilized for biofuel and energy production that is also in harmony with our environment.

Colorado State University Colorado Natural Heritage Program

The Colorado Natural Heritage Program is based at Colorado State University. This program is our state's source of information to guide conservation, management, and development. Their job is to make sure we don't lose the nature we have inherited, including all of our species and plant communities. CNHP's staff includes many of Colorado's leading experts on the rare animals, plants, and ecosystems of Colorado, and also includes database experts and GIS experts. CNHP has a huge impact on conservation throughout the state- their information has guided hundreds of millions of conservation dollars, ensuring that these funds are spent in the most impactful ways possible. They have helped to ensure that species do not go extinct in Colorado.

Colorado State University Department of Agricultural Biology

The Department of Agricultural Biology is committed to excellence in the creation and dissemination of knowledge about insects, plant pathogens, and weeds. The Department encompasses the disciplines of entomology, plant pathology, and weed science – thus providing unique opportunities to address critical issues that cut across disciplines. Agricultural Biology focuses its teaching, research and outreach missions in four program areas: 1) Genomics and Molecular Biology, 2) Ecology and Biodiversity, 3) Biology and Management of Invasive Species, and 4) Integrated Pest Management. Being interdisciplinary in nature, Agricultural Biology values cooperative and collaborative efforts with departmental teams, other research teams in the University, public stakeholders (e.g., public land agencies, crop grower associations, private landowners), and industry partners.

Colorado State University Department of Chemistry

The study of chemistry prepares students for a variety of careers, and the undergraduate program at Colorado State University has been designed to give graduates the background necessary to enter any one of those interesting, exciting, and rewarding careers. Chemists are employed in a wide array of professional fields in private industry, government, and education. Chemists often work in research, development, analysis and testing, consulting, industrial quality control, environmental resource management, and forensics. Participation in internships, volunteer activities, and cooperative education opportunities are available to students through the department to enhance their practical training and development.

Colorado State University Energy Institute

The Energy Institute is a multidisciplinary research department that integrates experts from many fields with the goal of improving quality of life - by taking research innovations to the global marketplace more efficiently and at an accelerated pace. The Energy Institute team has the breadth, depth, and entrepreneurial drive to make a global impact. Over two hundred faculty represent fields as diverse as the natural sciences, engineering, agricultural sciences, natural resources, humanities, applied human sciences, veterinary medicine, and business. In addition, a growing number of students and industry leaders are tapping into our growing network.

Colorado Veterinary Medical Association

The Colorado Veterinary Medical Association is a proactive organization of more than 2,600 professionals representing each setting of veterinary medicine - clinical practice, public health, academe, corporate, policy medicine, and uniformed services. CVMA members work together to foster excellence in the science and art of veterinary medicine, sustain the human/animal bond, and protect public health. CVMA's mission is to enhance animal health and welfare, and advance the knowledge and wellbeing of Colorado veterinarians.

Colorado's Electric Cooperatives

Colorado's electric cooperatives provide power to 70% of the land mass of Colorado and about 22% of the population. The electric co-ops are focused on being Leaders for a Sustainable Future by maintaining reliable and affordable electricity, advancing innovative solutions, and enhancing community resilience. CREA, the statewide trade association representing Colorado's electric cooperatives, appreciates the opportunity to recognize today's youth.

Colorado-Wyoming Society of American Foresters

The Society of American Foresters is a scientific and educational organization representing the forestry profession in the United States. Founded in 1900, it is the largest professional society for foresters in the world. The mission of the society is to advance the science, education, technology, and practice of forestry; to enhance the competency of its members; to establish professional excellence; and to use the knowledge, skills and conservation ethic of the profession to ensure the continued health and use of forest ecosystems and the present and future availability of forest resources to benefit society.

Department of Commerce Boulder Laboratories

The US Department of Commerce promotes job creation, economic growth, sustainable development and improved standards of living for all Americans by working in partnership with business, universities, communities and our nation's workers. The department touches the daily lives of the American people in many ways, with a wide range of responsibilities in the areas of trade, economic development, technology, entrepreneurship and business development, environmental stewardship, and statistical research and analysis. Cutting-edge science and technology at the department fosters innovation, and a focus on research and development that moves quickly from the lab to the marketplace generates progress and new 21st century opportunities.

Gromko Family

Mary Gromko has played a pivotal role in science education in the city of Colorado Springs as a chemistry teacher, in the state as the Science Coordinator at CDE for about 10 years, and nationally as president of the NSTA organization which represents 1000's of science teachers in the USA. When her husband Gerry, an engineer, passed away many science teachers donated money to this fund. The fund was set up to honor her husband Gerald who was an engineer and also a strong supporter of science.

Institute of Electrical & Electronics Engineers

The Institute of Electrical and Electronics Engineers (I triple E), an association dedicated to advancing innovation and technological excellence for the benefit of humanity, is the world's largest technical professional society. It is designed to serve professionals involved in all aspects of the electrical, electronic and computing fields and related areas of science and technology that underlie modern civilization.

Lemelson Foundation

Little Shop of Physics

The Little Shop of Physics is a group of science educators and science students based out of Colorado State University. The mission of the LSOP is to find creative ways to share the wonder of science; to present unique hands-on science experience to diverse ranges of students; to involve undergraduates in significant and meaningful service; and to share ideas and insights with current and future teachers. The Matthew McCausland Memorial Award recognizes the spirit of this kind-hearted inventor, and is given to the student who displays the most creativity and "out of the box" thinking.

National Centers for Environmental Information

NOAA's National Centers for Environmental Information (NCEI) hosts and provides access to one of the most significant archives on earth, with comprehensive oceanic, atmospheric, and geophysical data. From the depths of the ocean to the surface of the sun and from million-year-old ice core records to near-real-time satellite images, NCEI is the Nation's leading authority for environmental information. By preserving, stewarding, and maximizing the utility of the Federal government's billion-dollar investment in high-quality environmental data, NCEI remains committed to providing products and services to private industry and businesses, local to international governments, academia, as well as the general public.

National Geographic Society

Platte River Power Authority

Platte River Power Authority is a not-for-profit, community-owned public power utility established in 1973 that generates and delivers safe, reliable, environmentally responsible and financially sustainable energy and services to Estes Park, Fort Collins, Longmont and Loveland, Colorado, for delivery to their utility customers. Platte River sponsors this award to recognize academic leadership concerning these goals.

Regeneron

Rocky Mountain Association of Geologists

The Rocky Mountain Association of Geologists was founded in 1922 and is one of the largest and most active associations of geologists in the United States. The Rocky Mountain Association of Geologists supports professional exchange and education through sponsorship of events, publications, training, and seminars. RMAG publishes a monthly newsletter, The Outcrop, a quarterly scientific journal, The Mountain Geologist, and regular guidebooks on a variety of subjects.

Rocky Mountain Water Environment Association

The Rocky Mountain Water Environment Association was founded in 1936 as the Rocky Mountain Sewage Association, and since that time has provided its members with the most current information on water quality issues, technology, regulatory changes, and the latest research developments. The RMWEA is affiliated with the Water Environment Federation, an international organization that sponsors the Stockholm Junior Water Prize, which is the most prestigious youth award for a high school water related research project.

Science Toy Magic

Science Toy Magic closed its science toy store. Science Toy Magic now gives science presentations to schools and organizations world-wide in Spanish, French, German, Mandarin, Italian, Swedish, Hawai'ian, Navajo, Irish, and the Warlpiri Australian aboriginal language. Matt Hannifin gives humorous and multi-lingual science presentations to schools' world language and science departments. Matt has presented to the NASA Master's Forum, and was inducted into Who's Who among America's Teachers. Science Toy Magic congratulates every participant for changing your lives forever - prizes or no prizes. Matt learned from early unsuccessful projects. He succeeded only by persevering to become a patented inventor, commercial hot air balloon pilot, pyrotechnician, laser lightshow designer, advanced scuba diver, and holographer. Science Toy Magic encourages you to keep expanding on the ideas from this year's project. You and your families ROCK!

Society for Mining, Metallurgy & Exploration Colorado Section

As a member society of the American Institute of Mining, Metallurgy and Petroleum Engineers, the Society for Mining, Metallurgy and Exploration has roots dating back to 1871, when a handful of coal mining engineers founded AIME. Since its inception, SME has continued to evolve over the years to stay abreast of industry changes and to reflect the ever-broadening interests of its members. SME is organized into eight distinct divisions: coal & energy, environmental, health & safety, industrial minerals & aggregates, mineral and metallurgical processing, mining & exploration, underground construction association, and the woman's auxiliary to the AIME. More than 60 local SME sections facilitate the exchange of information and increase grassroots participation in SME programs and services.

Society of Manufacturing Engineers Colorado Chapter 354

The Society of Manufacturing Engineers is the premier source for manufacturing knowledge, education and networking. Through its local chapters, technical communities, publications, expositions and professional development resources, SME promotes an increasing awareness of manufacturing engineering and keeps manufacturing professionals up to date on leading trends and technologies. Headquartered in Michigan, the Society has members in more than 70 countries and represents manufacturing across all industries.

Society of Women Engineers Rocky Mountain Section

The Society of Manufacturing Engineers is the premier source for manufacturing knowledge, education and networking. Through its local chapters, technical communities, publications, expositions and professional development resources, SME promotes an increasing awareness of manufacturing engineering and keeps manufacturing professionals up to date on leading trends and technologies. Headquartered in Michigan, the Society has members in more than 70 countries and represents manufacturing across all industries.

Soil & Water Conservation Society Colorado Chapter

The Soil and Water Conservation Society is a nonprofit scientific and educational organization, founded in 1943, that serves as an advocate for conservation professionals and for science-based conservation practice, programs and policy. The mission of the society is to foster the science and art of natural resource conservation. The work of the society targets conservation of soil, water, and related natural resources on working land - the land used to produce food, fiber, and other services that improve the quality of life people experience in rural and urban communities. The society also works to discover, develop, implement and constantly improve ways to use land that sustains its productive capacity and enhances the environment at the same time.

State of Colorado

Division of Reclamation, Mining & Safety

The Colorado Division of Reclamation, Mining and Safety (DRMS) is responsible for balancing the need for mineral resource production with the protection of the public and Colorado's natural resources. DRMS consists of four programs: the Coal Regulatory Program, the Minerals Regulatory Program, the Inactive Mine Reclamation Program, and the Mine Safety and Training Program. Our mission is to protect the public, certified active miners, and the environment during current mining operations, and to restore abandoned mine sites, ensuring that all mined land is reclaimed to beneficial use. The Office of Mined Land Reclamation issues reclamation permits and is responsible for the regulation of all mining and reclamation activities at every coal, metal, mineral, and aggregate mine throughout the state. The primary objectives of this program are to review and evaluate all mining and reclamation permit applications and inspect active operations to ensure that approved reclamation plans and regulations are followed. The Office also provides essential safety training for mine operators and employees. DRMS staff, along with the array of other esteemed organizations, are proud to lend our continued support to the CSEF in the form of Junior and Senior Division Special Awards. It's safe to say, though, each year the true excitement arises when we meet these exceptional student-scientists, have the opportunity to learn from them directly, and are left buoyed into the future on ripples from their energy and ideas.

STEMgirls, LLC

STEMgirls encourages middle school females to consider pursuing careers in Science, Technology, Engineering and/or Math.

The Biophysical Society

The Biophysical Society (BPS) is a non-profit international organization founded in 1958 to lead the development and dissemination of knowledge in biophysics. Membership to the Society is open to those who have educational, research, or practical experience in biophysics or in an allied scientific field, such as physics, chemistry, biology, and engineering. BPS supports members in all stages of their career. Through the Society's programs, networks, and outreach efforts, BPS helps students and researchers develop their interests, skills, and career in biophysics.

The Sarah Volz Family

For 7 years beginning in 2006, the Colorado State Science Fair engaged and inspired Sara Volz who was the top winner of the 2013 Intel Science Talent Search and is now finishing her PhD in Biophysics at the University of California in Berkeley where she is studying the fundamentals of protein folding. Sara and her family would like to encourage other students to pursue their scientific passions.

Trout Unlimited

Trout Unlimited is a nonprofit volunteer organization that is dedicated to improving Colorado's fishing habitats and the preservation of their cold water ecosystems. Trout Unlimited through its state council Colorado Trout Unlimited along with the local chapter Boulder Flycasters, works to conserve, protect and restore North America's cold water fisheries and watersheds. By the next generation, Trout Unlimited will ensure that robust populations of native and wild cold water fish once again thrive within their North American range, so that tomorrow's children can enjoy healthy fisheries in their home waters.

United States Air Force

Air Force ROTC Detachment 90 at Colorado State University is the tenth largest Air Force ROTC unit in the nation. The mission of Detachment 90 is to commission highly qualified Air Force officer candidates by recruiting, educating, training and motivating cadets at both CSU and the University of Northern Colorado and prepare them to lead in the world's greatest air, space, and cyberspace force.

United States Navy & Marine Corps

The Office of Naval Research is an executive branch within the Department of Defense that provides technical advice to the Chief of Naval Operations and the Secretary of the Navy. Science and technology investments enable the technical superiority of our naval forces by producing knowledge and transitions and growing a healthy science and engineering workforce. ONR has six science and technology departments that coordinate and execute the research: Expeditionary Maneuver Warfare & Combating Terrorism; Command, Control Communications, Computers, Intelligence, Surveillance and Reconnaissance; Ocean Battlespace Sensing; Sea Warfare and Weapons; Warfighter Performance; and Naval Air Warfare and Weapons.

Wilkins Family

The Wilkins family recognizes the critical role of research and development in sparking the next generation of innovative start-up companies. The award is given to a student that has created an invention or innovation in computer science or engineering, and has undertaken further steps to realize its commercial potential.

Wojtaszek Family

The Paul Wojtaszek Memorial Award is sponsored by Paul's family and friends and given to the project deemed to be the foremost study in the field of medicine & health in the senior division. The award is named for Dr. Paul Wojtaszek, who for decades was a judge for the CSEF in the senior division for medical projects. Paul looked to not only recognize excellence, but also provide insight to students as to how to attain it. This award is intended to celebrate Paul's life in association with the science fair he loved.

Zonta Club

Founded in 1919, Zonta International is a global organization of executives and professionals working together to empowering women worldwide through service and advocacy. With more than 30,000 members belonging to more than 1,200 Zonta Clubs in 63 countries and geographic areas, Zontians all over the world volunteer their time, talents and support to local and international service projects, as well as scholarship programs aimed at fulfilling Zonta's mission and objectives. Amelia Earhart was one of its most famous members, and this award is given in her memory.

SCHOLARSHIP PROVIDERS



Colorado School of Mines is a public research university devoted to engineering and applied science. It has the highest admissions standards of any public university in Colorado and is among the highest of any public university in the country. Mines has distinguished itself by developing a curriculum and research program geared towards responsible stewardship of the earth and its resources. In addition to strong education and research programs in traditional fields of science and engineering, Mines is one of a very few institutions in the world having broad expertise in resource exploration, extraction, production and utilization. As such, Mines occupies a unique position among the world's institutions of higher education.



College of Agricultural Sciences

The College of Agricultural Sciences at Colorado State University is dedicated to the education of tomorrow's leaders in agricultural sciences through innovation and collaboration in a diverse and supportive environment. The science of agriculture needs to meet future global challenges in order to produce safe food, protect the environment and landscape, provide biofuels and energy sources, as well as confront the economic challenges of population and climate change. By the year 2050, the world population will have increased from the 7 billion of today to over 9 billion people. In order to feed those global masses, we must increase our global food production by 70%. This increase in food production needs to be accomplished with less land, less water and less resources. Existing technology cannot meet this challenge, so new science and technology needs to be developed. Young scientists need to be attracted into the fields of agriculture to create new ideas and ways of thinking to increase food production safely in a harmonious fashion with our environment. Some of the new technology can potentially be utilized for biofuel and energy production that is also in harmony with our environment.



Colorado State University-Pueblo is committed to excellence, setting the standard for regional comprehensive universities in teaching, research and service by providing leadership and access for its region while maintaining its commitment to diversity. Students graduate with the knowledge to enter their professions and with the learning skills (e.g. problem solving, critical thinking, research, communication) to keep current in those professions into the future. Colorado State University-Pueblo will enhance its reputation as a premier comprehensive regional university that offers a wide range of undergraduate degrees as well as specialized graduate degrees. As a federally designated Hispanic Serving Institution, CSU-Pueblo is committed to maintaining university accessibility which reflects southern Colorado's culturally and ethnically diverse student body, including first generation students. We will do so by offering excellent academics, affordable education, transformative opportunities, and supportive student life. CSU-Pueblo will be distinguished by the integration of the liberal arts and sciences with professional preparations as well as an emphasis on experiential education that reflects skills and competencies needed in a global society.

PIONEERS OF SCIENCE

Category

Sponsor

Pioneer Scientist

Animal Sciences

Judy Prester

Dian Fossey



Photograph of Dian Fossey by Yann Arthus-Bertrand

Dian Fossey (1932 - 1985) was an American primatologist and conservationist. Dian was one of the foremost primatologists in the world, a member of the so-called “Trimates” – a group formed of prominent female scientists originally sent by Louis Leakey to study great apes in their natural environments, along with Jane Goodall who studies chimpanzees and Birute Galdikas who studied orangutans. During her time in Rwanda, Dian actively supported conservation efforts, strongly opposed poaching and tourism in wildlife habitats, and made more people acknowledge sapient gorillas.

Behavioral & Social Sciences

Karen McCarthy

Leon Festinger



<https://en.wikipedia.org>

Leon Festinger (1919 - 1989) was an American social psychologist, best known for cognitive dissonance (the negative feeling that results from conflicting beliefs and behaviors) and social comparison theory (individuals determine their own social and personal worth based on how they compare to others). Leon is credited with advancing the use of laboratory experimentation in social psychology, although he simultaneously stressed the importance of studying real-life situations. He is also known for the proximity effect (the idea that physical and psychological nearness to others tends to increase interpersonal liking).

Behavioral & Social Sciences

Dan Kowal

Mary Ainsworth



<https://psychology.tcnj.edu>

Mary Ainsworth (1913 - 1999) was an American-Canadian developmental psychologist known for the development of the attachment theory. She designed the strange situation procedure to observe early emotional attachment between a child and its primary caregiver. Mary served in the Canadian Army, where she reached the rank of major in 1945. Mary received many honors, including the Award for Distinguished Contributions to Child Development in 1985 and the Distinguished Scientific Contribution Award from the APA in 1989.

Biomedical & Health Sciences

Dr. Robert Morrow

Elizabeth Blackburn



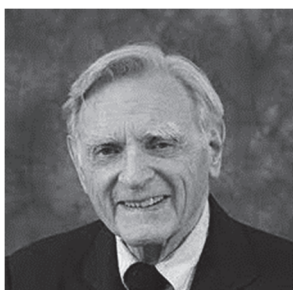
<https://en.wikipedia.org/>

Elizabeth Helen Blackburn (1948 -) is an Australian-born American biologist. Elizabeth is the former President of the Salk Institute for Biological Studies. Previously, she was a biological researcher at the University of California, San Francisco who studied the telomere, a structure at the end of chromosomes that protects the chromosome. In 1984, Elizabeth co-discovered telomerase, the enzyme that replenishes the telomere with Carol Greider. For this work, she was awarded the Nobel Prize in Physiology or Medicine in 2009, sharing it with Greider and Jack Szostak, becoming the first Australian woman Nobel laureate.

Chemistry

Dr. Larry Sveum

John Goodenough



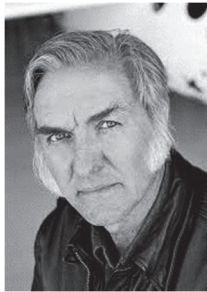
<https://www.fi.edu/laureates>

John Bannister Goodenough (1922 -) is an American material scientist and a solid-state physicist. John is a professor of mechanical engineering and material science at the University of Texas. He is widely credited with the identification and development of the lithium-ion battery; for developing the Goodenough-Kanamori rules on determining the sign of the magnetic superexchange in material; and for seminal developments in computer random access memory. John was awarded the Nobel Prize in Chemistry in 2019 for his work on lithium-ion batteries along with M. Stanley Whittingham and Akira Yoshino.

Earth & Environmental Sciences *Kristen Rasmussen***Wangari Muta Maathai**

<https://en.wikipedia.org/>

Wangari Muta Maathai (1940 - 2011) was a renowned Kenyan social, environmental and political activist and the first African woman to win the Nobel Prize. Wangari founded the Green Belt Movement, an environmental, non-governmental organization focused on the planting of trees, environmental conservation and women's rights. Wangari was an elected Member of Parliament and served as assistant minister for Environmental and Natural Resources in the government of President Mwai Kibaki between January 2003 and November 2005. Wangari was an honorary Councilor of the World Future Council and received the Nobel Peace Prize in 2004.

Energy**Barbara Ganong****Burt Ratan**

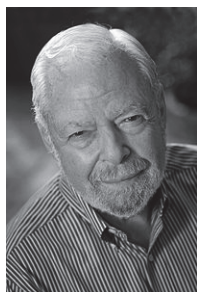
<https://www.nmspacemuseum.org>

Elbert "Burt" Leander Ratan (1943 -) is a retired American aerospace engineer and entrepreneur noted for his originality in designing light, strong, unusual-looking, energy efficient aircraft. Burt has come up with 367 individual concepts throughout his career, 45 of which have flown. His most notable achievements include Voyager (the first plane to fly non-stop around the world) and SpaceShipOne, which won the Ansari X-Prize in 2004 for becoming the first privately funded spacecraft to enter the realm of space twice within a two-week period. Burt is honored at the National Air and Space Museum in Washington, DC and has five aircraft displayed there.

Engineering**John Bahr****Steven Chu**

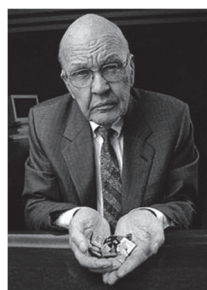
<https://en.wikipedia.org/>

Steven Chu (1948 -) is an American physicist and former Secretary of Energy. Steven is known for his research in cooling and trapping of atoms with laser light for which he won the Nobel Prize in Physics in 1997, along with his colleagues Claude Cohen-Tannoudji and William Daniel Phillips. Steven is a vocal advocate for more research in renewable energy and nuclear power, arguing that a shift away from fossil fuels is essential to combat climate change. Steven conceived the global "glucose economy," a form of low-carbon economy, in which glucose from tropical plants is shipped around the world like oil is today.

Environmental Engineering**Peter Laird****George Tchobanoglous**

<https://en.wikipedia.org/>

George Tchobanoglous (1935 -) is an American civil and environmental engineer. George's principal research interests are in the areas of wastewater treatment, water reuse and solid waste management. His work in the use of ultraviolet radiation for wastewater disinfection began in the early 1990s, when he investigated the potential to use UV to disinfect wastewater in order to reclaim it for reuse. Guidelines for UV disinfection that he helped draft in 1993 became the standard US resource on the topic and helped foster the acceptance of UV disinfection as a technology for water reuse.

Math & Computer Sciences**Lucy Adams****Jack Kilby**

<https://en.wikipedia.org/>

Jack St. Clair Kilby (1923 - 2005) was an American electrical engineer who took part (along with Robert Noyce) in the realization of the first integrated circuit while working at Texas Instruments (TI) in 1958. He was awarded the Nobel Prize in Physics in 2000. To congratulate him, President Bill Clinton wrote, "You can take pride in the knowledge that your work will help improve lives for generations to come." Jack is also the co-inventor of the hand-held calculator and the thermal printer, for which he has patents along with seven other inventions.

PIONERS OF SCIENCE

Category

Sponsor

Pioneer Scientist

Micro & Molecular Biology

Dolly Morrow

James Patrick Allison



<https://faculty.mdanderson.org/>

James Patrick Allison (1948 -) is an American immunologist who holds the positions of professor and chair of immunology and executive director of immunology platform at the MD Anderson Cancer Center at the University of Texas. James is also the director of the Cancer Research Institute (CRI) scientific advisory council. James' discoveries led to new cancer treatments for the deadliest cancers. He has a longstanding interest in the mechanisms of T-cell development and activation, development of novel strategies for tumor immunotherapy and is one of the first to isolate the T-cell antigen receptor complex protein. James shared the Nobel Prize in Physiology or Medicine in 2018 with Tasuku Honjo.

Physics

Josh Redmore

Donna Strickland



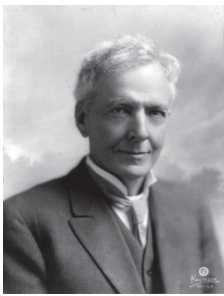
<https://en.wikipedia.org/>

Donna Theo Strickland (1959 -) is a Canadian optical physicist and pioneer in the field of pulsed lasers. Donna is a professor at the University of Waterloo, Canada. Donna's recent work has focused on pushing the boundaries of ultrafast optical science to new wavelength ranges such as the mid-infrared and the ultraviolet, using techniques such as two-colour or multi-frequency methods, as well as Raman generation. Donna was awarded the Nobel Prize in Physics in 2018 and was the third woman ever to be award the prize in physics.

Plant Sciences

Dr. David Holm

Luther Burbank



<https://en.wikipedia.org/>

Luther Burbank (1849 - 1926) was widely known as a horticulturist, botanist, and scientist. Burbank only had an elementary education, but he was an avid reader. Burbank went on to become one of history's most inventive and productive plant breeders. Luther has been credited with being the "world's greatest plant breeder." Luther Burbank established a nursery garden, greenhouse and experimental farms in Santa Rosa, California that have become famous throughout the world.

COLORADO SCIENCE & ENGINEERING FAIR

TEACHER OF THE YEAR HONOR ROLL

Gary Wilkinson	Monte Vista High School, Monte Vista	2003
Nancy Gettman	Woodlin School, Woodrow	2004
Penny Propst	Merino Jr/Sr High School, Merino	2005
TJ Donahue	Cherry Creek High School, Greenwood Village	2006
Haydee Phelps	Summit Middle School, Boulder	2007
*Doug Steward	Monte Vista High School, Monte Vista	2008
Dena Palser	Lone Star School, Otis	2009
James DePue	Wray High School, Wray	2010
Daniel Newmyer	Center High School, Center	2011
David Miner	Brush High School, Brush	2012
Candus Muir	The Classical Academy, Colorado Springs	2013
Loree' Harvey	Monte Vista Middle School, Monte Vista	2014
Diego Martinez	Center High School, Center	2015
Linda Niccoli	Liberty School, Joes	2016
Dr. Lorry Getz	Liberty Middle School, Denver	2017
Terri Paulson	Sargent Jr/Sr High School, Monte Vista	2018
Annette Humphrey	Good Shepherd Catholic School, Denver	2019
Marguerite Yowell	Genoa-Hugo School, Hugo	2020
Emmylou Harmon	West Grand High School, Kremmling	2021
Boone Starr	Flagstaff Academy, Longmont	2022

** Doug Steward, the 2008 CSEF Teacher of the Year winner, passed away in October 2018. Doug wasn't just a great science teacher he was also a science fair champion. He served on the CSEF Scientific Review Committee from 1999 – 2016 and led the Display & Safety inspections during that time as well. To honor Doug, we have collected donations from Doug's friends and are using those funds to give each of the Teacher of the Year nominees in 2019 a small monetary gift for their service to the students of Colorado. Thank you Doug, for everything you did for science fair and for me personally – you will be missed.*

Courtney Butler, CSEF Executive Director (2000 – 2023)

2022 REGENERON ISEF RESULTS

Grand Award Winners

Aditi Avinash from Rock Canyon High School won \$1,000 (3rd Place) in the Biomedical & Health Sciences category.

Rhys Hanson from Conifer High School won \$1,000 (3rd Place) in the Engineering Technology: Statics & Dynamics category.

Chloe Hindes from Monte Vista High School won \$1,000 (3rd Place) in the Environmental Engineering category.

Gitanjali Rao from STEM School Highlands Ranch won \$1,000 (3rd Place) in the Biomedical Engineering category.

Marissa Martinez from Monte Vista High School won \$500 (4th Place) in the Animal Sciences category.

Special Award Winners

Morgan Holien from Monarch High School won \$500 (3rd Place) from the American Mathematical Society. He also won a 1st Place prize from the National Security Agency Research Directorate.

Marissa Martinez won scholarships to Arizona State University. She also won a scholarship worth \$42,000 from the University of Arizona.

Henry Westfall from Fairview High School won a scholarship to Arizona State University.

Daniel Lin from Fairview High School won a scholarship to Arizona State University.

Wilson Moyer from Lakewood High School won a scholarship to Arizona State University.

Natalie Pujet from Fairview High School won a scholarship to Arizona State University.



COLORADO SCIENCE & ENGINEERING FAIR

Copper Sponsors

(Sponsorships of \$500 - \$749)

Michael Bemski

San Luis Valley Regional Science Fair, Inc.

The San Luis Valley Regional Science Fair (SLV RSF) is located in the San Luis Valley of southern Colorado. The first science fair for the SLV region was held in 1949, making it the oldest science fair in Colorado and one of the oldest in the nation. The fair received nonprofit status in 1981 and today the SLV RSV has a board of directors and a paid program director.

The Scriber Family

Society of Women Engineers, Rocky Mountain Section

The Society of Women Engineers, founded in 1950, is an international non-profit and service organization. SWE's mission is to stimulate women to achieve full potential in careers as engineers and leaders, expand the image of the engineering profession as a positive force improving the quality of life, and demonstrate the value of diversity. The Rocky Mountain Section has over 250 members in the northern half of Colorado and southern Wyoming.

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COLORADO SCIENCE & ENGINEERING FAIR

Gold Sponsors

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The Society of Petroleum Engineers is a worldwide society with over 80,000 members and locally, the Denver Section (<http://denver.spe.org>) has approximately 1,200 active members. Besides being a proud sponsor of the Denver Metro RSF and the CSEF, we also support 5 colleges and universities by providing scholarships to students of the junior and senior class level with a minimum 2.5 GPA and who participate in a Petroleum Engineering Curriculum.

Silver Sponsors

(Sponsorships of \$1,000 – \$2,499)

Black & Veatch

Black & Veatch (<http://bv.com>) is an employee-owned, global leader in building Critical Human Infrastructure™ in Energy, Water, Telecommunications and Government Services. Through our *Building a World of Difference*® Foundation, Black & Veatch is able to coordinate our charitable donations with the volunteer involvement of our professionals to organizations and programs worldwide. We focus our efforts on improving the areas of education, health and human services, the environment, public safety and emergency services.

CableLabs

CableLabs (www.cablelabs.com) is a non-profit research and development consortium that is dedicated to creating innovative ideas that significantly impact our cable operator members' business. CableLabs also serves to define interoperable solutions among our members and their technology vendors in order to drive scale, reduce costs, and create competition in the supply chain.

IEEE, Denver Section

The IEEE is a global organization of over 400,000 engineers and technical professionals with over 3600 members in the Denver – Boulder metropolitan area. The mission of the IEEE Denver Section is to enrich the professional and personal lives of the Rocky Mountain Region members, developing them into valued contributors to society through quality programs, continuing education, career development and community service; in collaboration with IEEE, industry, government and academia.

Dr. Larry & Carol Sveum

University of Colorado, Denver
College of Liberal Arts & Sciences

Bronz Sponsors

(Sponsorships of \$750 – \$999)

Galvanic Engineering

Galvanic Engineering, LLC is a small Colorado business that provides consulting and contracting services in the fields of electrical and software engineering. Galvanic has extensive experience in the design, manufacture and testing of electronic and electromechanical products, specializing in embedded computing and control systems.

Peter Laird

Sales Force

COLORADO SCIENCE & ENGINEERING FAIR

Diamond Sponsors

(Sponsorships of \geq \$10,000)



Bayswater Exploration and Production LLC is a Denver, CO based oil and gas development company that was established in 2004. The company owns and operates oil and gas properties throughout the Rocky Mountains, the Midcontinent Region, California, and the Permian Basin. Bayswater's strategy includes finding new opportunities in old fields, acquiring and drilling low cost development areas; and prospect generation/sales. Bayswater strategically partners with various companies and individuals to effectively implement those strategies discussed above. Bayswater's team has decades of experience adding value to oil and gas assets in North America.



Broadcom Foundation (www.broadcomfoundation.org; @BroadcomSTEM) empowers young people to be STEM literate, critical thinkers and college and career-ready by creating multiple pathways and equitable access to achieve the 21st century skills they need to success as engineers, scientists and innovators of the future.



Colorado State University

Colorado State University (www.colostate.edu) is one of the nation's leading research universities, with world-class research in infectious disease, atmospheric science, clean energy technologies and environmental science. Founded in 1870, CSU is the "University of Choice" for Colorado residents. In addition to excellent programs in those areas, CSU offers among the very best professional programs in the US in veterinary medicine, engineering, alternative energy, occupational therapy, journalism, agriculture and construction management.

The Sara Volz Family

From 2006 to 2013, the Colorado State Science Fair engaged and inspired Sara Volz, who was the top winner of the 2013 Intel Science Talent Search for her research in biofuels. Sara is currently finishing her PhD in Biophysics at the University of California in Berkeley where she is studying the fundamentals of protein folding. Sara and her family would like to encourage other students to pursue their scientific passions.

Platinum Sponsors

(Sponsorships of \$5,000 - \$9,999)



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From daily weather forecasts, severe storm warnings and climate monitoring to fisheries management, coastal restoration and supporting marine commerce, NOAA's (www.noaa.gov) products and services support economic vitality and affect more than one-third of America's gross domestic product. NOAA's dedicated scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need, when they need it.