

**70<sup>TH</sup> ANNUAL  
CSEF AWARDS CEREMONY  
APRIL 4, 2025**

# COLORADO SCIENCE & ENGINEERING FAIR

## 2025 AWARDS CEREMONY

Welcome..... Ms. Courtney Gooding, CSEF Director

### Presentation of Teacher Special Awards

Announcer: Courtney Butler  
Presenter: James Sipes

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	Lemelson Foundation
American Industrial Hygiene Association	Little Shop of Physics
American Psychological Association	Lockheed Martin
American Statistical Association	NASA
American Vacuum Society	National Oceanic & Atmospheric Administration
Association for Women Geoscientists	National Security Agency
Broadcom Foundation	Platte River Power Authority
Colorado Biology Teachers Association	Regeneron
Colorado BioScience Institute	Ricoh
Colorado Chemistry Teachers Association	Rocky Mountain Association of Geologists Foundation
Colorado Environmental Health Association	Rocky Mountain Water Environment Association
Colorado Foundation for Agriculture	Society for In Vitro Biology
Colorado Medical Society	Society for Mining, Metallurgy & Exploration
Colorado Mineral Society	Society of Manufacturing Engineers
Colorado Mycological Society	Society of Women Engineers
Colorado Native Plant Society	State of Colorado Division of Reclamation, Mining & Safety
Colorado Section of the American Chemical Society	The Biophysical Society
<u>Colorado State University</u>	The Sara Volz Family
Department of Agricultural Biology	The Warnock Family
Department of Chemistry	The Wilkins Family
Department of Horticulture & Landscape Architecture	The Wojtaszek Family
Energy Institute	Thermo Fisher Scientific
Natural Heritage Program	Trout Unlimited
Colorado Veterinary Medical Association	United States Air Force
Colorado’s Electric Cooperatives	United States Navy & Marine Corps
Colorado-Wyoming Society of American Foresters	United States Metric Association
Department of Commerce Boulder Laboratories	Yale Science & Engineering Association
Gromko Family	Zonta Club
Matt Hannifin – CO <sub>2</sub> /Greenhouse Reduction	
Institute of Electrical & Electronics Engineers	

COLORADO SCIENCE & ENGINEERING FAIR  
2025 AWARDS CEREMONY

Presentation of CSEF Special Awards

Announcer: Dr. Carol Morrow

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

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

Colorado State University, Pueblo

CO2/Greenhouse Gas Reduction Scholarship

Presentation of CSEF Top Awards

Announcer: Dr. Carol Morrow

Junior Division Best CSEF Project Awards.....	Courtney Gooding
Senior Division Best CSEF Project Awards.....	Courtney Gooding

Colorado ISEF Finalist Recognition

Closing Remarks .....	Courtney Gooding
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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 -11 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.

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## **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.

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## **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.

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## **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.

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## **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.

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## **Colorado Association of Science Teachers**

CAST ([coloradocast.org](http://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.

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## **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.

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## **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.

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## **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.

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## **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.

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## **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.

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## **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.

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## **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.

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## **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **Colorado State University Department of Horticulture & Landscape Architecture**

The focus of the Department of Horticulture and Landscape Architecture is to solve problems for people, agriculture and the environment and to improve policy making and public education while developing a workplace conducive to scholarship and creativity fostered by teamwork and individual diversity. The undergraduate program at CSU includes concentrations in landscape business, landscape design and contracting, nursery and landscape management, turfgrass management, landscape architecture, floriculture, horticultural business management, horticultural food crops production, horticultural food crops seed science, horticultural science, horticultural therapy and viticulture and enology.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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### **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.

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**Lockheed Martin**

Headquartered in Bethesda, MD, Lockheed Martin is a global security company that employs about 126,000 people worldwide and is principally engaged in the research, design, development, manufacturing, integration and sustainment of advanced technology systems, products and services. Lockheed Martin’s operating units are organized into the four broad business areas of aeronautics, missiles and fire control, rotary and mission systems, and space. Lockheed Martin Space has major operations in Colorado and California and is focused on human and deep space exploration, global communications systems, weather and remote sensing systems, strategic and missile defense systems, launch systems, military space and mission solutions.

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**National Security Agency**

The National Security Agency/Central Security Service (NSA/CSS) leads the U.S. Government in cryptology that encompasses both signals intelligence (SIGINT) and information assurance (now referred to as cybersecurity) products and services, and enables computer network operations (CNO) in order to gain a decision advantage for the Nation and our allies under all circumstances. We are well-positioned to carry out our missions because NSA is both a member of the Defense Department and an Intelligence Community agency. U.S. leaders, policymakers, war fighters, law enforcement agencies and our Intelligence Community partners face some of the gravest national security challenges in U.S. history. To overcome the very real threats to our country, national decision makers: (1) Need to know what our adversaries are doing and what their capabilities are so they can make decisions and plans, and execute policies and operations; (2) Need to be able to communicate and exchange information securely, so that our adversaries can't undermine our plans; and (3) Must be able to outmaneuver those who would do us harm in cyberspace. NSA is the world leader in cryptology - the art and science of making and breaking codes. It is this expertise- from our people and technology- that allows us to accomplish the goals of discovering adversaries' secrets, protecting U.S. secrets, and outmaneuvering our adversaries in cyberspace while at the same time protecting the privacy rights of the American people.

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**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.

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**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.

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**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.

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**Science Toy Magic**

Science Toy Magic gives humorous, multi-lingual physics presentations to schools and other organizations world-wide in: Spanish, French, German, Navajo, Mandarin, Irish, Warlpiri, Italian, Ukrainian, Swedish, and Hawai’ian. Matt Hannifin has presented to the NASA Master’s Forum and was inducted into Who’s Who Among America’s Teachers. Matt learned from early unsuccessful endeavors to persevere. He went on to become a teacher, balloon pilot, pyrotechnician, laser light show designer, advanced scuba diver and holographer (and was awarded US patents). Science Toy Magic is now targeting climate change mitigation and encourages you to keep expanding on the ideas from your projects this year. Science Toy Magic congratulates every participant for changing your lives forever – prize or no prize. You and your families ROCK!

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**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.

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**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.

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**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.

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**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.

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**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.

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**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.

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**The Warnock Family**

CSEF alums Max ('14 - '20) and Julia ('16 - '21) Warnock are honoring their grandparents through two special awards. Their grandmother, Dr. Martha L. Warnock, was a pathologist who discovered the connection between tobacco use and exposure to asbestos in causing lung cancer. The award in her honor goes to the top senior division female investigator(s) in the Biomedical & Health Sciences category. Their grandfather, Dr. Robert L. Warnock, was a physicist who studied sub-atomic particles using linear and circular accelerators. The award in his honor goes to a project in the senior division Physics & Astronomy category.

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**The Wilkins Family**

This \$750 award from 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.

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**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.

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**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.

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**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.

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**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.

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**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.

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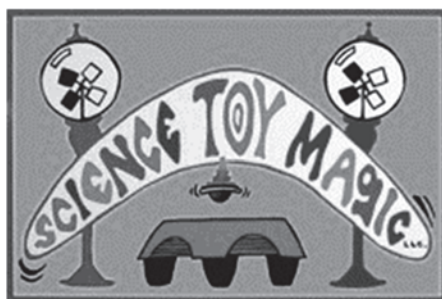
# SCHOLARSHIP PROVIDERS



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.

## Colorado State University - Pueblo

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.



## CO<sub>2</sub>/Greenhouse Gas Reduction Scholarship

Science Toy Magic gives humorous, multi-lingual physics presentations to schools and other organizations world-wide in: Spanish, French, German, Navajo, Mandarin, Irish, Warlpiri, Italian, Ukrainian, Swedish, and Hawai'ian. Matt Hannifin has presented to the NASA Master's Forum and was inducted into Who's Who Among America's Teachers. Matt learned from early unsuccessful endeavors to persevere. He went on to become a teacher, balloon pilot, pyrotechnician, laser light show designer, advanced scuba diver and holographer (and was awarded US patents). Science Toy Magic is now targeting climate change mitigation and encourages you to keep expanding on the ideas from your projects this year. Science Toy Magic congratulates every participant for changing your lives forever – prize or no prize. You and your families ROCK!



# 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. Erin Golden

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.

# PIONEERS OF SCIENCE

Category

Sponsor

Pioneer Scientist

Earth &Environmental Sciences

Dr. Kristen Rasmussen

Wangari Muta Maathai



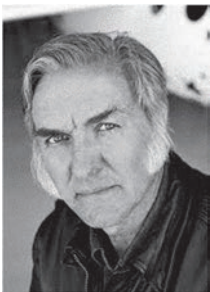
<https://en.wikipedia.org/>

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

Barb 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



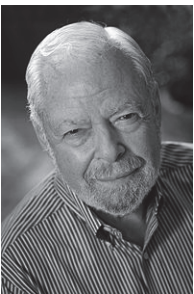
<https://en.wikipedia.org/>

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

Courtney Gooding

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

Peter Laird

Tim Berners-Lee



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

Tim Berners-Lee (1955 - ) is an English computer scientists best known for inventing the World Wide Web. He implemented the first successful communication between an HTTP client and a server in November 1989. He published his first website in December 1990 that described what the World Wide Web was and how people could use a browser and set up a server as well as how to start their own website.

# PIONEERS OF SCIENCE

Category

Sponsor

Pioneer Scientist

Micro & Molecular Biology

Dr. Bob 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

Peter Laird

Sir Isaac Newton



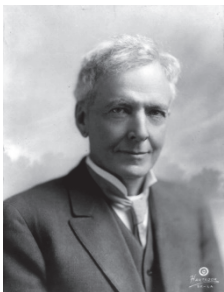
<https://en.wikipedia.org/>

Sir Isaac Newton (1643 - 1727) was an English polymath, active in mathematics, physics, astronomy, alchemy, theology and writing. Newton is famous for formulating the laws of motion and the universal gravitation theory. He used this to derive Kepler’s laws of planetary motion, account for tides, the trajectories of comets, the precession of the equinoxes and other phenomena. He built the first reflecting telescope and developed a theory of color based on the observation that a prism separates white light into the visible spectrum.

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.

*Coming from a rural farming area, I have always had an interest in crops and botany. Science fair allowed me to develop botany into a niche as well as master my speaking and writing skills. Although I often had issues conducting the complex research I had in mind without access to sophisticated technology, mentors from CSU and OSU helped me overcome those difficulties and become quite successful in science fair. As I entered college, my science fair accomplishments allowed for my selection to participate in a prestigious research program. The research professionals I have met through the program, my research background, and my communication skills greatly contributed to the success I had at CSU.*

**Heather Messick (CSEF Alumni 2003, 2004)**



# 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
Andrew Shelton	Centauri Middle School	2023
Angie Grimes	Miami-Yoder School	2024

*\* 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 – 2024)

# 2024 REGENERON ISEF RESULTS

## Grand Award Winners

**Elton Cao**, from Fairview High School, won \$500 (4<sup>th</sup> Place) in the Earth & Environmental Sciences category.

## Special Award Winners

**Claire Huang & Sophia Zhang**, from Fairview High School, won \$750 from The United States Air Force Research Laboratory.

**Elton Cao** won \$750 from The United States Air Force Research Laboratory. He also won an award from the National Geographic Society.

**Shrey Rohilla**, from The Classical Academy, received a scholarship from Arizona State University (valued at up to \$58,000).

**Maria Sears**, from Monte Vista High School, received a scholarship from Arizona State University (valued at up to \$58,000).



*Over my years of competing in the science fair, it has undoubtedly come to be one of the most formative experiences in my life. My first research project, back when I was 11 years old, showed me for the first time just how large a group there was of kids who were interested in science and conducting their own research. It really opened up a new world to me, and in my seven years competing in the science fair that world only continued to grow. My experiences with science fair helped me hone a host of skills from writing and analytical thinking, to public speaking and graphic design – skills that have only served me well throughout my life, especially into university education. My time in the science fair has also shown me the sheer extent of the opportunity that there is for young researchers in this day and age, from career paths to simple life experiences. And finally, my experiences competing in science fair allowed me to link up with a community of like-minded people to engage with, helping me forge relationships and make links that will last for life. All in all, I have to say that science fair has shaped me into who I am today, and I couldn't be more appreciative for how it has done so. Good luck to everyone competing, and may your futures in research shine brightly!*

**Casey Shaw (CSEF Alumni 2012 - 2018)**



# COLORADO SCIENCE & ENGINEERING FAIR

## Copper Sponsors

(Sponsorships of \$500 - \$749)

Katie Kowal

### 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.

### 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.

### Sundyne Corporation

### US Department of Commerce/NOAA

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.

## CSEF Contributors

Colorado Chemistry Teachers Association

Lucy Adams

Tyler Benton

Thomas Butts

Susan Cole

Karl Dise

Gina Holland & Isaac Britton

David & Vonda Holm

Kevin & Gail Keirn

Lale & Matt Lovell

Sarah Muro

Jennifer & Matt Nehring

Oswald Family Charitable Fund

Kimberly Parr

Jennie Ridgley

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Jim & Carolyn Sipes

Jean Wagner

Virgil Wagner

RedLion York

# COLORADO SCIENCE & ENGINEERING FAIR

## Gold Sponsors

(Sponsorships of \$2,500 – \$4,999)



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](http://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.

### Peter Laird

### Salesforce

### 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.

# 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](http://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 21<sup>st</sup> century skills they need to success as engineers, scientists and innovators of the future.



Colorado State University ([www.colostate.edu](http://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)



Lockheed Martin Corporation ([www.lockheedmartin.com](http://www.lockheedmartin.com)), a security and aerospace company, engages in the research, design, development, manufacture, integration and sustainment of advanced technology systems and products for defense, civil and commercial applications in the US and internationally.