



57th Annual
CSEF Awards Ceremony
April 6, 2012

Colorado Science and Engineering Fair 2012 Awards Ceremony

Welcome

Ms. Courtney Butler, CSEF Director

Presentation of Signature Special Awards

Lockheed Martin Teacher of the Year Award..... Larry Knauer

Presentation of Special Awards

Air & Waste Management Association	Colorado-Wyoming Society of American Foresters
American Association of University Women	Comstock Family
American Chemical Society	Eppler Family
American Institute of Chemical Engineers	Fort Collins Conservation District
American Meteorological Society	Frank Armbruster Foundation
American Public Power Association	Hands & Minds, Inc.
American Statistical Association	Human Factors & Ergonomics Society
American Vacuum Society	National Geophysical Data Center
American Water Works Association & Rocky Mountain Water Environment Association	Institute of Electrical & Electronic Engineers
ASM International	Little Shop of Physics
Association for Women Geoscientists	Lockheed Martin
Colorado Association of Meat Processors	MWH Americas, Inc.
Colorado Association of Science Teachers	National Geophysical Data Center
Colorado Biology Teachers' Association	Optical Society of America
Colorado Chemistry Teachers' Association	Pepperman-Alpert Family
Colorado Dental Association	Rawat Family
Colorado Division of Reclamation Mining & Safety	Rocky Mountain Association of Geologists
Colorado Environmental Health Association	SACNAS – Colorado State University Chapter
Colorado Foundation for Agriculture	Science Toy Magic. LLC
Colorado Geographic Alliance	Society for Mining, Metallurgy & Exploration
Colorado Medical Society	Society of Manufacturing Engineers
Colorado Mineral Society	Society of Women Engineers
Colorado State University Clean Energy Supercluster	SPIE: The International Society for Optics & Electronics
Colorado State University College of Agricultural Sciences	The Inventors' Roundtable
Colorado State University Department of Biochemistry & Molecular Biology	Trout Unlimited
Colorado State University Department of Chemistry	United States Department of Commerce
Colorado State University Department of Horticulture & Landscape Architecture	United States Geological Survey
Colorado Veterinary Medical Association	University of Colorado, Denver
	University of Northern Colorado
	Wojtaszek Family
	Xcel Energy
	Zonta Club of Boulder County

Presentation of Military Special Awards

United States Air Force.....
United States Army.....Major Keith Archibald
United States Navy & United States Marine Corps.....Captain Bill Emslie

Colorado Science and Engineering Fair 2012 Awards Ceremony

Presentation of Grand Awards

Junior and Senior Division Category Awards

Animal Sciences	Energy & Transportation	Medicine & Health
Behavioral & Social Sciences	Engineering	Microbiology
Chemistry	Environmental Sciences	Physics
Earth & Space Sciences	Math & Computer Sciences	Plant Sciences

Presentation of CSEF Special Awards

Pioneers of Science Awards

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

Poster Art Contest

Student Choice Awards

Ralph F. Desch Memorial Technical Writing Award

Broadcom MASTERS Nominations

Society for Science & the Public Awards

American Psychological Association

Intel Corporation

National High School & Two-Year College Mathematics Honor Society

National Society of Professional Engineers

Ricoh Americas Corporation

Society for In Vitro Biology

United States Department of Commerce

United States Metric Association

Yale Science and Engineering Association

Presentation of Scholarships

Colorado State University	Dr. David Holm
Adams State College	Dr. Larry Sveum
Colorado School of Mines	
Fort Lewis College	Dr. Maureen Brandon
Ryan Patterson Scholarship	Ryan Patterson

Presentation of CSEF Top Awards

Junior Division Best CSEF Project Awards

Senior Division Best CSEF Project Awards

Colorado ISEF Finalist Recognition & Closing Remarks

Ms. Courtney Butler

Special Awards Organizations

Air & Waste Management Association Rocky Mountain States Section

The Air & Waste Management Association is a nonprofit 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. A&WMA 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, lifelong education and positive societal change. 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 Chemical Society Colorado Local Section

The American Chemical Society, founded in 1876, is a congressionally chartered independent membership organization which represents professionals at all degree levels and in all fields of chemistry and sciences that involve chemistry. With more than 163,000 members, the ACS is the world's largest scientific society and one of the world's leading sources of authoritative scientific information. ACS is at the forefront of the evolving worldwide chemical enterprise and the premier professional home for chemists, chemical engineers and related professions around the globe.

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 Meteorological Society Denver/Boulder Chapter

The American Meteorological Society promotes the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences and the advancement of their professional applications. Founded in 1919, the AMS has a membership of more than 14,000 professionals, students and weather enthusiasts. AMS publishes nine atmospheric and related oceanic and hydrologic journals, sponsors more than 12 conferences annually and offers numerous programs and services.

American Public Power Association

The Demonstration of Energy Efficient Developments (DEED) program offers funding for projects that will develop and demonstrate new technologies and techniques in electric power production, distribution and use. Funding for DEED-sponsored projects comes in the form of grants to DEED member utilities, scholarships to university students studying in energy-related disciplines, and joint projects with American Public Power Association (APPA) committees. APPA is the national service organization for community-owned, not-for-profit electric utilities.

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 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.

American Water Works Association Rocky Mountain Section & Rocky Mountain Water Environment Association

The American Water Works Association, Rocky Mountain Section is an international nonprofit educational association dedicated to safe water. Founded in 1881 as a forum for water professionals to share information and learn from each other for the common good, AWWA is the authoritative resource for knowledge, information and advocacy for improving the quality and supply of water originating in Colorado, New Mexico and Wyoming.

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.

ASM International

ASM International was founded in 1913 as The Steel Treeters 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. The materials engineering "family" plays a critical role in society, and serves nearly every industry, from basic manufacturing to nanotechnology and biomaterials.

Association for Women Geoscientists Larimide Chapter

The Association for Women Geoscientists, founded in 1977 in the San Francisco Bay area, is an international organization devoted to enhancing the quality and level of participation of women in geosciences and to introduce girls and young women to geoscience careers. The purpose of the AWG is to encourage the participation of women in the geosciences, to exchange educational, technical and professional information, and to enhance the professional growth and advancement of women in the geosciences.

Colorado Association of Meat Processors

The goals of the Colorado Association of Meat Processors and the Wyoming Meat Processors Association are to provide members with formal and informal opportunities for education and information exchange; to encourage the principles of efficiency and effectiveness, while supporting the humane treatment and handling of animals and livestock; and to support full measure and full disclosure within the trade and to its community and moving toward an even safer, healthier meat and food supply for the consumer.

Colorado Association of Science Teachers

The Colorado Association of Science Teachers is a membership organization that represents educators from elementary and secondary schools, colleges and universities and informal science education. CAST provides its members with professional development opportunities, updates on science events around the state, and awards for excellence in science education.

Colorado Biology Teachers' Association

The Colorado Biology Teachers' Association is dedicated to the improvement of biological science instruction at all educational levels. CBTA provides its members with professional development opportunities, updates on science events around the state, and awards for excellence in science teaching.

Colorado Chemistry Teachers' Association

Colorado Chemistry Teachers Association supports over 1000 chemistry teachers in the state of Colorado through email, newsletter, classes, etc.

Colorado Dental Association

The mission of the Colorado Dental Association is to provide CDA membership and the public with superior service and to demonstrate effective leadership in advocacy, education, communication and quality products and services that enhance member practices, professional growth and patient care. The CDA is a diverse and synergistic association, led by dynamic, "people-centered" officers and staff that proactively serve and meet professional and related personal needs of member dentists and the oral health needs of Colorado communities.

Colorado Division of Reclamation Mining & Safety

The Colorado Division of Reclamation Mining and Safety is responsible for mineral and energy development, policy, regulation and planning. The division is comprised of the Office of Mined Land Reclamation and the Office of Active and Inactive Mines. The Office of Mined Land Reclamation issues reclamation permits from either the Minerals or Coal Programs. Together, these two programs regulate mining and reclamation activities at coal, metal, aggregate and other mineral mines. The Office of Active and Inactive Mines reclaims and safeguards abandoned mine sites that are dangerous and create environmental hazards.

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

The Colorado Foundation for Agriculture was established in 1991 to promote agricultural literacy in Colorado. CFA is governed by a nine-member board of directors that administers the Agriculture in the Classroom program in Colorado. Projects and materials developed by CFA are made available at no or minimal cost to Colorado educators and others interested in educating about agriculture. The CFA is the only organization that provides our state's educators with current information about Colorado agriculture and natural resources on a regular basis.

Colorado Geographic Alliance

The Colorado Geographic Alliance, part of a network of fifty Geographic Alliances across the country, was founded in 1989 by the National Geographic Society and geographers in Colorado. The COGA's main objective is to provide resources and professional development for elementary and secondary school teachers, ensuring the public understands the rationale behind comprehensive geography education throughout the state of Colorado. COGA is a state-wide educator's organization in which the collective knowledge of experienced teachers of geography is shared with others to strengthen the position of geography in all Colorado schools.

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.

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 private organization that has presented special awards during the entire 57-year history of the state science fair.

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 USGS 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 organizations, 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 State University Clean Energy Supercluster

A Supercluster is a multidisciplinary alliance 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. Superclusters focus on overlap areas between Colorado State University's internationally competitive research and the great global challenges, such as infectious disease, cancer, and clean energy. Launched in 2008, the Clean Energy Supercluster (CES) team has the breadth, depth, and entrepreneurial drive to make a global impact. CES is comprised of more than 160 self-selected faculty from all eight colleges at CSU. These faculty represent fields as diverse as the natural sciences, engineering, agricultural sciences, natural resources, humanities, applied human sciences, veterinary medicine, and business.

Colorado State University College of Agricultural Sciences

The College of Agricultural Sciences at Colorado State University is dedicated to training men and woman in the sciences of tomorrow's agriculture. It is the science of agriculture that will meet future global challenges to produce safe food, protect the environment and landscape, provide biofuels and energy sources as well as meet the economic challenges of change. We must increase food production 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. New technology can then potentially be used for biofuels and energy production that is also in harmony with our environment.

Colorado State University Department of Biochemistry & Molecular Biology

The Department of Biochemistry and Molecular Biology at CSU is committed to providing high quality undergraduate education. As a biochemistry major, a student's studies will include macromolecular structure and function; cellular biochemistry; metabolism; gene expression, structure, replication and repair; cell organization, communication, growth, aging and death with an emphasis on animal cells. The Biochemistry major is ideally suited for pursuing advanced degrees in biochemistry, molecular biology or related life sciences; for health professions; and for employment in the biotechnology industry.

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 these interesting and exciting areas. Chemists are employed in a wide array of professional fields in private industry, government and education. Chemists work in research, development, analysis and testing, consulting, industrial quality control, environmental resource management and forensics.

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.

**Colorado Veterinary Medical Association,
CVMA Auxiliary, & Auxiliary to the AVMA**

The Colorado Veterinary Medical Association is a proactive group of more than 2,200 professionals representing each setting of veterinary medicine - clinical practice, public health, academe, corporate, and uniformed services. CVMA members are determined to work together to advance the science and art of veterinary medicine. The CVMA exists to enhance animal health and welfare; promote the human/animal bond; protect public health; advance the well-being of veterinarians; and foster excellence in veterinary medicine through education, advocacy and outreach.

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 ethics 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.

Comstock Family

The Heather Comstock Memorial Award is sponsored by the Comstock family in remembrance of Heather Comstock. Before her untimely death, Heather was an honor student at the University of Michigan. She was a biology major studying stem cell research. She had a real zest for life and those who knew her said she was going to save the world.

Eppler Family

The Eppler family of Berthoud, Colorado supports general and science education through teaching, volunteering, and donations. This award is intended to give deserving science students both recognition and the tools they need to continue their work on future projects.

Fort Collins Conservation District

The Fort Collins Conservation District was formed in 1945 along with many districts across Colorado and across the Nation to assist landowners heal the scars of the Dust Bowl days. The district's boundaries contain irrigated and non-irrigated cropland, range land, forest land, and urban areas. The purpose of the conservation district is to deal with soil and water conservation problems through a cooperative effort with landowners, State and Federal Agencies, and other groups and organizations concerned with water and soil conservation issues.

Frank Armbruster Foundation

Armbruster Associates is an organization which designs, develops, and markets motivational products for use in learning. The Charles Armbruster Memorial Award is given for the best example by a junior division contestant for energy, creativity and enthusiasm in problem solving using readily available existing or recycled materials and/or inexpensive common objects to complete their project.

Hands & Minds, Inc.

Anatomy in Clay Learning System models kinesthetically facilitate learning of skeletal, muscular and other body systems. The learning system product line includes exquisitely handcrafted models for the human, dog, horse, baboon, chimpanzee and other vertebrates. Anatomy in Clay Learning System is a proven, nationally recognized anatomy tool that can increase student retention and test scores.

**Human Factors & Ergonomics Society
Rocky Mountain Chapter**

The Rocky Mountain Chapter of the Human Factors and Ergonomics Society was founded in 1978 as a part of what was then the Human Factors Society. The chapter offers networking opportunities and conducts professional programs of interest to human factors engineers, product designers, industrial psychologists, corporate ergonomists, software engineers, safety engineers and professionals in related fields.

**Institute of Electronic & Electrical Engineers
High Plains Section**

The Institute of Electrical and Electronics Engineers (IEEE), 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.

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.

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's operating units are organized into the four broad business areas of aeronautics, electronic systems, information systems and global solutions, and space systems. Space Systems has major operations in Colorado and California and is focused on human space flight, global communications systems, commercial space, sensing and exploration systems, missile defense systems, strategic missiles, commercial launch systems, and surveillance and navigation systems.

MWH Americas, Inc.

Since its founding in 1820, MWH has engaged in the engineering, construction and management of some of the largest and most technically advanced wet infrastructure, hydropower, mining and transportation projects for municipalities, governments and multi-national private corporations throughout the world. At MWH, "Building a Better World" is more than a feel-good statement. It is their commitment to more sustainable and efficient use of resources in local communities and throughout the world. It's about doing the work better to help ensure that the planet stays blue for future generations.

National Geophysical Data Center

The National Geophysical Data Center, located in Boulder, is part of the US Department of Commerce, National Oceanic & Atmospheric Administration. The NGDC provides stewardship, products and services for geophysical data describing the solid earth, marine and solar-terrestrial environment, as well as Earth observations from space. NGDC's data holdings currently contain more than 400 digital and analog databases, some of which are very large. As technology advances, so does the search for more efficient ways of preserving this data.

**Optical Society of American
Rocky Mountain Section**

The Rocky Mountain Section of the Optical Society of America was established in 1968 and is one of the longest serving sections of the Optical Society of America. The society promotes the generation, application, archiving and world-wide dissemination of knowledge in optics and photonics.

Pepperman-Alpert Family

The Pepperman-Alpert Memorial Award fund was created in loving memory of our family members who lost their lives due to cancer. Our award is granted in recognition of an outstanding project related to the prevention, treatment, and/or cure for cancer. Our goal is to encourage students to pursue careers related to the prevention, treatment and/or cure of cancer.

Rawat Family

The Champion of Scientific Innovation award is presented in honor of Dr. and Dr. (Mrs.) Rawat, who were visionary mentors to their family and students alike. This award embodies their spirit to congratulate outstanding youth vision, and it applauds the unsung heroes behind their work: parents who never let their children down, teachers who never give up on their students, and mentors who never let their champions quit.

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.

SACNAS: Colorado State University Chapter

Founded in 2007, the SACNAS, Colorado State University Chapter's mission is to further the work of, improve the effectiveness of and to enhance the public understanding of and appreciation for Chicanos, Latinos, native Americans, Alaska Natives, Native Hawaiians and other underrepresented minorities in the sciences; to promote the recruitment and retention of underrepresented minority students at Colorado State University; and to provide a forum for all students from the STEM disciplines to come together for academic excellence, community service, professional development, mentorship opportunities and social activities at CSU.

Science Toy Magic, LLC

Science Toy Magic is a science retail store in Old Town Square, Fort Collins where all of the toys, in some dramatic way, demonstrate principles of science as if by magic, are durable and the best made of their kind.

Society for Mining, Metallurgy and Exploration Colorado Section

A member society of the American Institute of Mining, Metallurgy and Petroleum Engineers, SME's roots date 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, industrial minerals & aggregates, mineral and metallurgical processing, mining & exploration, underground construction association, the International Marine Minerals Society, and the woman's auxiliary to the AIME.

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 Women Engineers is a nonprofit educational and service organization that empowers women to succeed and advance in the field of engineering and to be recognized for their life-changing contributions as engineers and leaders. Founded in 1950, SWE is the driving force that establishes engineering as a highly desirable career for women through an exciting array of training and development programs, networking opportunities, scholarships, outreach and advocacy activities and much more.

SPIE-The International Society for Optics & Electronics

SPIE is The International Society for Optics and Photonics founded in 1955 to advance light-based technologies. Serving 225,600 constituents from 150 countries, the Society advances emerging technologies through interdisciplinary information exchange, continuing education, publications, and career and professional growth. In 2011, the Society provided more than \$2.5 million in support of scholarships, grants, and other education programs around the world.

The Inventors' Roundtable

The Inventor's Roundtable attempts to create a safe, innovative and open forum where talented inventors and value-driven service providers can meet, connect and share experiences, insight and wisdom. American inventors know no limits. Any age, both genders, and all races throughout history have contributed to the creative genius of American innovation. Since 1790, the US Patent and Trademark Office has granted more than 7 million patents. The number of patents issued increased dramatically during the 19th century, stimulated by the industrial revolution and further fueling it.

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 coldwater fisheries and watersheds.

United States Department of Commerce

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.

United States Geological Survey

Established in 1879, the US Geological Survey is a science organization that provides impartial research on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land-use change, and the core science systems that help us provide timely, relevant and useable information. As the Nation's largest water, earth and biological science and civilian mapping agency, the USGS collects, monitors, analyzes and provides scientific understanding about natural resource conditions, issues, and problems.

University of Colorado, Denver

At the University of Colorado Denver, Anschutz Medical Campus, the Medical Scientist Training Program provides rigorous training for students interested in a career in clinical medicine and basic science research. The MST Program's mission is to provide students with the breadth and depth of training necessary to excel as clinician scientists. Colorado has strengths in molecular and cellular biology, immunology, biomedical engineering, virology, neuroscience, endocrinology, pharmacology, and cancer biology, which provide an exciting spectrum of research opportunities for MSTP students.

University of Northern Colorado, MAST Institute

The MAST Institute, within the College of Natural and Health Sciences at the University of Northern Colorado, is committed to equitable and systemic reform in the teaching and learning of science, mathematics and technology education. MAST, established in 1987, provides leadership and coordination for projects and programs to improve mathematics and science education, within the University, the State and nationally. The goals of the Institute include promoting science and mathematics for all; enhancing today's teachers; facilitating faculty development; supporting collaborative partnerships, research and development; and preparing tomorrow's teachers.

Wojtaszek Family

The Paul Wojtaszek Memorial Award is sponsored by Pauls' 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.

Xcel Energy

Xcel Energy's name reflects their core value - excellence in energy products and services. Xcel is committed to customer satisfaction by continuously improving their operations to be a low-cost, reliable, environmentally sound energy provider. Xcel has been successfully proving this to their customers for more than 130 years and will work hard to continue this commitment in the future.

Zonta Club of Boulder County

Founded in 1919, Zonta International is a global organization of executives and professionals working together to advance the status of 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.

Special Awards Military Organizations

United States Air Force

The 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 Army

The US Army Research Laboratory of the US Army Research Development and Engineering Command is the Army's corporate, or central, laboratory. Its diverse assortment of unique facilities and dedicated workforce of government and private sector partners make up the largest source of world-class integrated research and analysis in the Army. By combining its in-house technical expertise with those from academic and industry partners, ARL is able to maximize each dollar invested to provide the best technologies for our soldiers. ARL's program consists of basic and applied research and survivability/lethality and human factors analysis. ARL also applies the extensive research and analysis tools developed in its direct mission program to support ongoing development and acquisition programs in the Army Research, Development, and Engineering Centers, Program Executive Offices/Program Manager Offices, and Industry. ARL has consistently provided the enabling technologies in many of the Army's most important weapons systems.

United States Navy & United States 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.

Scholarship Providers

Adams State College

Since its cornerstone was laid in 1923, Adams State College has grown from a teachers' college into a fine liberal arts college. Adams State was recently designated the regional education provider for southern Colorado. Today, students can earn a bachelor's degree in any of 16 majors with 28 minors and emphases. The close-knit campus and friendly community create a supportive environment that fosters success. Adams State is a perfect fit for anyone who loves snowboarding, rock climbing, mountain biking - or the idea that professors will know them by name.

Colorado School of Mines

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

With more than 150 programs of study in eight colleges, Colorado State University offers a world-class education at one of the nation's top research universities. Academic programs at CSU are among the best in the nation in quality, innovation, and achievement, with internationally known programs in infectious disease, agriculture, cancer research, atmospheric science, sustainability and clean energy, and much more.

Colorado State University, College of Natural Sciences

The College of Natural Sciences' central mission is to train and educate successful scientists, scholars, and responsible citizens. In the college, dedicated professors and strong research programs enable students to become vital participants in the scientific process while preparing to contribute actively and skillfully in a world where knowledge of science and technology has become the standard. Approximately 3,100 of the University's nearly 21,000 undergraduates are enrolled in majors within the College. The College also provides courses for the All-University Core Curriculum as part of the general education component required of all students graduating from the University. Each of our eight departments has strong graduate programs that offer Master of Science and Doctor of Philosophy degrees.

Fort Lewis College

The School of Natural and Behavioral Sciences at Fort Lewis College in Durango is distinguished by the universal opportunity for students to learn by carrying out individual, independent research projects, by the ability to develop close professional relationships with department faculty members, and by the opportunity to acquire real-world experiences in their chosen fields.

Ryan Patterson Scholarships

The Colorado Science and Engineering Fair, with funds from Intel Corporation have established a nonrenewable scholarship of \$2,000 in the name of Ryan Patterson, the 2001 Intel International Science and Engineering Fair top winner. The scholarship is presented to a deserving high school senior based on criteria set by CSEF.

SparkFun Electronics

SparkFun's mission statement is "Sharing Ingenuity". Everyone should have the tools, hardware, and resources to play with cool electronic gadgets. SparkFun's goal is to get our hands on current technology and information and pass it on - we want to share the love! We make finding the parts and information you need easier and affordable so you can create awesome projects. By getting technology in your hands, we think everyone is better off.

Pioneers of Science Awards

Category	BOD Sponsor	Pioneer
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<i>Animal Sciences</i>	<i>Nancy Glissmann</i>	<i>Georges L. C. F. Cuvier</i>
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Georges Leopold Chretien Fredric Cuvier (1769 - 1832) was a French naturalist who was a pioneer in the science of comparative anatomy. Georges Cuvier originated a system of zoological classification that comprised four phyla based on differences in structure of the skeleton and organs. His reconstruction of the soft parts of fossils based on skeletal remains greatly advanced the science of paleontology.

<i>Behavioral & Social Sciences</i>	<i>Dan Kowal</i>	<i>Sigmund Freud</i>
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Sigmund Freud (1856 – 1939) was an Austrian psychiatrist and founder of psychoanalysis. Psychoanalysis is the treatment of mental ailments by realizing that present patient symptoms are directly traceable to psychic trauma experienced earlier in life. Originally, Sigmund Freud’s work was not well received by the medical profession, but is now accepted practice in treating mental patients. Freudian theory has had a wide impact, influencing anthropology, education, art and literature.

<i>Behavioral and Social Sciences</i>	<i>Karen McCarthy</i>	<i>Margaret Mead</i>
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Margaret Mead (1901- 1978) was an American social anthropologist, receiving her Ph.D. from Columbia University in 1929. Margaret focused her studies on problems of child rearing, personality and culture. Margaret is best known for work among the people of Oceania. Margaret rose to become the president of the World Federation for Mental Health.

<i>Chemistry</i>	<i>Dr. Larry Sveum</i>	<i>Marie Curie</i>
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Marie Curie (1867 - 1934) a chemist and physicist became the first woman Professor of General Physics in the Faculty of Sciences at the Sorbonne, in Paris, France. In 1903 she shared the Noble Prize in physics with her husband Pierre and Henri Becquerel, for their work on radioactivity; thus, becoming the first woman to win a Noble Prize. Dr. Curie went on to receive a second Nobel Prize in Chemistry in 1911 for isolating the element radium and thus became the first person to ever be awarded a second Nobel Prize.

<i>Earth & Space Sciences</i>	<i>Sam Bartlett</i>	<i>Edwin Powell Hubble</i>
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Edwin Powell Hubble (1889 – 1953) was an American astronomer best known for changing our views of the universe from being of limited size to being ever expanding and for laying the foundation for modern understanding of the cosmos. Edwin Hubble explained the “red shift” when studying stars. He also formulated Hubble’s Law: the greater the distance of a galaxy, the faster it recedes and he devised Hubble’s constant for calculating that rate. Hubble explained, “Equipped with five senses, man explores the universe around him and calls the adventure science.”

<i>Energy & Transportation</i>	<i>Marty Cameron</i>	<i>James Prescott Joule</i>
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James Prescott Joule (1818 - 1889) was an English physicist, born in Sale, near Manchester. Joule studied the nature of heat, and discovered its relationship to mechanical work. This led to the theory of conservation of energy, which led to the development of the first law of thermodynamics. The SI unit of work, the Joule, is named after him. He worked with Lord Kelvin to develop the absolute scale of temperature, made observation on magnetostriction, and found the relationship between the flow of current through a resistance and the heat dissipated, now called Joule’s Law.

<i>Engineering</i>	<i>Larry Knauer</i>	<i>Nicola Tesla</i>
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Nicola Tesla (1856 - 1943), a brilliant inventor, was born in Austria and migrated to the United States in 1884. Tesla pioneered the invention of the fluorescent light. AC induction motor, radio, various transformers, wireless communications, and alternating current power transmission. All of these inventions were critical to the modern industrial revolution, and are still in use today. Throughout his life, Tesla received more than 700 patents, along with the Edison Medal.

<i>Environmental Sciences</i>	<i>Dr. Alfred Bedard</i>	<i>Rachel Louise Carson</i>
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Rachel Louise Carson (1907-1964) was an American writer and marine biologist. Her widely known books on sea life combined keen scientific observation with rich poetic description. Rachel Louise Carson’s book, *Silent Spring* is a provocative study of the dangers involved in the use of insecticides and is widely believed to have initiated the environmental movement in the United States.

Pioneers of Science Awards

Category	BOD Sponsor	Pioneer
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<i>Environmental Sciences</i>	<i>Jody Oaks</i>	<i>Rosalie Edge</i>
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Rosalie Edge (1877 - 1962) was a firebrand suffragette, who worked to secure women's right to vote. In the early 1900's, she used her advocacy skills to influence conservation organizations to protect and conserve wildlife and natural resources. The Audubon Society was one of her main targets because of its early reliance on gun manufacturers for financial support and its early support of unlimited hunting of predators. She appreciated raptors at a time when they were considered vermin and established the first preserve for raptors, Hawk Mountain in Pennsylvania. This woman, who learned to love birds in Central Park, became one of the most effective environmental activists in an era when women were not to engage in public controversy or challenge the establishment.

<i>Mathematics & Computer Sciences</i>	<i>Ryan Patterson</i>	<i>Grace Hopper</i>
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Grace Hopper (1902-1992) joined the Navy during WWII where she worked on the Navy's first modern computer. By the end of WWII she had published a 500 page manual for its use and was working on a successor. By 1953 she invented the compiler, a computer language, translating program. In 1955 she introduced FLOW-MATIC, the first business oriented programming language. Hopper returned to the Navy in 1967 to compile USA Standard COBOL, retiring from the Navy in 1986 with the rank of rear admiral. She was one of the most forward thinking computer programmers of her time.

<i>Medicine & Health</i>	<i>Dr. Bob Morrow</i>	<i>Greene Vardiman Black</i>
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Greene Vardiman Black (1836 – 1915) was an American dentist. Greene Vardiman Black rose to become the dean of the Dental School at Northwestern University. Greene Vardiman Black made large contributions to dentistry as a teacher, as an originator of dental methods and instruments, and as an author. The method of preparing amalgam alloys for fillings is still in use today.

<i>Microbiology</i>	<i>Dr. Carol Morrow</i>	<i>John Edward Salk</i>
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Jonas Edward Salk (1914 - 1995) was an American microbiologist who was an authority on virus diseases. Jonas Edward Salk is best known for his development of the first polio vaccine. The *Salk vaccine* is made by cultivating three strains of the poliovirus separately in monkey tissue.

<i>Microbiology</i>	<i>Jody Oaks</i>	<i>Louis Pasteur</i>
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Louis Pasteur (1822-1895) was a French chemistry professor. Louis Pasteur gained his first success by studying the wine making, fermentation process. Pasteur discovered that both good and bad yeasts were produced in wine making and that he could kill the bad microbes through heating, a process we now call pasteurization. Pasteur further learned that many common diseases were caused by microbes. This realization lead Pasteur to develop ways of inoculating animals by injecting them with the same heat weakened microbes, thus finding vaccines for the prevention of anthrax, cholera and rabies.

<i>Physics</i>	<i>Dr. Carol Morrow</i>	<i>Max Planck</i>
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Max Planck (1858 – 1947), a theoretical professor of physics at the University of Berlin came from an ancient German family of great scholars, theologians and lawyers. Max Planck's curiosity about the laws of nature and thermodynamics led him to introduce a whole new realm of physics called quantum mechanics that would transform our understanding of the microscopic world of atoms and subatomic particles. Max Planck's research in thermodynamics evolved into the Quantum Theory for which he received the Nobel prize for physics in 1918.

<i>Physics</i>	<i>Elemer Bernath</i>	<i>Edward Teller</i>
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Edward Teller, an American nuclear physicist, made contributions to nuclear and molecular physics, spectroscopy and surface physics. Perhaps his most important contribution was the elucidation of the Jahn-Teller effect, which describes the geometrical distortion that electron clouds undergo in certain situations. In collaboration with Brunauer and Emmett, Edward Teller also made an important contribution to surface physics and chemistry; the so-called Brunauer-Emmett-Teller (BET) isotherm. In the early 1940's Edward Teller's research with Enrico Fermi led to the first controlled nuclear reaction. As one of the great pioneers of modern physics and as a strenuous advocate for America's national security, Edward Teller made his mark on our time in a way that few could equal.

<i>Plant Sciences</i>	<i>Dr. David Holm</i>	<i>Luther Burbank</i>
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Luther Burbank (1849 - 1926) was widely known as a horticulturist, botanist, and scientist. Luther only had an elementary education, but he was an avid reader. Luther 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.

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Colorado Science and 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



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2011 Intel ISEF Results

Grand Award Winners

Sara Volz from Colorado Springs, CO won \$3,000 (1st Place) in the Energy & Transportation category. Sara was the 1st Place Best Individual Project winner at the 2011 CSEF.

Soyeun Yang from Boulder, CO won \$500 (4th Place) in the Microbiology category. Soyeun took 1st Place in Microbiology at the 2011 CSEF.

Special & Governmental Award Winners

Kerry Betz from Boulder, CO won an \$8,000 scholarship from the United States Navy and Marine Corps. She also won \$1,500 (2nd Place) from the United States Air Force.

John Parish IV from Colorado Springs, Co won \$1,000 (1st Place) from Mu Alpha Theta. He also won \$500 (2nd Place) from the American Mathematical Society. He was also awarded an Honorable Mention from the Society of Experimental Test Pilots.

Jessica Constant from Fort Collins, CO was awarded Honorable Mention from the American Meteorological Society.

Tara Sowrirajan from Aurora, CO won a \$15,000 per year renewable scholarship from the Florida Institute of Technology.

Sara Volz from Colorado Springs, CO won \$3,000 in savings bonds from the United States Army.