



*San Luis Valley Regional
Science Fair, Inc.
2014 Annual Report*

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San Luis Valley Regional Science Fair 2014 Annual Report

From start to finish, and at all levels of participation, the science fair experience is one not only of competition but also of camaraderie, creativity, cooperation, and education. This is the essence of the San Luis Valley Regional Science Fair.

Established in 1949, the San Luis Valley Regional Science Fair, Inc. is a private, non-profit organization, which holds a regional competition each year. More than 800 students from the San Luis Valley and Chaffee County, participate in Science Fair at their school. The purpose of the fair is to stimulate student interest and encourage them in science and engineering by recognition of their abilities and achievements.

This year's winners were chosen from among 325 exhibits presented by 340 finalists. These finalists represented 13 public school districts, home-schoolers from the San Luis Valley, students from Salida, and private schools. More than 250 judges, including professional scientists, engineers, medical professionals, mathematicians, and advanced Adams State University students, interview the students and evaluate their projects before selecting the winners. In addition, there were also businesses, professional societies, and government agencies that provide their own representatives to judge exhibits based on their criteria. These judges confer the Special Awards, including scholarships, summer internships, cash, medals, and scientific calculators, which represents an aspect of the bestowing organization. Over 1000 people attended the Awards Ceremony this year held in the Plachy Hall gym at Adams State University.

In addition, receiving the rare opportunity to speak with working scientists, SLV Regional Science Fair students participate in three grade-level divisions for awards in a number of categories: Behavioral and Social Science, Biomedical Science, Botany, Chemistry, Consumer Science, Earth and Space Science, Engineering, Environmental Science, Mathematics and Computer Science, Physics and Zoology.

Participating in Science Fair is one of the few activities that expects students to integrate virtually all areas of their academic development. The use the library for literature reviews, history and research; the students execute experimentation and generally complete mathematical analysis; they write reports; they utilize artistic styles in the preparation of their presentation boards; and they are expected to orally present their projects to the judges. Awards are also given for technical writing, oratory skills, display, originality, and overall projects. Winning Junior and Senior division projects are awarded trips to the Colorado Science & Engineering Fair, which is held in Fort Collins, Colorado. In addition, the two senior division students with outstanding overall projects are awarded all-expense paid trip to the Intel International Science & Engineering Fair. In 2013 the Intel International Fair was held in Phoenix, Arizona, where Colorado students competed with their peers from nearly 60 countries, regions and territories to showcase their independent research projects.

Many educational experiences are made available to students who participate in the San Luis Valley Regional Science Fair. Recent programs have included Science From CU; the Alamogordo Space Center; Mobil Ed Productions; Physics is Fun; the Denver Museum of Nature and Science; Visible Productions and Mike Mullane (Ret.), NASA Astronaut. Last year's program, "Marine Biology", Where students discovered the watery world of jellyfish, sea horses, sharks, and other ocean creatures. They learned about the characteristics of several groups of marine vertebrates and invertebrates by seeing and touching museum specimens. There was focus on adaptations, behaviors, and habitats of many marine animals as well as other ecological importance. Xcel Energy sponsored the educational programs for the students.

The judges' interviews and the educational programs allow the students to interact with professional scientists and engineers and with each other. Many students have said that having the chance to meet and speak with their peers about their science projects is the most beneficial aspect of the SLV Regional Science Fair.

Scholarships from Adams State University and other organizations are also presented. Adams State University awards \$3,000 in scholarships for outstanding science fair participants who have a desire to further their education at ASU. The San Luis Valley Research Center - Colorado State University, Department of Horticulture and Landscape Architecture - offers a \$900 summer internship to a San Luis Valley student, in grades eight through twelve, who shows excellence in the field of potato research, from the Botany category. A new family scholarship was established a couple of years ago that is awarded to a graduating senior student that will be attending Colorado State University and majoring in a field of science.

The San Luis Valley Regional Science Fair is devoted to increasing the academic involvement and excellence between all fourth through twelfth grade students in our region. All participants at the San Luis Valley Regional Science Fair receive a ribbon and a certificate of participation. Student winners from each category are presented monetary awards. There are also many local and national awards that are presented to deserving student participants. With the help of our local sponsors and contributors, the San Luis Valley Regional Science Fair is able to present \$24,000 (either in monetary awards, scholarships, all-expense paid trips to the international fair or material awards) to the outstanding students of our region.

Organization

The San Luis Valley Regional Science Fair would not be possible without the dedication and tremendous efforts of many committed individuals, as well as public and private organizations, school districts, Adams State University, government agencies, corporations, professional associations, and local businesses. These groups sustain the Fair through their financial and resource support, special awards, and most importantly, through providing dedicated volunteers to serve on the Fair's working committees and/or Board of Directors. Many of these businesses not only make monetary donations, but also allow their employees to serve as judges for the San Luis Valley Regional Science Fair. Prior to this regional event, many local school fairs are conducted throughout the region. Each of these fairs is supported by hardworking and dedicated educators at the local school level. Before a student's project is accepted at the Regional Fair, it requires the encouragement and support from individual teachers, science fair coordinators, and parents to help the student see their project from conception to the finished exhibit. The success of the San Luis Valley Regional Science Fair is dependent on all of these dedicated individuals.

To organize and stage the Fair every year requires a great effort by many people, but it also offers many personal challenges and rewards. To witness the level of achievement, pride, and excitement of these bright young people in their scientific endeavors is one of the rewards that all volunteers of the Fair share. It also speaks of the high level of students' aptitude and enthusiasm for science in the San Luis Valley.

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"The science fair experience was truly my bridge to a technical education and career. I gained the fundamental knowledge necessary to identify a problem, develop methods to test a hypothesis, analyze data, and compile information in a clean and concise manner. The support of teachers, family, and mentors was critical to my success because they taught me to effectively organize, document, research, and present complex ideas. Science fair laid the launching platform from which I was able to pursue a technical degree, and I continue to draw upon these fundamentals in my work responsibilities. Thank you to those who organize, fund, and support the San Luis Valley Regional Science Fair - you open doors for the youth of the Valley!"

- Raleigh Burt, Sargent 2010, Montana State University, College of Engineering, Industrial Engineering 2014, Employed at SLV Rural Electric, Operations Engineer 2014

Mission Statement

The San Luis Valley Regional Science Fair is an organization that:

- Honors winners from local San Luis Valley school fairs at an annual Regional Science Fair
- Sends finalists from the Regional Science Fair to the Colorado Science and Engineering Fair (CSEF)
- Provides two overall winners at the Regional Science Fair with an all expense paid trip to participate in the Intel International Science and Engineering Fair (ISEF)
- Encourages students to pursue careers in science, technology, mathematics, or engineering
- Provides a forum for developing academic skills, such as conducting an independent scientific investigation, writing a research paper, speaking, preparing an organized display, and becoming familiar with the scientific method.

The San Luis Valley Regional Science Fair supports local school fairs by:

- Providing a forum where local fairs can influence policies, rules, and by-laws of the San Luis Valley Regional Science Fair.
- Providing rules and requirements for participation in all fairs – Regional, State, and International.
- Coordinate mentors.
- Provides judges and critique at local school fairs.

Impact Statement

The following represent some of the impacts the San Luis Valley Regional Fair has had on the San Luis Valley:

- Awareness, appreciation, and recognition of the importance of science in our society, livelihoods, academic achievement and lifelong success
- An increased awareness of academic competition and the importance of science among Valley educators
- An increased quality of educational activities in all schools in the region
- An increased usage of libraries and the Internet
- An increased exposure to robotics, holography, pathology, space art, moon geology, and the scientific method to the general public.

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"The San Luis Valley Regional Science Fair is a great program. I have participated in it since fourth grade, and it's been a blast every time. When I first started setting goals for last year, I decided I would try my hardest to go to state science fair again, and it ended up even better than I expected! My project last year was inspired by a NOVA TV show called "Making Things Faster", I looked at finding the fastest paths around a mathematical network. Between SLVRSF and CSEF, I worked more on my project to make it a bit more competitive at CSEF, and I also practiced a lot. All the hard work paid off-I won first place in my category and third best overall. I really like going to CSEF because you meet people from all over Colorado who have the same interests as you! I encourage kids of all ages to participate in the science fair, no matter how smart or how good the project, everyone deserves an award for participation. Thanks to SLVRSF, I plan to do science fair every year, and I plan to make science in general a big part of my life."

-Molly Nehring, Monte Vista Middle School, Colorado State Science Fair Winner 2014

Top Winners of the 2014 San Luis Valley Regional Science Fair

COLORADO AWARD WINNERS

The following students were chosen to represent the
San Luis Valley Regional Science
Fair at the Colorado State Science Fair:

Senior Division

Claire Sheperd - Crest Academy	Daisy Andrea Garcia - Center High School
Leighton Burt - Sargent High School	Taylor A. Rocha - Monte Vista High School
Hannah Fischer - Sierra Grande High School	Cassidy Plane - Sargent High School
Mary Hood - Sargent High School	Kelsey Lindbloom - Salida High School
Alanna Chacon - Center High School	Hinal Rathi - Alamosa High School

Junior Division

Remigio Lucero - Centauri High School	Jacob Lowder - Sargent Middle School
Molly Nehring - Monte Vista Middle School	Nicholas DuPont - MV Middle School Alyssa
Rawinski - Monte Vista Middle School	Andrew Smith-Martinez - MV Middle School
Jessica Kern - Sargent Middle School	Nicole Miller - Ortega Middle School
Brycen Hotz - Monte Vista Middle School	Colby Self - Monte Vista Middle School

INTEL/ISEF WINNERS

The following two students were chosen to represent the San Luis Valley Regional Science Fair at the
Intel International Science and Engineering Fair:

Taylor Rocha - Monte Vista High School	Mary Hood - Sargent High School
Cassidy Plane - Sargent High School	

Junior Observer Award
Colby Self - Monte Vista Middle School

TEACHER AWARDS

The following teachers were chosen to attend the
Intel International Science and Engineering Fair:

Loree Harvey - Monte Vista High School
Matt Relyea - Sargent High School

SCHOOL AWARDS

The following School Awards are based on the total tabulations of all Grand
Awards received by their students:

Small Elementary School	La Jara Elementary School
Large Elementary School	Bill Metz Elementary School
Small Middle School	Sargent Middle School
Large Middle School	Monte Vista Middle School
Small High School	Center High School
Large High School	Monte Vista High School

WORKING COMMITTEE MEMBERS

Fair Director: Lucy Adams

The Fair Director is actively involved in all working committees hereto mentioned and is also an ex-officio member of the SLV Regional Science Fair Board of Directors.

Awards Ceremony: SLV Regional Science Fair Board of Directors
Joy DiCamillo
Judy Prester
Chad Chavez

Display and Safety: Dr. Curtis Crawford

Finance: SLV Regional Science Fair Board of Directors

Publishing: Joy DiCamillo and Judy Prester

Registration: SLV Regional Science Fair Board of Directors

Regular Judging: Diana Jones – Judge Coordinator

Room Setup: SLV Regional Science Fair Board of Directors
Monte Vista High School
MESA/Science Club
Parent Volunteers
ASU Facilities

Scientific Review Committee: Dr. Larry Sveum – Chair
Curtis Crawford- DVM
Ms. Jody Oaks
Mr. Doug Steward
Dr. Jeff Elison
Ms. Loree Harvey

Website Committee: Julie Messick
Chad Chavez

(Note: The Scientific Review Committee must consist of a minimum of three persons. Additional members are recommended to avoid conflict of interest. This committee must include: a biomedical scientist (Ph.D., MD, DDS, or D.O.), a science teacher and at least one other member. The committee examines projects for the following: evidence of library search; evidence of proper supervision; use of accepted research techniques; completed forms; signatures and dates; humane treatment of animals; compliance with rules and laws governing human and animal research; appropriate use of recombinant DNA, pathogenic organisms, controlled substances, tissues and hazardous substances and devices; and appropriate documents and substantial expansion for continuation projects.)

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“TV shows that try to portray science fair don't even come close to what it is in real life. Science Fair is a way to learn about something new and have fun while doing it. Science Fair allows young adults to do actual science and present it the world. This experience has taught me many life lessons. The satisfaction of completing a project that has taken months of work is like no other. Without Science Fair, I would a completely different person.”

-Colby Self, Monte Vista Jr High School, Colorado State Science Fair Winner & Intel/ISEF Student Observer 2014

Highlights of the San Luis Valley Regional Science Fair for 2013-2014

Sixty-five years of Science Fair was celebrated in the San Luis Valley this past year. What an honorable history for an organization! Our Science Fair is one of the oldest in the country!

Our fair was again successful, thanks to wonderful sponsorship that allowed a middle school student to attend the Intel International Science and Engineering Fair, as a Student Observer.

This year several new contributors were acquired for sponsorship of different category or special awards.

There were a total of 314 projects with a total of 344 finalist participants at the 2014 Regional Fair. .

20 SLV students received a total of 52 awards at the Colorado State Science Fair, placing sixth of all thirteen regional fairs.

Of the entries to the CSEF, 90% won an award. San Luis Valley students placed 4th by ranking winning Special Awards. The following are examples:

- 14 of those students placed in the grand awards, totaling \$1075.
- There were 26 different special awards given to our students, which had a total monetary amount of \$2435 and also included other prizes.
- Adams State University awarded 3 scholarships to Valley students, which is equivalent to one-year tuition and fees, (approximately \$15,000)
- One student was awarded a \$1,000 renewable undergraduate scholarship from Colorado School of Mines, renewable for up to 3 additional years.
- One student was awarded a \$1,000 scholarship to attend CSU -Ft. Collins, renewable for up to 3 additional years.
- One student was awarded a \$500 scholarship to attend the University of Colorado, Boulder.
- Three middle school students were nominated to participate in the Broadcom Masters program.
- One Teacher from the San Luis Valley was nominated and received the Lockheed Martin, CSEF Teacher of the year Award. The teacher nominated was: Ms. Loree Harvey, Monte Vista Middle School. This award was a \$3000.00 classroom grant.

Board member Jody Oaks and Fair Director Lucy Adams were members of the Display and Safety Committee at the Intel International Science and Engineering Fair held in Los Angeles, California.

The biggest accomplishment this year is our website. The site was designed by our work study student and one board member. We are now able to receive online student registrations for the fair.

Also on the website is a judge registration that is going to be used this year. Other information listed on the site includes: the SLV Regional Science Fair Board of Directors, Mission Statement, History, and other information.

New contributors and visitors to the site are able to view information on how to donate/contribute to the fair. Additional support to the SLV Regional Science Fair can be given by using GoodSearch and GoodShop. Links may be found by visiting our website at:

SLVRSF.org

Another great year for the San Luis Valley Regional Science Fair!

"Science fair was a part of my life starting years before I could actually compete. I remember helping my sister collect data for her botany projects, and I remember the late nights leading up to the fair when she would work on her display or rehearse her presentation for my parents and me. The first time she qualified for the state fair and I was able to go along, I was amazed: people not much older than myself, were thinking up and researching these amazing ideas and I couldn't understand half of them. Coming from a small farm town, I was given a new sense of how limited my academic resources were. I hadn't learned to mix chemicals or use math or program computers in the way those students did with their projects, but it was exciting to see the breadth of their research ideas.

While my sister was working on her projects, I had some ideas of my own including "Balloon Blowup", in which I tried to determine what proportions of baking soda and vinegar would produce the most amount of gas (measured by how much a balloon fixed around a beaker expanded), and "Flower Evanescence" which tried to determine which flower preservative worked the best. However, by the time I was old enough to compete at a regional and state level, I had turned toward the field which had first really caught my eye at fairs: electronics. I wanted to make something that could control a computer using hand gestures. There weren't any electronics classes at school and I had no idea how to turn my idea into something real, but it turned out that my science fair director knew plenty of people and soon I was talking with professors and students who told me exactly where to start.

It started with a simple "breadboard" kit and a Basic Stamp microcontroller - the kit taught me how to blink a light, write a "hello world!" program, and wire up some buttons to talk to a piece of software. Many coding experiments, a few burned parts, and several months later I hit the first big milestone in my project: I flexed my finger while a small sensor was attached to it and the pointer on my computer screen moved. The pointer didn't move the right direction and it didn't move smoothly, but it moved, and that was the first part of what I'd set out to do. Ultimately, that turned into a multi-year project that ended with a wireless set of gloves that could be used for typing and controlling a computer pointer. Because of that science fair project, I was able to go to state and international science fairs not just as an observer as I had been with my sister, but as a competitor. I had the exhilaration of winning state fair and placing at internationals, and also the disappointment of not qualifying at all my last year. But more importantly I took away everything learned along the way. When I began applying for colleges the thing always at the top of my extracurricular list was science fair, and it immediately came up during interviews. I ultimately received a full ride scholarship to the College of Engineering at CU Boulder, and my experience in science fair was a huge factor in being selected for that honor.

During my later years of college I started interning for a small startup aerospace company. Some of my friends were working jobs that paid a little more than mine, but they were stuck doing the same thing every day while I got to work on several projects and continuously design new circuits and software. Several years later, that company has grown significantly and I've become a full time employee and part owner. In a lot of ways, we're like that kid who has an idea for a science fair project but hasn't totally figured out how to make it happen; ultimately it comes down to just wanting to get your hands dirty and experiment. There are projects that require a lot of hard work, some dead ends, late nights and failures, but in the end it's an amazing feeling to see an idea become something real.

Since that first development kit years ago, I've spent many hours working on projects where the biggest challenge was getting the first light to blink or the first "hello world!" message to print, but that's where every good project starts, and it's exciting."

-Chris Messick, Boettcher Scholar Sargent High School Graduate 2007, Master's Degree CU Computer/Electrical Engineering 2012, Part Owner of Blue Canyon Technologies 2013

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"I can say without a doubt that the Science Fair experience has transformed my life. I remember the first time I attempted to do a science fair project by myself...I was in the fourth grade. I thought about how much fun it would be to answer my very own question and be able to use equipment and discover things. However, that year I never finished my project, and I never got to present my work at science fair on any level, not even our school fair. So when middle school came around, and completing a project was suddenly a requirement, I freaked out. How can someone who couldn't manage to finish an elementary project be expected to do one in middle school? But I talked to my teacher and came up with an idea. It was simple project, placing a few goldfish in a maze that my grandpa and I designed and timing them to see how long it took them to complete it. In all honesty, my main motivation to complete the project was to get the grade. I never realized that it would or even could become a passion of mine. When the middle school science fair rolled around, and they were announcing the people who would be able to compete at regionals, I was surprised and excited when they called my name. I went home that night and bragged about it to my family. I didn't stop talking about it during the weeks that led up to the SLV Regional fair. My view of science fair was changing.

The day we set up our projects, I looked in stunned amazement. There were so many students there, all who had some joy in science. Out of curiosity, we wandered around looking at the vast array of projects, and when we strolled through the high school category, my jaw dropped. Their titles were so complex I needed a dictionary to read the first words. They were so big and full of graphs and information and I thought to myself that I could never do something like that. All of these kids must have rich families or tons of resources, and because I didn't have those things, I felt that there was no way I would ever be able to compete at the high school level. But as I walked back to the middle school section, I quickly forgot about being

intimidated by high school projects. I was proud of my goldfish experiment and even though I was super nervous, talking to the judges went really well...it was fun! That year I got second place in the behavioral sciences category, and I was so excited and happy. As the announcers read through the list of students who qualified for state, I was surprised at how disappointed I was that I didn't make it to the state fair. I believe that this was the beginning of my drive and passion to learn more about science, and to try to do bigger projects.

During the fall of my freshman year of high school, I got the chance to take a tour of the burned area in Medano Creek at the Great Sand Dunes National Park & Preserve. It made quite the impression on me, the area seemed so devastated. I learned that the fire had started from a lightning strike, and I wanted to know the impacts on the water quality and fish that lived in the creek. I started conversations with my mentor, Loree Harvey, who helped me come up with a design of how to analyze my questions by setting up River Watch sites on Medano and Little Medano creek. When I started the permit process and collecting data, it was more work than anything I had ever done. But I was so excited to see the results develop, I was learning so much, and I really believed that my work was going to help the park biologists. I began to imagine doing this for a living... as a real scientist.

In the next three years that followed, I continued to examine the water quality and macroinvertebrates on the Medano fire, succession and biological response of a water application on a playa in the San Luis Lakes area, and the effects of fire on endangered southwest willow flycatcher populations and their habitat. I have been very fortunate to have gone to International Science Fair three years in a row to each of the ISEF host cities; Pittsburgh, Phoenix, and Los Angeles. I have met fellow student scientists from across the world, and I have talked with expert scientists and Nobel Prize winners, and felt included among them.

I am now pursuing my biology degree from Adams State University, with the hopes of going to graduate school and getting an advanced degree within the biological field. I don't think I would be in the position I am in if it hadn't been for the Science Fair experience, and all the people who have believed in me and supported me along the way, including my grandparents, my mentor, and the support of the SLV Regional Science Fair board members. A huge lesson that I learned is that it doesn't matter where you come from, how much money you have, or whether or not you come from a family of "professionals". If you have a passion for something and you follow that passion, it can take you places that you would have never dreamed possible, and help you develop into the best person you can be."

-Tayler Rocha, Monte Vista High School Graduate 2014, Intel/ISEF Student Winner 2012, 2013, 2014

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"Science Fair is one of those things that I person like me just can't shake- and that's a good thing. It has made an impact on me throughout my life, and it will, I hope, continue to do so. Being raised by a science teacher kick started my desire to explore that subject, though my true passion has always been history. She encouraged my siblings and I to test theories and find answers to basic questions. This transferred easily to developing projects throughout elementary, junior high, and high school. If you ask anyone who participated in Science Fair what they learned, they will usually give some version of the same things: excellent speaking and presenting skills, writing concise and correct scientific papers, learning and carrying out the scientific method, etc. All of these are very true. But for me, and the career path I chose, I also learned much more.

As with most veterinarians, I knew from a young age what my calling was. The steps for becoming one were fairly black and white: school, volunteering/working, college, veterinary school and career. What I didn't know was how impactful having participated in Science Fair was going to be on my career path. One of the first skills I unknowingly learned was communicating with and working alongside scientists and professionals. I discovered a world of professors, biologists, mathematicians, veterinarians, physicians, researchers, chemists, and more. These were opportunities I never would have gotten had it not been for science fair. I quickly became comfortable in their environs and when it came time to enter into a university setting, I gravitated easily towards that comfort zone. I found jobs, volunteer positions, mentors and colleagues that aided me greatly throughout my schooling. Another skill I learned was researching scientific papers and applying them to my needs. This was helpful for obvious reasons in college and veterinary school, but perhaps even more so in my career now, where I am confronted with some new and exciting challenge that requires research and reflection on a daily basis. I then have to apply my findings to my patients and, perhaps less excitingly, to that time-consuming, precise, and legal document: the medical record. The last benefit that I will note from having been a Science Fair student is the immediate and instinctual knowledge that CSU was the school for me. I was twelve years old when I made it to the Colorado State Science & Engineering Fair for the first time, and walking onto that campus, participating in the activities and meeting some professors made it crystal clear to me that I was home. I spent eight years at CSU, met my future husband (also, a Colorado State Science Fair alum) there, and enjoyed every minute. I believe it was that exposure to a campus far from home, and my comfort in the scientific realm that made a small town girl like me make such an easy and successful transition to undergraduate and professional school.

I can only hope that I can help at least one budding young scientist to realize a dream and a career that they will find as equally rewarding as I find mine. I know that the easiest way to achieve that is through Science Fair and its many wonderful benefits."

-Kayla Henderson, Sargent High School Graduate 2004, CSU Bachelor's in Equine Science and Business Administration 2008, CSU Professional Veterinary Medical School 2012, Employed at Alpine Veterinary 2012