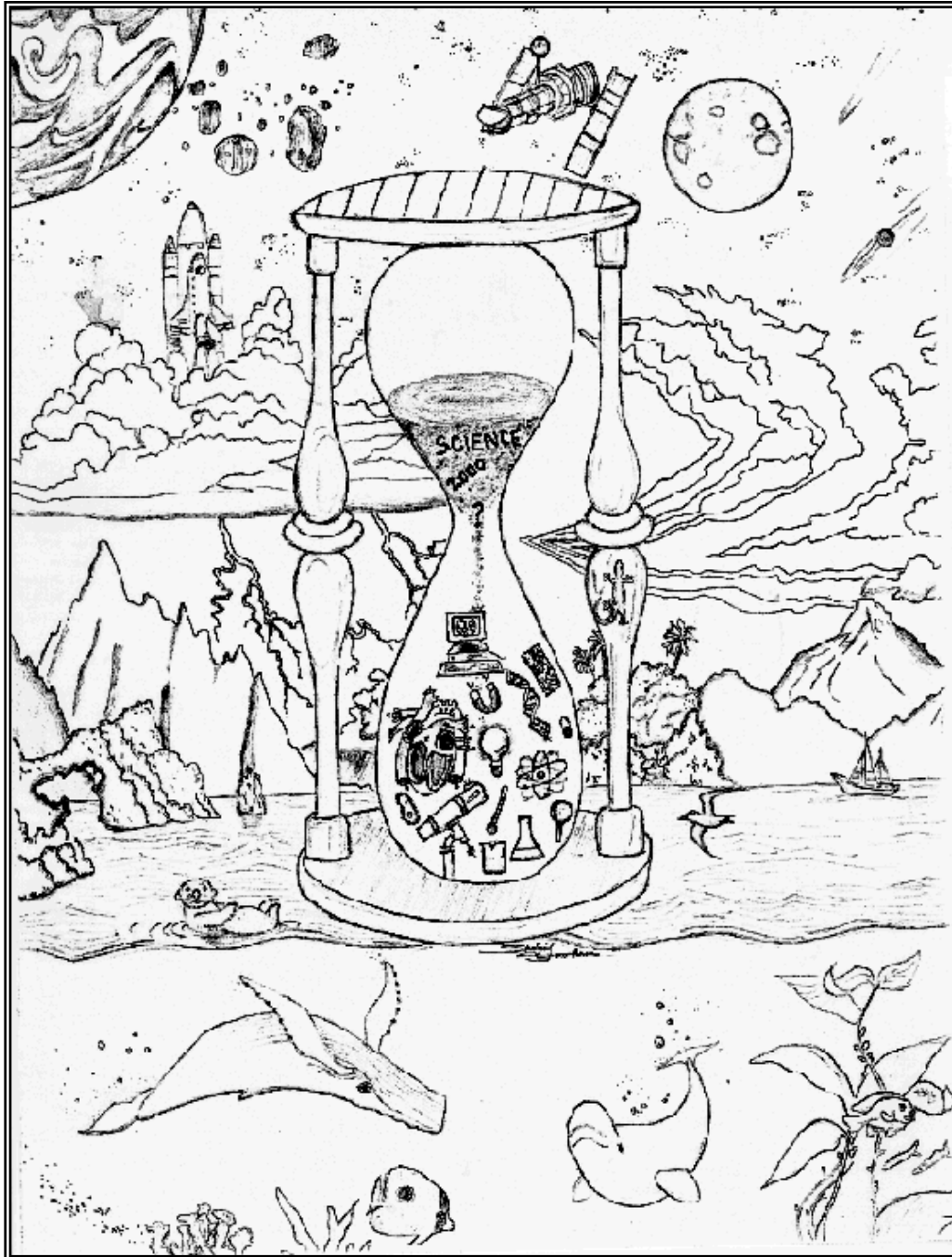
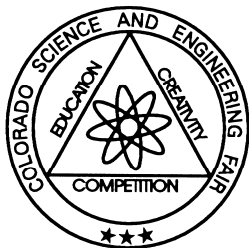


Forty-fifth Annual

# Colorado Science and Engineering Fair



Artist: Shalini Therese Low-Nam  
Boulder High School



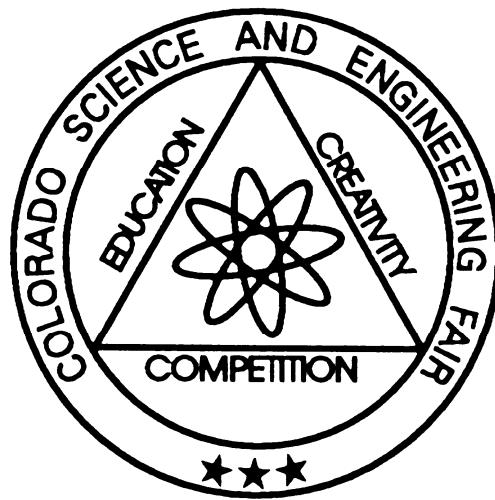
**CSEF 2000**

April 13 - 15  
Lory Student Center  
Colorado State University  
Fort Collins, Colorado



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## 45<sup>TH</sup> ANNUAL COLORADO SCIENCE AND ENGINEERING FAIR

Lory Student Center

Fair Headquarters: 2<sup>nd</sup> Floor Lobby

Colorado State University

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### THURSDAY, APRIL 13, 2000

8:30 - 9:00 AM SRC and Display & Safety Committee Meeting: Main Ballroom

9:00 - 11:00 AM **FINALIST CHECK-IN:** Exhibit Areas Open for Set-Up.

*Finalists MUST stay with exhibit until Exhibit Safety Check-Off Sheet is signed by a Display & Safety Committee Member. Finalists must be out of the Exhibit Areas by noon.*

10:30 - 11:00 AM Grand Awards Judge Captain's Briefing: Cherokee Park Room

11:00 - 11:30 AM Grand Awards Judge's Briefing: Cherokee Park Room

11:30 AM - 12:30 PM Judge's Luncheon: Cherokee Park Room

12:30 - 1:00 PM Special Awards Judge's Briefing: Cherokee Park Room

12:00 - 5:00 PM JUDGING

12:00 - 1:00 PM	<u>Grand Awards Judges</u> only in exhibit areas.
1:00 - 2:00 PM	Special Awards Judges may enter exhibit areas. <u>Judges only</u> in exhibit areas.
2:00 - 5:00 PM	<b><u>Students must be at their exhibits for interviews.</u></b>
5:30 PM	EXHIBIT AREAS ARE LOCKED: Final Regular Judging continues

**No one else is permitted in the exhibit areas at this time.**

1:45 - 2:00 PM **Finalist Orientation Meeting:** East Ballroom -- *Mandatory for all exhibitors.*

2:00 - 5:00 PM Parent/Teacher/Sponsor's Lounge: Refreshments in Room 203/205

2:00 - 4:00 PM Regional Fair Director's Meeting: Room 224/226

4:00 PM All ISEF Adult Delegates Meeting: Room 224/226 to get pins

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### FRIDAY, APRIL 14, 2000

9:00 AM - 5:00 PM **STATE FAIR OPEN TO PUBLIC:** West/Middle & North Ballrooms

9:00 - 9:50 AM Guest Speaker: Dr. Eric Cornell

9:40 AM - 4:00 PM **Tours:** Students, their sponsors, family, and judges are invited to participate in the tours by pre-registering on Thursday morning.

7:00 PM **AWARDS CEREMONY:** Middle/East Ballrooms

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### SATURDAY, APRIL 15, 2000

8:00 - 9:00 AM Intel/ISEF trip winners and teachers must meet with CSEF Director to go over paperwork and travel arrangements: 2<sup>nd</sup> Floor Lobby LSC

9:00 - 11:00 AM **STATE FAIR OPEN TO PUBLIC:** *Finalists must be at their exhibits.*

9:00 - 11:00 AM Advisory Council Meeting: Room 203/205

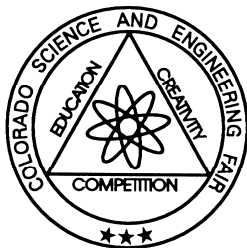
11:00 AM - 12:00 PM **PIZZA PARTY & FINALIST DOOR PRIZES:** Exhibit Halls  
Sponsored by *Old Chicago* for finalists, their sponsors and families.  
**Finalists must be present to win door prizes!**

12:30 - 2:00 PM CSEF Board of Director's Meeting: Room 203/205

12:00 - 2:00 PM Exhibit Dismantling: **Everything must be removed by 3:00 PM.**

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**Upcoming Intel/International Science and Engineering Fair, Detroit, Michigan, May 7 - 13, 2000.**  
**NEXT YEAR'S COLORADO SCIENCE AND ENGINEERING FAIR: APRIL 12 - 14, 2001.**



## General Information

- Finalists must wear their CSEF BADGE for judging, on tours, at the Awards Ceremony, and when at their exhibits.
- Admission to certain areas, at certain times is restricted to persons wearing specific BADGES and APPROPRIATE RIBBONS.
- Ribbons must be attached to the badge at all times.
- Smoking is prohibited in the Exhibit Halls and throughout the Lory Student Center.
- Friday is T-shirt Day! Wear your Finalist T-shirt to the guest speaker presentation and on the tours.
- Friday night is the Awards Ceremony! Dress for SUCCESS and RECOGNITION!
- The Colorado Science and Engineering Fair is OPEN TO THE PUBLIC all day Friday and on Saturday morning.
- The Colorado Science and Engineering Fair mailing address:  

P O Box 1465  
Fort Collins, CO 80522-1465  
Voice Mail: (970) 498-4121  
Office Phone: (970) 491-7716  
FAX: (970) 491-2005  
E-mail: [csef@lamar.colostate.edu](mailto:csef@lamar.colostate.edu)
- During the fair, CSEF Headquarters phone number is (970) 491-5361.

## Welcome to the Colorado Science and Engineering Fair

On behalf of the Board of Directors and Colorado State University, I'd like to welcome all of you - students, parents, educators, and volunteers - to the 45<sup>th</sup> annual Colorado Science and Engineering Fair.

This will be my first of hopefully many years as the Director of the CSEF. While beginning my work on this project, it has become clear to me that this fair would not be possible without the hard work and dedication put in by all involved - the students who do the research and put together the exhibits; the parents and educators who encourage and sponsor the students throughout the whole process; the volunteers who spend many hours helping set up the fair and aid the students when they arrive on campus; and the financial and resource contributors who donate the money and supplies that allow us to put together such a wonderful event.

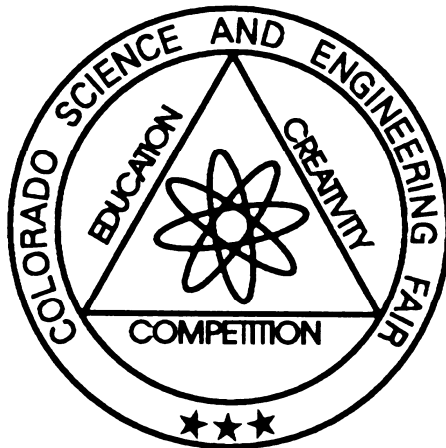
If you've taken part in the CSEF in previous years, you already know that every year, this fair exhibits the projects of over 250 scientifically talented youth from thirteen regions around Colorado. If the CSEF experience is new to you, you may not be aware that in addition to the Grand Awards, there are special awards given by professional organizations, governmental agencies, and industries for exhibits that best represent their particular emphasis or philosophies. The top three winners in the Senior Division, at the state level, are awarded a trip to the Intel/ International Science and Engineering Fair being held in Detroit, MI May 7-13, 2000.

The dedication displayed by Colorado Science and Engineering Fair participants is commendable. Each exhibitor is already a winner, having successfully initiated and completed their outstanding projects, and then won the opportunity to represent their region at the state level. We celebrate the success of all these students and applaud their parents and teachers for their enthusiastic support. From start to finish, and at all levels of participation, the science and engineering fair experience is one of not only competition, but also of camaraderie, creativity and education. Well done, participants!

The unsung heroes of the Science and Engineering Fair are the volunteers who make this event possible. There are those who serve on the CSEF Advisory Council and its numerous working committees. They and other volunteers from the scientific community serve as fair judges. And prior to the state fair, there are thirteen regional, and a large number of school fairs that are conducted through the voluntary efforts of educators in our state.

So take pride in the Colorado Science and Engineering Fair and your part in it. Thanks to each and every one of you. Your involvement shows your support for the scientific development of our youth. Congratulations to all of the participants and may you continue to succeed in all of your endeavors.

Courtney Butler  
CSEF Director



The Colorado Science and Engineering Fair is an independent, nonprofit organization. For this reason, CSEF is totally dependent on the generous financial and resource support of these private businesses, organizations, and individuals that provide prize money, the ISEF trip, and cover fair expenses.

There are several levels of financial participation in the CSEF. Contributors provide financial support up to \$500. Fair Sponsors provide \$500 or more to financially support the CSEF, and are invited to provide up to two volunteers to serve on the Fair Board of Directors. These dedicated Board members represent the non-profit corporation and set fair policy. They are part of the overall Advisory Council that provides the volunteer staff and working committees that produce this valuable event.

***PLATINUM SPONSORS* provide \$2500 or more in support, and up to two dedicated volunteers to serve on the CSEF Board of Directors.**

***GOLD SPONSORS* provide from \$1000 to \$2500 in support, and up to two dedicated volunteers to serve on the CSEF Board of Directors.**

***SILVER SPONSORS* provide from \$750 to \$1000 in support, and up to two dedicated volunteers to serve on the CSEF Board of Directors.**

***REGULAR SPONSORS* provide from \$500 to \$750 in support, and up to two dedicated volunteers to serve on the CSEF Board of Directors.**

***CONTRIBUTORS* provide financial support up to \$500.**

# Colorado Science and Engineering Fair

## Financial Contributors

The thanks of everyone who participates in science fair go to these private organizations, corporations, government agencies, universities, and individuals that encourage Colorado's young scientists, engineers and mathematicians through their generous support of the CSEF.

### PLATINUM SPONSORS

Colorado State University, Office of the Provost & College of Engineering

### GOLD SPONSORS

Alcoa Foundation  
Anheuser Busch  
Ball Corporation  
Colorado Dental Association  
Colorado Medical Society Education and Research Foundation  
Kodak Colorado Division  
Lockheed Martin Astronautics  
Old Chicago  
Rocky Mountain Remediation Services, LLC  
Safe Sites of Colorado, LLC  
Storage Tek  
US Department of Commerce/NOAA

### SILVER SPONSORS

National Institute for Standards Technology  
U S West

### FAIR SPONSORS

Amgen	National Renewable Energy Laboratory
Colorado Engineering Council	Norgen
Hach Scientific Foundation	OEA
Hewlett-Packard Company	Raytheon Engineers & Constructors
Denver Chapter of the IEEE Lasers and Electro- Optics Society	Sna Luis Valley Regional Science Fair, Inc.
LSI Logic	University of Colorado, College of Engineering & Applied Science
Marathon Oil Company	

### OTHER CONTRIBUTORS

A & L Coors	Gina Holland
Lucy Adams	Kaiser-Hill Company
COBE Laboratories, Inc.	King Soopers
Dan & Carol Blake	Laurie Precision Technology, Inc.
Colorado Association of Soil Conservation Districts	Rocky Mountain Chapter of ASM International
CSU – Center for Science, Mathematics & Technology Education	Public Service Company of Colorado
The Cooperative Institute for Research in the Atmosphere	Sigma Xi, CSU Chapter
	URS Greiner Woodward Clyde
	Utility Engineering Corporation

*Thank You!!*

# Dr. Eric Cornell

## CSEF 2000 Guest Speaker

Dr. Eric Cornell received his B.S. from Stanford 1990. His doctoral research, with Dave Pritchard, trapped molecular ions. Dr. Cornell went to JILA been a staff scientist with the National Institute of and Professor Adjoint in the Physics Department of

Dr. Cornell's research interests center around Einstein condensation and experiments on atoms and by magnetic forces along lithographically

Dr. Cornell received the Stratton Award from NIST London Prize in 1996; the Presidential Early Career 1997 I. I. Rabi Award; the 1997 King Faisal Newcomb-Cleveland Prize; the 1997 Alan T. Waterman Award; the Lorentz Medal in 1998, and in 1999; the R. W. Wood Prize; and the Benjamin Franklin Medal in Physics.



University in 1985, and his Ph.D. from MIT in was on precision mass spectroscopy of single in Boulder, Colorado in 1990. Since 1992 he has Standards and Technology. He is a Fellow of JILA the University of Colorado.

various aspects of ultracold atoms, including Bose-guided by optical forces inside hollow glass fibers patterned wires.

in 1995; the Carl Zeiss Award in 1996; the Fritz Award for Scientists and Engineers in 1996; the International Prize for Science; the 1995-96 AAAS

### About Bose-Einstein Condensation

(Taken from <http://jilawww.colorado.edu/bec/>)

#### What is it really, and how did someone think of it?

In the early 1920s Satyendra Nath Bose was studying the new idea (at that time) that the light came in little discrete packets (we now call these "quanta" or "photons"). Bose assumed certain rules for deciding when two photons should be counted up as either identical or different. We now call these rules "Bose statistics" (or sometimes "Bose-Einstein statistics").

#### So where does Einstein come in?

Bose had trouble getting people to believe him and to publish his ideas in the scientific magazines of the day, so he sent them to Einstein. Einstein liked them, and he was a very important scientist at that time, so he used his influence to get them published.

#### So all he did was use his influence, and for that he got his name on it?

No, he actually did something else very important. Einstein guessed that these same rules might apply to atoms. He worked out the theory for how atoms would behave in a gas if these new rules applied. What he found was that the equations said that generally there would not be much difference, except at very low temperatures. If the atoms were cold enough, something very unusual was supposed to happen. It was so strange he was not sure it was correct.

#### I thought Einstein was always right.

Not in this case. He was only sort of half correct, or maybe a little less. First, not all types of atoms actually follow the rules for Bose statistics (stay tuned for our upcoming Bose-Einstein and Fermi statistics page). However, some atoms do, and for those Einstein's predictions were right. But even for those kinds of atoms, he did not realize the most important effects that his equations were predicting.

#### If Einstein missed them, they must have been pretty hard to see. What were they and how did anyone figure them out?

The effects come from the fact that, at very low temperatures, most of the atoms are in the same quantum level.

#### Uh, the same quantum level? What does that mean?

Remember how we talked about how electrons in an atom can only have certain energies which we called the quantum mechanical energy levels?

#### Vaguely I guess.

If you put an atom in any kind of container, even a mixing bowl, it also can only have certain particular energies. It cannot roll around

in there with just any speed it wants. It has to choose from a particular set of allowed energies.

#### That does not make sense. I can put a ball bearing in a bowl and give it any speed I want. So where are your particular energies?

They are so close together in energy that you never notice there are tiny steps. What Einstein's equations predicted was that at normal temperatures the atoms would be in many different levels. However, at very low temperatures, a large fraction of the atoms would suddenly go crashing down into the very lowest energy level. The example below shows a model of atoms in a bowl with greatly magnified energy levels.

#### When I make the temperature low, they are all in the bottom. What does that mean?

The atoms piling up in the bottom is what we call Bose-Einstein condensation, and it happens because this demonstration is built to match Einstein's equations. "What it really means" is probably a question Einstein should have asked, but did not. He did not realize how weird a material would be with all the atoms in one level like this. It means that all the atoms are absolutely identical. There is no possible measurement that can tell them apart.

#### But I can just look and see the different black spots that represent different atoms. How can they be identical?

Good point. You have just picked out a mistake in this demonstration. Really, an atom in the lowest energy level is spread out a little, so it looks like a very small fuzzy ball. When you have lots of atoms in the same state, all these fuzzy balls lie exactly on top of each other.

#### Now I can't tell one atom from another; they are all in the same place. But I know that atoms don't really do that. I have tables, chairs, and all these other objects that have their shapes because their atoms are arranged in different places.

Now you can see why it was so long before people understood what BEC really meant. Atoms really can all be in the same place like this, but it goes against everything we see around us. It is only at the special incredibly low temperatures needed for BEC that they lose their individual identities and coalesce into a single blob. Some people have called this a "super atom" for just that reason.



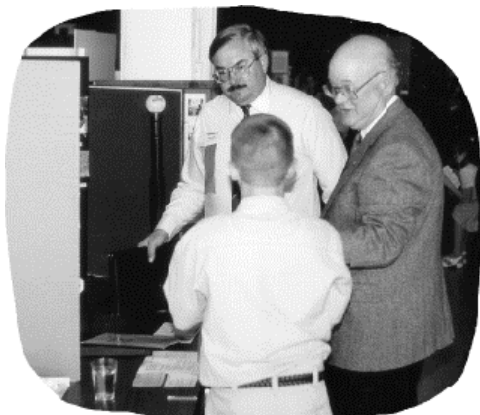
**2000 Colorado Science and Engineering Fair Tours  
Friday, April 14, 2000**

<b>Morning Tours</b>		<b>Cost</b>	<b>Limit</b>	<b>Afternoon Tours</b>		<b>Cost</b>	<b>Limit</b>
2A	<b>Heska Corporation</b> Meets at 8:40 AM in Room 205 LSC (before guest speaker) Leaves at 10:00 AM (from parking lot north of LSC) Arrives back at CSU about 12:00 PM	\$1.00	10	2B	<b>Heska Corporation</b> Meets at 1:00 PM in Room 205 LSC Leaves at 1:15 PM (from parking lot north of LSC) Arrives back at CSU about 3:15 PM	\$1.00	10
3A	<b>CSU – Anatomy/Physiology Lab</b> (Senior Division Student Tour ONLY!) Meets at 10:00 AM in Room 217 LSC Tour is from 10:15 AM – 11:00 AM	\$0.50	20	4B	<b>CSU – Electron Microscopy Center</b> Meets at 1:45 PM in Room 203 LSC Tour is from 2:00 PM – 3:00 PM	\$0.50	10
3B	<b>CSU – Anatomy/Physiology Lab</b> Meets at 11:00 AM in Room 205 LSC Tour is from 11:15 AM – 12:00 PM	\$0.50	20	5B	<b>National Seed Storage Laboratory</b> Meets at 1:30 PM in Room 217 LSC Tour is from 1:45 PM – 3:15 PM	\$0.50	15
4A	<b>CSU Electron Microscopy Center</b> Meets at 10:15 AM in Room 203 LSC Tour is from 10:30 AM – 11:30 AM	\$0.50	10	6B	<b>CSU – College of Engineering</b> Meets at 1:30 PM in Room 203 LSC Tour is from 1:45 PM – 2:45 PM	\$0.50	20
5A	<b>National Seed Storage Laboratory</b> Meets at 10:15 AM in Room 217 LSC Tour is from 10:30 AM – 12:00 PM	\$0.50	15	7B	<b>Atrix Laboratories</b> Meets at 1:00 PM in Room 217 LSC Leaves at 1:15 PM (from parking lot north of LSC) Arrives back at CSU about 3:15 PM	\$1.00	14
6A	<b>CSU – College of Engineering</b> Meets at 10:30 AM in Room 203 LSC Tour is from 10:45 AM – 11:45 AM	\$0.50	20	8B	<b>CIRA</b> (Senior Division Student Tour ONLY) Meets at 1:15 PM in Room 203 LSC Leaves at 1:30 PM (from parking lot north of LSC) Arrives back at CSU about 3:30 PM	\$1.00	14
7A	<b>Atrix Laboratories</b> Meets at 8:40 AM in Room 217 LSC (before guest speaker) Leaves at 10:00 AM (from parking lot north of LSC) Arrives back at CSU about 12:00 PM	\$1.00	14	9B	<b>Little Shop of Physics</b> Meets at 1:30 PM in Room 205 LSC Tour is from 1:45 PM – 3:00 PM	\$0.50	15
8A	<b>CIRA</b> (Junior Division Student Tour ONLY) Meets at 10:00 AM in Room 203 LSC Leaves at 10:15 AM (from parking lot north of LSC) Arrives back at CSU about 12:15 PM	\$1.00	14	10B	<b>CSU Engineering Research Center</b> Meets at 1:15 PM in Room 205 LSC Leaves at 1:30 PM (from parking lot north of LSC) Arrives back at CSU about 3:30 PM	\$1.00	14
9A	<b>Little Shop of Physics</b> Meets at 10:30 AM in Room 205 LSC Tour is from 10:45 AM – 12:00 PM	\$0.50	15	13	<b>Geologic History of the Front Range</b> Meets at 1:15 PM in Room 217 LSC Tour is from 1:30 PM – 2:30 PM	\$0.50	20
10A	<b>CSU Engineering Research Center</b> Meets at 10:00 AM in Room 205 LSC Leaves at 10:15 AM (from parking lot north of LSC) Arrives back at CSU about 12:15 PM	\$1.00	14				
11A	<b>Forensic Sciences</b> Meets at 10:30 AM in Room 217 LSC Presentation is from 10:45 AM – 12:00 PM	\$0.50	15				

**Fort Collins Area Self-Guided Tours!**

There are lots of interesting things to do and see while you are visiting the Fort Collins area. These attractions include historical sites, sculpture gardens, the Swetsville Zoom and museums. For more information, please check out the Fort Collins Visitor's guide provided by the Fort Collins Visitor's Bureau. These guides are available to you next to the tour ticket sales table.

# What To Do At The CSEF!



Thursday:  
Set-Up and Judging Day

Friday:  
Guest Speaker: Dr. Eric Cornell  
Tours: See Page 7  
Awards Ceremony



National Seed  
Storage Laboratory



College of Engineering - CSU

Many educational experiences are available to participants of CSEF including tours of The University and local corporate research facilities. This series of tours, both on and off campus, gives students, their sponsors and families an opportunity to see research in action.

**Purchase tour tickets during Thursday's registration at the Tour Table in the second floor lobby of the Lory Student Center from 9 – 11 AM.** Some tours fill up early so stop by the Tour Table as soon as possible.

**Old Chicago** generously sponsors the CSEF Saturday Lunch Pizza Party as a final celebration for exhibitors, teachers and parents.

Door prizes donated by several National Parks and Monuments within State of Colorado, Analex, Colorado Geological Survey, U S Forest Service, and many other organizations.

**Finalists MUST be present to win door prizes.**



Saturday:  
Pizza Party



1999 Top of Fair Winners:  
Natalia Toro  
Katie Propst  
Lindsey Mitchell

# 2000 CSEF Awards Ceremony

Friday, April 14, 2000 - 7:00 PM

Welcome to the Colorado Science and Engineering Fair..... Mr. Harvey Teyler, President

## Special Awards

Special Awards Announcer..... Mr. Kelly Reed

- |  |  |
|--|--|
| Air and Waste Management Association,<br>Rocky Mountain States Section                                     | Institute of Arctic and Alpine Research,<br>University of Colorado   |
| American Association of University Women   | Intel Excellence in Computer Science   |
| American Institute of Chemical Engineers,<br>Rocky Mountain Section  | Intel Excellence in Environmental Health and Safety<br>Lockheed Martin Astronautics<br>NACE International          |
| American Meteorological Society – Denver/Boulder Chapter   | National Council of Teachers of Mathematics<br>National Geophysical Data Center                                    |
| American Vacuum Society, Rocky Mountain Chapter  | National Renewable Energy Laboratory<br>Rocky Mountain Association of Geologists                                   |
| American Welding Society, Colorado Section<br>Analex Corporation   | Rocky Mountain Bioengineering Symposium<br>Rocky Mountain Inventors and Entrepreneurs Congress                     |
| ASM International, Rocky Mountain Chapter  | Rocky Mountain Optical Society<br>Rocky Mountain Section of the<br>American Water Works Association                |
| Association for Women Geoscientists, Denver Chapter  | Rocky Mountain Water Environment Association<br>Society for In Vitro Biology<br>Society of Manufacturing Engineers |
| Colorado Association of Sciences Teachers  | Society of Women Engineers – Rocky Mountain Section  |
| Colorado Biology Teacher’s Association   | Soil and Water Conservation Society, Colorado Chapter<br>Space Imaging   |
| Colorado Foundation for Agriculture–<br>“Agriculture in the Classroom”                                     | US Department of Health and Human Services/<br>US Public Health Service  |
| Colorado Geological Survey   | US Geological Survey<br>US Metric Association  |
| Colorado Medical Society   | US Navy and US Marine Corps  |
| Colorado Mineral Society   | United States Air Force ROTC<br>United States Army   |
| Colorado Mycological Society   | University of Colorado Health Sciences<br>Center Medical Scientist Training Program                                |
| Colorado Psychological Association   | Water Environment Federation   |
| Colorado Scientific Society  | Yale University Science and Engineering Association<br>Zonta Club of Boulder County                                |
| Colorado Section of the American Chemical Society<br>Colorado State University:<br>Department of Chemistry |  |
| Department of Biochemistry and Molecular Biology   |  |
| Department of Horticulture and Landscape Architecture  |  |
| Colorado Sustainability Project, Inc.  |  |
| Colorado Veterinary Medical Association  |  |
| Colorado Veterinary Medical Association Auxiliary<br>Conservation International                            |  |
| Kodak Colorado Division  |  |
| Fort Collins Soil Conservation District  |  |
| Hach Scientific Foundation   |  |
| Herbert Hoover Presidential Library Association  |  |

## Grand Awards

Grand Awards Announcer ..... Ms. Sue Refner

Grand Awards Presenter ..... Mr. Harvey Teyler

### Junior and Senior Division Category Awards:

- |                        |                                 |
|------------------------|---------------------------------|
| Botany                 | Health & Behavioral Sciences    |
| Earth & Space Sciences | Mathematics & Computer Sciences |
| Engineering            | Physical Sciences               |
| Environmental Sciences | Zoology                         |

### Team Interdisciplinary

## Scholarships

Scholarship Presenter..... Adams State College.....Mr. Edmon Adams

Scholarship Presenter..... Colorado School of Mines .....Ms. Jane Cowden

Scholarship Presenter..... Colorado State University.....Mr. David Holm

Ralph F. Desch Memorial Technical Writing Award ..... Mr. Russell Stoner

## Top of Fair Awards

- Junior Division
- Senior Division

## 2000 CSEF Grand Award Judges

More than 110 professional scientists and engineers volunteer to judge the Finalists for the CSEF Grand Awards. Judging teams are made up of these volunteers to judge each of the categories in both divisions. The captains of each judging team form the All Fair Award team which determines the Top of Fair winners in each division. In addition, a Grand Awards judging team determines the winner of the Ralph Desch Memorial Technical Writing Award. Grand Awards judging team lists are available at the CSEF Registration on Thursday.

<p><b>James E. Allison, B.S.</b> Computer Sciences Lockheed Martin</p> <p><b>David L. Anselmi, B.S.</b> Electrical Engineering</p> <p><b>Dr. Robert T. Anselmi, Ph.D.</b> Chemistry Lockheed Martin (Retired)</p> <p><b>Larry Armfield, B.S.</b> Physics/Mathematics Laerie Precision Technology, Inc.</p> <p><b>Samuel R. Bartlett, B.S.</b> Geology USDI Bureau of Reclamation</p> <p><b>Michael Bemski, B.A.</b> Geology Rocky Mountain Remediation Services, LLC</p> <p><b>Stephen Bernard, B.S.</b> Engineering/EH&amp;S AT&amp;T</p> <p><b>Veronica M. Bierbaum, Ph.D.</b> Physical Chemistry University of Colorado</p> <p><b>James Boaz, B.S.</b> Geology Self-employed</p> <p><b>John W. Bollinger, P.E., B.S.</b> Architectural Engineering Boulder Valley Public Schools</p> <p><b>Paul J. Bradley, B.S.</b> Engineering Lockheed Martin</p> <p><b>Marla Broussard, M.S.</b> Geology Rocky Mountain Remediation Services, LLC</p> <p><b>Brian Burnett, B.S.</b> Botany</p> <p><b>Dewayne A. Campbell, Ph.D., P.E.</b> Civil Engineering USDI Bureau of Reclamation</p> <p><b>Chris A. Cantrell, Ph.D.</b> Chemistry National Center for Atmospheric Research</p> <p><b>Dr. Russell B. Chadwick, Ph.D.</b> Electrical Engineering NOAA</p> <p><b>J. Wey Chen, Ph.D.</b> Computer Sciences University of Northern Colorado</p> <p><b>John Chermak, Ph.D.</b> Geology/Chemistry Shepherd Miller, Inc.</p> <p><b>Paul Choate, M.S.</b> Mechanical Engineering Alcoa Packaging Machinery</p> <p><b>Douglas R. Cook, M.S.</b> Engineering Systems/Physics TRW, Inc.</p>	<p><b>Bonnie Crysdale, M.S.</b> Geology Self-employed</p> <p><b>Doug Curran-Everett, Ph.D.</b> Physiology University of Colorado Health Sciences Center</p> <p><b>Christine Daigler, D.V.M.</b> Veterinary Medicine Aspenwood Animal Hospital</p> <p><b>Tim Davis, M.S.</b> Electrical Engineering Aspenlogic</p> <p><b>Jerry Duggan, M.S.</b> Mathematics/Computer Sciences Hewlett-Packard</p> <p><b>Mike Duncan, M.S.</b> Electrical Engineering Ball Aerospace</p> <p><b>Carl Edstrom, M.S.</b> Engineering/Industrial Management CME Consulting</p> <p><b>Dean Ehn, M.S.</b> Chemical Engineering/CIS IBM (Retired)</p> <p><b>Robert E. Fiehweg, M.S.</b> Biochemistry/Civil Engineering Rocky Mountain Remediation Services, LLC</p> <p><b>Karl Fleischer, M.E.</b> Engineering Systems ALCOA</p> <p><b>Kay Force, B.S.</b> Civil Engineering EDAW</p> <p><b>Karl Ford, Ph.D.</b> Environmental Health Bureau of Land Management</p> <p><b>Trudy Forsyth, M.S.</b> Mechanical Engineering NREL</p> <p><b>Charles Fraser, M.D.</b> Medicine Retired</p> <p><b>Ernest C. Garcia, M.S.</b> Chemical/Environmental Engineering Rocky Mountain Remediation Services, LLC</p> <p><b>Trudy Germann, B.S.Ed., B.S.</b> Civil Engineering USDI Bureau of Reclamation (Retired)</p> <p><b>Ronald Geurts, B.S.</b> Civil Engineering Farnsworth Polk</p> <p><b>Rich Gianzero, A.S.</b> Machining Safe Sites of Colorado</p> <p><b>Janet Gibson, M.S.</b> Applied Math/Electrical Engineering NOAA</p>	<p><b>Donald L. Groves, B.S.</b> Mechanical Engineering Retired</p> <p><b>Paula Guenther-Gloss, M.S.</b> Zoology/Water Resources USDA Forest Service</p> <p><b>Jill Hamilton, B.S.</b> Combined Science Colorado State University</p> <p><b>Thomas A. Harp, M.S.</b> Geology/Engineering Terracon Companies, Inc.</p> <p><b>Christine Hawley, M.S.</b> Environmental Engineering International Engineering</p> <p><b>Scot Heath, P.E., M.S.</b> Electrical Engineering Hewlett-Packard</p> <p><b>Mark Hennesy, M.B.A., B.S.</b> Mechanical Engineering Public Service Company of Colorado</p> <p><b>Steve Hiebert, B.S.</b> Fisheries Biology USDI Bureau of Reclamation</p> <p><b>Gina Holland, P.E., B.S.</b> Electrical Engineering Public Service Company of Colorado</p> <p><b>Harl Hoppler, M.S.</b> Geology LSI Logic, Inc.</p> <p><b>William H. Hoyt, Ph.D.</b> Geology University of Northern Colorado</p> <p><b>Joel Hutcheson, Ph.D.</b> Entomology Colorado State University</p> <p><b>John B. Ivey, M.S.</b> Geology Amuedo and Ivey, Inc.</p> <p><b>James Jarvis, M.S.</b> Nuclear Medicine Rocky Mountain Remediation Services, LLC</p> <p><b>James L. Jehn, M.S.</b> Geology Jehn Water Consultants</p> <p><b>Adrian Jimenez, B.S.</b> Mechanical Engineering Lockheed Martin</p> <p><b>Don Jones, M.B.A., B.S.</b> Mechanical Engineering IBM</p> <p><b>Michelle L. Jones, Ph.D.</b> Biochemistry/Horticulture Colorado State University</p> <p><b>Beth Kelsic, P.E., M.S.</b> Mechanical Engineering Ball Aerospace</p>
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## 2000 CSEF Grand Award Judges

<p><b>Cheryl Kennedy, B.S.</b> Chemistry/Physics NREL</p> <p><b>Donald E. Kirkland, M.S.</b> Economics/Computer Science LSI Logic, Inc.</p> <p><b>Dan Knobeloch, B.S.</b> Chemistry/Microbiology Los Alamos National Lab &amp; Kaiser-Hill</p> <p><b>Ron Kollars, D.V.M.</b> Veterinary Medicine Self-employed</p> <p><b>Sue Kollars, B.S.</b> Biology American Airlines</p> <p><b>Gary S. Kruse, B.S.</b> Mechanical Engineering Lockheed Martin</p> <p><b>Linda Lundgren, M.S.</b> Zoology Glencoe McGraw Hill</p> <p><b>Scott Lundgren, Ph.D.</b> Astrophysics Lockheed Martin Astronautics</p> <p><b>Edward T. McCarthy Jr., B.S.</b> Chemistry Safe Sites of Colorado</p> <p><b>Kim McKanna, B.S.</b> Earth Sciences</p> <p><b>Donna McDonnall, R.N.</b> Nursing/Public Health Wiley School</p> <p><b>Bruce McDonnall, P.E., P.L.S.</b> Civil Engineering Retired</p> <p><b>Marjorie McLellan, B.S.</b> Science Education Retired</p> <p><b>Bill Moninger, Ph.D.</b> Physics NOAA</p> <p><b>Andrew M. Montano, B.G.S.</b> Biology USDI Bureau of Reclamation</p> <p><b>Robert L. Morrow, D.M.D.</b> Dentistry Baca County</p> <p><b>Bruce Nall, B.S.</b> Electrical Engineering</p> <p><b>C. Ben Nelson, P.E., M.S.</b> Civil Engineering Martin/Martin</p> <p><b>S. Mark Nelson, M.S.</b> Fisheries Biology USDI Bureau of Reclamation</p> <p><b>Dr. Steven E. Newman, Ph.D.</b> Horticulture Colorado State University</p> <p><b>Tom Newman, B.S.</b> Geology Holnam, Inc.</p> <p><b>Thomas C. Nolan, M.A.</b> Chemical Engineering &amp; Computer Resources Management Los Alamos Technical Associates</p>	<p><b>Kevin Roy Nunn, B.S.</b> Electrical Engineering LSI Logic, Inc.</p> <p><b>Karen Fay O'Loughlin, B.A.</b> Literature/Professional Research University of Colorado-CIRES</p> <p><b>Dr. Don Ostwald, D.V.M.</b> Veterinary Medicine Wheat Ridge Animal Hospital</p> <p><b>Gary Overgard, B.S.</b> Computer Sciences/Mathematics Self-employed</p> <p><b>Phil Parilla, Ph.D.</b> Physics NREL</p> <p><b>Kathy Partin, Ph.D.</b> Anatomy/Neurobiology</p> <p><b>Joyce C. Pennycooke, M.S.</b> Agronomy/Horticulture Colorado State University</p> <p><b>Mike Pepping, B.A.</b> Geography/Earth Science Rocky Mountain Remediation Services, LLC</p> <p><b>Brook Phifer, B.S.</b> Civil Engineering NiCo Resources, L.L.C.</p> <p><b>Donald E. Portz, M.A.</b> Biology USDI Bureau of Reclamation</p> <p><b>Felicity Johnson Potter, Ph.D.</b> Botany Colorado State University</p> <p><b>Dan Prevedel, B.S.</b> Electrical Engineering LSI Logic, Inc.</p> <p><b>Bridget Robinson, B.S.</b> Molecular Biology Colorado State University</p> <p><b>Dr. James C. Schatzman, Ph.D.,</b> Applied Mathematics TRW, Inc.</p> <p><b>Michael E. Seitz, M.A.</b> Earth Science Bayfield School District</p> <p><b>Fred Smigiel, B.S.</b> Civil Engineering Lockheed Martin</p> <p><b>Craig Smith, M.S.</b> Environmental Engineering Rocky Mountain Remediation Services, LLC</p> <p><b>Alberto Squassabia, P.E., M.S.</b> Civil Engineering Hewlett-Packard</p> <p><b>Prof. Russell B. Stoner, Emeritus, Ph.D.</b> Technical Writing Metropolitan State College of Denver</p> <p><b>Martha H. Stoner, Emeritus, Ph.D., R.N.</b> Nursing University of Colorado School of Nursing</p> <p><b>Erica Suchman, Ph.D.</b> Biochemistry/Molecular Biology Colorado State University</p> <p><b>Elissa Teel-Duggan, D.V.M.</b> Veterinary Medicine Animal Emergency Services</p>	<p><b>Bill Thomas</b> Science Education Retired</p> <p><b>Phillip F. Tomlinson, M.S.</b> Electrical Engineering/Health Physics Rocky Mountain Remediation Services, LLC</p> <p><b>Scott Toro-Allen, B.S.</b> Electrical Engineering Lockheed Martin</p> <p><b>Roger L. Torres, P.E., M.S., D.</b> Engineering USDI Bureau of Reclamation</p> <p><b>Ed Tracy, B.S.</b> Physical Science NREL</p> <p><b>Randall Tyson, M.S.</b> Environmental Sciences/Engineering GRS Duratek</p> <p><b>Harry Valenta, Ph.D.</b> Biomedical Engineering Self-Employed</p> <p><b>William G. Weist, Jr., M.S.</b> Geology Retired</p> <p><b>Paul West Ph.D.</b> Chemistry Kodak Polychrome Graphics</p> <p><b>Christine Whitley, M.S.</b> Computer Science/Mechanical Engineering LSI Logic, Inc.</p> <p><b>Jim Wild, M.B.A., B.S.</b> Electronics Engineering Woodward Governor Company</p> <p><b>Daniel Wilkinson, B.S.</b> Physics NOAA</p> <p><b>Linda Wilkinson</b> Dental Hygiene Dr. F. Robert Murphy, D.D.S.</p> <p><b>Victor Wisdom, B.S.</b> Manufacturing Engineering Wisdom Industries, Ltd.</p> <p><b>Paul A. Wojtaszek, Ph.D.</b> Physics/Toxicology Rocky Mountain Remediation Services, LLC</p> <p><b>Robert Woolf, B.S.</b> Mechanical Engineering Retired</p> <p><b>Karl Zeller, Ph.D.</b> Meteorology USDA Forest Service</p> <p><b>Don Zimmerman, Ph.D.</b> Technical Journalism Colorado State University</p>
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# 2000 CSEF Special Award Organizations and Judges

<p><b>Adams State College Foundation</b> Dr. Edmon Adams Dr. Rob Benson Dr. Guy Farish Dr. Larry Sveum</p> <p><b>Air and Waste Management Association</b> <b>Rocky Mountain States Section</b> Greg Nelson Sims Duggins Patrick McKean</p> <p><b>American Association of University Women</b> Mary Shultz Dr. Lisa Maas Martin</p> <p><b>American Institute of Chemical Engineers</b> <b>Rocky Mountain Section</b> Natalie Van Tyne</p> <p><b>American Meteorological Society -</b> <b>Denver/Boulder Chapter</b> Ralph Anderson Robert Rozumalski</p> <p><b>American Vacuum Society</b> <b>Rocky Mountain Chapter</b> J. Grant Armstrong Tim Gessert Kevan Cameron</p> <p><b>American Welding Society</b> <b>Colorado Section</b> Robert Keenan Elemer Bernath</p> <p><b>Analex Corporation</b> Suzanne Weston</p> <p><b>ASM International</b> <b>Rocky Mountain Chapter</b> Prof. Chester Van Tyne</p> <p><b>Association for Women Geoscientists</b> <b>Denver Chapter</b> Katie KellerLynn Elizabeth Pottorff</p> <p><b>Colorado Association of Science Teachers</b> Robert Keenan Elemer Bernath</p> <p><b>Colorado Biology Teacher's Association</b> Warren R. Buss</p> <p><b>Colorado Dental Association</b> Dr. David Wright</p> <p><b>Colorado Foundation for Agriculture</b> <b>"Agriculture in the Classroom"</b> Wayne F. Kein Jack R. Fenwick</p> <p><b>Colorado Geological Survey</b> Karen Berry Jim Cappa Chris Carroll Dave Noe Jim Soule Katie KellerLynn</p> <p><b>Colorado Medical Society</b> <b>Education and Research Foundation</b> Dr. William Keiger Dr. Lawrence Wolk Dr. Jo Fletcher</p> <p><b>Colorado Mineral Society</b> Thomas Kohnen Jerry Kiefer Ray Horton Bruce Geller Paul Ralston</p> <p><b>Colorado Mycological Society</b> Dr. Robert Reinsvold</p> <p><b>Colorado Psychological Association</b> William J. Van Doorninck, Ph.D.</p>	<p><b>Colorado School of Mines</b> Jane Cowden</p> <p><b>Colorado Scientific Society</b> Chuck Weisenberg Eric Erslev Tom Sutton Judy Hannah</p> <p><b>Colorado Section of the</b> <b>American Chemical Society</b> Dr. Peter K. Dorhout Dr. Debbie C. Crans Dr. Joseph A. Zirrolli</p> <p><b>Colorado State University</b> <b>Department of Chemistry</b> Dr. Peter K. Dorhout Dr. Debbie Crans Dr. Michael Elliott Dr. Tony Tappe</p> <p><b>Colorado State University, Department of</b> <b>Biochemistry and Molecular Biology</b> Dr. Paul Laybourn Dr. Cathy Radebaugh Dr. Scott Summers Dr. Norm Curthoys</p> <p><b>Colorado State University, Department of</b> <b>Horticulture and Landscape Architecture</b> Dr. Stephen J. Wallner Dr. Steven E. Newman Dr. Michelle L. Jones</p> <p><b>Colorado Sustainability Project, Inc.</b> Jon R. Schulz Dr. Ron Larson Dr. Ron West Dr. A.R. Palmer Dr. H. Dana Moran Andrea Jacobs Dr. Dennis Lamm Bob Nagel Jack Jenkins June Brennan Jesse D. Silverstein</p> <p><b>Colorado Veterinary Medical Association</b> <b>Colorado Veterinary Medical Association</b> <b>Auxiliary</b> Al Strating, DVM Charles Johnson, DVM Kelly Rohn</p> <p><b>Kodak Colorado Division</b> Ray Alvarado</p> <p><b>Fort Collins Soil Conservation District</b> Jeanene Hess Roland Feit Todd Boldt</p> <p><b>Hach Scientific Foundation</b> Annette Gieselmann</p> <p><b>Institute of Arctic and Alpine Research</b> <b>University of Colorado</b> Dr. William F. Manley</p> <p><b>Lockheed Martin Astronautics</b> Gary Krause James Miles Dr. Paul Cheng</p> <p><b>National Geophysical Data Center</b> David Cole Karen Horan Dave Hastings</p> <p><b>National Renewable Energy Laboratory</b> Eric Hass Doug Hooker Linda Lung</p>	<p><b>Rocky Mountain Association of Geologists</b> Susan R. Wager</p> <p><b>Rocky Mountain Bioengineering Symposium</b> Harry Valenta</p> <p><b>Rocky Mountain Inventors and Entrepreneurs</b> <b>Congress</b> Joseph S. Akiyama Kevin D. Vessels Larry L. Wessels David J. Lester John Boylan Omar Moore</p> <p><b>Rocky Mountain Optical Society</b> Beth Sornsin Charles Moore</p> <p><b>Rocky Mountain Section of the American</b> <b>Water Works Association</b> Dr. Roger Jordan Jan Crannor</p> <p><b>Rocky Mountain Water Environment</b> <b>Association</b> Larry DeMers Greg Woodward Linda Murray Jenny Hartfelder Dennis Schump John Rehring</p> <p><b>Society of Manufacturing Engineers</b> Maxine P. Verbit Dennis Grant</p> <p><b>Society of Women Engineers</b> <b>Rocky Mountain Section</b> Beth Boaz Sandra Thwaites Linda McGowan</p> <p><b>Soil and Water Conservation Society</b> <b>Colorado Chapter</b> Steven Petersen Ruben Vasquez Raymond Mowery</p> <p><b>Space Imaging</b> Victor Solanyk</p> <p><b>U. S. Geological Survey</b> Dr. John Gray</p> <p><b>U.S. Navy and U.S. Marine Corps</b> CAPT Bill Emslie, USNR CDR Peter Lyddon, USN CAPT Jeff McNair, USNR CAPT Dorthy Nazareus FTI David Wartman, USN ET2(SS) Adam Brunin MM1 Robert Issa, USN</p> <p><b>United States Air Force ROTC</b> SrA Philip Couch SrA Christine Fontenot SSgt Kevin Kerr</p> <p><b>United States Army</b> SFC Todd L. Kurkoski</p> <p><b>University of Colorado Health Sciences Center</b> <b>Medical Scientist Training Program</b> Enrique Alvarez Stephanie Atencio Aaron Spalding Sean Bennett</p> <p><b>Yale University Science and Engineering</b> <b>Association</b> Atul Goel Jason McDonough</p> <p><b>Zonta Club of Boulder County</b> Billie Klaus Helen Coffey</p>
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# 2000 CSEF Honor Roll

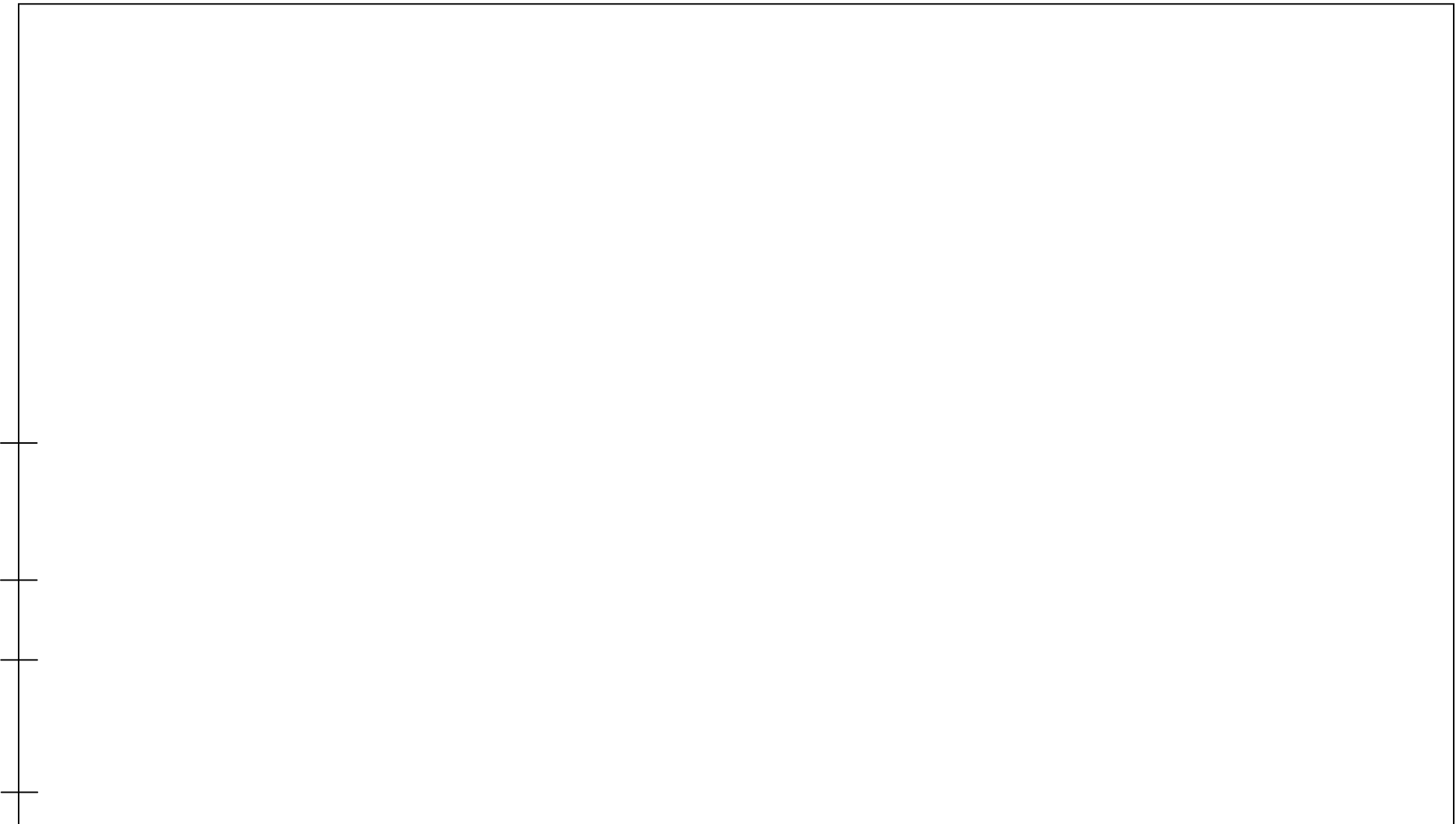
Schools, Teachers, and Adult Sponsors Supporting the 2000 Finalists!

<b>Akron High School</b> Nancy Gettman	<b>Frenchman RE-3</b> Linda Niccoli	<b>Pagosa Springs Junior High School</b> Cindy Nobles
<b>Alta Vista Charter School</b> Timothy Main	<b>Fruita Monument High School</b> Bill Schaefer	<b>Palmer High School</b> Ann Bernhard
<b>Arriba/Flagler School</b> Scott Grover	<b>Gardner School</b> Kevin Crossen	Brad Bogard
<b>Bayfield Middle School</b> Victor Pennell	<b>Genoa-Hugo Middle School</b> William Mallory	Rata Clarke
<b>Berry Creek Middle School</b> Kim Wlatter	<b>Genoa-Hugo High School</b> Marguertie Yowell	Betty Weide
<b>Boltz Junior High School</b> Brad Blank	<b>George Washington High School</b> Jyoti More	<b>Pawnee High School</b> Carrie Erickson
<b>Bookcliff Middle School</b> Randall Dean	<b>Goddard Middle School</b> Jean Kavanagh	<b>Platt Middle School</b> Emily Burkett
<b>Boulder High School</b> Tamsen Meyer	<b>Heath Junior High School</b> Jerry Bauer	<b>Quest School of Choice</b> Patricia Walls
<b>Branson Undivided High School</b> Jay Geiger	<b>Hi-Plains High School</b> Deanna Baker Schrock	<b>Redlands Middle School</b> Todd Henderson
Rick Usrey	<b>Holy Family Catholic School</b> Arlene Crawford	<b>Ricks Center for Gifted Children</b> Patricia Emery
<b>Brentwood Middle School</b> Christina Kauffman	<b>Hotchkiss Middle School</b> Donald Spor	Larry Hillman
Keith Trusler	<b>Ignacio Junior High School</b> Danny Jaques	<b>Rifle High School</b> Anthony Rossilli
<b>Brush High School</b> Judy Florian	<b>Jefferson Academy</b> Niloufar Salehi	<b>Rocky Mountain Hebrew Academy</b> Melanie Knowles
Don Gabriel	<b>Kim School</b> Nancy Broce	<b>Sangre de Cristo Middle School</b> Debra Davis
David Miner	<b>La Junta Middle School</b> Joel Gray	<b>Sargent Junior High School</b> Terri Rae Paulson
<b>Burbank Middle School</b> Daniel Tomlin	<b>La Veta Middle School</b> Dan Smith	<b>Skyview High School</b> Kristal Domenico
<b>Burlington Middle School</b> Cherie Wyatt	<b>Lamar Middle School</b> Terri Lira	<b>Springfield Jr/Sr High School</b> Tamara Piper
<b>Campus Middle School</b> Marianne Wood	<b>Liberty Common School</b> Larry Sarner	<b>St. Columba</b> Jeff Klazura
<b>Centauri Middle School</b> Paula Gilmore	<b>Liberty High School</b> Renny James	<b>St. John the Evangelist Middle School</b> Laura Ward
Cheri Jones	<b>Mackintosh Academy</b> William Meine	<b>St. Mary's of Littleton</b> Amy Brady
<b>Central High School</b> John McConnell	Maggie Pavlik	<b>Summit Middle School</b> Stephanie Donaton
James Rexroad	<b>Merino Jr/Sr High School</b> Penny Propst	Sharon Sikora
<b>Challenge School</b> Jeffrey Poland	<b>Miller Middle School</b> Robert Nuhn	<b>Swink School</b> Kent Lusk
<b>Challenger Middle School</b> Kenneth Percival	Preston Sommers	<b>Trinidad Junior High School</b> Robin Conner
<b>Cherry Creek High School</b> Robert Fendall	<b>Monte Vista High School</b> Doug Steward	<b>Trinity Lutheran School</b> Sharon Kembel
Peter Hanson	Gary Wilkinson	<b>Walsh Jr/Sr High School</b> Tami Alley
Stephen Lantz	<b>Monte Vista Middle School</b> Antonio Lucero	Erroll Cook
<b>Christian Fellowship School</b> Chris Powers	John Myers	Dale Kandt
<b>Community Christian School</b> Cheryl Keelan	Carol Shaffer	Robert Lancaster
<b>Cotopaxi Consolidated Schools</b> Charlie Rahe	<b>Mount Garfield Middle School</b> Brenda Austin	Steve Mills
<b>Del Norte High School</b> Kristin Emmons	<b>Mountain Ridge Middle School</b> Kay LaBella	Cathy Jo Tate
Laura Stuemky	Regina Miller	Kim Tate
<b>Dolores Middle School</b> Kristin Shurr	<b>Nederalnd Jr/Sr High School</b> Alberto Real	<b>Weld Central Jr/Sr High School</b> Larry Jakel
<b>Euclid Middle School</b> Marilyn Mestnik	<b>New Vista High School</b> Lisa Feldman	<b>West Jefferson Middle School</b> Laura Correll
<b>Fairview High School</b> David Delene	<b>North Middle School</b> Greg Busby	Margo Lopenske
Kristin Donley	Martha Tobey	Ronald West
Elisa Passarelli	<b>Orchard Middle School</b> Donlad Ray Bavor, Jr.	<b>Wiggins Elementary School</b> Jennifer Renner
<b>Flagler Public School</b> Allen Bell	<b>Pagosa Springs High School</b> Rick Schur	<b>Wiggins Jr/Sr High School</b> Mary Linton
<b>Fort Lupton Middle School</b> Michael Swanson	<b>Pagosa Springs Intermediate School</b> Diana Hill	<b>Windsor Middle School</b> Tom Osborne
<b>Fort Morgan Middle School</b> Julie Guynes		<b>Woodlin Undivided High School</b> Nancy Gettman
		<b>Wray High School</b> Jay Clapper

**Junior Division – West Ballroom**



**Senior Division – North Ballroom**



## 2000 CSEF Finalist Statistics

279 Finalist Participants with 251 Exhibits from 12 Regional Science Fairs

123 Senior Division Finalists with 107 Exhibits

156 Junior Division Finalists with 144 Exhibits

Category	-Overall-	-----Division-----			-----Grade-----					
	Finalists	Junior	Senior	6	7	8	9	10	11	12
Botany	32	20	12	9	10	1	4	2	4	2
Earth & Space Sciences	14	9	5	2	3	4	2	0	1	2
Engineering	28	20	8	4	6	10	3	2	2	1
Environmental Sciences	20	12	8	0	8	4	1	3	3	1
Health/Behavioral Sci.	49	23	26	4	11	8	10	7	3	6
Math & Comp. Sci.	20	14	6	4	5	5	0	1	3	2
Physical Sciences	38	23	15	5	6	12	8	0	2	5
Zoology	23	11	12	3	5	3	3	1	5	3
Team Exhibits	27	12	15	3	3	6	3.5	10	.5	1
Team Finalists	55	24	31	6	6	12	7	20	1	2
TOTAL Exhibits	251	144	107	34	57	53	34.5	26	23.5	23
TOTAL Finalists	279	156	123	37	60	59	38	37	24	24

### Schools/Teachers-

At least 86 schools from throughout the state were represented, and over 110 teachers and adults sponsored the students' projects. There were 30 high schools represented.

### Judges-

More than 110 professional scientists and engineers volunteered to judge the Finalists for the Grand Awards.

### Special Awards-

At least 50 organizations offered Special Awards to the finalists, judged by more than 130 professionals from those organizations.

### Sponsorship-

The 2000 Colorado Science and Engineering Fair had 40 sponsors. Sponsors include 1 Platinum Sponsor (providing over \$2500 of support), 11 Gold Sponsors (\$1000 or more of support each), 2 Silver Sponsors (\$750 or more of support), and 13 Fair Sponsors (\$500 or more of support each). In addition, there were 15 Financial Contributors (less than \$500 each).

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**Upcoming Intel/International Science and Engineering Fair: Detroit, Michigan, May 7 – 13, 2000.**  
**NEXT YEAR'S COLORADO SCIENCE AND ENGINEERING FAIR: April 12 – 14, 2001.**



# CSEF Junior Division Finalists



## Botany

- 1-01-001 **Does the color of the barley affect its germination rate?** Alegria Mitson-Salazar Grade 6 Centauri Middle School Mrs. Paula Gilmore
- 1-01-002 **Can I Tickle You As You Grow?** Rhonda Robnett Grade 8 Sargent Junior High School Mrs. Terri Rae Paulson
- 1-01-003 **How Low Can You Go? A Possible Treatment for Corn and Freezing Temperatures** Collin Weber Grade 7 Merino Jr/Sr High School Mrs. Penny Propst
- 1-01-004 **Will Radishes Croak From Second Hand Smoke?** Nissa Schmidt Grade 7 Merino Jr/Sr High School Mrs. Penny Propst
- 1-01-005 **H<sub>2</sub>O and the Planet Green** Taylor Kandt Grade 7 Walsh Jr/Sr High School Mr. Dale Kandt
- 1-01-006 **Organic vs. Chemical** Bradley Hertneky Grade 6 Burlington Middle School Ms. Cherie Wyatt
- 1-01-007 **How Does Extra Radiation Affect the Growth of Seedlings?** Jillian Humphrey Grade 6 Burlington Middle School Ms. Cherie Wyatt
- 1-01-008 **Nitrates In Different Types of Soils** Michael York Grade 7 Brentwood Middle School Mr. Keith Trusler
- 1-01-009 **Which way is up?** David Bonomo Grade 6 St. John the Evangelist Middle School Mrs. Laura Ward
- 1-01-010 **From Household Chemicals to Injection Wells: Are We Ruining Weld County's Water?** Corey Swanson Grade 7 Fort Lupton Middle School Mr. Michael Swanson
- 1-01-011 **Plant Carbon Dioxide Deficiency** Brittney Hladky Grade 6 Fort Lupton Middle School Mr. Michael Swanson
- 1-01-012 **What Is the Best Way to Eat In Y2K or How To Grow the Most Potatoes** Jake Cammack Grade 6 Pagosa Springs Intermediate School Ms. Diana Hill
- 1-01-013 **Why does grass grow so sparsely in pine forests?** Jessica Harms Grade 7 Pagosa Springs Junior High School Mrs. Cindy Nobles
- 1-01-014 **Can herbs inhibit microbe growth and control the spread of disease?** Christena Lungstrum Grade 7 Pagosa Springs Junior High School Mrs. Cindy Nobles
- 1-01-015 **What in Mountain Dew makes plants grow better? Do the Dew?** Alexandra Sneed Grade 7 Fort Morgan Middle School Ms. Julie Guynes
- 1-01-016 **A Sweet Match: Cane vs. Beet** Brie Groves Grade 6 Wiggins Elementary School Mrs. Jennifer Renner
- 1-01-017 **To Grow or Not to Grow?** Jessica Stroud Grade 6 North Middle School Mr. Greg Busby
- 1-01-018 **Fun with Fungi: The effects of pH on yeast growth.** Lauren Smith Grade 7 Mountain Ridge Middle School Mrs. Kay LaBella
- 1-01-019 **Identifying Our Christmas Tree by Paper Chromatography** Alexander West Grade 6 West Jefferson Middle School Mr. Ronald West
- 1-01-020 **Do Different Environments Promote or Discourage Green Unicellular Algae Growth?** Irina Hardesty Grade 7 West Jefferson Middle School Mrs. Margo Lopenske

## Earth & Space Sciences

- 1-03-010 **The Effects of Centrifugal Force on Flour Beetles** Amber Lawson Grade 7 Woodlin Undivided High School Mrs. Nancy Gettman
- 1-02-001 **What's In Your Water?** Samantha Vance Grade 7 Centauri Middle School Mrs. Cheri Jones
- 1-02-002 **What Does It Take To Be A Weather Watcher?** Kayla Harris Grade 6 Lamar Middle School Mrs. Terri Lira
- 1-02-003 **To Catch a Cosmic Ray** Kellyn Tate Grade 8 Walsh Jr/Sr High School Mrs. Cathy Jo Tate
- 1-02-004 **Crystals - What affects their size, shape and hardness?** Edward Munsell Grade 8 St. John the Evangelist Middle School Mrs. Laura Ward
- 1-02-005 **Geodesy - Measuring the Earth with Original Instruments** Emily Rosa Grade 8 Liberty Common School Mr. Larry Sarner
- 1-02-006 **Edible Rocks: The Collection and Classification of Micro-Meteorites** Karla Harris Grade 7 Wiggins Jr/Sr High School Mrs. Mary Linton
- 1-02-007 **The Core of the Matter** Todd Zurlinden Grade 6 West Jefferson Middle School Mrs. Laura Correll
- 1-02-008 **Is your mood affected by the weather?** Talia Rubin Grade 8 Rocky Mountain Hebrew Academy Mrs. Melanie Knowles



# CSEF Junior Division Finalists



## Environmental Sciences

- 1-03-001 **Manure Marvels? The Role of Lemna minor and Hoya carnosa in Phytoremediation** Andrew Fritzler Grade 7 Merino Jr/Sr High School Mrs. Penny Propst
- 1-03-002 **To Grow or Not to Grow Is the Question** Jesus Contreras Grade 8 Trinidad Junior High School Mrs. Robin Conner
- 1-03-003 **Cleaning An Oil Spill - Are Waste Materials Effective?** Jim Bowie Grade 7 Trinidad Junior High School Mrs. Robin Conner
- 1-03-004 **Pyramid Power** Haley Schwarz Grade 7 La Veta Middle School Mr. Dan Smith
- 1-03-005 **Landfills vs. Recycling** Aanna Blacker Grade 7 Alta Vista Charter School Mr. Timothy Main
- 1-03-006 **Structural Modifications For Designing A Nuclear Waste Storage Cell** Brandon Williams Grade 8 Redlands Middle School Mr. Todd Henderson
- 1-03-007 **The Water's Always Cleaner on the Other Side of the Lake** Charlie Keenan Grade 7 Holy Family Catholic School Mrs. Arlene Crawford
- 1-03-008 **Can You Stop Chilly Windchill?** Alana Riksheim Grade 7 Summit Middle School Ms. Mery Molenaar
- 1-03-009 **The Chemicals and Plant Life in Boulder Creek** Katherine Hermann Grade 7 Southern Hills Middle School Mr. Karl Hermann
- 1-03-011 **Recycling Water Using Aquatic Plants** Kate Quick Grade 8 North Middle School Ms. Martha Tobey
- 1-03-012 **Talkin' Trash: From Garbage to Gas** Kalen Meine Grade 7 Mackintosh Academy Mr. William Meine
- 1-03-013 **What are the effects of acid rain on the cell structure of spirogyra?** Doug Krause Grade 8 Rocky Mountain Hebrew Academy Mrs. Melanie Knowles

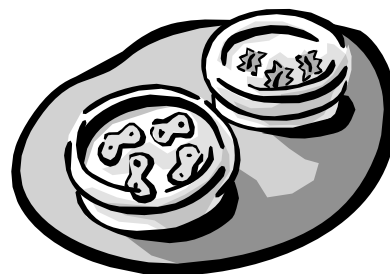
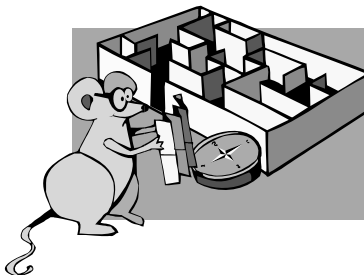
## Engineering

- 1-04-001 **Let's Build It Phase II** Karyl Shawcroft Grade 7 Centauri Middle School Mrs. Cheri Jones
- 1-04-002 **Smashing Eggs** Stephanie Davis Grade 6 Lamar Middle School Mrs. Terri Lira
- 1-04-003 **Which .22 Caliber Shell Is More Accurate?** Tyler Hainer Grade 6 Alta Vista Charter School Mr. Timothy Main
- 1-04-004 **The Force Is With You** Kyle Cureau Grade 8 Berry Creek Middle School Ms. Kim Walter
- 1-04-005 **Fabulous Frequencies: Harmonics of a single and double open-ended pipe.** Jamie Karp Grade 8 Holy Family Catholic School Mrs. Arlene Crawford
- 1-04-006 **It's All Riding on a Magnetic Field** Jon Lafferty Grade 7 Holy Family Catholic School Mrs. Arlene Crawford
- 1-04-007 **In Search of the Ultimate Building Product: The Search Continues** Kevin Burns Grade 8 Flagler Public School Mr. Allen Bell
- 1-04-008 **On which surface does sound reflect off of best?** Ted Mast Grade 8 St. John the Evangelist Middle School Mrs. Laura Ward
- 1-04-010 **Prosthetics** Anne McLaughlin Grade 6 Miller Middle School Mr. Robert Nuhn
- 1-04-011 **Concrete in Adobe!** Victoria Owens Grade 8 Ignacio Junior High School Mr. Danny Jaques
- 1-04-012 **The Answer Is Blowing In The Wind II** Aaron Jacobson Grade 7 Burbank Middle School Mr. Daniel Tomlin
- 1-04-013 **Terminating Turbulence** Steve Wilson Grade 8 Summit Middle School Dr. Sharon Sikora
- 1-04-014 **The Firefly Effect: Using Chemiluminescence to Design a Viable Process for Marking Previously Sprayed Swaths** Craig Wright Grade 8 Woodlin Undivided High School Nancy Gettman
- 1-04-015 **Paintipult** Zack Yearous Grade 7 Mrs. Trinity Lutheran School Sharon Kembel
- 1-04-016 **Flywheels: A New Spin on Energy Storage** Adam Sidman Grade 6 North Middle School Mr. Greg Busby
- 1-04-017 **To Fly or Not to Fly? Exploring Airfoils and Lift** Kevin Weber Grade 7 Challenger Middle School Mr. Kenneth Percival
- 1-04-018 **Can Buildings Withstand an Earthquake?** Jeremy Walter Grade 7 Challenger Middle School Mr. Kenneth Percival
- 1-04-019 **Gyroscopic speeds in stabilization.** Alex Lyddon Grade 8 Euclid Middle School Mrs. Marilyn Mestnik
- 1-04-020 **Magnified Light - Solar Energy** Colin Sieg Grade 8 Jefferson Academy Ms. Niloufar Salehi
- 1-04-021 **Zero In** Phillip Cisneros Grade 8 Gardner School Mr. Kevin Crossen

# CSEF Junior Division Finalists

## Health & Behavioral Sciences

- 1-05-001 **The Shop Talk Silencer** Meghann Myers  
Grade 7 Monte Vista Middle School Mr. John Myers
- 1-05-002 **Primetime Representation** Erin McAuliffe  
Grade 7 Monte Vista Middle School Mr. Antonio Lucero
- 1-05-003 **To See or Not to See?** Caleb Brown Grade 8  
Sangre de Cristo Middle School Ms. Debbie Davis
- 1-05-004 **Beef's Protection Against E.coli Infection - Corn or Hay?** Janessa Dermer Grade 7  
Merino Jr/Sr High School Mrs. Penny Propst
- 1-05-005 **Spit for Science! The Caries Question Answered by Class** Melissa Timko Grade 7  
Merino Jr/Sr High School Mrs. Penny Propst
- 1-05-006 **Do Rewards Really Work? Part 2** Amber McVicker Grade 7 La Junta Middle School Dr. Joel Gray
- 1-05-007 **Enamel: Here Today Gone Tomorrow** Andrea Buxton Grade 6 Lamar Middle School Mrs. Terri Lira
- 1-05-008 **Does Gender Affect Memory?** Charisma Douglas Grade 7 Alta Vista Charter School Mr. Timothy Main
- 1-05-009 **Which Antacid Will You Use** Thomas Lange Grade 8 Orchard Middle School Mr. Donald Ray Bavor, Jr.
- 1-05-010 **Oh, What Nerve!** Megan Vogel Grade 7 Holy Family Catholic School Mrs. Arlene Crawford
- 1-05-011 **Blame It On The Soap** Rachel Schmucker Grade 8 Hotchkiss Middle School Mr. Donald Spor
- 1-05-012 **I have only my right brain left!** Cortney Grauberger Grade 8 Genoa-Hugo Middle School Mr. William Mallory
- 1-05-013 **Bacteria Fighters** Lisa Markle Grade 7 Genoa-Hugo Middle School Mr. William Mallory
- 1-05-014 **Do People See Afterimages Differently?** Shelby Vick Grade 7 St. John The Evangelist Middle School Mrs. Laura Ward
- 1-05-015 **Humidifiers: Healthy or Hazardous?** Rachel Schur Grade 7 Pagosa Springs Junior High School Mrs. Cindy Nobles
- 1-05-016 **Are You Right or Left Brained?** Emilie Schur Grade 6 Pagosa Springs Intermediate School Mrs. Diana Hill
- 1-05-017 **Does Color Affect Your Heart Rate?** Megan Kuretich Grade 7 Fort Morgan Middle School Ms. Julie Guynes
- 1-05-018 **Antiseptics: Their Purpose and Function** Lauren Neher Grade 8 Home Schooled Mrs. Judy Florian
- 1-05-019 **Cellular Phones at the Cellular Level** Walker Williams Grade 8 Ricks Center for Gifted Children Ms. Patricia Emery
- 1-05-020 **The Effect of Cadmium on Macrophages** Kira Newman Grade 6 Ricks Center for Gifted Children Ms. Patricia Emery
- 1-05-021 **Disc-o-mania** Katie Sabin Grade 8 St. Mary's of Littleton Mrs. Amy Brady
- 1-05-022 **Eeeew . . . You mean I'm putting that on my face?** Ariana Kiken Grade 8 Rocky Mountain Hebrew Academy Mrs. Melanie Knowles
- 1-05-023 **Verbose Lads and Lassies** Allison Qubain Grade 6 Gardner School Mr. Kevin Crossen





# CSEF Junior Division Finalists



## Mathematics & Computer Sciences

- 1-06-001 **Bending the Lines** Jo Jo Heersink Grade 7 Sangre de Cristo Middle School Ms. Debbie Davis
- 1-06-002 **Spinner Mania** Samantha Wood Grade 7 Springfield Jr/Sr High School Ms. Tamara Piper
- 1-06-003 **Fibonacci Sequence and the Golden Ratio** David Sumpter Grade 7 Swink School Mr. Kent Lusk
- 1-06-004 **Can Binary Replacement Create Superior Compression Ratios?** Brad Klingenberg Grade 8 Heath Junior High School Mr. Jerry Bauer
- 1-06-005 **Computer Fundamentals and Software Algorithm Efficiency** Andrea Nickel Grade 8 Windsor Middle School Mr. Tom Osborne
- 1-06-006 **Artificial Intelligence vs. Human Intelligence** Mitchell Martin Grade 6 Pagosa Springs Intermediate School Mrs. Diana Hill
- 1-06-007 **Knotty Math: How can knots be used as mathematical models?** Matt Nobles Grade 6 Pagosa Springs Intermediate School Mrs. Diana Hill
- 1-06-008 **How did the Romans compute?** Daniel Beylkin Grade 6 Summit Middle School Ms. Stephanie Donaton
- 1-06-009 **The Day Maker** Joshua Karpel Grade 6 Summit Middle School Dr. Sharon Sikora
- 1-06-010 **It's Not Magic, It's Math** Paul Scott Grade 8 Woodlin Undivided High School Mrs. Nancy Gettman
- 1-06-011 **The Curse of the Recursive Function** Jimmy Laff Grade 7 Ricks Center for Gifted Children Mr. Larry Hillman
- 1-06-012 **Basketball Math** Dan Lucero Grade 8 Challenge School Mr. Jeffrey Poland
- 1-06-013 **Out of Order: A Comparison of Computer Sorting Algorithms** Ryan Whitnah Grade 7 Challenge School Mr. Jeffrey Poland
- 1-06-014 **Playing by the Numbers** Nyssa Walker Grade 8 Community Christian School Ms. Cheryl Keelan



## Physical Sciences

- 1-04-009 **The Light Bulb: Which is the most efficient and still produces a lot of light?** Jeremy Morris Grade 7 Bayfield Middle School Mr. Victor Pennell
- 1-07-001 **Can Vegetable Oil Replace Fossil Fuel?** Lewis Shaffer Grade 8 Monte Vista Middle School Ms. Carol Shaffer
- 1-07-002 **Which Fabric Is the Most Wind Resistant?** Rachael Cannon Grade 8 Monte Vista Middle School Mr. Antonio Lucero
- 1-07-003 **Inductrack Maglev: Phase I** Robin Blenden Grade 6 Monte Vista Middle School Mr. Antonio Lucero
- 1-07-004 **Is It Worth It?** Rebecca Whitlock Grade 6 Cotopaxi Consolidated Schools Mr. Charlie Rahe
- 1-07-005 **Bismuth vs. Lead** Jared Shelden Grade 8 Branson School Mr. Rick Usrey
- 1-07-006 **Stabilized Levitation Assisted by Diamagnetic Repulsion** Keith Dean Grade 8 Bookcliff Middle School Mr. Randall Dean
- 1-07-007 **What Works Best When Lightening Your Hair?** Becky Ravenkamp Grade 7 Genoa-Hugo Middle School Mr. William Mallory
- 1-07-008 **To Choke or Not To Choke** Shane Laverenz Grade 8 Burlington Middle School Ms. Cherie Wyatt
- 1-07-009 **What is the best fat replacer in apple muffins?** Amanda Walls Grade 7 Quest School of Choice Mrs. Patricia Walls
- 1-07-010 **Do All 60 Watt Light Bulbs Produce The Same Amount of Energy?** Davide Navarrete Grade 6 Fort Lupton Middle School Mr. Michael Swanson
- 1-07-011 **Exploration Extreme H<sub>2</sub>O** Lora Bobbitt Grade 8 St. Columba Mr. Jeff Klazura
- 1-07-012 **Solar Cell Performance** Ian Cain Grade 8 Dolores Middle School Mrs. Kristin Shurr
- 1-07-013 **Brewster's Angle: Reflection, Refraction, and Polarization** James Norton Grade 8 Summit Middle School Dr. Sharon Sikora
- 1-07-014 **The Modern Day Milky Way: What Can We Find Out About It?** Corinne D'Ippolito Grade 8 Summit Middle School Dr. Sharon Sikora
- 1-07-015 **Determining the Corrosion Resistance & Degradation of Treated Iron Nails** Tracy Douglass Grade 8 Woodlin Undivided High School Mrs. Nancy Gettman
- 1-07-16 **That's the Way the Ball Bounces: Does Height Determine Distance?** Alyssa Hill Grade 7 Fort Morgan Middle School Ms. Julie Guynes



# CSEF Junior Division Finalists



## Physical Sciences cont.

- 1-07-017 **The relationship between the solubility of compounds and rates of evaporation.** Megan Malone Grade 8 North Middle School Ms. Martha Tobey
- 1-07-018 **Do you get what you pay for in a multi-gear bike?** Brody Ferris Grade 7 Challenger Middle School Mr. Kenneth Percival
- 1-07-019 **Sand Content vs. The Strength of Concrete** Nathaniel Blood Grade 6 Mountain Ridge Middle School Mrs. Regina Miller
- 1-07-020 **Fire fabrics worst nightmare.** Meredith Klee Grade 7 St. Mary's of Littleton Mrs. Amy Brady
- 1-07-021 **Arrows and the Fletchings Attached to Them** Drew Laurens Grade 8 St. Mary's of Littleton Mrs. Amy Brady
- 1-07-022 **Which paper airplane does the best in . . drag, distance, and maneuverability** Max Bohana Grade 6 Campus Middle School Ms. Marianne Wood

## Team Projects

- 1-09-001 **Bubble, Bubble, Toil, and Trouble?** Brittany Zuech, Ashleigh Ackerman Grade 8 Trinidad Junior High School Mrs. Robin Conner
- 1-09-002 **Heat It Up** Charley Frazee, Sarah Alley Grade 8 Walsh Jr/Sr High School Mrs. Tami Alley
- 1-09-003 **Waste Not, Chill Not** Lupe Salazar, Melissa Mills Grade 8 Walsh Jr/Sr High School Mr. Steve Mills
- 1-09-004 **Which Procedure is the Best Way to Germinate Lupine Seed?** Brian Austin, Alex Terrien Grade 8 Mount Garfield Middle School Mrs. Brenda Austin
- 1-09-005 **Reducing Water Erosion on Farmland** Joel Martin, Cody Jolly Grade 7 Genoa-Hugo Middle School Mr. William Mallory
- 1-09-006 **Vitamin C is Here** Matt Halsey, Ryan Pace Grade 6 Brentwood Middle School Ms. Christina Kauffman
- 1-09-007 **Magnetism and Density** Ashley Nakagawa, Beth Poeppelman Grade 8 Boltz Junior High School Mr. Brad Blank
- 1-09-008 **Florida River Water Health Analysis** Kelsea Ferrato, Erika Langhart Grade 7 Miller Middle School Dr. Preston Sommers
- 1-09-009 **Sports Drinks** Erin McCormack, Beth Temple Grade 6 Miller Middle School Mr. Robert Nuhn
- 1-09-010 **Around the World in a Night: Is It Possible?** Amber Mallory, Alison Bratsousky Grade 8 Fort Morgan Middle School Ms. Julie Guynes
- 1-09-011 **Monetary Microbes** Darrick Ohr, Jeff Paulson Grade 7 Woodlin Undivided High School Mrs. Nancy Gettman
- 1-09-012 **Which Type of Bridge Holds the Most Weight?** Sarah Blei, Peggy Tautz Grade 6 Goddard Middle School Mrs. Jean Kavanagh

## Zoology

- 1-08-001 **To Beat or Not To Beat? Does Aspirin Help Prevent Heart Failure in Passalus cornutus?** Silas Gartin Grade 7 Merino Jr/Sr High School Mrs. Penny Propst
- 1-08-002 **Laying a Little or a Lot - Should Laying Crumbs Be Bought?** Trae Miller Grade 7 Merino Jr/Sr High School Mrs. Penny Propst
- 1-08-003 **What Makes A Blue Bird Blue?** Korry Lewis Grade 6 Kim School Ms. Nancy Broce
- 1-08-004 **Hot on the Slime Trail** Megan Neldner Grade 7 La Veta Middle School Mr. Dan Smith
- 1-08-005 **Which Man-made Fish Bait Works the Best?** Matthew Lira Grade 6 Lamar Middle School Mrs. Terri Lira
- 1-08-006 **Behavior of Fancy Guppies** Wyatt Duea Grade 7 Platt Middle School Ms. Emily Burkett
- 1-08-007 **Beetle Juice** Hildur Boylston Grade 7 Summit Middle School Dr. Sharon Sikora
- 1-08-008 **Measuring the Growth Rate of the Tiger Muskie in Confinement** Kyle Atwater Grade 8 Woodlin Undivided High School Mrs. Nancy Gettman
- 1-08-009 **Magnet\*Ficent\* Snail Pull** Rebecca Metherd Grade 8 Wiggins Jr/Sr High School Mrs. Mary Linton
- 1-08-010 **Food and Exercise: Does Exercising Decrease Food Intake?** Morissa Katz Grade 8 Rocky Mountain Hebrew Academy Mrs. Melanie Knowles
- 1-08-011 **Protozoa and Pollution: A Good Mix? I Think Not . . .** Trevor Filter Grade 6 Mackintosh Academy Ms. Maggie Pavlik



# CSEF Senior Division Finalists

## Botany

- 2-01-001 **Potato Virus Y Spread in Potatoes** Nathan Davidson Grade 11 Monte Vista High School Mr. Gary Wilkinson
- 2-01-002 **Super Soaker** Brandi Mann Grade 12 Liberty High School Mr. Renny James
- 2-01-003 **Is It Truly Incurable?** Beth Buckner Grade 10 Branson High School Mr. Jay Geiger
- 2-01-004 **Microbial Fuel Cells** Scott Lancaster Grade 11 Walsh Jr/Sr High School Mr. Robert Lancaster
- 2-01-005 **Hydroponics: Does Medium Matter?** Laura Allis Grade 9 Genoa-Hugo School Mrs. Marguerite Yowell
- 2-01-006 **Can Monocots and Dicots be Determined Through Chromatography?** Lucas Ingmire Grade 11 Brush High School Mrs. Judy Florian
- 2-01-007 **A Comparative Assay of the Effects of Lead Dioxide on E.coli** Holly McGuire Grade 9 Woodlin Undivided High School Mrs. Nancy Gettman
- 2-01-008 **Contributions Towards a Monograph of Cytospora Species in Colorado** Wendi Swan Grade 11 Woodlin Undivided High School Mrs. Nancy Gettman
- 2-01-009 **A Rainbow of Serratia: A Study in Metabolic Pathways and Ultraviolet Light** Laura Wacker Grade 9 Palmer High School Mrs. Rata Clarke
- 2-01-010 **How Water Pollution Effects the Life of a Plant** Danielle Diers Grade 9 Palmer High School Mr. Brad Bogard
- 2-01-011 **Phytoextraction and Rhizofiltration of Toxic Metals** Pavan Sekhar Grade 12 Cherry Creek High School Mr. Robert Fendall
- 2-01-012 **Vinegar and Hydrogen Peroxide: Effective antimicrobial agents?** Emily Kauvar Grade 10 Rocky Mountain Hebrew Academy Ms. Melanie Knowles

## Earth & Space Sciences



- 2-02-001 **Using GPS to Quantify the Relative Lightning Risk of Ridges and Mesas** Aaron Burgess Grade 9 Fairview High School Ms. Elisa Passarelli
- 2-02-002 **An Open or Shut Case** Crystal Hart Grade 9 New Vista High School Ms. Lisa Feldman
- 2-02-003 **Predicting Avalanche Risk** Evan Burgess Grade 11 Fairview High School Mrs. Kristin Donley
- 2-02-005 **Mathematical Modeling of Fringe Patterns from Double Stars** Thomas Liu Grade 12 Cherry Creek High School Mr. Robert Fendall
- 2-02-006 **Sands of Time** Paul Valdez Grade 12 John Mall High School Ms. Sheryl Siegmann

## Engineering

- 2-04-001 **Does Rotor Design Affect Airspeed?** Kyle Tate Grade 10 Walsh Jr/Sr High School Mrs. Kim Tate
- 2-04-002 **Slethbot: A Robotic Search Tool** Ryan Patterson Grade 10 Central High School Mr. John McConnell
- 2-04-003 **A Study of Room Temperature Thermal Energy Conversion** Michael Jakel Grade 12 Weld Central Jr/Sr High School Mr. Larry Jakel
- 2-04-004 **Oscar the Grouch's Fine Wine: The Conversion of Biomass to an Energy Intensive Fuel Source** Natalie Barnes Grade 11 Woodlin Undivided High School Mrs. Nancy Gettman
- 2-04-005 **Designing a MAV** Leota McDaniel Grade 9 Brush High School Mr. David Miner
- 2-04-006 **Soaring on the Wings of Shape** Jocelyn Henjum Grade 9 Palmer High School Mrs. Rata Clarke
- 2-04-007 **Applying Heflon to Windshields** Henry Berkowitz Grade 11 Cherry Creek High School Mr. Robert Fendall
- 2-04-008 **Thermal Degradation of H. T. S. Films** Justin Migacz Grade 9 Cherry Creek High School Mr. Peter Hanson





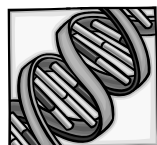
# CSEF Senior Division Finalists

## Environmental Sciences

- 2-02-004 **Water Quality** Josh Dember Grade 11 Rocky Mountain Hebrew Academy Mrs. Melanie Knowles
- 2-03-001 **Welcome to the Collembia Café** Milena Pastore Grade 10 Monte Vista High School Mr. Doug Steward
- 2-03-002 **Water: Let's Make It Perfectly Clear!** Katie Gelvin Grade 11 Liberty High School Mr. Renny James
- 2-03-003 **Microbial Decontamination of Soil** Mary Beard Grade 10 Walsh Jr/Sr High School Mr. Robert Lancaster
- 2-03-004 **Single Celled Spelunkers . . . The Microbes of Glenwood Caverns** Michelle Lyons Grade 12 Rifle High School Mr. Anthony Rossilli
- 2-03-005 **The Effects of Sodium Hydroxide on Euglena** Gage Osthoff Grade 9 Heath Junior High School Mr. Jerry Bauer
- 2-03-006 **Aerosol Black Carbon As A Possible Air Pollution Measurement** Ryan Schnell Grade 11 Fairview High School Dr. David Delene
- 2-03-007 **Desert Remediation: Selecting for Salt Tolerant Native Grasses** Shannon George Grade 10 Woodlin Undivided High School Mrs. Nancy Gettman

## Health & Behavioral Sciences

- 2-05-001 **Saw It, Wanted It, Bought It: The want makers; the world of marketing how they make you buy.** Michelle Keck Grade 10 Monte Vista High School Mr. Doug Steward
- 2-05-002 **Stopping Stroke Damage: A Quantitative Approach to Reduce Malondialdehyde with Ascorbic Acid** Keri Propst Grade 11 Merino Jr/Sr High School Mrs. Penny Propst
- 2-05-003 **Arthritic Articular Joints - Is the Glucosamine/Chondroitin Sulfate Combo For You? Phase II** Dusty Behrens Grade 12 Merino Jr/Sr High School Mrs. Penny Propst
- 2-05-004 **Bouncing: A Sensory Integration Technique For Children With Autism** Jennifer Green Grade 11 Merino Jr/Sr High School Mrs. Penny Propst
- 2-05-005 **Germ Warfare** Shere Brisendine Grade 12 Walsh Jr/Sr High School Mr. Robert Lancaster
- 2-05-006 **A "Bonding" Experience? Comparing the Effectiveness of Dental Bonding Materials** Jessami Claunch Grade 10 Walsh Jr/Sr High School Mr. Robert Lancaster
- 2-05-007 **Does visual imagery effect physiological functioning?** Douglas Humble Grade 9 Rifle High School Mr. Anthony Rossilli
- 2-05-008 **Diabetes and Sports** Jason Enewold Grade 9 Rifle High School Mr. Anthony Rossilli
- 2-05-009 **Is Your Refrigerator Safe?** Tiffany Schiffers Grade 9 Arriba/Flagler School Mr. Scott Grover
- 2-05-010 **Does TV violence and it's effect on the Hypothalamus make us more susceptible to violent acts?** Katie Smith Grade 10 Weld Central Jr/Sr High School Mr. Larry Jakel
- 2-05-011 **Effects of Vitamin E on the Infection of E.coli by Bacteriophage T4** Kristin Hoff Grade 9 Heath Junior High School Mr. Jerry Bauer
- 2-05-012 **Combating Resistance to Penicillim in Staphylococcus epidermis** Benjamin Staub Grade 10 Greeley West Senior High School Mrs. Cynthia Miller-Hughes
- 2-05-013 **Analysis on Human Birth Weight at Two Altitude Ranges in Boulder County** Jacob Taylor Grade 9 Nederland Jr/Sr High School Mr. Alberto Real
- 2-05-014 **Screening for Protease Inhibitors to Block HIV Maturation and Infectivity** Shalini Low-Nam Grade 12 Boulder High School Ms. Tamsen Meyer
- 2-05-015 **Turning Up the Beat** Teresa Bloemker Grade 12 Brush High School Mrs. Judy Florian
- 2-05-016 **Effects of St. John's Wort on Daphnia Heart Rate** Daniel Gardner Grade 11 Brush High School Mr. David Miner
- 2-05-17 **Identifying the Amount of Hg Leached from Silver Dental Amalgams** Heather Wright Grade 12 Akron High School Mrs. Nancy Gettman
- 2-05-18 **Herbal Teas: Bane or Palliative** Kelly Haller Grade 9 Woodlin Undivided High School Mrs. Nancy Gettman
- 2-05-019 **Toxic Shock Syndrome: The Chemical Connection** Anna Nussbaum Grade 10 Palmer High School Mr. Brad Bogard



# CSEF Senior Division Finalists

## Health & Behavioral Sciences Cont.

- 2-05-020 **Let There Be Light!** Megan McDavid Grade 9 Palmer High School Mrs. Rata Clarke
- 2-05-021 **While You Were Sleeping** Amber Cole Grade 9 Palmer High School Mrs. Rata Clarke
- 2-05-022 **Of Mice and Men: Amazing Tales** Brian Camley Grade 9 Palmer High School Mrs. Rata Clarke
- 2-05-023 **Dandelions: The Medicinal Weed?** Stephen Canham Grade 10 Cherry Creek High School Mr. Peter Hanson
- 2-05-024 **Do penicillin and enzyme treatments inhibit the growth of Lactobacillus acidophilus?** Sharona Hakimi Grade 9 Rocky Mountain Hebrew School Mrs. Ann Stanford
- 2-05-025 **Eye Dominance: Fixed or Variable** Gina Fasciani Grade 10 Christian Fellowship School Mr. Chris Powers
- 2-05-026 **The Role of Sensory Neuropeptides in Allergic Airway Inflammation** Preetraj Grewal Grade 12 Cherry Creek High School Mr. Robert Fendall

## Mathematics & Computer Sciences

- 2-06-001 **Can Losing Strategies Win? Parrondo's Paradox** Isabelle Zaugg Grade 11 Centauri High School Mrs. Michelle Salazar
- 2-06-002 **Object Recognition Through the Use of Linear Neural Networks** Will Helling Grade 12 Weld Central Jr/Sr High School Mr. Larry Jakel
- 2-06-003 **Orderly Ants** William Hickey Grade 12 Brush High School Mr. Don Gabriel
- 2-06-004 **Artificial Intelligence** Pascal Getreuer Grade 10 Palmer High School Ms. Betty Weide
- 2-06-005 **Neural Networks for Constellation Identification** Kevin Christopher Grade 11 Cherry Creek High School Mr. Peter Hanson
- 2-06-006 **The Higher Dimensions of Spheres** Nicholas Hall Grade 11 Cherry Creek High School Mr. Robert Fendall

## Physical Sciences

- 2-07-001 **Preventing Enzymatic Browning On Apples** Joslyn Trujillo Grade 11 Monte Vista High School Mr. Gary Wilkinson
- 2-07-002 **Physics of an Arrow** Andrea Fleming Grade 12 Del Norte High School Mrs. Kristin Emmons
- 2-07-003 **What's the pH of Your Water?** Brad Cook Grade 9 Walsh Jr/Sr High School Mr. Erroll Cook
- 2-07-004 **Gravity's Magnetic Personality: A Study of the Effects of Magnetism on Free Falling Objects.** Brian Cleary Grade 11 Fruita Monument High School Mr. Bill Schaefer
- 2-07-005 **Bloodstain Pattern Analysis Based Upon Trigonometric Functions** Patrick Snyder Grade 12 Central High School Mr. James Rexroad
- 2-07-006 **The Effects of Varying Wavelengths on Liesegang Rings** Krista Davies Grade 12 Brush High School Mr. David Miner
- 2-07-007 **Biodiesel: Fuel of the Future** Jonathan Davies Grade 12 Brush High School Mr. Don Gabriel
- 2-07-008 **Determining the Effects of Annealing on a Metallurgical Explosive Bond** Jessica Caver Grade 9 Woodlin Undivided High School Mrs. Nancy Gettman
- 2-07-009 **The Fabrication, Testing, and Analysis of a YBCO High Temperature Ceramic Superconductor** Caleb Creel Grade 12 Pagosa Springs High School Mr. Rick Schur
- 2-07-010 **Shake, Rattle, and Roll** Katherine Muterspaugh Grade 9 Palmer High School Mrs. Ann Bernhard
- 2-07-011 **Sticky Bubbles** Julia Coffin Grade 9 Palmer High School Mrs. Rata Clarke
- 2-07-012 **A Comparative Study of the Aerodynamic Efficiency of Newer & Older Body Styles of Pick-up Truck** Ben Grass Grade 9 Cherry Creek High School Mr. Stephen Lantz
- 2-07-013 **The Chemistry of Photography Using Salted Paper Prints** Burgandy Brown Grade 9 Skyview High School Mrs. Kristal Domenico
- 2-07-014 **Air Resistance on Model Rockets** Michael Graybill Grade 9 Christian Fellowship School Mr. Chris Powers
- 2-07-015 **The Effect of Exterior Structural Additions on Vehicles' Aerodynamic Drag** Samuel Huang Grade 9 Cherry Creek High School Mr. Peter Hanson





# CSEF Senior Division Finalists

## Team Project

- 2-09-001 **Brand of Performance** Kevin Duda, Tory Kerr  
Grade 10 Del Norte High School Mrs. Laura  
Stuemky
- 2-09-002 **Pollution In Groundwater Study II** Ely  
Walker, Eric Doner Grade 10 Walsh Jr/Sr High  
School Mr. Robert Lancaster
- 2-09-003 **The Physics of Cheating in Baseball**  
Katherine Divis, Carol Porter Grade 10 Genoa-  
Hugo School Mrs. Marguerite Yowell
- 2-09-004 **Don't Get Bac, Get Even!** Mitchell Terry,  
Sheena Solomon Grade 10 Genoa-Hugo School  
Mrs. Marguerite Yowell
- 2-09-005 **Fertilizing Plants to Death** Ashley Chapin,  
Kendal Bauman Grade 10 Pawnee High School  
Ms. Carrie Erickson
- 2-09-006 **The Effects of Marine Pollution on  
Polysiphonia** Markelle Gray, Erin Divins  
Grade 9 Heath Junior High School Mr. Jerry  
Bauer
- 2-09-007 **Blown Away: The Effects of Farming  
Techniques on Wind Erosion** Jason Smith, B J  
Knuppel, Leo Gracik Grade 10 Pawnee High  
School Ms. Carrie Erickson
- 2-09-008 **How Does Varying Amounts of Methanol  
Affect the Growth of Cabbage Plants?** Kaily  
Sirios, Kimberly Klausner Grade 10 Weld  
Central Jr/Sr High School Mr. Larry Jakel
- 2-09-010 **Gorillas in the Concrete Jungle** Laurel  
Stephens, Yonah Cohen Grade 12 Nederland  
Jr/Sr High School Mr. Alberto Real
- 2-09-009 **The Effects of Barometric Pressure on the  
Altitude of Model Rockets** Scotty Martell, Jake  
McDonald Grade 9 Weld Central Jr/Sr High  
School Mr. Al Sinnwell
- 2-09-011 **Random Orientation of Wires in Composites**  
Levi Klausner Grade 9, Luke Klausner Grade  
11 Woodlin Undivided High School Mrs.  
Nancy Gettman
- 2-09-012 **Does Color Disorientate Your Sense of Taste?**  
Cassie Kembel, Alicia McDaniel Grade 10  
Brush High School Mr. Don Gabriel
- 2-09-013 **The Colored Light at the End of the Tunnel**  
Jamie Johnson, Jessica McAlister Grade 10  
Palmer High School Mr. Brad Bogard
- 2-09-014 **E.coli On The Move** Michelle Seffrood,  
Lindsay Henjum Grade 10 Palmer High School  
Mr. Brad Bogard
- 2-09-015 **The Effectiveness of Anacharis in  
Phytoremediation of Aqueous Copper  
Pollution** Carys Horgan, Courtney Cudlip  
Grade 9 Cherry Creek High School Mr.  
Stephen Lantz



## Zoology

- 2-08-001 **Super Worm! Super fast that is!** Aftin  
Slingerland Grade 11 Monte Vista High School  
Mr. Gary Wilkinson
- 2-08-002 **Home for the Homeless Ladybug** Eric  
Oestman Grade 11 Wray High School Mr. Jay  
Clapper
- 2-08-003 **Do Hemolymph and Cell Suspension  
Decrease Paralysis in Munda Sexta?** Ranae  
Sessions Grade 11 Merino Jr/Sr High School  
Mrs. Penny Propst
- 2-08-004 **A Better-built Egg From the Feed Up** Trixie  
Lee Grade 10 Frenchman RE-3 Mrs. Linda  
Niccoli
- 2-08-005 **Turn Up the Heat on Mosquito Sex Ratio**  
Chelsea Hargrove Grade 11 Walsh Jr/Sr High  
School Mr. Robert Lancaster
- 2-08-006 **Oral Glutamine Supplementation on Plasma  
Glutamine and Tissue PGE<sub>2</sub> Levels in Dogs  
Experiencing Mucositis** Lauren Iske Grade 12  
Hi-Plains High School Mrs. Deanna Baker  
Schrock
- 2-08-007 **The Effects of Hyla cinera When  
Environmental Changes Occur** Arianna  
Stumbaugh Grade 9 Heath Junior High School  
Mr. Jerry Bauer
- 2-08-008 **The Effects of Kava Kava on Drosophila  
Melanogaster** Allison Infante Grade 9 Heath  
Junior High School Mr. Jerry Bauer
- 2-08-009 **"Got Milk"** Erin Shelton Grade 11 Weld  
Central Jr/Sr High School Mr. Larry Jakel
- 2-08-010 **Cancer Eye: Probing the Squamous Cell  
Carcinoma/Martix Metalloproeinase  
Connection** Amanda Baker Grade 12 Woodlin  
Undivided High School Mrs. Nancy Gettman
- 2-08-011 **Functional Analysis of ZALK-8, a Novel Type  
I T6F-B Receptor, in Zebrafish** Tejaswini  
More Grade 12 George Washington High  
School Dr. Jyoti More
- 2-08-012 **The Assessment of Different Mechanisms of  
Gene Transfer** Emily Hyatt Grade 9 Rocky  
Mountain Hebrew Academy Mrs. Melanie  
Knowles

## Alphabetical Listing of Finalists

Ashleigh Ackerman	1-09-001	Courtney Cudlip	2-09-015	Kayla Harris	1-02-002
Sarah Alley	1-09-002	Kyle Cureau	1-04-004	Crystal Hart	2-02-002
Laura Allis	2-01-005	Corinne D'Ippolito	1-07-014	Jo Jo Heersink	1-06-001
Kyle Atwater	1-08-008	Nathan Davidson	2-01-001	Will Helling	2-06-002
Brian Austin	1-09-004	Jonathan Davies	2-07-007	Lindsay Henjum	2-09-014
Amanda Baker	2-08-010	Krista Davies	2-07-006	Jocelyn Henjum	2-04-006
Natalie Barnes	2-04-004	Stephanie Davis	1-04-002	Katherine Hermann	1-03-009
Kendal Bauman	2-09-005	Keith Dean	1-07-006	Bradley Hertneky	1-01-006
Mary Beard	2-03-003	Josh Dember	2-02-004	William Hickey	2-06-003
Dusty Behrens	2-05-003	Janessa Dermer	1-05-004	Alyssa Hill	1-07-016
Henry Berkowitz	2-04-007	Danielle Diers	2-01-010	Brittney Hladky	1-01-011
Daniel Beylkin	1-06-008	Erin Divins	2-09-006	Kristin Hoff	2-05-011
Aanna Blacker	1-03-005	Katherine Divis	2-09-003	Carys Horgan	2-09-015
Sarah Blei	1-09-012	Eric Doner	2-09-002	Samuel Huang	2-07-015
Robin Blenden	1-07-003	Charisma Douglas	1-05-008	Douglas Humble	2-05-007
Teresa Bloemker	2-05-015	Tracy Douglass	1-07-015	Jillian Humphrey	1-01-007
Nathaniel Blood	1-07-019	Kevin Duda	2-09-001	Emily Hyatt	2-08-012
Lora Bobbitt	1-07-011	Wyatt Duea	1-08-006	Allison Infante	2-08-008
Max Bohana	1-07-022	Jason Enewold	2-05-008	Lucas Ingmire	2-01-006
David Bonomo	1-01-009	Gina Fasciani	2-05-025	Lauren Iske	2-08-006
Jim Bowie	1-03-003	Kelsea Ferrato	1-09-008	Aaron Jacobson	1-04-012
Hildur Boylston	1-08-007	Brody Ferris	1-07-018	Michael Jakel	2-04-003
Alison Bratrskousky	1-09-010	Trevor Filter	1-08-011	Jamie Johnson	2-09-013
Shere Brisendine	2-05-005	Andrea Fleming	2-07-002	Cody Jolly	1-09-005
Caleb Brown	1-05-003	Charley Frazee	1-09-002	Taylor Kandt	1-01-005
Burgandy Brown	2-07-013	Andrew Fritzler	1-03-001	Jamie Karp	1-04-005
Beth Buckner	2-01-003	Daniel Gardner	2-05-016	Joshua Karpel	1-06-009
Evan Burgess	2-02-003	Silas Gartin	1-08-001	Morissa Katz	1-08-010
Aaron Burgess	2-02-001	Katie Gelvin	2-03-002	Emily Kauvar	2-01-012
Kevin Burns	1-04-007	Shannon George	2-03-007	Michelle Keck	2-05-001
Andrea Buxton	1-05-007	Pascal Getreuer	2-06-004	Charlie Keenan	1-03-007
Ian Cain	1-07-012	Leo Gracik	2-09-007	Cassie Kembel	2-09-012
Brian Camley	2-05-022	Ben Grass	2-07-012	Tory Kerr	2-09-001
Jake Cammack	1-01-012	Cortney Grauberger	1-05-012	Ariana Kiken	1-05-022
Stephen Canham	2-05-023	Markelle Gray	2-09-006	Levi Klausner	2-09-011
Rachael Cannon	1-07-002	Michael Graybill	2-07-014	Luke Klausner	2-09-011
Jessica Caver	2-07-008	Jennifer Green	2-05-004	Kimberly Klausner	2-09-008
Ashley Chapin	2-09-005	Preetraj Grewal	2-05-026	Meredith Klee	1-07-020
Kevin Christopher	2-06-005	Brie Groves	1-01-016	Brad Klingenberg	1-06-004
Phillip Cisneros	1-04-021	Tyler Hainer	1-04-003	B J Knuppel	2-09-007
Jessami Claunch	2-05-006	Sharona Hakimi	2-05-024	Doug Krause	1-03-013
Brian Cleary	2-07-004	Nicholas Hall	2-06-006	Megan Kuretich	1-05-017
Julia Coffin	2-07-011	Kelly Haller	2-05-018	Jimmy Laff	1-06-011
Yonah Cohen	2-09-010	Matt Halsey	1-09-006	Jon Lafferty	1-04-006
Amber Cole	2-05-021	Irina Hardesty	1-01-020	Scott Lancaster	2-01-004
Jesus Contreras	1-03-002	Chelsea Hargrove	2-08-005	Thomas Lange	1-05-009
Brad Cook	2-07-003	Jessica Harms	1-01-013	Erika Langhart	1-09-008
Caleb Creel	2-07-009	Karla Harris	1-02-006	Drew Laurens	1-07-021

## Alphabetical Listing of Finalists

Shane Laverenz	1-07-008	Anna Nussbaum	2-05-019	Jessica Stroud	1-01-017
Amber Lawson	1-03-010	Eric Oestman	2-08-002	Arianna Stumbaugh	2-08-007
Trixie Lee	2-08-004	Darrick Ohr	1-09-011	David Sumpter	1-06-003
Korry Lewis	1-08-003	Gage Osthoff	2-03-005	Wendi Swan	2-01-008
Matthew Lira	1-08-005	Victoria Owens	1-04-011	Corey Swanson	1-01-010
Thomas Liu	2-02-005	Ryan Pace	1-09-006	Kyle Tate	2-04-001
Shalini Low-Nam	2-05-014	Milena Pastore	2-03-001	Kellyn Tate	1-02-003
Dan Lucero	1-06-012	Ryan Patterson	2-04-002	Peggy Tautz	1-09-012
Christena Lungstrum	1-01-014	Jeff Paulson	1-09-011	Jacob Taylor	2-05-013
Alex Lyddon	1-04-019	Beth Poeppelman	1-09-007	Beth Temple	1-09-009
Michelle Lyons	2-03-004	Carol Porter	2-09-003	Alex Terrien	1-09-004
Amber Mallory	1-09-010	Keri Propst	2-05-002	Mitchell Terry	2-09-004
Megan Malone	1-07-017	Allison Qubain	1-05-023	Melissa Timko	1-05-005
Brandi Mann	2-01-002	Kate Quick	1-03-011	Joslyn Trujillo	2-07-001
Lisa Markle	1-05-013	Becky Ravenkamp	1-07-007	Paul Valdez	2-02-006
Scotty Martell	2-09-009	Alana Riksheim	1-03-008	Samantha Vance	1-02-001
Joel Martin	1-09-005	Rhonda Robnett	1-01-002	Shelby Vick	1-05-014
Mitchell Martin	1-06-006	Emily Rosa	1-02-005	Megan Vogel	1-05-010
Ted Mast	1-04-008	Talia Rubin	1-02-008	Laura Wacker	2-01-009
Jessica McAlister	2-09-013	Katie Sabin	1-05-021	Ely Walker	2-09-002
Erin McAuliffe	1-05-002	Lupe Salazar	1-09-003	Nyssa Walker	1-06-014
Erin McCormack	1-09-009	Tiffany Schifferns	2-05-009	Amanda Walls	1-07-009
Alicia McDaniel	2-09-012	Nissa Schmidt	1-01-004	Jeremy Walter	1-04-018
Leota McDaniel	2-04-005	Rachel Schmucker	1-05-011	Collin Weber	1-01-003
Megan McDavid	2-05-020	Ryan Schnell	2-03-006	Kevin Weber	1-04-017
Jake McDonald	2-09-009	Rachel Schur	1-05-015	Alexander West	1-01-019
Holly McGuire	2-01-007	Emilie Schur	1-05-016	Rebecca Whitlock	1-07-004
Anne McLaughlin	1-04-010	Haley Schwarz	1-03-004	Ryan Whitnah	1-06-013
Amber McVicker	1-05-006	Paul Scott	1-06-010	Walker Williams	1-05-019
Kalen Meine	1-03-012	Michelle Seffrood	2-09-014	Brandon Williams	1-03-006
Rebecca Metherd	1-08-009	Pavan Sekhar	2-01-011	Steve Wilson	1-04-013
Justin Migacz	2-04-008	Ranae Sessions	2-08-003	Samantha Wood	1-06-002
Trae Miller	1-08-002	Lewis Shaffer	1-07-001	Craig Wright	1-04-014
Melissa Mills	1-09-003	Karyl Shawcroft	1-04-001	Heather Wright	2-05-017
Alegria Mitson-Salazar	1-01-001	Jared Sheldon	1-07-005	Zack Yearous	1-04-015
Tejaswini More	2-08-011	Erin Shelton	2-08-009	Michael York	1-01-008
Jeremy Morris	1-04-009	Adam Sidman	1-04-016	Isabelle Zaugg	2-06-001
Edward Munsell	1-02-004	Colin Sieg	1-04-020	Brittany Zuech	1-09-001
Katherine Muterspaugh	2-07-010	Kaily Sirios	2-09-008	Todd Zurlinden	1-02-007
Meghann Myers	1-05-001	Aftin Slingerland	2-08-001		
Ashley Nakagawa	1-09-007	Lauren Smith	1-01-018		
Davide Navarrete	1-07-010	Jason Smith	2-09-007		
Lauren Neher	1-05-018	Katie Smith	2-05-010		
Megan Neldner	1-08-004	Alexandra Sneed	1-01-015		
Kira Newman	1-05-020	Patrick Snyder	2-07-005		
Andrea Nickel	1-06-005	Sheena Solomon	2-09-004		
Matt Nobles	1-06-007	Benjamin Staub	2-05-012		
James Norton	1-07-013	Laurel Stephens	2-09-010		



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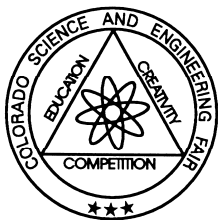
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