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### 45TH ANNUAL COLORADO SCIENCE AND ENGINEERING FAIR

Lory Student Center | Fair Headquarters: 2nd Floor Lobby | Colorado State University

#### THURSDAY, APRIL 13, 2000

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 - 9:00 AM</td>
<td>SRC and Display &amp; Safety Committee Meeting: Main Ballroom</td>
</tr>
<tr>
<td>9:00 - 11:00 AM</td>
<td><strong>FINALIST CHECK-IN:</strong> Exhibit Areas Open for Set-Up. Finalists MUST stay with exhibit until Exhibit Safety Check-Off Sheet is signed by a Display &amp; Safety Committee Member. Finalists must be out of the Exhibit Areas by noon.</td>
</tr>
<tr>
<td>10:30 - 11:00 AM</td>
<td>Grand Awards Judge Captain's Briefing: Cherokee Park Room</td>
</tr>
<tr>
<td>11:00 - 11:30 AM</td>
<td>Grand Awards Judge's Briefing: Cherokee Park Room</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Judge's Luncheon: Cherokee Park Room</td>
</tr>
<tr>
<td>12:30 - 1:00 PM</td>
<td>Special Awards Judge's Briefing: Cherokee Park Room</td>
</tr>
<tr>
<td>12:00 - 5:00 PM</td>
<td>JUDGING</td>
</tr>
<tr>
<td>12:00 - 1:00 PM</td>
<td>Grand Awards Judges only in exhibit areas.</td>
</tr>
<tr>
<td>1:00 - 2:00 PM</td>
<td>Special Awards Judges may enter exhibit areas. Judges only in exhibit areas.</td>
</tr>
<tr>
<td>2:00 - 5:00 PM</td>
<td>Students must be at their exhibits for interviews.</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>EXHIBIT AREAS ARE LOCKED: Final Regular Judging continues</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:45 - 2:00 PM</td>
<td><strong>Finalist Orientation Meeting:</strong> East Ballroom -- Mandatory for all exhibitors.</td>
</tr>
<tr>
<td>2:00 - 5:00 PM</td>
<td>Parent/Teacher/Sponsor's Lounge: Refreshments in Room 203/205</td>
</tr>
<tr>
<td>2:00 - 4:00 PM</td>
<td>Regional Fair Director's Meeting: Room 224/226</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>All ISEF Adult Delegates Meeting: Room 224/226 to get pins</td>
</tr>
</tbody>
</table>

#### FRIDAY, APRIL 14, 2000

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM - 5:00 PM</td>
<td>STATE FAIR OPEN TO PUBLIC: West/Middle &amp; North Ballrooms</td>
</tr>
<tr>
<td>9:00 - 9:50 AM</td>
<td>Guest Speaker: Dr. Eric Cornell</td>
</tr>
<tr>
<td>9:40 AM - 4:00 PM</td>
<td>Tours: Students, their sponsors, family, and judges are invited to participate in the tours by pre-registering on Thursday morning.</td>
</tr>
<tr>
<td>7:00 PM</td>
<td><strong>AWARDS CEREMONY:</strong> Middle/East Ballrooms</td>
</tr>
</tbody>
</table>

#### SATURDAY, APRIL 15, 2000

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 9:00 AM</td>
<td>Intel/ISEF trip winners and teachers must meet with CSEF Director to go over paperwork and travel arrangements: 2nd Floor Lobby LSC</td>
</tr>
<tr>
<td>9:00 - 11:00 AM</td>
<td><strong>STATE FAIR OPEN TO PUBLIC:</strong> Finalists must be at their exhibits.</td>
</tr>
<tr>
<td>9:00 - 11:00 AM</td>
<td>Advisory Council Meeting: Room 203/205</td>
</tr>
<tr>
<td>11:00 AM - 12:00 PM</td>
<td><strong>PIZZA PARTY &amp; FINALIST DOOR PRIZES:</strong> Exhibit Halls Sponsored by Old Chicago for finalists, their sponsors and families. Finalists must be present to win door prizes!</td>
</tr>
<tr>
<td>12:30 - 2:00 PM</td>
<td>CSEF Board of Director's Meeting: Room 203/205</td>
</tr>
<tr>
<td>12:00 - 2:00 PM</td>
<td>Exhibit Dismantling: Everything must be removed by 3:00 PM.</td>
</tr>
</tbody>
</table>


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

- 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 45th 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, governamental 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 successful 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
US West

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

OTHER CONTRIBUTORS
A & L Coors
Lucy Adams
COBE Laboratories, Inc.
Dan & Carol Blake
Colorado Association of Soil Conservation Districts
CSU – Center for Science, Mathematics & Technology Education
The Cooperative Institute for Research in the Atmosphere
Gina Holland
Kaiser-Hill Company
King Soopers
Laurie Precision Technology, Inc.
Rocky Mountain Chapter of ASM International
Public Service Company of Colorado
Sigma Xi, CSU Chapter
URS Greiner Woodward Clyde
Utility Engineering Corporation
Dr. Eric Cornell
CSEF 2000 Guest Speaker

Dr. Eric Cornell received his B.S. from Stanford University in 1985, and his Ph.D. from MIT in 1990. His doctoral research, with Dave Pritchard, trapped molecular ions. Dr. Cornell went to JILA, and Professor Adjoint in the Physics Department of the University of Colorado. Dr. Cornell received the Stratton Award from NIST 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.

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.
### Morning Tours

<table>
<thead>
<tr>
<th>Tour</th>
<th>Cost</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A Heska Corporation</td>
<td>$1.00</td>
<td>10</td>
</tr>
</tbody>
</table>
| 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 |
| 3A CSU – Anatomy/Physiology Lab | $0.50 | 20 |
| (Senior Division Student Tour ONLY!)  
Meets at 10:00 AM in Room 217 LSC  
Tour is from 10:15 AM – 11:00 AM |
| 3B CSU – Anatomy/Physiology Lab | $0.50 | 20 |
| Meets at 11:00 AM in Room 205 LSC  
Tour is from 11:15 AM – 12:00 PM |
| 4A CSU Electron Microscopy Center | $0.50 | 10 |
| Meets at 10:15 AM in Room 203 LSC  
Tour is from 10:30 AM – 11:30 AM |
| 5A National Seed Storage Laboratory | $0.50 | 15 |
| Meets at 10:15 AM in Room 217 LSC  
Tour is from 10:30 AM – 12:00 PM |
| 6A CSU – College of Engineering | $0.50 | 20 |
| Meets at 10:30 AM in Room 203 LSC  
Tour is from 10:45 AM – 11:45 AM |
| 7A Atrix Laboratories | $1.00 | 14 |
| 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 |
| 8A CIRA | $1.00 | 14 |
| (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 |
| 9A Little Shop of Physics | $0.50 | 15 |
| Meets at 10:30 AM in Room 205 LSC  
Tour is from 10:45 AM – 12:00 PM |
| 10A CSU Engineering Research Center | $1.00 | 14 |
| 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 |
| 11A Forensic Sciences | $0.50 | 15 |
| Meets at 10:30 AM in Room 217 LSC  
Presentation is from 10:45 AM – 12:00 PM |

### Afternoon Tours

<table>
<thead>
<tr>
<th>Tour</th>
<th>Cost</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B Heska Corporation</td>
<td>$1.00</td>
<td>10</td>
</tr>
</tbody>
</table>
| 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 |
| 4B CSU – Electron Microscopy Center | $0.50 | 10 |
| Meets at 1:45 PM in Room 203 LSC  
Tour is from 2:00 PM – 3:00 PM |
| 5B National Seed Storage Laboratory | $0.50 | 15 |
| Meets at 1:30 PM in Room 217 LSC  
Tour is from 1:45 PM – 3:15 PM |
| 6B CSU – College of Engineering | $0.50 | 20 |
| Meets at 1:30 PM in Room 203 LSC  
Tour is from 1:45 PM – 2:45 PM |
| 7B Atrix Laboratories | $1.00 | 14 |
| 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 |
| 8B CIRA | $1.00 | 14 |
| (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 |
| 9B Little Shop of Physics | $0.50 | 15 |
| Meets at 1:30 PM in Room 205 LSC  
Tour is from 1:45 PM – 3:00 PM |
| 10B CSU Engineering Research Center | $1.00 | 14 |
| 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 |
| 11A Forensic Sciences | $0.50 | 15 |
| Meets at 1:30 PM in Room 217 LSC  
Presentation is from 10:45 AM – 12:00 PM |

### 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 Zoo 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!

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

Thursday:
Set-Up and Judging Day

National Seed Storage Laboratory

Friday:

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.

College of Engineering - CSU

Saturday:
Pizza Party

1999 Top of Fair Winners:
Natalia Toro
Katie Propst
Lindsey Mitchell
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, Rocky Mountain States Section
- American Association of University Women
- American Institute of Chemical Engineers, Rocky Mountain Section
- American Meteorological Society – Denver/Boulder Chapter
- American Vacuum Society, Rocky Mountain Chapter
- American Welding Society, Colorado Section
- Analex Corporation
- ASM International, Rocky Mountain Chapter
- Association for Women Geoscientists, Denver Chapter
- Colorado Association of Sciences Teachers
- Colorado Biology Teacher’s Association
- Colorado Foundation for Agriculture – “Agriculture in the Classroom”
- Colorado Geological Survey
- Colorado Medical Society
- Colorado Mineral Society
- Colorado Mycological Society
- Colorado Psychological Association
- Colorado Scientific Society
- Colorado Section of the American Chemical Society
- Colorado State University: 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
- Conservation International
- Kodak Colorado Division
- Fort Collins Soil Conservation District
- Hach Scientific Foundation
- Herbert Hoover Presidential Library Association
- Institute of Arctic and Alpine Research, University of Colorado
- Intel Excellence in Computer Science
- Intel Excellence in Environmental Health and Safety
- Lockheed Martin Astronautics
- NACE International
- National Council of Teachers of Mathematics
- National Geophysical Data Center
- National Renewable Energy Laboratory
- Rocky Mountain Association of Geologists
- Rocky Mountain Bioengineering Symposium
- Rocky Mountain Inventors and Entrepreneurs Congress
- Rocky Mountain Optical Society
- Rocky Mountain Section of the American Water Works Association
- Rocky Mountain Water Environment Association
- Society for In Vitro Biology
- Society of Manufacturing Engineers
- Society of Women Engineers – Rocky Mountain Section
- Soil and Water Conservation Society, Colorado Chapter
- Space Imaging

Grand Awards
Grand Awards Announcer .................................................................................................................................................. Ms. Sue Refner
Grand Awards Presenter ................................................................................................................................................ Mr. Harvey Teyler

- Botany
- Earth & Space Sciences
- Engineering
- Environmental Sciences

Health & Behavioral Sciences
Mathematics & Computer Sciences
Physical 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.

James E. Allison, B.S.
Computer Sciences
Lockheed Martin

David L. Anselmi, B.S.
Electrical Engineering

Dr. Robert T. Anselmi, Ph.D.
Chemistry
Lockheed Martin (Retired)

Larry Armsfield, B.S.
Physics/Mathematics
Laerie Precision Technology, Inc.

Samuel R. Bartlett, B.S.
Geology
USDI Bureau of Reclamation

Michael Bemski, B.A.
Chemistry
Lockheed Martin (Retired)

Larry Armfield, B.S.
Physics/Mathematics
Laerie Precision Technology, Inc.

Samuel R. Bartlett, B.S.
Geology
USDI Bureau of Reclamation

Stephen Bernard, B.S.
Engineering/EH&S
AT&T

Veronica M. Bierbaum, Ph.D.
Physical Chemistry
University of Colorado

James Boaz, B.S.
Geology
Self-employed

John W. Bollinger, P.E., B.S.
Architectural Engineering
Boulder Valley Public Schools

Paul J. Bradley, B.S.
Engineering
Lockheed Martin

Marla Broussard, M.S.
Geology
Rocky Mountain Remediation Services, LLC

Brian Burnett, B.S.
Botany

Dewayne A. Campbell, Ph.D., P.E.
Civil Engineering
USDI Bureau of Reclamation

Chris A. Cantrell, Ph.D.
Chemistry
National Center for Atmospheric Research

Dr. Russell B. Chadwick, Ph.D.
Electrical Engineering
NOAA

J. Wey Chen, Ph.D.
Computer Sciences
University of Northern Colorado

John Chermak, Ph.D.
Geology/Chemistry
Shepherd Miller, Inc.

Paul Choate, M.S.
Mechanical Engineering
Alcoa Packaging Machinery

Douglas R. Cook, M.S.
Engineering Systems/Physics
TRW, Inc.

Bonnie Crysdale, M.S.
Geology
Self-employed

Doug Curran-Everett, Ph.D.
Physiology
University of Colorado Health Sciences Center

Christine Daigle, D.V.M.
Veterinary Medicine
Aspenwood Animal Hospital

Tim Davis, M.S.
Electrical Engineering
Aspenlogic

Jerry Duggan, M.S.
Mathematics/Computer Sciences
Hewlett-Packard

Mike Duncan, M.S.
Electrical Engineering
Ball Aerospace

Carl Edstrom, M.S.
Engineering/Industrial Management
CME Consulting

Dean Ehn, M.S.
Chemical Engineering/CIS
IBM (Retired)

Robert E. Eichweg, M.S.
Biochemistry/Civil Engineering
Rocky Mountain Remediation Services, LLC

Karl Fleischer, M.E.
Engineering Systems
ALCOA

Kay Force, B.S.
Civil Engineering
EDAW

Karl Ford, Ph.D.
Environmental Health
Bureau of Land Management

Trudy Forsyth, M.S.
Mechanical Engineering
NREL

Charles Fraser, M.D.
Medicine
Retired

Ernest C. Garcia, M.S.
Chemical/Environmental Engineering
Rocky Mountain Remediation Services, LLC

Trudy Germann, B.S.Ed., B.S.
Civil Engineering
USDI Bureau of Reclamation (Retired)

Ronald Geurts, B.S.
Civil Engineering
Farnsworth Polk

Rich Gianzero, A.S.
Machining
Safe Sites of Colorado

Janet Gibson, M.S.
Applied Math/Electrical Engineering
NOAA

Donald L. Groves, B.S.
Mechanical Engineering
Retired

Paula Guenther-Gloss, M.S.
Zoology/Water Resources
USDA Forest Service

Jill Hamilton, B.S.
Combined Science
Colorado State University

Thomas A. Harp, M.S.
Geology/Engineering
Terracon Companies, Inc.

Christine Hawley, M.S.
Environmental Engineering
International Engineering

Scot Heath, P.E., M.S.
Electrical Engineering
Hewlett-Packard

Mark Hennesy, M.B.A., B.S.
Mechanical Engineering
Public Service Company of Colorado

Steve Hiebert, B.S.
Fisheries Biology
USDI Bureau of Reclamation

Gina Holland, P.E., B.S.
Electrical Engineering
Public Service Company of Colorado

Harl Hoppler, M.S.
Geology
LSI Logic, Inc.

William H. Hoyt, Ph.D.
Geology
University of Northern Colorado

Joel Hutcheson, Ph.D.
Entomology
Colorado State University

John B. Ivey, M.S.
Geology
Amuedo and Ivey, Inc.

James Jarvis, M.S.
Nuclear Medicine
Rocky Mountain Remediation Services, LLC

James L. John, M.S.
Geology
John Water Consultants

Adrian Jimenez, B.S.
Mechanical Engineering
Lockheed Martin

Don Jones, M.B.A., B.S.
Mechanical Engineering
IBM

Michelle L. Jones, Ph.D.
Biochemistry/Horticulture
Colorado State University

Beth Kelsic, P.E., M.S.
Mechanical Engineering
Ball Aerospace
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<th>Name</th>
<th>Degree</th>
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## 2000 CSEF Special Award Organizations and Judges

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<td>Dr. Edmon Adams, Dr. Rob Benson, Dr. Guy Farish, Dr. Larry Sweum</td>
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<td>Air and Waste Management Association</td>
<td>Greg Nelson, Sims Duggins, Patrick McKean</td>
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<td>American Association of University Women</td>
<td>Mary Shultz, Dr. Lisa Maas Martin</td>
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<td>American Dental Association</td>
<td>Natalie Van Tyne</td>
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<td>Denver Chapter</td>
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<td>Colorado Association of Science Teachers</td>
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<td>Colorado Foundation for Agriculture</td>
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<td>Agriculture in the Classroom</td>
<td>Karen Berry, Jim Cappa, Chris Carroll, Dave Noe, Jim Soule</td>
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<td>Colorado Geological Survey</td>
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<td>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</td>
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<td>CAPT Bill Emslie, USNR, CAPT Jeff McNair, USNR, CAPT Dorthy Nazarens, FTI David Wartman, USN, ET2(SS) Adam Brunin, MM1 Robert Issa, USN</td>
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<td>Enrique Alvarez, Stephanie Atencio, Aaron Spalding, Sean Bennett</td>
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<td>Yale University Science and Engineering Association</td>
<td>Atul Goel, Jason McDonough, Billie Klaus, Helen Coffey</td>
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2000 CSEF Honor Roll
Schools, Teachers, and Adult Sponsors Supporting the 2000 Finalists!

Akron High School
Nancy Gettman

Alta Vista Charter School
Timothy Matz

Arriba/Flagler School
Scott Grover

Bayfield Middle School
Victor Pennell

Berry Creek Middle School
Kim Water

Boltz Junior High School
Brendan Kmiec

Bookcliff Middle School
Randall Dean

Boulder High School
Tamsen Meyer

Alta Vista Charter School
Timothy Main

Arriba/Flagler School
Scott Grover

Bayfield Middle School
Victor Pennell

Berry Creek Middle School
Kim Water

Boltz Junior High School
Brendan Kmiec

Bookcliff Middle School
Randall Dean

Boulder High School
Tamsen Meyer

Brentwood Middle School
Christina Kaufman
Keith Trusler

Brush High School
Judy Florian
Don Gabriel
David Miner

Burkbank Middle School
Daniel Tomlin

Burlington Middle School
Cherie Wyatt

Campus Middle School
Marianne Wood

Centauri Middle School
Paula Gilmore
Cheri Jones

Central High School
John McConnell
James Rexroad

Challenge School
Jeffrey Poland

Challenger Middle School
Kenneth Percival

Cherry Creek High School
Robert Fendall
Peter Hanson
Stephen Lantz

Christian Fellowship School
Chris Powers

Community Christian School
Cheryl Keelan

Cotopaxi Consolidated Schools
Charlie Rahe

Del Norte High School
Kristin Emmons
Laura Stuecky

Dolores Middle School
Kristin Shurr

Euclid Middle School
Marilyn Mestnik

Fairview High School
David Delene
Kristin Donley
Elisa Passarelli

Flagler Public School
Allan Bell

Fort Lupton Middle School
Michael Swanson

Fort Morgan Middle School
Julie Guynes

Frenchman RE-3
Linda Niccoli

Fruita Monument High School
Bill Schaefer

Gardner School
Kevin Crossen

Genoa-Hugo Middle School
William Mallory

Genoa-Hugo High School
Marguerite Yowell

George Washington High School
Brad Blank

Goddard Middle School
Jean Kavanagh

Heath Junior High School
Jerry Bauer

Hi-Plains High School
Deanna Baker Schrock

Holy Family Catholic School
Arlene Crawford

Hatchie Middle School
Donald Spor

Ignacio Junior High School
Danny Jaques

Jefferson Academy
Niloufar Salehi

Kim School
Nancy Broce

La Junta Middle School
Joel Gray

La Veta Middle School
Dan Smith

Lamar Middle School
Teri Lira

Liberty Common School
Larry Sarner

Liberty High School
Renny James

Mackintosh Academy
William Meine
Maggie Pavlik

Merino Jr/Sr High School
Penny Propst

Miller Middle School
Robert Nuhn

Monte Vista High School
Doug Steward
Gary Wilkinson

Monte Vista Middle School
Antonio Lucero
John Myers
Carol Shaffer

Mount Garfield Middle School
Brenda Austin

Mountain Ridge Middle School
Kay LaBella
Regina Miller

Nederdale Jr/Sr High School
Alberto Real

New Vista High School
Lisa Feldman

North Middle School
Greg Bushy
Martha Tobey

Orchard Middle School
Donlad Ray Bavor, Jr.

Pagosa Springs High School
Rick Schar

Pagosa Springs Intermediate School
Diana Hill

Pagosa Springs Junior High School
Cindy Nobles

Palmer High School
Ann Bemhard
Brad Bogard
Rata Clarke
Betty Weide

Pawnee High School
Carrie Erikson

Platt Middle School
Emily Burkett

Quest School of Choice
Patricia Walls

Redlands Middle School
Todd Henderson

Ricks Center for Gifted Children
Patricia Emery
Larry Hillman

Rifle High School
Anthony Rossilli

Rocky Mountain Hebrew Academy
Melanie Knowles

Sandre de Cristo Middle School
Debra Davis

Sargent Junior High School
Terri Rae Paulson

Skyview High School
Kristal Domenico

Springfield Jr/Sr High School
Tamara Piper
St. Columba
Jeff Kla zura

St. John the Evangelist Middle School
Laura Ward

St. Mary’s of Littleton
Amy Brady

Summit Middle School
Stephanie Donaton
Sharon Sikora

Swink School
Kent Lusk

Trinidad Junior High School
Robin Conner

Trinity Lutheran School
Sharon Kembel

Walsh Jr/Sr High School
Tami Alley
Erroll Cook
Dale Kandt
Robert Lancaster
Steve Mills
Cathy Jo Tate
Kim Tate

Weld Central Jr/Sr High School
Larry Jaks

West Jefferson Middle School
Laura Correll
Margo Lopenkske
Ronald West

Willow Elementary School
Jennifer Renner

Wiggins Jr/Sr High School
Mary Linton

Windsor Middle School
Tom Osborne

Woodlin Undivided High School
Nancy Gettman

Wray High School
Jay Clapper
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

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<th>Category</th>
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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).

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 H₂O 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
### 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

1-03-0011 **Recycling Water Using Aquatic Plants**  
Kate Quick  Grade 8  North Middle School  Ms. Martha Tobey

### 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 Graubeger  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

Challenge School  Mr. Jeffrey Poland

1-06-014  **Playing by the Numbers**  Nyssa Walker  Grade 8  
Community Christian School  Ms. Cheryl Keeland

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 H2O**  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

1-07-016  **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 Ppeppelman 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 Bratsrousksy 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 Asprin 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 Cytospera 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  Centennial 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

2-04-005 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 Schifferns  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
- **2-05-017** Identifying the Amount of Hg Leached from Silver Dental Amalgams  Heather Wright  Grade 12  Akron High School  Mrs. Nancy Gettman
- **2-05-018** 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
2-09-012 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 Phytoxemediation 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 Ostman  Grade 11  Wray High School  Mr. Jay Clapper
2-08-003 Do Hemolymph and Cell Suspension Decrease Paralysis in Munduca 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 PGE2 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
<table>
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<td>Drew Laurens  1-07-021</td>
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Alphabetical Listing of Finalists

Shane Laverenz 1-07-008
Amber Lawson 1-03-010
Trixie Lee 2-08-004
Korry Lewis 1-08-003
Matthew Lira 1-08-005
Thomas Liu 2-02-005
Shalini Low-Nam 2-05-014
Dan Lucero 1-06-012
Christena Lungstrum 1-01-014
Alex Lyddon 1-04-019
Michelle Lyons 2-03-004
Amber Mallory 1-09-010
Megan Malone 1-07-017
Brandy Mann 2-01-002
Lisa Markle 1-05-013
Scotty Martell 2-09-009
Joel Martin 1-09-005
Mitchell Martin 1-06-006
Ted Mast 1-04-008
Jessica McAlister 2-09-013
Erin McAuiffe 1-05-002
Erin McCormack 1-09-009
Alicia McDaniel 2-09-012
Leota McDaniel 2-04-005
Megan McDavid 2-05-020
Jake McDonald 2-09-009
Holly McGuire 2-01-007
Anne McLaughlin 1-04-010
Amber McVicker 1-05-006
Kalen Meine 1-03-012
Rebecca Metherd 1-08-009
Justin Migacz 2-04-008
Trae Miller 1-08-002
Melissa Mills 1-09-003
Alegría Mitson-Salazar 1-01-001
Tejaswini More 2-08-011
Jeremy Morris 1-04-009
Edward Munsell 1-02-004
Katherine Muterspaugh 2-07-010
Meghann Myers 1-05-001
Ashley Nakagawa 1-09-007
Davide Navarrete 1-07-010
Lauren Neher 1-05-018
Megan Neldner 1-08-004
Kira Newman 1-05-020
Andrea Nickel 1-06-005
Matt Nobles 1-06-007
James Norton 1-07-013
Anna Nussbaum 2-05-019
Eric Oestman 2-08-002
Darrick Ohr 1-09-011
Gage Osthoff 2-03-005
Victoria Owens 1-04-011
Ryan Pace 1-09-006
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Ryan Patterson 2-04-002
Jeff Paulson 1-09-011
Beth Poepelman 1-09-007
Carol Porter 2-09-003
Keri Propst 2-05-002
Allison Qubain 1-05-023
Kate Quick 1-03-011
Becky Ravenkamp 1-07-007
Alana Rikshiem 1-03-008
Rhonda Robnett 1-01-002
Emily Rosa 1-02-005
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Katie Sabin 1-05-021
Lupe Salazar 1-09-003
Tiffany Schifferns 2-05-009
Nissa Schmidt 1-01-004
Rachel Schmucker 1-05-011
Ryan Schnell 2-03-006
Rachel Schur 1-05-015
Emilie Schur 1-05-016
Haley Schwarz 1-03-004
Paul Scott 1-06-010
Michelle Seffrood 2-09-014
Pavan Sekhar 2-01-011
Ranae Sessions 2-08-003
Lewis Shaffer 1-07-001
Karyl Shawcroft 1-04-001
Jared Shelden 1-07-005
Erin Shelton 2-08-009
Adam Siddman 1-04-016
Colin Sieg 1-04-020
Kaily Sirios 2-09-008
Aftin Slingerland 2-08-001
Lauren Smith 1-01-018
Jason Smith 2-09-007
Katie Smith 2-05-010
Alexandra Snead 1-01-015
Patrick Snyder 2-07-005
Sheena Solomon 2-09-004
Benjamin Staub 2-05-012
Laurel Stephens 2-09-010
Jessica Stroud 1-01-017
Arianna Stumbaugh 2-08-007
David Sumpter 1-06-003
Wendi Swan 2-01-008
Corey Swanson 1-01-010
Kyle Tate 2-04-001
Kellyn Tate 1-02-003
Peggy Taultz 1-09-012
Jacob Taylor 2-05-013
Beth Temple 1-09-009
Alex Terrien 1-09-004
Mitchell Terry 2-09-004
Melissa Timko 1-05-005
Joslyn Trujillo 2-07-001
Paul Valdez 2-02-006
Samantha Vance 1-02-001
Shelby Vick 1-05-014
Megan Vogel 1-05-010
Laura Wacker 2-01-009
Ely Walker 2-09-002
Nyssa Walker 1-06-014
Amanda Walls 1-07-009
Jeremy Walter 1-04-018
Collin Weber 1-01-003
Kevin Weber 1-04-017
Alexander West 1-01-019
Rebecca Whitlock 1-07-004
Ryan Whitnah 1-06-013
Walker Williams 1-05-019
Brandon Williams 1-03-006
Steve Wilson 1-04-013
Samantha Wood 1-06-002
Craig Wright 1-04-014
Heather Wright 2-05-017
Zack Yearous 1-04-015
Michael York 1-01-008
Isabelle Zaugg 2-06-001
Brittany Zuech 1-09-001
Todd Zurlinden 1-02-007
2000 CSEF Advisory Council
The CSEF Advisory Council includes all Regional Fair Directors, the CSSF, Inc. Board of Directors and many volunteers.

<table>
<thead>
<tr>
<th>Colorado State Science Fair, Inc. Executive Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
</tr>
<tr>
<td>Mr. Harvey Teyler</td>
</tr>
<tr>
<td>Vice President</td>
</tr>
<tr>
<td>Ms. Gina Holland</td>
</tr>
<tr>
<td>Treasurer</td>
</tr>
<tr>
<td>Ms. Sue Refner</td>
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<tr>
<td>Secretary</td>
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<tr>
<td>Mr. David Holm</td>
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<tr>
<td>Recording Secretary</td>
</tr>
<tr>
<td>Ms. Lucy Adams</td>
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<tr>
<td>CSEF Director</td>
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<tr>
<td>Ms. Courtney Butler</td>
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<table>
<thead>
<tr>
<th>Board of Directors</th>
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<tbody>
<tr>
<td>Anheuser-Busch, Inc.</td>
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<tr>
<td>Skip Beck</td>
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<tr>
<td>Colorado Dental Association</td>
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<tr>
<td>Dolly Morrow</td>
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<tr>
<td>Bob Morrow</td>
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<tr>
<td>Colorado Engineering Council</td>
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<tr>
<td>Gina Holland</td>
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<tr>
<td>Paul Cheng</td>
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<tr>
<td>Colorado Medical Society</td>
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<tr>
<td>John Farrington</td>
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<tr>
<td>William Pierson</td>
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<tr>
<td>Colorado State University</td>
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<tr>
<td>Daniel Binkley</td>
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<tr>
<td>Tom Snieder</td>
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<tr>
<td>Kodak Colorado Division</td>
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<tr>
<td>Sue Refner</td>
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<tr>
<td>IEEE/LEOS</td>
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<tr>
<td>Gary Wilson</td>
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<tr>
<td>Lockheed Martin Astronautics</td>
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<tr>
<td>Paul Cheng</td>
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<tr>
<td>LSI Logic</td>
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<tr>
<td>Don Kirkland</td>
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<tr>
<td>NERL-Midwest Research Institute</td>
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<tr>
<td>Dan Blake</td>
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<tr>
<td>Bonnie Hames</td>
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<tr>
<td>Rocky Mountain Remediation Services</td>
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<tr>
<td>Ed Brody</td>
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<tr>
<td>Asa Reed</td>
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<tr>
<td>San Luis Valley Regional Science Fair</td>
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<tr>
<td>Harvey Teyler</td>
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<td>David Holm</td>
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<tr>
<td>Storage Tek</td>
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<tr>
<td>Dan McCamman</td>
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<tr>
<td>University of Colorado, Dept. of Engineering &amp; Applied Science</td>
</tr>
<tr>
<td>Sherry Snyder</td>
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<tr>
<td>US Department of Commerce/ITS</td>
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<tr>
<td>Amy Weich</td>
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<td>Dave Lovering</td>
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<tr>
<td>Al Bedard</td>
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<tr>
<td>David Clark</td>
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<td>US West</td>
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<tr>
<td>Radford Walker</td>
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<tr>
<th>Past CSEF Directors</th>
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<tbody>
<tr>
<td>*Charles Bragaw</td>
</tr>
<tr>
<td>1956-1967</td>
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<tr>
<td>Lloyd Walker</td>
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<tr>
<td>1986-1988</td>
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<tr>
<td>*Calvin Fisher</td>
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<tr>
<td>1968-1974</td>
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<tr>
<td>Connie Vader-Lindholm</td>
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<tr>
<td>1989-1990</td>
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<tr>
<td>*Sam Shushan</td>
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<tr>
<td>1975-1977</td>
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<tr>
<td>Lynn Butler</td>
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<tr>
<td>1991-1992</td>
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<tr>
<td>Gordon Moore</td>
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<td>1978-1979</td>
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<tr>
<td>Kate Taylor</td>
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<tr>
<td>1992-1994</td>
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<tr>
<td>*Russell B. Stoner</td>
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<td>1979-1981</td>
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<tr>
<td>Christal McDougall</td>
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<tr>
<td>1994-1996</td>
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<tr>
<td>Virgil A. Sandborn</td>
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<tr>
<td>1982-1983</td>
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<tr>
<td>Kate Taylor</td>
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<tr>
<td>1996-1998</td>
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<tr>
<td>James R. Sites</td>
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<tr>
<td>1984-1985</td>
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<tr>
<td>Lucy Adams</td>
</tr>
<tr>
<td>1998-1999</td>
</tr>
<tr>
<td>Courtney Butler</td>
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<tr>
<td>1999-2000</td>
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*Director Emeritus for outstanding contribution to the CSEF and more than two years of service as CSEF Director.

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<thead>
<tr>
<th>Participating Regional Science Fairs</th>
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<tbody>
<tr>
<td>Arkansas Valley Regional Science Fair</td>
</tr>
<tr>
<td>Joel Gray</td>
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<tr>
<td>Jim Herrell</td>
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<tr>
<td>Boulder Valley Regional Science Fair</td>
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<tr>
<td>Kym Monacelli</td>
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<tr>
<td>Denver Metro Regional Science Fair</td>
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<tr>
<td>Radford Walker</td>
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<tr>
<td>East Central Colorado Regional Science Fair</td>
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<tr>
<td>William Mallory</td>
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<tr>
<td>Lamar Community College/Southeast Colorado Regional Science Fair</td>
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<td>Robert Williams</td>
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<tr>
<td>David Northrup</td>
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<tr>
<td>Longs Peak Regional Science Fair</td>
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<tr>
<td>Terry Scott</td>
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<tr>
<td>Courtney Willis</td>
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<tr>
<td>Morgan/Washington Bi-County Regional Science Fair</td>
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<tr>
<td>Elemer Bernath</td>
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<tr>
<td>Don Gabriel</td>
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<tr>
<td>Nancy Gettman</td>
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<tr>
<td>Northeastern Colorado Regional Science Fair</td>
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<tr>
<td>Ann Pomeroy</td>
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<tr>
<td>Pikes Peak Regional Science Fair</td>
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<tr>
<td>Georgia Matteson</td>
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<tr>
<td>San Juan Basin Regional Science Fair</td>
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<td>Martha Iverson</td>
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<td>Lucy Adams</td>
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<td>Lori Dillon</td>
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<tr>
<td>Western Colorado Regional Science Fair</td>
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<tr>
<td>Forbes Davidson</td>
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<tr>
<td>Rob Robison</td>
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</tbody>
</table>

At Large Advisory Council Members

Jane Cowden                   Lisa Hatcher
Gary Church                  Cameron Holm
Carl Edstrom                 Kelly Reed
Steve Iona                   Jim Stevens
Larry Jakel                  James Sites
Charles Johnson              Doug Steward
Beverly Meter                Dan Van Gorp
Jody Oaks
We Invite You to Help Make a Difference

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Phone:  (303) 275-3702; FAX:  (303) 275-2905; e-mail:  daniel_blake@NREL.gov

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SLV Research Center - CSU
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Center, CO  81125
Phone:  (719) 754-3594; FAX:  (719) 754-2619; e-mail:  spudmkr@coop.ext.colostate.edu

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Gina Holland, Regular Fair Judge Coordinator
Colorado Engineering Council
Phone:  (303) 273-4634; FAX:  (303) 278-6046; e-mail:  gholland@psco.com

For other questions about the Colorado Science and Engineering Fair please contact:

Courtney Butler, Fair Director
P O Box 1465
Fort Collins, CO  80522-1465
Phone:  (970) 491-7716; FAX:  (970) 491-2005; e-mail:  courtney@csmate.colostate.edu
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