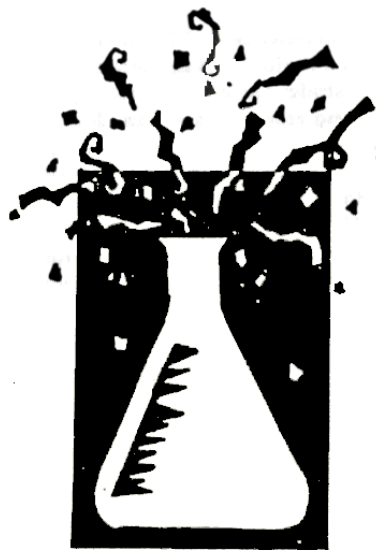


# OZARKS SCIENCE & ENGINEERING FAIR

HAMMONS STUDENT CENTER  
MISSOURI STATE UNIVERSITY

March 31 – April 2, 2009



## 2009 WINNERS

Sponsored By:

Missouri State University  
Associated Electric Cooperative, Inc.  
Jordan Valley Innovation Center  
Schneider Foundation  
Positronic Industries  
F & H Food Equipment Company



## **MASTER OF CEREMONIES**

MICHELLE NORNGREN  
EXECUTIVE DIRECTOR  
OZARKS SCIENCE & ENGINEERING FAIR

DR. TAMERA JAHNKE, DEAN  
COLLEGE OF NATURAL & APPLIED SCIENCES  
PRESENTER OF AWARDS



## **OSEF COMMITTEE MEMBERS**

EXECUTIVE DIRECTOR:  
EXECUTIVE ASSISTANT:  
CORPORATE DISPLAYS & SPONSORSHIP  
DISPLAY & SAFETY:  
ELEMENTARY FAIR:

PLACEMENT AWARDS:  
SPECIAL AWARDS:

VOLUNTEERS:

WEB PAGE DEVELOPMENT:

MICHELLE NORNGREN  
JULIANNA NORNGREN  
JEFF RAWSON  
KEN MCCRORY  
JESICA DUDLEY  
CHARLES DOAN  
ADAM CRANE  
CHERYL SCHAEFER WRINKLE  
SAMANTHA SCHAEFER  
SUE MCCRORY  
SAMANTHA SCHAEFER  
CHARLES DOAN  
SUE MCCRORY



## **SCIENTIFIC REVIEW COMMITTEE**

DR. TOM TOMASI, CHAIR  
DR. JACK STEIERT, MICROBIOLOGY  
BRIAN HIGH, CHEMISTRY  
DR. MATTHEW FANETTI, HUMAN BEHAVIOR  
DR. MICHAEL PFANDER, DVM, NONHUMAN VERTEBRATES



## **MAJOR SPONSORS**

MISSOURI STATE UNIVERSITY

ASSOCIATED ELECTRIC COOPERATIVE, INC.

JORDAN VALLEY INNOVATION CENTER

SCHNEIDER FOUNDATION

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## **2009 AWARDS AND SPONSORS**

AMERICAN CHEMICAL SOCIETY – OZARK  
SECTION

AMERICAN METEOROLOGICAL SOCIETY  
AMERICAN PSYCHOLOGICAL ASSOCIATION  
AMERICAN SOCIETY OF MAMMALOGISTS  
THE ASM INTERNATIONAL FOUNDATION  
ASSOCIATION OF WOMEN GEOSCIENTISTS  
BAKER CHAIR OF INSURANCE/GAMMA IOTA  
SIGMA

IRENE BRUNER MEMORIAL AWARD  
CITY OF SPRINGFIELD – SOLID WASTE  
DIVISION

COMMUNITY FOUNDATION OF THE OZARKS  
DRURY UNIVERSITY

EVANGEL UNIVERSITY  
EXPANDING YOUR HORIZONS: WOMEN IN  
SCIENCE

GREATER OZARKS AUDUBON SOCIETY  
GREENE COUNTY RESOURCE MANAGEMENT  
DEPARTMENT

INTEL

IN VITRO BIOLOGY SOCIETY  
DR. WARFORD B. & FLORENCE JOHNSON  
MEMORIAL AWARD

JORDAN VALLEY INNOVATION CENTER  
DR. GARY KELL MEMORIAL AWARD  
MISSOURI DEPARTMENT OF CONSERVATION  
MISSOURI MASTER NATURALISTS  
MISSOURI SOLAR ENERGY ASSOCIATION  
MISSOURI STATE UNIVERSITY COLLEGE OF  
NATURAL & APPLIED SCIENCES

MISSOURI STATE UNIVERSITY DEPARTMENT OF  
BIOLOGY

MISSOURI STATE UNIVERSITY DEPARTMENT OF  
GEOLOGY, GEOGRAPHY, & PLANNING

MISSOURI STATE UNIVERSITY DEPARTMENT OF  
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MISSOURI STATE UNIVERSITY DEPARTMENT OF  
PSYCHOLOGY

MISSOURI STATE UNIVERSITY SOCIETY OF  
PHYSICS STUDENTS

THE LOU & NADINE MOORE MEMORIAL  
AWARD

MU ALPHA THETA MATHEMATICS HONOR  
SOCIETY

NATIONAL OCEANIC & ATMOSPHERIC  
ADMINISTRATION

NATIONAL SOCIETY OF PROFESSIONAL  
ENGINEERS

OZARKS SCIENCE & ENGINEERING FAIR  
FOUNDATION

OZARKS TECHNICAL COMMUNITY COLLEGE  
POSITRONIC INDUSTRIES

RICOH CORPORATION

THE REGIONAL FAIR DIRECTOR EMERITUS  
“SYLVIA SPEAR” AWARD

SCHNEIDER FOUNDATION

SMITH-GLYNN-CALLOWAY FOUNDATION  
SOCIETY OF MANUFACTURING ENGINEERS

STOCKHOLM JUNIOR WATER PRIZE

THE JAMES K. TICE MEMORIAL TEACHER  
AWARD

TROPHIES, ETC.

UNITED STATES AIR FORCE

UNITED STATES ARMY

UNITED STATES DEPARTMENT OF HEALTH &  
HUMAN SERVICES

UNITED STATES NAVY/MARINE CORPS

UNITED STATES METRIC ASSOCIATION

WALLACE WEBER MEMORIAL AWARD

WATERSHED COMMITTEE OF THE OZARKS

YALE SCIENCE & ENGINEERING ASSOCIATION

## **SENIOR DIVISION GRAND PRIZE WINNERS & ALTERNATES**

(Grand Prize Awards Sponsored by: F & H Food Equipment Company, Jordan Valley Innovation Center, Positronic Industries, Schneider Foundation & Associated Electric Cooperative, Inc. - includes plaques for the Grand Prize Winners & Teachers.)

GRAND PRIZE            Zhou Li  
Synthesis and Electrochemical Characterizations of  
Graphene Supported Pt And Pt/Ru Nanoparticles for Fuel  
Cell Applications  
Todd VanGorden  
Greenwood Lab School

GRAND PRIZE            Tron Sherman  
Use of Recycled Tires as a Hydroponic Medium  
Pam Probert  
Mansfield High School

1st ALTERNATE            Alisha Gray and Kaysha Ousley  
The Effects of Environmental Glycerol on the Hypersomotic  
Response of *Saccharomyces cerevisiae*  
Pam Probert  
Mansfield High School

2nd ALTERNATE            Kaila Swain  
An Evaluation of Caffeine Content in Various Energy Drinks  
Jim Flora  
Pleasant Hope High School

## **JUNIOR DIVISION GRAND PRIZE WINNERS**

### **Sponsored by Positronic Industries**

(\$100 & plaque to each Junior Grand Prize Winner & Teacher; \$50 to each Junior Grand Prize Alternate & Teacher)

GRAND PRIZE            Theo Shuler  
Methods of Interrogation  
Laura Stroup  
The Summit Preparatory school

Alternate                    Matt Haley  
Burn Factor  
Lynn Vogel  
St. Agnes Middle School



# THE 2009 JUNIOR DIVISION



# PLACEMENT AWARD WINNERS!

# JUNIOR DIVISION PLACEMENT AWARDS

## BEHAVIORAL AND SOCIAL SCIENCES

1st Place: Theo Shuler  
Methods of Interrogation  
Laura Stroup  
The Summit Preparatory

2nd Place: Pooja Patel  
How Do Chairs Affect  
Your Skills?  
Laura Stroup  
The Summit Preparatory

3rd Place: Emma Thomas  
Read to Remember  
Lynn Vogel  
St. Agnes MS

4th Place: Gregory Rudloff  
IDK – UDK (I Don't Know  
– You Don't Know)  
Lynn Vogel  
St. Agnes MS

## BIOCHEMISTRY

1st Place: Sarah Hogan  
The Effect of Sugar on the  
Amount of Carbon  
Dioxide Produced in  
Yeast Fermentation  
Mary Hogan  
Freedom Elementary

2nd Place: Karissa Varga  
How Much Energy Can a  
Peanut Produce?  
Miriam Jump  
St. Joseph Middle School

3rd Place: Mitchell Johnson  
Can Petting Dogs Reduce  
the Heart Rate?  
Laura Stroup  
The Summit Preparatory

4th Place: Haley Kamykowski  
pH Comparisons of Fruits  
and Their Juices  
Miriam Jump  
St. Joseph School

## BOTANY

1st Place: Jae Ellis  
The Effects of  
Temperature on Seed  
Germination  
Debra Burgard  
Manes MS

2nd Place: Matthew Hamilton  
I Dig Dirt  
Deborah Hawkins  
Clever MS

3rd Place: Ryan Willhite  
Effects of Type of Soil on  
Plant Height  
Lannie Hinote  
Skyline MS

4th Place: Victoria Richardson  
Vitamins in Plants  
Lynn Vogel  
St. Agnes MS

## CHEMISTRY

1st Place: Matt Haley  
Burn Factor  
Lynn Vogel  
St. Agnes MS

2nd Place: Shyanne Koehler  
Bursting Balloons: Call  
Soap for Help!  
Ana Lozano  
Waynesville MS

3rd Place: Justin Abresch  
Fight Fires with Diapers?  
Jon Abresch  
Wood Elementary

4th Place: Sierra Tasker  
Effect of Viscosity of  
Bubbles  
Debra Burgard  
Manes MS

## ENGINEERING

1st Place: Keith Cissell  
What's Solar Cookin'?  
Lynn Vogel  
St. Agnes

2nd Place: John Bentley  
The Solar Cycle  
Tim Hayes  
Immaculate Conception

3rd Place: Dalton Fisher  
The Solar Powered Car  
Deborah Hawkins  
Clever MS

4th Place: Michael Ghirardelli  
Does Structural Integrity  
Determine Potential  
Height of a Skyscraper?  
Tim Hayes  
Immaculate Conception

## ENVIRONMENTAL SCIENCES

1st Place: Tyran Vestal  
Effect of Detergent on  
Plant Growth  
Darlene Henne  
Pleasant View MS

2nd Place: Dylan Nash  
Dalton Nash  
Environmental Effects on  
Hatching & Growing  
Artemia  
Darlene Henne  
Pleasant View MS

3rd Place: Michael Cooper  
The Effect of Sand on  
Water Purification  
Debra Burgard  
Manes MS

4th Place: Evan Garoutte  
The Ups & Downs of  
MPG  
Lynn Vogel  
St. Agnes MS

# JUNIOR DIVISION PLACEMENT AWARDS

## MEDICINE & HEALTH

1st Place: Kelsea Rush  
The Effects of Body Parts  
on the Amount of Bacteria  
Lannie Hinote  
Skyline MS

2nd Place: Emily Smid  
The Effects of Alcohol-  
Based Hand Sanitizer in a  
Grade School Setting  
Tim Hayes  
Immaculate Conception

3rd Place: Ciara Fosset  
The Effects of Hand  
Washing Methods on  
Number of Bacteria  
Lannie Hinote  
Skyline MS

4th Place: Toby Lathrop  
Do Video Games Give  
You Exercise?  
Laura Stroup  
The Summit Preparatory

## MICROBIOLOGY

1st Place: Paul Vienhage  
Disinfectant Wars  
Tim Hayes  
Immaculate Conception

2nd Place: Brandon Tredway  
The Yeast Beast  
Lynn Vogel  
St. Agnes MS

3rd Place: Taylor Lee  
How Dirty Is Your Debit  
Card?  
Tim Hayes  
Immaculate Conception

4th Place: Grace Huckfield  
Elizabeth Catapang  
Thera-Worx! Or It  
Doesn't?  
Tim Hayes  
Immaculate Conception

## PHYSICS & MATH

1st Place: Ian George  
What a Drag!  
Lynn Vogel  
St. Agnes MS

2nd Place: Matthew Jordan  
The Sound Cushion:  
Materials That Absorb  
Sound  
Laura Stroup  
The Summit Preparatory

Madisyn Harris  
Tatum Maples  
Jessi Pearce  
Lexi Tennis  
Peanut Power  
Rashel Bussard  
Clever MS

3rd Place: Michael Harrington  
The Effect of the Gauge  
of Wire on the Amount of  
Electricity Generated  
Debra Burgard  
Manes MS

Camden Eck  
Eggs-traordinary Eggs  
Lynn Vogel  
St. Agnes MS

4th Place: Chance Wolf  
Boiling Point  
Deborah Hawkins  
Clever MS

Blake Breme  
The Keeper's Dilemma  
Lynn Vogel  
St. Agnes MS

## ZOOLOGY

1st Place: Justine Nelson  
The Effect of the Height of  
a Horse on the Weight of  
a Horse  
Lannie Hinote  
Skyline MS

2nd Place: Emma Mitchell  
Crown of Thorns Starfish  
and the Coral Reef  
Elizabeth Mitchell  
Mitchell Home School



# THE 2009 SENIOR DIVISION



## PLACEMENT AWARD WINNERS!

# SENIOR DIVISION PLACEMENT AWARDS

## BEHAVIORAL AND SOCIAL SCIENCES

1st Place: Tommy Martin  
The Effect of Birth Order on  
Personality Traits  
Peggy Veatch  
Thayer High School

2nd Place: Olivia Whorton  
Correlation of Risk  
Behavior & Energy Drink  
Use  
Pam Probert  
Mansfield High School

Shelby Stansell  
Eye Colors' Effect on  
Peripheral Vision  
Jennifer Carlton  
Hillcrest High School

3rd Place: Jennifer Bieker  
The Influences of Family  
Stability on Teenage  
Development  
Tabitha Shaver  
Hartville HS

Gloria Franke  
The Effect of Eating  
Breakfast on Grades  
Peggy Veatch  
Thayer High School

4th Place: Thomas Weeks  
The Effect of Smell on  
Taste Perception  
Peggy Veatch  
Thayer High School

John Carter  
Coke vs. Pepsi  
Jennifer Carlton  
Hillcrest High School

## BOTANY

1st Place: Lexi Sherman  
The Effects of Time &  
Temperature on The  
Growth & Germination of  
Missouri Native Seeds  
John Hinsley  
Mansfield High School

## BOTANY (cont.)

2nd Place: Arielle Campbell  
What Effect Does Tea Have  
on Plant Growth?  
Ashley Moyer  
Clever High School

3rd Place: Paige Lambert  
Kelly Whorton  
A Study of Vigor Tests on  
*Sorghum durra* Seeds and  
their Correlation with  
Emergence  
Pam Probert  
Mansfield High School

4th Place: Zack McClanahan  
The Effect of Carbon  
Emissions on Plant Growth  
Tabitha Shaver  
Hartville High School

Ian McElyea  
Alcoholic Tomatoes  
Jennifer Bryant  
Hillcrest High School

## CHEMISTRY

1st Place: Kaila Swain  
An Evaluation of Caffeine  
Content in Various Energy  
Drinks  
Jim Flora  
Pleasant Hope HS

2nd Place: Shay Sechler  
Determining Disintegration  
Rates of Folic Acid Tablets  
Jim Flora  
Pleasant Hope HS

3rd Place: Nathan Loya  
The Effects of Hot vs. Cold  
Water When Washing a  
Swimsuit  
Jennifer Carlton  
Hillcrest High School

4th Place: Aaron Henson  
Testing for Bisphenol A in  
Nalgene Bottles Utilizing a  
HPLC  
Jim Flora  
Pleasant Hope HS

## ENGINEERING

1st Place: Justin Keith  
Landon Jarrett  
The Effects of Baseball  
Contact with the Sweet  
Spot  
Pam Probert  
Mansfield High School

2nd Place: Madeleine Esther  
Do the Little Things Count?  
Todd VanGorden  
Greenwood Lab School

3rd Place: John Finelli  
Kevin Casaday  
Development of a  
Galvanometer for  
Polygraph Accuracy  
Tabitha Shaver  
Hartville High School

4th Place Evelyn Bush  
The Effectiveness of a  
Solar Powered Hydrolysis  
Machine  
Todd VanGorden  
Greenwood Lab School

## ENVIRONMENTAL/EARTH SCIENCES

1st Place: Tron Sherman  
The Effects of Recycled  
Rubber Mulch on  
*Phaseolus vulgaris* Plants  
in a Hydroponic System  
Pam Probert  
Mansfield High School

2nd Place: Brett Bethurem  
Biodiesel: From Pond Scum  
to Power  
Jim Flora  
Pleasant Hope HS

3rd Place: Kayla Horsman  
How Super Cool Are You?  
Analyzing the Role of  
Bacteria in Ice Nucleation  
Rick Snyder  
Kickapoo High School

# SENIOR DIVISION PLACEMENT AWARDS

## ENVIRONMENTAL/EARTH SCIENCES (cont.)

4th Place: Stuart Jump  
A Comparative Analysis of  
Dissolved Oxygen During  
the Day & Night in a Rural  
Farm Pond  
Miriam Jump  
Springfield Catholic HS

## MEDICINE AND HEALTH

1st Place: Eryn Swain  
A Caloric Comparison of  
Common Snack Foods and  
their Nutritional Label  
Jim Flora  
Pleasant Hope HS

2nd Place: Sam Myears  
Assessing Interaction  
Between Flow Resistance  
& Pressure in an Artificial  
Heart Valve  
Todd VanGorden  
Greenwood Lab School

3rd Place: Chandler Reed  
Zing or Zs? The Correlation  
Between Energy Drinks &  
Reaction Time  
Jennifer Bryant  
Hillcrest High School

4th Place: Kripa Sreepada  
Effect of Intensity of  
Exercise (in Terms of  
Running) on Slowing the  
Progression of Alzheimer's  
Disease  
Todd VanGorden  
Greenwood Lab School

## MICROBIOLOGY

1st Place: Benjamin Mattax  
Do You Know What is in  
Your Beef?  
Todd VanGorden  
Greenwood Lab School

## MICROBIOLOGY (cont.)

2nd Place: Alisha Gray  
Kaysha Ousley  
Effects of Environmental  
Glycerol on the  
Hypersomotic Response of  
*Saccharomyces cerevisiae*  
Pam Probert  
Mansfield High School

3rd Place: Erin Pitts  
The Growth of Bacteria in  
Reused Bottles  
Tabitha Shaver  
Hartville High School

4th Place: Karen Ragsdale  
Sarah Cook  
How Various Foods Affect  
the Amount of Bacteria in  
Different Species' Mouths  
Tabitha Shaver  
Hartville High School

## PHYSICS & MATH

1st Place: Zhou Li  
Synthesis and  
Electrochemical  
Characterizations of  
Graphene Supported Pt  
and Pt/Ru Nanoparticles for  
Fuel Cell Applications  
Todd VanGorden  
Greenwood Lab School

2nd Place: Kaylan Cobb  
Kyra Griffin  
The Effects of Ultraviolet  
Light and Heat on the  
Physical Appearance of  
Dyed Hair  
Tabitha Shaver  
Hartville High School

## PHYSICS & MATH (cont.)

3rd Place: Trey Jones  
Tyler Henry  
The Effects of Various  
Launch Angles on Catapult  
Projection Distances  
Pam Probert  
Mansfield High School

4th Place: Nate Turner  
Concussion or No  
Concussion?  
Jennifer Bryant  
Hillcrest High School

## ZOOLOGY

1st Place: Amanda Seale  
Talisa Cochran  
Ashley Collins  
*Equus caballus*: Pumped  
Up  
Amber Gieber  
Norwood High School

2nd Place: Sidney McColum  
Light's Attraction on Brine  
Shrimp  
Jennifer Bryant  
Hillcrest High School

**THE 2009  
JUNIOR & SENIOR  
DIVISION**



**SPECIAL AWARD  
WINNERS!**

# SPECIAL AWARDS

## AMERICAN CHEMICAL SOCIETY, OZARKS SECTION

*\$100 Cash Award to Student and \$50 Flinn Certificate to Teacher*

Senior Division: Shay Sechler  
A Determination of  
Disintegration Rates for  
Folic Acid Tablets  
Pleasant Hope HS  
Jim Flora

## THE AMERICAN METEOROLOGICAL SOCIETY

*Certificate of Award*

Senior Division: Michelle Rathe  
The Shocking Truth About  
Lightning: It's All Relative  
Humidity  
Kickapoo High School

## AMERICAN SOCIETY OF MAMMALOGISTS

*Certificates of Award*

Junior Division: Justine Nelson  
The Effect of The Height  
of Horses on the Weight  
of Horses  
Skyline Middle School

Senior Division: Amanda Seale  
Talisa Cochran  
Ashley Collins  
*Equus caballus*: Pumped  
Up  
Norwood High School

## THE ASM MATERIALS EDUCATION FOUNDATION

*Medallion & Certificate of Award (Medallion will be mailed to recipient)*

Senior Division: Jacob Lorenz  
What Wood Glue is  
Stronger?  
Hillcrest High School

## THE AMERICAN PSYCHOLOGICAL SOCIETY

*Certificate of Award*

Senior Division: Shelby Stansell  
Eye Colors' Effect on  
Peripheral Vision  
Hillcrest High School

## THE ASSOCIATION OF WOMEN GEOSCIENTISTS

*Certificate of Recognition*

Senior Division: Clarissa Gutierrez  
Effects of Filtration  
Process on Bacteria  
Growth  
Hillcrest High School

## BAKER CHAIR OF INSURANCE/GAMMA IOTA SIGMA AWARD

*\$50 Cash & Certificate of Achievement*

Senior Division: Olivia Whorton  
Correlation of Risk  
Behavior & Energy Drink  
Use  
Mansfield High School

## IRENE BRUNER MEMORIAL AWARD

*\$25 Cash & Certificate*

Junior Division: Jae Ellis  
The Effects of  
Temperature on Seed  
Germination  
Manes Middle School

## CITY OF SPRINGFIELD – SOLID WASTE DIVISION

*Recycled T-Shirt*

Senior Division: Brett Bethurem  
Biodiesel: From Pond  
Scum to Power  
Pleasant Hope HS  
  
Elizabeth Baker  
Organic Materials'  
Effectiveness of De-Icer  
Norwood High School

## CITY OF SPRINGFIELD – SOLID WASTE DIVISION (cont.)

Senior Division: Tron Sherman  
Use of Recycled Tires as  
a Hydroponic Medium  
Mansfield High School

## CONSTELLATION CLUB – TROPHIES ETC. "GALAXY EXPLORERS" AWARD

*\$25 Cash Award to each*

Junior Division: Ian George  
What A Drag!  
St. Agnes Middle School

Dalton Fisher  
The Solar Powered Car  
Clever Middle School

*Plaque & \$25 Cash*

Junior Division: Jessica Gamble  
Solar Energy  
St. Agnes Middle School

## DRURY UNIVERSITY

*3 Hours Undergraduate Credit to each Senior High First Place Award Winner*

Senior Division: Tommy Martin  
The Effect of Birth Order  
on Personality Traits  
Thayer High School

Lexi Sherman  
The Effects of Time &  
Temperature on The  
Growth & Germination of  
Missouri Native Seeds  
Mansfield High School

Kaila Swain  
An Evaluation of Caffeine  
Content in Various Energy  
Drinks  
Pleasant Hope HS

Justin Keith  
Landon Jarrett  
The Effects of Baseball  
Contact with the Sweet  
Spot  
Mansfield High School

# SPECIAL AWARDS

## DRURY UNIVERSITY (cont.)

Senior Division: Tron Sherman  
The Effects of Recycled Rubber Mulch on *Phaseolus vulgaris* Plants in a Hydroponic System  
Mansfield High School

Eryn Swain  
A Caloric Comparison of Common Snack Foods and their Nutritional Label  
Pleasant Hope HS

Benjamin Mattax  
Do You Know What is in Your Beef?  
Greenwood Lab School

Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

Amanda Seale  
Talisa Cochran  
Ashley Collins  
*Equus caballus*: Pumped Up  
Norwood High School

*6 Hours Undergraduate Credit to the Senior High Grand Prize Award Winners*

Senior Division: Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

Tron Sherman  
The Effects of Recycled Rubber Mulch on *Phaseolus vulgaris* Plants in a Hydroponic System  
Mansfield High School

## EVANGEL UNIVERSITY

*\$1,500 Scholarship to each Senior Division First Place Winner as Entering Freshmen*

Senior Division: Tommy Martin  
The Effect of Birth Order on Personality Traits  
Thayer High School

Lexi Sherman  
The Effects of Time & Temperature on The Growth & Germination of Missouri Native Seeds  
Mansfield High School

Kaila Swain  
An Evaluation of Caffeine Content in Various Energy Drinks  
Pleasant Hope HS

Justin Keith  
Landon Jarrett  
The Effects of Baseball Contact with the Sweet Spot  
Mansfield High School

Tron Sherman  
The Effects of Recycled Rubber Mulch on *Phaseolus vulgaris* Plants in a Hydroponic System  
Mansfield High School

Eryn Swain  
A Caloric Comparison of Common Snack Foods and their Nutritional Label  
Pleasant Hope HS

Benjamin Mattax  
Do You Know What is in Your Beef?  
Greenwood Lab School

Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

## EVANGEL UNIVERSITY (cont.)

Senior Division: Amanda Seale  
Talisa Cochran  
Ashley Collins  
*Equus caballus*: Pumped Up  
Norwood High School

*\$2,500 Scholarship to each Grand Prize Award Winner as Entering Freshmen*

Senior Division: Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

Tron Sherman  
The Effects of Recycled Rubber Mulch on *Phaseolus vulgaris* Plants in a Hydroponic System  
Mansfield High School

## EXPANDING YOUR HORIZONS: WOMEN IN SCIENCE

*Book Card & Certificate of Award*

Junior Division: Grace Huckfelt  
Elizabeth Catapang  
Thera-Worx! Or It Doesn't?  
Immaculate Conception

Senior Division: Eryn Swain  
A Caloric Comparison of Common Snack Foods & Their Nutritional Labels  
Pleasant Hope HS

Arielle Campbell  
The Effect of Tea on Plant Growth  
Clever High School

# SPECIAL AWARDS

## GREATER OZARK AUDOBON SOCIETY "ENVIRONMENTAL AWARENESS AWARD"

*One Year Membership in the National Audubon Society & Field Guide*

Senior Division: Sivert Johnson  
Carbon Soot Effect on the Melting Rate of Glacial Ice  
Kickapoo High School

## THE GREENE COUNTY GROUNDWATER GUARDIAN AWARD (sponsored by the GREENE COUNTY RESOURCE MANAGEMENT DEPARTMENT)

*Plaque & Tickets to Fantastic Caverns*

Junior Division: Tyran Vestal  
Effects of Detergent on Plant Growth  
Pleasant View MS

## INTEL "EXCELLENCE IN COMPUTER SCIENCE" AWARD

*Certificate of Award & \$200 Cash (to be mailed)*

Senior Division: Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

## IN VITRO BIOLOGY AWARD

*Certificate & Invitation to attend National Meeting*

Senior Division: Benjamin Mattax  
Do You Know What Is In Your Beef?  
Greenwood Lab School

## JORDAN VALLEY INNOVATION CENTER

*\$1500 Summer Work Study Award*

Senior Division: Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

## MISSOURI DEPARTMENT OF CONSERVATION

*Field Guide & Conservation Department Materials*

Junior Division: Jae Ellis  
The Effects of Temperature on Seed Germination  
Manes Middle School

Senior Division: Ryan Veatch  
The Effects of Ammonia Phosphate on Daphnia  
Thayer High School

## MISSOURI MASTER NATURALIST AWARD, JUNIOR DIVISION

*Certificate of Award & \$50 Cash*

Junior Division: Dylan Nash  
Dalton Nash  
Environmental Effects on Hatching & Growing Artemia  
Pleasant View MS

## MISSOURI MASTER NATURALIST AWARD, SENIOR DIVISION

*Certificate of Award & \$50 Cash*

Senior Division: Brett Bethurem  
Biodiesel: From Pond Scum to Power  
Pleasant Hope HS

*Honorable Mention*

Senior Division: Ryan Veatch  
The Effects of Ammonia Phosphate on Daphnia  
Thayer High School

## MISSOURI SOLAR ENERGY

*Solar Calculator*

Junior Division: John Bentley  
The Solar Cycle  
Immaculate Conception

## MISSOURI STATE UNIVERSITY COLLEGE OF NATURAL AND APPLIED SCIENCES

*\$50 Cash Award*

Junior Division: Theo Shuler  
Methods of Interrogation  
The Summit Preparatory

Senior Division: Zhou Li  
Synthesis and Electrochemical Characterizations of Graphene Supported Pt and Pt/Ru Nanoparticles for Fuel Cell Applications  
Greenwood Lab School

Tron Sherman  
The Effects of Recycled Rubber Mulch on *Phaseolus vulgaris* Plants in a Hydroponic System  
Mansfield High School

## MISSOURI STATE UNIVERSITY DEPARTMENT OF BIOLOGY

*Certificates to students & plaques to teachers*

Junior Division: Jae Ellis  
The Effects of Temperature on Seed Germination  
Manes Middle School  
Debra Burgard

Tyrann Vestal  
Effect of Detergent on Plant Growth  
Pleasant View MS  
Darlene Henne

Emily Smid  
The Effects of Alcohol Based Hand Sanitizer in a Grade School Setting  
Immaculate Conception  
Tim Hayes

# SPECIAL AWARDS

## MISSOURI STATE UNIVERSITY DEPARTMENT OF BIOLOGY (cont.)

Junior Division: Paul Vienhage  
Disinfectant Wars  
Immaculate Conception  
Tim Hayes

Emma Mitchell  
Crown of Thorns Starfish  
and the Coral Reef  
Mitchell Home School  
Elizabeth Mitchell

Senior Division: Joslyn Arthur  
Going Deep: Using Deep  
Ocean Water Technology  
in Agriculture  
Kickapoo High School  
Rick Snyder

Sivert Johnson  
Carbon Soot's Effect on  
Melting Rate of Glacier  
Ice  
Kickapoo High School  
Rick Snyder

Eryn Swain  
A Caloric Comparison of  
Common Snack Foods  
and their Nutritional Label  
Pleasant Hope HS  
Jim Flora

Benjamin Mattax  
Do You Know What Is In  
Your Beef?  
Greenwood Lab School  
Todd VanGorden

Amanda Seale  
Talisa Cochran  
Ashley Collins  
*Equus caballus*: Pumped  
Up  
Norwood High School  
Amber Gieber

### *\$1,000 Work Study Award*

Senior Division: Benjamin Mattax  
Do You Know What Is In  
Your Beef?  
Greenwood Lab School  
Todd Van Gorden

## MISSOURI STATE UNIVERSITY DEPARTMENT OF GEOGRAPHY, GEOLOGY & PLANNING

Senior Division: Stuart Jump  
Comparative Analysis of  
Dissolved O<sub>2</sub> During the  
Day & Night in a Rural  
Farm Pond  
Springfield Catholic HS

## MISSOURI STATE UNIVERSITY DEPARTMENT OF INDUSTRIAL MANAGEMENT

### *\$100 Cash Award & Certificate*

Junior Division: John Bentley  
The Solar Cycle  
Immaculate Conception

## MISSOURI STATE UNIVERSITY DEPARTMENT OF PSYCHOLOGY

### *Certificate of Award*

Senior Division: Jared Wilkinson  
Candy vs. Medicine: Can  
Kids Tell The Difference?  
Hillcrest High School

## MISSOURI STATE UNIVERSITY SOCIETY OF PHYSICS STUDENTS

### *Paperweight & Certificate of Award*

Senior Division: Liza Salisbury  
Harnessing Solar Energy  
Through Asphalt  
Greenwood Lab School

## LOU & NADINE MOORE MEMORIAL AWARD

### *\$50 Cash Award to the top Junior Division projects covering Education or Special Needs*

Junior Division: Hannah Esterline  
The Effects of Hand-Eye  
Coordination on Grade  
Level  
Skyline High School

Grace Shryack  
Does Regular Physical  
Exercise Affect Memory?  
The Summit Preparatory

## MU ALPHA THETA NATIONAL MATHEMATICS HONOR SOCIETY

### *Certificate of Award*

Senior Division: Nikki Zorsch  
Lacunarity: An Analysis of  
Unoccupied Space  
Mansfield High School

## NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

### *Certificate of Award & a Medal*

Junior Division: Reggie Thurston  
Whirlwind Experience  
Immaculate Conception

## NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS "INNOVATIVE ENGINEERING" AWARD

### *Certificate of Award & Lapel Pin*

Senior Division: John Finelli  
Kevin Casaday  
Development of a  
Galvanometer for  
Polygraph Accuracy  
Hartville High School

Evelyn Bush  
The Effectiveness of a  
Solar Powered Hydrolysis  
Machine  
Greenwood Lab School

## OZARKS TECHNICAL COMMUNITY COLLEGE

### *Water Bottles & Assorted OTCC Items*

Senior Division: Tommy Martin  
The Effect of Birth Order  
on Personality Traits  
Thayer High School

Lexi Sherman  
The Effects of Time &  
Temperature on The  
Growth & Germination of  
Missouri Native Seeds  
Mansfield High School

Kaila Swain  
An Evaluation of Caffeine  
Content in Various Energy  
Drinks  
Pleasant Hope HS



# SPECIAL AWARDS

## OZARKS TECHNICAL COMMUNITY COLLEGE

Senior Division: Justin Keith  
Landon Jarrett  
The Effects of Baseball  
Contact with the Sweet  
Spot  
Mansfield High School

Tron Sherman  
The Effects of Recycled  
Rubber Mulch on  
*Phaseolus vulgaris* Plants  
in a Hydroponic System  
Mansfield High School

Eryn Swain  
A Caloric Comparison of  
Common Snack Foods  
and their Nutritional Label  
Jim Flora  
Pleasant Hope HS

Benjamin Mattax  
Do You Know What is in  
Your Beef?  
Todd VanGorden  
Greenwood Lab School

Zhou Li  
Synthesis and  
Electrochemical  
Characterizations of  
Graphene Supported Pt  
and Pt/Ru Nanoparticles  
for Fuel Cell Applications  
Todd VanGorden  
Greenwood Lab School

Amanda Seale  
Talisa Cochran  
Ashley Collins  
*Equus caballus*: Pumped  
Up  
Amber Gieber  
Norwood High School

## RICOH CORPORATION

*Certificate of Award & Progression to National  
Competition*

Senior Division: Tron Sherman  
Use of Recycled Tires as  
a Hydroponic Medium  
Mansfield High School

## SCHNEIDER FOUNDATION (in cooperation with the Community Foundation of the Ozarks)

*\$200 Cash & Certificate*

Junior Division: Theo Shuler  
Methods of Interrogation  
The Summit Preparatory

Matt Haley  
Burn Factor  
St. Agnes Middle School

Tyran Vestal  
Effect of Detergent on  
Plant Growth  
Pleasant View MS

Paul Vienhage  
Disinfectant Wars  
Immaculate Conception

Ian George  
What A Drag!  
St. Agnes Middle School

*\$500 Cash & Certificate*

Senior Division: Tommy Martin  
The Effect of Birth Order  
on Personality Traits  
Thayer High School

Tron Sherman  
The Effects of Recycled  
Rubber Mulch on  
*Phaseolus vulgaris* Plants  
in a Hydroponic System  
Mansfield High School

Kaila Swain  
An Evaluation of Caffeine  
Content in Various Energy  
Drinks  
Pleasant Hope HS

Zhou Li  
Synthesis and  
Electrochemical  
Characterizations of  
Graphene Supported Pt  
and Pt/Ru Nanoparticles  
for Fuel Cell Applications  
Greenwood Lab School

## SCHNEIDER FOUNDATION (in cooperation with the Community Foundation of the Ozarks) (cont.)

Senior Division: Lexi Sherman  
The Effects of Time &  
Temperature on The  
Growth & Germination of  
Missouri Native Seeds  
Mansfield High School

## THE SMITH-GLYNN-CALLOWAY MEDICAL FOUNDATION AWARD

*\$100 Cash Award & Certificate*

Senior Division: Eryn Swain  
A Caloric Comparison of  
Common Snack Foods &  
Their Nutritional Labels  
Pleasant Hope HS

Paxton Leer  
The Dissolution Rates of  
Different Pain Relievers  
Hillcrest High School

Sam Myears  
Assessing Interactions  
Between Flow,  
Resistance & Pressure in  
an Artificial Heart Valve  
Greenwood Lab School

*\$300 Cash Award & Certificate*

Senior Division: Jessica Stokes  
Jamie Perkins  
Please Don't Stop the  
Music  
Norwood High School

*\$400 Cash Award*

Senior Division: Kripa Sreepada  
Effects of Exercise  
Intensity on Progression  
of Alzheimer's Disease  
Greenwood Lab School

## STOCKHOLM JUNIOR WATER PRIZE

*Certificate of Award & Promotion to State  
Competition*

Senior Division: Ryan Veatch  
The Effects of Ammonia  
Phosphate on *Daphnia*  
Thayer High School

# SPECIAL AWARDS

## STOCKHOLM JUNIOR WATER PRIZE (cont.)

Senior Division: Erin Pitts  
The Growth of Bacteria in  
Reused Bottles  
Hartville High School

Stuart Jump  
A Comparative Analysis  
of Dissolved Oxygen  
During the Day & Night in  
a Rural Farm Pond  
Springfield Catholic HS

## UNITED STATES AIR FORCE

### *Backpack & Daypack*

Senior Division: Alisha Gray  
Kaysha Ousley  
Effects of Environmental  
Glycerol on the  
Hypersomotic Response  
of *Saccharomyces*  
*cerevisiae*  
Mansfield High School

Tron Sherman  
The Effects of Recycled  
Rubber Mulch on  
*Phaseolus vulgaris* Plants  
in a Hydroponic System  
Mansfield High School

Zhou Li  
Synthesis and  
Electrochemical  
Characterizations of  
Graphene Supported Pt  
and Pt/Ru Nanoparticles  
for Fuel Cell Applications  
Greenwood Lab School

## UNITED STATES ARMY – Excellence in Engineering

### *Certificate of Award & Shirt*

Senior Division: Madeleine Esther  
Do The Little Things  
Count?  
Greenwood Lab School

## UNITED STATES ARMY – Excellence in Environmental Science

### *Certificate of Award & Shirt*

Senior Division: Brett Bethurem  
Biodiesel: From Pond  
Scum to Power  
Pleasant Hope HS

## UNITED STATES ARMY – Excellence in Life Sciences

### *Certificate of Award & Shirt*

Senior Division: Ian McElyea  
Alcoholic Tomatoes  
Hillcrest High School

## UNITED STATES ARMY – Excellence in Mathematics/Computer Science

### *Certificate of Award & Shirt*

Senior Division: Zhou Li  
Synthesis and  
Electrochemical  
Characterizations of  
Graphene Supported Pt  
and Pt/Ru Nanoparticles  
for Fuel Cell Applications  
Greenwood Lab School

## UNITED STATES ARMY – Excellence in Physics

### *Certificate of Award & Shirt*

Senior Division: Evan Whorton  
Tyler Page  
Effects of Starting Terrain  
on Initiation Speed of a  
Kx250F  
Mansfield High School

## UNITED STATES ARMY – Award of Excellence

### *Bronze Medallion*

Senior Division: Brett Bethurem  
Biodiesel: From Pond  
Scum to Power  
Pleasant Hope HS

## UNITED STATES DEPARTMENT OF HEALTH & HUMAN SERVICES

### *Certificate of Award*

Senior Division: Kripa Sreepada  
Effect of Exercise  
Intensity on Progression  
of Alzheimer's Disease  
Greenwood Lab School

## UNITED STATES METRIC ASSOCIATION

### *Certificate of Award*

Senior Division: Evelyn Bush  
The Effectiveness of Solar  
Powered Hydrolysis  
Machine  
Greenwood Lab School

## UNITED STATES NAVY/MARINE CORPS

### *Certificate of Award*

Junior Division: Matt Haley  
Burn Factor  
St. Agnes Middle School

Ian George  
What A Drag!  
St. Agnes Middle School

*\$50 Cash Award, Award Letter & Certificate*  
*(to be mailed)*

Senior Division: Tron Sherman  
The Effects of Recycled  
Rubber Mulch on  
*Phaseolus vulgaris* Plants  
in a Hydroponic System  
Mansfield High School

Tommy Martin  
The Effect of Birth Order  
on Personality Traits  
Thayer High School

# SPECIAL AWARDS

## WATERSHED COMMITTEE OF THE OZARKS

\$50 Cash Award

Junior Division: Tyran Vestal  
Effects of Detergent on  
Plant Growth  
Pleasant View MS

Senior Division: Joslyn Arthur  
Going Deep: Using Deep  
Ocean Water technology  
on Agriculture  
Kickapoo High School

## WALLACE WEBER MEMORIAL AWARD FOR BOTANY

\$25 Cash & Certificate of Award for  
Outstanding Botany Project

*Dr. Weber spent his life teaching people about the Earth both in and out of the classroom. He had a great appreciation for nature and a strong desire to protect it. As a professor in the Biology Department at Southwest Missouri State University, he spent 30 years promoting environmental awareness in Springfield. In addition to teaching Botany at Southwest Missouri State University, Dr. Weber belonged to many environmental groups, including Zero Population Growth, Vision 20/20, the Sierra Club, Missouri Native Plant Society, and Missouri Prairie Foundation. He was totally committed to environmental education and never gave up on the idea that each of us could make a change and make things better.*

*We encourage the recipient of this award to continue Dr. Weber's work by having an appreciation for nature and strong desire to protect it.*

Junior Division: Jae Ellis  
The Effects of  
Temperature on Seed  
Germination  
Manes MS

## YALE SCIENCE & ENGINEERING ASSOCIATION, INC.

*Preliminary Certificate (Actual Certificate & Medallion to be Shipped)*

Senior Division: Madeleine Esther  
Do the Little Things  
Count?  
Greenwood Lab School

## THE DR. WARFORD & FLORENCE JOHNSON MEMORIAL TEACHER AWARD

*\$1,000 Cash Award to the Teacher with the most Placement Awards in the Senior Division*

*This award is granted to the educator who has demonstrated an exceptional ability to inspire in her students the interest, inquiry, and mastery of a scientific pursuit, and recognizes that educator's dedication and investment in teaching. It is gratefully presented by the family of Dr. Warford B. Johnson, Sr., and Florence Tindall Johnson. For over 40 years, Dr. Johnson demonstrated his unending fascination with science through his tireless service to his patients, the medical profession, and the Ozarks community. His unending quest to understand not just "what" but "why" and "how" was a stimulating influence on all who knew him. Two days before his death at age 84, he had purchased a book on quantum string theory, announcing that he needed a better understanding of that field. Florence, his wife of 60 years, stood at his side, both tolerating and encouraging his and their children's sometimes eccentric fascination of all things scientific.*

*As Warford and Florence were teacher, friend, and inspiration to their children, so has this educator been teacher, friend and inspiration to her students. It is our conviction that only through the humane application of scientific principles and discipline will the next generation be prepared to meet the challenges of the future. We congratulate you,*

***Pam Probert, Mansfield High School,***

*on your splendid accomplishments.*

## THE DR. GARY KELL MEMORIAL TEACHER AWARD

*\$250 Cash Award to the Teacher with the Most Placement Awards in the Junior Division*

Lynn Vogel  
St. Agnes Middle School

## THE REGIONAL FAIR DIRECTOR EMERITUS "SYLVIA SPEAR MEMORIAL AWARD"

*\$25 Cash to a First Time Teacher.*

Jennifer Carlton  
Hillcrest High School

## THE JAMES K. TICE MEMORIAL TEACHER AWARD

*This new award of \$100 cash and a certificate has been established in memory of James K. Tice, whose constant support and encouragement of Missouri's teachers and students changed so many lives.*

*Mr. Tice served for many years as a teacher, principal and superintendent of K-12 schools. Even after he retired from public education, Mr. Tice continued his tireless dedication to improving educational opportunities for everyone. He was devoted to creating learning communities, by integrating current and emerging technologies into the classroom.*

*Mr. Tice was a coach, a teacher, a mentor, a surrogate parent, and a friend. He never failed to say "I appreciate you". It is our hope that the recipient of this award also hears "We appreciate you".*

*The first recipient of this annual award is:*

Peggy Veatch  
Thayer High School

# SPECIAL AWARDS

## OZARKS SCIENCE & ENGINEERING FAIR FOUNDATION JUNIOR DIVISION TEACHER AWARDS

*This award of a Certificate of Award and a ticket to the Fair Recognition Breakfast is awarded to the teachers of the Junior Division First Place Category winners. The recipients of the Junior Division Teacher Awards for 2009 are:*

Laura Stroup, The Summit Preparatory  
Mary Hogan, Freedom Elementary  
Debra Burgard, Manes Middle School  
Lynn Vogel, St. Agnes Middle School  
Darlene Henne, Pleasant View Middle School  
Lannie Hinote, Skyline Middle School  
Tim Hayes, Immaculate Conception

## OZARKS SCIENCE & ENGINEERING FAIR FOUNDATION SENIOR DIVISION TEACHER AWARDS

*This award of a Certificate of Award and a ticket to the Fair Recognition Breakfast is awarded to the teachers of the Senior Division First Place Category winners. The recipients of the Senior Division Teacher Awards for 2009 are:*

Peggy Veatch, Thayer High School  
Jon Hinsley, Mansfield High School  
Jim Flora, Pleasant Hope High School  
Pam Probert, Mansfield High School  
Todd VanGorden, Greenwood Lab School  
Amber Gieber, Norwood High School

## OZARKS SCIENCE & ENGINEERING FAIR FOUNDATION JUNIOR DIVISION GRAND PRIZE TEACHER AWARD

*This award of a plaque is awarded to the teacher of the Junior Division Grand Prize student project. The recipient of the OSEF Foundation Junior Division Grand Prize Teacher Award for 2009 is:*

Laura Stroup  
The Summit Preparatory School

## OZARKS SCIENCE & ENGINEERING FAIR FOUNDATION SENIOR DIVISION GRAND PRIZE TEACHER AWARD

*This award of a plaque is awarded to the teacher(s) of the Senior Division Grand Prize student projects. The recipients of the OSEF Foundation Senior Division Grand Prize Teacher Award for 2009 are:*

Todd VanGorden  
Greenwood Lab School

Pam Probert  
Mansfield High School

# Thank You

The Ozarks Science & Engineering Fair Foundation and Steering Committee would like to recognize those volunteers, both individuals and organizations, without whom this event would not be possible. This week alone, over 600 hours of volunteer time and effort were donated – our deepest thanks and appreciation especially to the following:

- Dr. Georgianna Saunders' BIO 100 Class
- Michelle Hulett's CIS 101 Classes
- Missouri State University Biology Department
- Missouri State University Pre-Medical Society
- Sue McCrory's CIS 101, CSC 101 & RIL 211 Classes
- Citizenship & Service Learning Students
- Harry Shea's CSC 101 Class
- Aimee Marcello's CIS 101 Class
- Dr. Cheryl Schaefer's PHY 123 Class
- Dr. Kathy Hughes' BIO 210 Class
- Missouri State University Honors College
- Missouri State University Entertainment Management Association
- Delta Zeta Sorority
- Vickie Haynes' ELE 434 Class
- Society of Manufacturing Engineers, Student Chapter

In addition, nearly 200 judges from local colleges, companies and organizations donated their time and expertise Tuesday evening to judge the approximately 250 projects at this year's Fair. We cannot recognize them all by name, but their efforts are greatly appreciated.

We would also like to extend a very special Thank You to Maschino's for their generous donation of 28 umbrella bases, and to Robinett Business Systems for their generous donation of a copier.

In addition, we would like to recognize Allen Rents for their continuing support of the Fair by providing a substantial number of the folding tables used during the Fair.

Finally, we especially want to acknowledge the generous donation contributed by Positronic Industries, Jordan Valley Innovation Center, Positronic Industries, Schneider Foundation, and F & H Food Equipment Company toward the substantial travel expenses incurred by the Senior Division Grand Prize Winners for travel to the 2009 International Science & Engineering Fair in Reno, Nevada.

Volunteers are the lifeblood of an event of this magnitude. Without you, we could not continue the Fair's tradition of excellence. Thank you!