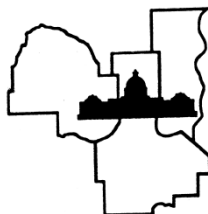


WELCOME TO THE

75th Annual Twin Cities Regional Science Fair
21st Annual St. Paul Science Fair
19th Annual Western Suburbs Science Fair

Twin Cities Regional
1939 - 2013
75
Years
Science Fairs
Feb. 22-23, 2013



**Affiliated with the International Science & Engineering Fair and the
Minnesota Academy of Science Minnesota State Science & Engineering Fair**

We're scientists ^{engineers}
inventors marketers
& business people of every kind.



We're 3M volunteers.

Tutoring, mentoring, serving, advising, building, delivering and most of all inspiring. The good works of thousands of 3M employee and retiree volunteers improve lives in our communities.

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3M Community Giving

**WELCOME TO THE 75th ANNUAL TWIN CITIES REGIONAL SCIENCE FAIR,
THE 21st ANNUAL ST. PAUL REGIONAL SCIENCE FAIR,
THE 19th ANNUAL WESTERN SUBURBS REGIONAL SCIENCE FAIR.**

Our Host this year is the University of Minnesota.

YOUR SCIENCE FAIR BUTTON is your identification as a participant in this Science Fair.

WEAR IT AT ALL TIMES - when you are at the Fair, both Friday and Saturday.

DO NOT WEAR HEELS WHILE IN THE BUILDING - FLAT SOLES ONLY!

Students must have a complete correct set of project forms at their exhibit during competition. Save your project forms after the fair. They may be needed for next year's project, too. TCRSF will send project forms to state for those projects advancing to state.

1. The number by your name is your project number. It shows you where to set up your project. When you find your place, set up your project. If you ordered electricity, find your place in "Electricity Row."
2. If there is a Scientific Review Committee (SRC) violation sheet in your folder, it means that there is a problem with your paperwork. Report to the SRC table as soon as you have set up your project. You will not be allowed to compete unless you have been cleared for competition by the Scientific Review Committee.
3. After your project is completely set up, please drop off the Safety & Display page in the **IN BOX at Safety & Display** (next to SRC). Go back to your project exhibit and wait for a Safety & Display volunteer to check your exhibit so you can be cleared for competition. You must pass both SRC and Safety & Display inspections to be able to compete for awards.
4. **There is no food or beverage allowed anywhere in the competition area.** A closed bottle of drinking water is the only exception.
5. Wear your TCRSF button in a clearly visible place at all times.

TCRSF requires that ALL TEAM members of team projects must be present at judging on Friday night (unless cleared by the fair director and the SRC chair) and that all ISEF winners must be at the Saturday Awards Ceremony. Winners of sponsor's awards must be present at the Saturday Awards Ceremony to win, have their photo taken with their award at their project, and have a signed parental consent form already on file with TCRSF.

All ISEF winners and all persons interested in traveling with the group to ISEF **MUST** attend the Sunday 1:00 p.m. ISEF meeting. (This meeting is *only* for ISEF winners, ISEF alternates, their teachers/mentors/and family members.) The location and time of this meeting will be confirmed with the ISEF winners immediately following the Awards Ceremony.

Green, Red, and Blue ribbon winners are all eligible to win special awards. All students: please listen carefully for your name during the awards program on Saturday. In order to shorten the awards program, the large groups of winners will be posted on a bulletin board Saturday morning in lieu of the names being read during the awards program. The winners and alternates will receive instructions and/or a purple ribbon or a certificate in their project or paper envelope. **Alternates have an excellent chance of being advanced, so keep your boards and your paperwork ready! Many of those not advancing to state still win awards.**



Science doesn't start in a laboratory

A child's imagination is ignited by curiosity and powered by all the wonders of the world.

At Medtronic, we devote ourselves to finding new and better ways to alleviate pain, restore health and extend the lives of people around the world. And we know that any innovation starts with imagination. That's why we support organizations and activities that will inspire the next generation of scientific innovators.



Bill Hawkins
Chairman and Chief Executive Officer

www.medtronic.com/community



UC2008015B x EN

SCHEDULE

Friday, February 22, 2013:

<u>Time</u>	<u>Activity</u>	<u>Location</u>
1:00 - 3:30 p.m.	Registration	Field House – No heeled Shoes
1:00 - 3:30 p.m.	Set up Projects / Clear Safety&Display Grades 6-8 must be set up by 3:30 Grades 9-12 must be set up by 3:30	Field House – No heeled Shoes
4:00-9:30 p.m.	Judging	Field House – No heeled Shoes

Saturday, February 23, 2013

8:00- 10:00a.m.	Exhibits open to the public	Field House - No heeled Shoes
9:00 - 9:30 a.m.	All Paper and Project Participants pick up envelopes containing ribbons & judging forms	Field House - No heeled Shoes



TEACHERS – Please arrange for someone to pick up papers, folders, & exhibits of any students not able to attend the award ceremony.

DO NOT DISMANTLE YOUR PROJECT UNTIL AFTER THE AWARD CEREMONY!

10:00 a.m. to 12:00 p.m.	Award Ceremony for projects & papers	Field House - University of Minnesota
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Winners of Special Sponsor Awards must be present at the Award Ceremony. ONLY projects with their signed Parental Media Release (generated during registration) turned in before judging starts will be eligible for awards which require a photograph. ALL team members must have signed media release forms on file for a team project to be eligible. Immediately after the awards ceremony, Sponsor Award winners must return to their projects until the official Fair Photographer takes their photo with the award & their display and then dismisses them.

All ISEF winners must be at both the Saturday Awards Ceremony AND the Sunday ISEF meeting to be eligible to be named finalist to travel to and compete in ISEF, or they will forfeit their finalist status to an alternate.

After Award Ceremony	*ISEF Finalists, Alternates and Advisors meet with the Fair Directors & SRC chair. *ISWEEEP Finalists, Alternates and Advisors meet with the Fair Directors & SRC chair.	South end of bleachers Field House
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Everyone: 1:30 p.m.	PLEASE HELP OUR VOLUNTEERS TEAR DOWN TABLES & CHAIRS ALL PROJECTS MUST BE REMOVED	Please help throw trash & leave the Field House clean.
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Minnesota State Science & Engineering Fair (grades 6-12 projects, grades 6-8 papers)
April 7-9, 2013, **Doubletree by Hilton** (formerly Sheraton Bloomington Hotel)

JSHS: Junior Science & Humanities Symposium (grades 9-12 research papers)
April 6-7, 2013, **Doubletree by Hilton** (formerly Sheraton Bloomington Hotel)

I-SWEEEP: International Sustainable World EnergyEngineering Environment Project Olympiad (grades 9-12 projects), Houston, Texas, May 8–13, 2013

ISEF: Intel International Science & Engineering Fair (grades 9-12 projects)
Phoenix, Arizona, May 12–17, 2013 (Twin Cities flies out May 11th)

JUDGING RULES AND SCHEDULE

1. Each student must remain with his/her project during the time scheduled for judging. If you are not at your project when a judge arrives, you may miss your chance to be judged.
2. Students must clear both SRC (Scientific Review Committee) & S&D (Safety & Display) before judging begins to be able to compete.
3. ONLY judges and students presenting projects are allowed in the exhibit area during judging.
No parents, advisors, teachers, or other non-participants are to be in the exhibit area during judging times, 4:00 PM – close Friday.
4. Stay at your project until the official announcement over the public address system dismisses you. Dismissal will be by grade. If you leave early you may be missing out on judging for other special awards.
5. TCRSF and the University of Minnesota do not accept responsibility for equipment/instruments brought to the Fair. **DO NOT LEAVE SUCH ITEMS OVERNIGHT OR UNATTENDED.**

	Judging Begins	Estimated Dismissal Time (WAIT for official announcement)
Grade 6	4:00p.m.	6:30p.m.
Grade 7	4:00p.m.	7:30p.m.
Grade 8	4:00p.m.	8:00p.m.
Grades 9-12	4:00p.m.	9:30p.m.



ALL TIMES ARE APPROXIMATE. PLEASE LISTEN FOR ANNOUNCEMENTS!

PROJECT LISTING

Student projects are listed by number, grade and affiliation and broken down by category within each grade level. Following this listing is an alphabetical list of all entries by grade. To find a project, or to find out where you are to set up your project, look for the signs.

GRADE	PROJECT NUMBERS	AFFILIATION CODES
6	6000-6999	(S) St. Paul Regional Science Fair
7	7000-7999	(W) Western Suburbs Regional Science Fair
8	8000-8999	(T) Twin Cities Regional Science Fair
9-12	1000-1999	All 3 affiliations are collectively known as "Twin Cities Regional Science Fairs"

RESEARCH PAPERS

All research paper competitors pick up your envelope with your research paper ribbon about 9 AM Saturday before the awards program. Grades 6-8 alternates and competitors advancing to state science fair with their research paper and grades 9-12 alternates and competitors advancing to Junior Science & Humanities Symposium (JSHS) will be posted Saturday morning in the Field House. Additional awards for papers will be handed out at the Award Ceremony on Saturday morning at 10:00 a.m. in the Field House.

TCRSF AND THE UNIVERSITY ARE NOT RESPONSIBLE FOR PAPERS, SRC PAPERWORK, PROJECTS, RIBBONS, AWARDS OR EQUIPMENT LEFT AT THE UNIVERSITY OF MINNESOTA FIELD HOUSE!

REMEMBER - We are guests of the University of Minnesota. Please keep your area clean and respect the property of others. Your actions reflect not only on you, but also on your school, your parents, your advisors and the fair.

Grade 6

Animal Sciences (AS)

- 6001S **Samantha R Peden**
Are Goldfish more Active in Light or Dark?
- 6002T **Meghan E Walsh**
You Can't Teach an Old Dog New Tricks

Behavioral and Social Sciences (BE)

- 6003T **Victoria M Caliguire**
All of That Sugar
- 6004S **Bobby J Clayton King**
The Effects of Violence in Video Games
- 6005S **Zipporah C Cohen**
Do different genres of music effect test scores?
- 6006S **Lukas G Foss**
How Do Tongue Twisters Work?
- 6007S **Andje T P**
How Does Color Affect Taste?
- 6008W **Karthik Papisetty**
The Effect of Video Games' on Test Taking Ability for Middle School Students
Project At Electicity Wall
- 6009W **Elise Pearson**
Girls vs Boys; Who Has Better Dexterity?
- 6010W **Mecca Polk**
Music and Test Scores
- 6011S **Benjamin Smith**
Taste That!
- 6012S **Grace M Zenzen**
The Power of Thought

Biochemistry (BI)

- 6013S **Julia Camacho**
The Effects of Boiling On The Loss of Vitamin C in Vegetables

Chemistry (CH)

- 6014W **Kristiana Adams**
Sticky Stuff
- 6015T **Erin M Bloom**
Hot Pots
- 6016S **Caleb I Cunningham**
Which Pop is a Better Copper Remover
- 6017S **Anna R Ebert**
Is All Bread the Same?

- 6018T **Jacob Hulteen**
Combustion of Fabric
- 6019W **Emily Killen**
What Kind of Sugar Tasted Best?
- 6020W **Grace Knoer**
Which sugar/yeast combination gives off the most carbon dioxide?
- 6021W **Prince Kuiah**
May The Best Nut Win
- 6022S **Eva M Langenbrunner**
Sweet drinks and bubbles and bombs oh my!!!
- 6023T **Benjamin Lenzmeier**
Household Cleaners: Safe and Helpful, or Are They? The Test to See How Harmful Cleaners Really Are!
- 6024S **Jonah K O'Hara-David**
What's the Secret of Elephant Toothpaste?
Exploring the decomposition of hydrogen peroxide
- 6025T **Cecilia Petruconis**
Rust In Peace
- 6026W **Anna Rumley**
What Surface makes Boo Bubbles stay the longest?
- 6027W **Cecelia K Schaack**
Flaming Fabric
- 6028S **Celita Spain**
The Acid Test
- 6029W **Claire Will**
The Best Way to Relieve Heartburn

Earth and Planetary Science (EA)

- 6030W **Joseph A Enzler**
What Works Best For Insulation?
- 6031W **Hadley C Sheehan**
Tornado Time
Project At Electicity Wall

Energy and Transportation (ET)

- 6032S **William R Anderson, John T Gunderson Team** - Measuring Acid Electricity of Different Fruit
- 6033S **Michael C Davis**
The Solar Race
- 6034W **Hannah Norman**
Which Blade Design on a Wind Turbine Will Produce the Most Energy?
- 6035W **Joseph p O'Brien**
Solar Cells

6036W **Logan T. Wright , Mohamed S Ali**
Team - Electric Fruit

Engineering: Electrical and Mechanical (EE)

6037T **Andrew L Glassman**
Solar water collector
Project At Electricity Wall

6038W **Avni Jain**
Utilization of Parabolic Reflectors to enhance
energy generation through the power of Solar and
Thermoelectric
Project At Electricity Wall

6039S **Jamin L Mittal**
AM Radio Transmitter Antenna

Engineering: Materials and Bioengineering (EN)

6040T **Henry Kelzenberg**
Which Bridge Design is the Strongest?

6041S **Anna E Middleton**
Splish Splash: Does wearing a swim cap make you
swim fast?

Environmental Management (EM)

6042W **Callan Happe**
Sound Insulation: Which Material Is Best?

Environmental Sciences (EV)

6043W **Sumaiya N Azeez**
Packaging Wasters

6044S **Thomas R Etter**
Shoreline Erosion

6045W **Maddie C Mork**
Heat It Up!

6046S **Will F Rachac III, Maximilian J Henseler**
Team - Burn On

6047S **Abigail L Reeder**
There is a pH for That

6048S **Antero J Sivula**
How Green Is That Detergent

6049W **Toby Sullivan**
Designing for Disaster: Which Tsunami Barrier is
Best?

Medicine and Health Sciences (ME)

6050W **Natalie Gorwor**
Fat or No Fat

6051W **Ella R Kester**
How does the type of flour,when mixed with
water,affect how much the mixture spreads out?

6052W **Luke Kolar**
Ouch! Why Redheads are Tougher Than Blondes
and Brunettes

6053W **Rahul Manoj**
How does food or drink affect glucose (sugar)
levels?

6054S **Matteo M Marchio**
Acidity level in different beverages

6055S **Nicholas R Martinez**
Medication Mayhem

6056S **Xwm C Moua**
Which Hand Soap Cleans The Best

6057S **Eva M Neira**
Lactose Intolerance

6058S **Celia J Olson**
The Effect of 5-Hour Energy on Heart Rate and
Blood Pressure

6059W **Joe Pedrolie**
Purposeful Exercise: The impact of varied load on
heart rate recovery

6060T **Alexandra N Snow**
Jumping Heart

6061S **Katia I Tesarczyk**
Do String Players have longer left-hand fingers?

Microbiology (MI)

6062W **Catherine G Kerin**
What Hockey Pads Have the Most Bacteria

6063S **Isak Stillwell Jardine**
Does Hand Sanitizer Actually Kill Germs?

Physics and Astronomy (PH)

6064W **Hemant S Gouni**
Solar Energy A Clean Source Of Energy
Project At Electricity Wall

6065W **Latron D. Hunter Jr., Trayvon D. Hodges**
Team - Rocking Rockets

6067T **Haley C Jostes**
How to create the perfect spin

6066T **Milan E Jostes**
Telephone Book Friction

6068W **Brendan Kiely**
Which Size Lead Levitates the Highest?

6069S **Eric G Lagos**
The Effect of Ball Pressure on Shot Quality

6070S **Soren C Malm**
Changing the Color of Light

- 6071T **Jui A Nagarkar**
Archimedes Principle: Principle of Floatation
- 6072T **Glenn D Rorer, Jameson Stahl**
Team - How Do Different Shotgun Choke Tubes Affect the Pattern of the Lead Pellets?
- 6073S **Olivia R Zindren**
Hidden Harmonics

Plant Sciences (PS)

- 6074S **Valerie Cavender Bares**
Changes in leaf pigments between spring and fall
- 6075W **Joel Horstmann**
Acids Effect on Plant Growth
- 6076W **Alijandra I Rahn**
In Which Soil Do Soybeans Grow Best?
- 6077W **Jacob P Stern**
What is the Effect on Radish Plants When Given Different Types of Liquids
- 6078W **Abigail Thompson**
Does Hydroponics Grow A Bigger Plant Than Regular Gardening?
- 6079S **Yvonne M Welborn**
Which soil? Topsoil, Miracle-Gro, or Compost?

Grade 7

Animal Sciences (AS)

- 7001S **Sophia R Clark**
Mississippi Mussel Movement
- 7002S **Sam M Doyle**
Cricket Critics
- 7003W **Grace T Ryan**
Ant Barriers
- 7004W **Grace Schmidt**
DeLIGHTful Ladies: The Effect of Light on Painted Lady Pupae
- 7005S **Christopher M Tibbetts**
Do Worms Regenerate faster In Different Types of Light

Behavioral and Social Sciences (BE)

- 7006W **Amalia Rencina Baca**
Does Font Affect your Memory
- 7007T **Hannah L Bjorklund**
Does Color Affect Taste Perception?
- 7008T **Aidan Mae Crotty, Sophia Ann Cave**
Team - Name Brand vs. Generic

- 7009S **Matt W Davies**
Does the color of food affect its taste?
- 7010T **Miski A. Dayib, Khadija A. Abdi, Habsa A. Gulet**
Team - It's written all over your face
- 7011T **Katie Kelzenberg**
What Age Group Smiles Back at Me the Most?
- 7012W **Elizabeth A. Kruchten**
Strategic Volunteering
- 7013W **Josie Marie LaBonne**
Memory differences for boys and girls
- 7014S **Evelyn R Morgan-Anderson**
May I Have Your Undivided Attention? A Study Of Music and It's Effects On Concentration
- 7015W **Ilham Omar Nur**
The effect of tv watching on students MCA score

- 7016S **Quinn T O'Keefe**
How Weather Affects mood
- 7017W **Andrew J Plouff**
Do The Eyes Have It?
- 7018T **Raquel Brooke Reser**
Does time go by faster when your having fun?
- 7019S **Gabriel N Reynolds**
Does gender affect how quickly one could find hidden letters?
- 7020T **Caylyn C Rosch**
Does chewing gum affect your test score?
- 7021S **Shyann M Salverda**
Musical Mathematics
- 7022S **Pasia Vang**
Musical Multiplication
- 7023T **Daniel S Votel**
Dominant Eye Vs Dominant Hand
- 7024T **Cameron J Weber**
Recess = Positive Learning
- 7025S **Dominic Wolters**
Super Stroop Effect

Biochemistry (BI)

- 7026T **Andrew L Barton**
An Inspiration from Norman Borlaug: A Study of Organic Fertilizers and Soil Types on Triticum Aestivum (Spring Wheat) Production
- 7027S **Grace T Commers Jr.**
How does the amount of oil affect the time it takes the popcorn to pop, the amount of kernels it pops and the flavor?

- 7028S **Claire N Davis**
The Role of Gluten in Baking
- 7029S **Eve A Devens**
Which name brand whitening toothpaste whitens the fastest?
- 7030T **Lancedell W Meniboon, Austin H Nguyen Team** - Environment Effects on Respiration Rate
- 7031T **Caleb E Peichel**
How do Different Containers affect the Decomposition of Apples?
- Cellular and Molecular Biology (CB)*
- 7032S **Bilan Omar**
Paper Towel Absorption
- Chemistry (CH)*
- 7033S **Ansley Atkinson**
Bone Damage
- 7034S **Ogheneochuko Avwunuma**
Ferrofluid
- 7035S **Christian R Berger**
How Does the Number of Charge Cycles Put Into the Leyden Jar Affect How Long the Discharging Spark is?
- 7036S **Erin M Boehme**
Let the Flames Begin!
- 7037S **Ellen A Carlson**
Marker Science Fair Project
- 7038S **Allen Davis**
Temperamental Chemiluminescence
- 7039W **Nicole C Dorn**
Candy Chromatography
- 7040T **Emma DuPont**
Plastic From Milk?
- 7041T **Anna Marie Gomes**
Power Crystals
- 7042S **Kang Zoua Her**
Science or Magic
- 7043W **Catherine E King**
Sweet Dreams and Laser Beams
- 7044S **Sarah E Linke**
Breaking Down Eggshells
- 7045W **Olivia J Litecky, Hailey Daher Team** - The Effect Color and Temperature Have on the Amount of Fizz in Pop
- 7046W **Anaiya Martin**
Water as a Solvent
Project At Electricity Wall
- 7047S **Grace E. Nelson**
The Foggy World of Dry Ice
- 7048W **Kylie M Nevells**
Scalp Psoriasis Treatment
- 7049T **Serafin Portillo**
Glowing Water Experiment
- 7050S **Nathan Reinboldt**
Sublimation
- 7051S **Katelyn S. Schearer**
The Best Stain Remover
- 7052W **Regan Sheehy**
Energy Content of Food
- 7053T **Nathan J Shirk**
Kool Cookies
- 7054S **Melissa Teal**
Sunprints
- 7055T **Matt J. Weimann**
Batteries
- 7056T **Madeline R Zitek**
Chip, Crack or Peel
- Computer Science (CS)*
- 7057T **Collin TE Knorr-Wegener**
The Importance of CPU Cooling
- 7058S **Thomas J Quinn**
Freeze frame
- Earth and Planetary Science (EA)*
- 7059S **Eliza M Donnelly**
The Effects Of Mining On Plant Growth
- 7060T **Sophie N Oubaha**
How much of the chemicals that are put in the ground end up in the aquifer?
- Energy and Transportation (ET)*
- 7061W **Micah T. Brands**
Shaping Parachute Future
- 7062W **Zach John Ertel**
Gear Ratios; How do gear ratios affect a car's performance, acceleration, and fuel economy?
- 7063W **James M Jurek, Elijah C Nelson Team** - Hovercrafts
- 7064S **Baonyiag Moua**
Burning Candles

- 7065W **Evan C Olson**
Hydrodynamics in Boat Hulls
- 7066S **Christopher Carl Ranum**
How temperature affects how high a tennis-ball bounces

Engineering: Electrical and Mechanical (EE)

- 7067S **Forrest Clay Ahrens**
How does the air pressure in a soccer affect the distance the ball travels when kicked?
- 7068S **Mariah Jo DelCastillo**
Woah, Wind!
- 7069S **Gayathri Dileepan**
How Does the Diameter of the Core in an Electromagnet Affect its Strength?
- 7070W **Emily J Nelson**
The Race for Cold is On!
- 7071W **Sean Newsome Newsome**
How Many Paperclips Can You Hold
- 7072T **Julian Shaw**
Wacky Wind Energy
Project At Electricity Wall
- 7073W **Paul C Steege**
What Bridge design holds the most weight?

Engineering: Materials and Bioengineering (EN)

- 7074T **Hana Abdi, Hafsa Warsame, Fartun Ahmed Team** - Flamingo Zoo Exhibit
- 7075W **Jane Ann Bremer**
Which material slips least on ice
- 7076T **Jack A Foley**
Span vs. Weight Bearing Capacity
- 7077T **Catherine M Frye**
Which Substance Keeps An Ice Cube Frozen The Longest?
- 7078T **Megan K Meyer**
Which Fabric Will Keep You the Warmest
- 7079W **Paislee ann Olson-Bengry**
Flame Resistant PJs

Environmental Management (EM)

- 7080W **Nicole L Reynolds**
Effects of salt and sand runoff on fish color and activity
- 7081W **Ashwin Senthilkumar**
Useful Waste

- 7082W **Ava M Stende**
Green Roofs verses Tar Roofs: "Which is better?"
- 7083S **Samuel L Warner**
411 Erosion Control

Environmental Sciences (EV)

- 7084W **Jack Ryan Acomb**
Effect of Road Salts on Soybeans
- 7085W **Caroline G Bowen**
Polluting Our Earth? Analyzing Nitrogen Levels in Fertilizer Runoff
- 7086W **Lauren M Copland**
Go With The Flow, Darcy's Law and Hazardous Waste
- 7087W **Cassidy Deng**
Global Warming: Ocean Acidification
- 7088S **Lydia R Dunn**
Windy City
- 7089W **Nikki Graves**
What's That Green Stuff?
- 7090W **Sam R. Ibach**
Terrifying Tornadoes
- 7091W **Gwendolyn Dehler Kelley**
Which Common Material Absorbs the Most oil out of Water
- 7092S **James A. Kinsella**
How acid rain affects aquatic plants
- 7093S **Ellie R Malmon-Andrews**
Cruising With Critters and Chemicals
- 7094S **Lauren E Mendoza**
Soil: Dig it!
- 7095S **Abigail R Moseman**
The Carbon Dioxide Effect
- 7096W **Florencia I Padilla**
How does the Earth tilt affect the Seasons?
- 7097S **Peter A Wild Crea**
How Does Type Of Touch Affect Plant Growth

Mathematical Sciences (MA)

- 7098S **Melinda Xiong**
Popcorn Percentages

Medicine and Health Sciences (ME)

- 7099W **Sydney M. Beard**
Save A Life: selecting the right disinfectant
- 7100S **Caleigh C Beltz**
Jumping For Science

- 7101W **Sarah E Betts**
An Exercise Therapy Program and Hand Device
Invented To Benefit Osteoarthritic Patients
- 7102T **Jenna Rose Bidwell, Kelsey Marie Dick
Team** - Temperature's Effect on Concentration
- 7103S **Tony Bogolub**
Putting the "P" in pH
- 7104W **Annie M Busch**
Does Perception of Quality Equal Higher Price
- 7105S **Flannery M Enneking-Norton**
Got Speed?
- 7106W **Jimmy J Farah**
Sprinting
- 7107T **Grace M Foley**
Are Fingerprints inherited?
- 7108S **Jessica Hoveland**
Dizzy Dancers
- 7109W **N'jallah V Kelleh**
Microwave Radiation
- 7110S **Clara G Mack**
Remembering With Different Senses
- 7111T **Kellie M McKane**
Multitasking
- 7112W **Annie K O'Connell**
Brain Power: Concentration Level
Project At Electricity Wall
- 7113W **Elise Olson**
Boys vs. Girls: A Comparison of Strength and Fine
Motor Coordination in Adolescents
- 7114S **Lucille K Omwena**
Burning Calories
- 7115W **Meg M Pryor**
Does Your Birth Month Affect Your Success In
Sports?
- 7116W **James Qualah**
Germ-Fighting Spices
- 7117T **Grace E Rohleder, Sami M Gallagher
Team** - The World of Taste
- 7118T **Anna M Schiltz**
Caffeine Commotion
- 7119T **Justin R Thompson**
The Effect of Gender on Lung Capacity
- 7120S **Marina Tipler**
Lung Capacity
- 7121T **Moira Weiland**
To Sleep or Not to Sleep
- 7122W **Charles Wylie**
Dominate vs. Non-Dominate Eye
- Microbiology (MI)*
- 7123T **Madison R Berglof, Katherine R Book
Team** - Effects of Music On Daphnia
- 7124W **Patrick D Daley**
Best Way To Clean A Kitchen Sponge
- 7125S **Beth S. Fryxell**
How Does the Temperature of Red Meat affect how
much E. coli grows on it?
- 7126S **Noah F. Johnson**
Mouthwash Mayhem
- 7127W **Will Kamm**
Yeast Fermentation in Sugar Substitutes
- 7128S **Jamie T Lackay**
How does the wrong antibiotic affect the bacteria's
resistance
- 7129S **Isak T Larsson**
How does the active ingredient in a mouthwash
affect the efficacy of that solution?
- 7130S **Alice S. Lightfoot**
Intelligent Slime Mold???
- 7131W **Nate J Loney**
Gross Gear
- 7132S **Emilia F Topp-Johnson**
Battle of the Fungicides
- 7133W **Morgan E Williams**
Does It Pay To Spend?
- Physics and Astronomy (PH)*
- 7134W **Steven C Barnier**
Lifting off with the Best Wings
- 7135T **Keith Calvin-Stokes**
Aerodynamics: The Answer Flows in the Wind
- 7136S **Arturo T di Girolamo**
How Does Location Affect Skyglow
- 7137W **Junior Kai**
Give Me Your Best Shot
- 7138W **Devon Jordan Kendall**
Does The Type of Wax effect the Glide Time
- 7139S **Walter J. Medcraft**
Rockets

Grade 8

7140W **Seth D Olson**
Electro-Jar

7141W **David Segelstrom**
Fire Away

7142S **Noah Y Solomon**
Cutting Through Air

7143S **Paul Thompson-Nelson**
Faster,Faster

7144S **Takele P Thompson-Nelson**
Ow, I hit my head

7145W **Molly M Totzke**
Pop N Mentos with a twist

7146S **Pajfuabcha Vang**
Attrition Friction Machine

7147W **Isaac Lee Velgersdyk**
Bounce to the Max

7148T **Estefany Vergara -Zuniga**
Temperature Affecting Distance

Plant Sciences (PS)

7149W **David DeJong**
The Effect of Talking on the Height of Plants

7150W **Michael Doyle**
How does your garden grow

7151S **Mara E Halloran**
Gettin' Dirty with fast plants

7152T **Evan Joseph Huss**
Does the Type of Light Bulb Affect Plant Growth?

7153W **Nya Macon**
Strawberries

7154W **Maria C McGrath**
Capillary Action

7155S **Annie Rose Twiss**
How does different colored light affect plant growth?

7156W **Joey A Veurink**
Lucky Bamboo

7157T **Matthew Paul Warmka**
Do plants grow better in a water or carbon dioxide rich environment

Animal Sciences (AS)

8001T **Nathaniel R Farmer**
Investigating association preference behavior of wild caught fathead minnows (*Pimephales promelas*)

8002S **Jada M Konop Defreitas**
Does the Amount of Dissolved Oxygen in Water affect a fishes respiration

8003S **Sophia M Poppert**
Animal Emotions

8004S **Henry J Twiss**
How sound affects snakes

Behavioral and Social Sciences (BE)

8005W **Huda Q Alamiri**
Judged By Their Cover

8006T **Dylan T Cook , Liam H Casement Team** - How Breakfast Effects Your Problem Solving Skills

8007W **Elena Extrand**
Does Music Affect the Efficiency of Test-Taking?

8008S **Samuel C. Gerteis**
Gender Differences and bullying

8009W **Kevin Hughes Jr**
Oooh, My Ears

8010W **Harini Kethar, Linnea Gilbertson Team** - Effects of background music on short-term memory
Project At Electricity Wall

8011T **Sophia M Larson**
Stopping The Stroop Test

8012S **Jade C Larson**
Does Music Improve Memory?

8013S **Gwen C Nash**
Peer Influence

8014S **Thomas John Sheehan, Mason Asher Corhouse Team** - Nothing but net- does having a net affect free throw percentage

8015S **Isabel R Warner**
Does The Speed At Which You Read Affect Your Comprehension Level?

8016S **Henry Warwick**
Backwards Thinking

Biochemistry (BI)

8017S **Liam J McCully**
How age affects taste

Cellular and Molecular Biology (CB)

8018S **Paige L Bosler**
There's A Fungus Among Us!

8019S **Damyan W Hart**
How do different types of light bulbs affect the growth of keratinocytes?

Chemistry (CH)

8020W **Kate C Arms**
Scented vs. Unscented Candles Which Burns Faster

8021T **Omoyemi O Davies**
Hair Dye Experiment

8022S **Elizabeth M Demitroff**
Globs Of Gluten

8023S **Maddie A Hawkins**
Fingerprints vs. Temperature

8024T **Katie T Henschell, Taylor A Thomas**
Team - The Durability of Nail Polish

8025S **Charles Horttor**
Ice shapes vs melting time

8026W **Jenna L Jackson**
Maintaining freshness

8027W **Carson L Knoer**
Which Biodegradable Material Gives Off The Most Biogas?

8028T **Christine A Lorentzen**
Egyptian Mummification

8029S **Josephine K McMahon**
Body Temperature and How it Affects the Presence of Fingerprints

8030W **Nikita A Menon**
The effect of solvents on the amount of ink removed from a permanent marker

8031S **Sigurd C. Ostlie-Olson**
Fire Vs. Fabric a Tale of Resiastance

8032W **Annie E Paulison**
Fruit Ripening

8033W **Stephanie V R Roberts**
Which Type Of Exterior Paint Base Best Protects Metal From Rust

8034S **Robert O Roof**
How do different temperature conditions affect crystal growth?

8035T **Jonah J Rueb**
Is Lead Paint Really Gone

8036S **Eileen K Ryan**
Which Sunscreen SPF Protects The Best And Stays On The Longest In Changing Environments?

8037T **Emily R Schabert, Rachel N Tschida**
Team - Solvents:Are They Efficient Cleaners?

8038S **Imogene J Silver**
Briggs-Rauscher (BR) Reaction

8039T **Kara P. Star**
Best Bacteria Buster

8040W **Jamila Tennin**
Time for Viscosity

8041S **Yengkong Thao**
Growing Crystals

8042T **Amy C Vievering**
Does a Candle's Environment Affect Its Burn Rate?

8043W **Colleen E Wagner**
Ever So Sweet: Measuring the Sugar Content in Fruit

8044S **Jade D Waldmann**
Chocolate vs. Chocolate vs. Chocolate

Computer Science (CS)

8045S **Max J Narvaez**
Does a persons knowledge of HTML affect how fast they can make a website?

8046S **Mon C Non**
How does certain formats affect the render speed in Final Cut Pro X

Earth and Planetary Science (EA)

8047S **Hanna Devaney**
Desalination of sea water

8048T **Brianna H Scott**
Can plant seeds grow in diffrent types of growing compounds?

8049W **Chelsea Yigan-Kohoe**
Water Purification

Energy and Transportation (ET)

8050W **Abby Bollensen**
Nitrogen vs Air

8051W **Joey R Dahl, Nick M Kroening**
Team - Crash Test Dummies

- 8052S **Sovigne P Gardner**
Dye-sensitized Solar Cells: Is there a correlation between acidity & anthocyanin effectiveness?
- 8053S **Tyler Lee Johnson**
How does the different type of color affect how hot it gets from the sun
- 8054W **Luke F Narog**
The Impact of Keel Design on Boat Stability
- 8055S **Kirk J Thoren**
What SAT-NAV is More Efficient
- 8056W **James M Vogel**
Gear up

Engineering: Electrical and Mechanical (EE)

- 8057S **Maikong Chang**
Build a Light Bulb
- 8058W **Nolan S Farnam**
Voltage*N*Ator
Project At Electricity Wall
- 8059S **Vanessa Manzanares**
Soil Fertility and Conductivity
- 8060S **Sumaya Mohamed**
Rubber Bands for Energy
- 8061S **Jack A Swartz**
The Way Airplanes Fly

Engineering: Materials and Bioengineering (EN)

- 8062S **Zack Bellovich**
Cookies
- 8063S **Denasia A Hamilton**
Heat Resistant Shield
- 8064T **Duncan Ince**
To Pad Or Not To Pad - How To Survive Another Whack To The Head?
- 8065T **Andrew M Weigel**
Balancing water, a study of water tension

Environmental Sciences (EV)

- 8066W **Courtney Bowman**
Rainbow Milk
- 8067S **Abigail J Clapp**
Temperature and Greenhouse Gases
- 8068S **Ice Demmings**
The Ice Melting Affect
- 8069S **Seamus H Flynn**
A Clean Drink of Water?: Part Two

- 8070S **Grace L Gardner**
Oil Spills: Taking Oil Out of Water
- 8071W **Sophie T. Hedrick**
Phosphorus
- 8072W **Kate S Janda**
Bloomin' Algae!
- 8073T **Nicholas F Knapp**
Biofuels vs Fossil Fuels
- 8074W **Jane C Kolar**
Achieving Thermophilic Bacteria Growth Using Compost Activators
- 8075S **Sonu Lane**
Oh No Dirty Water
- 8076T **Mark A Leinberger**
The Effects of Temperature on Solar Cell Productivity
- 8077W **Michael J Munson**
Water Conservation through Irrigation Efficiency
- 8078T **Tim J Ollmann**
Fishing for Sound
- 8079S **Yusra M Osman**
Measuring Soil Acidity
- 8080T **Elizabeth V Ott**
Compact Compost
- 8081T **Joey P Pardo III**
Measuring Tornadoes
- 8082S **Anthony Pin**
Rock Salt Affecting Plants
- 8083W **Annie G Plunkett**
The Greenhouse Effect: And How It's Changing Our Lives
- 8084S **Deja Ragland**
Candle Effect
- 8085W **Timothy M Reed**
Biofuel vs Motor Oil
- 8086S **Gavin J Reeder**
The Effects of Pollutants on Protista
- 8087W **Genevieve G Thelen**
Grey Water Gardens
- 8088T **Jake T Yocum**
Wind Vs. Solar

Mathematical Sciences (MA)

- 8089T **Sydney C. Polski**
Coca-Cola and its Carbonation

Medicine and Health Sciences (ME)

- 8090W **Euphrosyne I Daoutidou**
Hearing Thresholds
- 8091T **Jacinta B Davis**
Smokers and Non-Smokers: Could lung capacity be an indicator of lung cancer?
- 8092W **Maddie J Duffy**
Magic Medicine
- 8093W **Emmalyn R Elsen**
Germs Be Gone
- 8094S **Iris Holman**
How Pre-Exercise Nutrition Affects Workout Performance
- 8095T **Megan K Leffner**
Pop goes the Kernal
- 8096W **Garett E Moore**
Natural, Home-Made vs.Store Bought Antacids
- 8097S **Geetanjali Rajamani**
Comparison of Different Sweeteners in Terms of Influence on Blood Glucose Response and Taste
- 8098S **Minna E Stillwell Jardine**
Which Sweetener Makes the Best Tasting Chocolate Chip Cookies?
- 8099W **Maggie R Sullivan**
Pilobolus: Is Precision Driven by Colored Light
- 8100W **Dearest Welwolie**
Caffeine and Heart Rate
- 8101W **Jack A Will**
Evaluating Kidney Sizes: Measuring Kidney Size Using Ultrasound Technology
Project At Electricity Wall

Microbiology (MI)

- 8102W **Ashley M Cordero**
Cinnamon, The Eliminator?
- 8103W **Grace M Ovsak**
Can't Touch This
Project At Electricity Wall
- 8104S **Noah M Rooze**
Pollution = Mutation

Physics and Astronomy (PH)

- 8105W **Ben Becker**
Light Scattering Off 3D Shapes
- 8106T **Colin M Bergthold**
Organic Batteries

- 8107W **Edward M Cavello III**
Mentos and Soda Explosion
- 8108W **Rachel Deering**
Centrifugal Force
- 8109T **Greg P Dobihal, Sam J Henkes Team** - Weight Impact on Wood
- 8110S **Riley R Domler**
Which is faster:sliding, diving or running?
- 8111W **Andrew J Hoy**
Magnetic Linear Accelerator
- 8112S **Molly E Johnson**
Can Sound Waves Be Used To Measure The Pitch Speed of a Softball?
- 8113S **Nicholas T Juckel**
Puckology: The Effects of Temperature on Hockey Pucks
- 8114W **Anthony L Jurek**
The .22 Caliber Bullet
- 8115S **Mira E Kammueler**
What percentage of stars have visible transits?
- 8116W **Emma R Kane**
What is Color?
- 8117T **Keithton C Kelly**
Trebuchet Physics
Project At Electricity Wall
- 8118T **Ben Kemp**
To Stick Or Not To Stick
- 8119W **Giles D Koski**
Power of Magnetism
- 8120S **Johnny F Krawczyk**
Get a Grip
- 8121W **Nick H Nassen**
The Effect of Mass on a Sled Going Down a Hill
- 8122S **Julian E Politsch II**
Got Friction?
- 8123S **Maxwell C Riley**
Gauss Gun
- 8124W **Hannah M Smith**
How magnets affect ferrofluid?
- 8125W **Conrad J Stenglein**
Projectile Motion
- 8126S **Sam H Swanson**
Going the Distance with Potato Cannons
- 8127S **Brian R Whelan**
Which materials absorb sound the best?

8128S **Mackenzie F Zenk**
Supercooling Water: Can Different Types of Water Remain Liquid Below Their Natural Freezing Points?

Plant Sciences (PS)

8129S **Jose F Carballo**
Same but Different

8130W **Andrew C Hienz, Spencer M Weiss, Matthew J Nyberg**
Team - Near Space, The Final Frontier

8131S **Christopher C Miller**
Growing Plants: Hydroponics vs. Traditional

8132S **Jackson Lee Muehlbauer**
How does the type of soil effect the growth of corn?

8133S **Tessa B Newman-Heggie**
Grasses, Seeds and Salt: The Effect of Road Salt on Native Plants

8134S **Jose Ramirez**
Tomato

8135S **Nehali van der Leeuw**
The Four Colors Of Growth

8136S **Cher Vang**
Flowers to Colorful

8137W **Matthew W Wysopal**
Acid Rain

8138S **YeeKo Yang**
Preserving Apples

High School

Animal Sciences (AS)

1001T **Darby J Lofthus**
Grade 10 - The Effects of Exercise on Respiration Rate, Body Mass, and Swimming Patterns of *Carassius auratus* at Two Different Elevations

1002W **Iman Pakzad**
Grade 11 - Host Fish Response to Mussel Lure

1003W **Sarah E Stefanik**
Grade 9 - Designer Dog Dilemmas or Purebred Dog Problems?

Behavioral and Social Sciences (BE)

1004T **Amy Bendtsen**
Grade 10 - The Gender Gap

1005T **Riley L Bergsten**
Grade 10 - The Effects of Music

1006T **Claire R Boatman**
Grade 10 - The Role Gender Plays in Reaction Time

1007T **Aisha Cacique, William Spaulding**
Grade 10,10 - Team - Task Completion With Music

1008T **Elijah k Clements**
Grade 10 - Does Involvement in a High School Music Program Affect a Person's Ability to Judge Musical Performance?

1009T **Samantha R Corcoran**
Grade 10 - Imagination Wars: Children vs. Adults

1010T **Jessica M Drymon**
Grade 10 - Can You Really Taste the Rainbow?

1011T **Marisa J Dunning**
Grade 10 - Effects of Color on Memorization

1012W **Abby Erdmann**
Grade 12 - Stop: A Study of Distracted Driving Behaviors in the Vicinity of Breck School
Project At Electricity Wall

1013W **Nirupa Galagedera**
Grade 12 - Nice Ride Expansion and Physical Activity
Project At Electricity Wall

1014T **Sonrisa Gaulden, Jahkobi Martin-Senna**
Grade 10,10 - Team - Time Perception and Fun

1015T **Jack J Hanson**
Grade 10 - Logical Intelligence Based on Various Demographics

1016T **Teslin R Maertz**
Grade 9 - Monty Hall Paradox

1017T **Kevin Z Mason**
Grade 11 - Detection of a lie

1018T **Tess M Mueske**
Grade 10 - Perceptions of Organic Food

1019W **Achinth K Murali**
Grade 12 - "Rethinking ADHD: relationships between symptoms, personality, brain volume, and reward processing"

1020W **Abhishek Nayar, Stephen Kim**
Grade 11 - Team - Birth of a Revolution
Project At Electricity Wall

1021T **Jonathan D Nguyen**
Grade 10 - Appeal of Colors

1022T **Carmel C San Juan**
Grade 10 - The Complex Relationship between Handedness and Brain Lateralization among Humans

- 1023T **Zaria T Smith**
Grade 10 - MorethanMeetsTheEye
- 1024W **Sanjana Srivastava**
Grade 11 - Identifying Executive Functioning Deficits From Gameplay Behavior Using Machine Learning
- 1025T **Jacob W Tangney**
Grade 10 - Correlation between one's favorite music and their concentration
- 1026T **Dennis W Toenjes**
Grade 9 - Responses to Local and Non-Local Bird Calls in Domestic Cats
- 1027T **Nathaniel G Treimer**
Grade 12 - A Scientific Analysis of the Effects of Auditory Performance Feedback on Motor Skill Refinement
- 1028T **Abigail T Ulrich**
Grade 10 - Analysis of Preference to Various Meal Plating Techniques
- 1029S **Jocelyne V Villada**
Grade 9 - Does Color Affect The Way One Feels ?
- 1030T **Louie Chelle B Villamor**
Grade 10 - The Study of Multitasking Efficiency on Teenagers
- 1031T **Riley J Wedan**
Grade 10 - The Hidden Intelligence of Crowds
- 1032S **Kao Soua Yang**
Grade 10 - Gender on Memory Recall

Biochemistry (BI)

- 1033W **Priyanka R Narayan**
Grade 11 - Improving the Oral Absorption of Chemotherapeutic Drugs Through the Use of Novel Nanoparticles
Project At Electricity Wall
- 1034S **Maxwell J Silver**
Grade 10 - Slip in a Banana Peel
- Cellular and Molecular Biology (CB)***
- 1035W **Greer E Bingham**
Grade 12 - Starving Cancer: A study of glutamine dependency in cancer cells
- 1036T **Seth Cattanach**
Grade 9 - How do proteins and protein functions affect how organisms are related?
- 1037W **Emily J Chen**
Grade 11 - The Effect of FANCD2 on ATR kinase function
Project At Electricity Wall

Chemistry (CH)

- 1038S **Erica P Craddock**
Grade 10 - Cupcake Wars: Which contestant--vegetable oil, red wine or grapefruit juice--will win?
- 1039S **Mai See Her**
Grade 10 - What Make More Energy?
- 1040T **Kaitlyn L Huntley, Sophie M McNurlin**
Grade 9,9 - **Team** - Vegetable Oil Vs. Olive Oil In Cupcakes
- 1041T **Gina S Jostes**
Grade 9 - Gummybears vs. the force of gravity - How much can an adhesive hold?
- 1042S **Kamairee J Kimble**
Grade 9 - Copper Plating
- 1043T **Nicki Lyons**
Grade 10 - I'm a Bad Bleach
- 1044W **Matthew R McMillan**
Grade 11 - Engineering a polyelectrolyte-based film with a novel carbon nanotube base layer
- 1045S **Mai S Moua**
Grade 12 - Fingerprints: Which techniques used to find latent fingerprints is the most efficient?
- 1046S **A'nashai S Nelson**
Grade 11 - My hair dye
- 1047T **Travis K Nguyen**
Grade 10 - Quickest Oxidation Materials
- 1048T **Salma H Noor, Yasmin A Gabdille**
Grade 9,9 - **Team** - DNA Strawberry Extraction
- 1049T **Bee Bee R. Qureshi, Muna A. Mohamed, Hanan M. Farah**
Grade 9,9,9 - **Team** - Cabbage Indicator: Basic or Acidic? Choose Your Pick!
Project At Electricity Wall
- 1050W **Claire M Simpson**
Grade 11 - Writing and applying Monte Carlo simulation software to examine aerosol nucleation—a primary contributor to climate change
- 1051T **Siddharth Sridher**
Grade 9 - Burning Calories: How much energy is stored in each type of food?
- 1052S **James Yang**
Grade 9 - Which Brand of Gel is Better?

Computer Science (CS)

- 1053W **Darius W Bieganski**
Grade 12 - A telemedicine tool for monitoring Parkinson's: Using Microsoft Kinect to engineer the ParkinsonsProtoTracker
Project At Electricity Wall
- 1054W **Caleb J Kumar**
Grade 12 - There's an App for That: An iPhone Application for Post-stroke Upper Extremity Rehabilitation
Project At Electricity Wall
- 1055T **Aceif J Oubaha**
Grade 9 - The effect of parabolic reflectors on the signal strength of a wireless internet connection
- 1056W **Apurv H Shekhar**
Grade 11 - A Topographic Pressure Equalization Approach to Facility Assignment with Capacity Constraints
Project At Electricity Wall

Earth and Planetary Science (EA)

- 1057W **Kevin Barry**
Grade 12 - The Effect of Water on the Temperature of Land
- 1058T **Mitch R Carlson**
Grade 9 - How Temperature Affects Magnetism
- 1059W **Lilly J Hanson, Claire Q Guinta**
Grade 11,11 - **Team** - The Effect of Environmental Differences on the Breakdown of Polystyrene Foam
- 1060S **Ole Johnson, Midahkota Wells, Jaylan Foster-Walker**
Grade 12,12,12 - **Team** - The Effect of Temperature on Stalactite Formation
- 1061T **James L Kruse**
Grade 12 - Are Genetic Fragments Still Present in Mosasaur Teeth?

Energy and Transportation (ET)

- 1062S **Nou Cheng Lee**
Grade 11 - How Does the Angle of Attack Affect the Amount of Lift and Drag?
- 1063T **Marya A Redmond**
Grade 9 - Straw Bridge Construction
- 1064T **Colton V Van Dorpe**
Grade 10 - The Effects of Temperature on the Voltage Output of a Photovoltaic Cell
- 1065S **Mai Yer Vang, Xylina Vue, Karen Xiong**
Grade 12,12,11 - **Team** - The Cost of Cell Phone Charging

- 1066T **Max Ylitalo**
Grade 9 - Food or Fuel? Can Arrowroot or Cassava Replace Corn in the Production of Ethanol?

Engineering: Electrical and Mechanical (EE)

- 1067T **Ben W Andrews**
Grade 10 - How Far does Shocky Shoot?
- 1068T **Joseph H Carlstrom**
Grade 10 - Piezoelectric Energy Harvesting
- 1069S **Ismeal Y Hassan, Aeh B Moe**
Grade 11,11 - **Team** - Which Bridge Should You Truss? Strength of Bridge Trusses
- 1070S **Serena Jing, Michelle Mao**
Grade 9,9 - **Team** - Wind Turbine Design Optimization for Maximum Power
- 1071T **Sam E Johnson**
Grade 10 - The Effects of Altering the Structural Design of Bridge Trusses on Bridge Strength and Wind Deflection
- 1072T **Christopher D Knutsen**
Grade 9 - Ping Pong Catapult
- 1073T **Theodore E Ko**
Grade 10 - The Effect of Surface Area Touching on Resistance in Copper Wires
- 1074S **Sor Lee, Xa Lor**
Grade 11,11 - **Team** - Electromagnetic Generator and Number of coils
- 1075T **Derek J Racek**
Grade 10 - Diamagnetic Strength of Common Materials
- 1076S **Kristofer T Robison**
Grade 9 - Building a Crystal Radio
- 1077W **Jason J Sylvestre**
Grade 11 - Engineering VoltX, A Multifunctional Teleoperated Rescue Robot
Project At Electricity Wall
- 1078T **Andrew D Wade**
Grade 12 - Engineering a Solar Powered Cooler, Year 2
- 1079T **Lauren R Warmka**
Grade 10 - Retrofitting Structures to Withstand Seismic Waves

Engineering: Materials and Bioengineering (EN)

- 1080T **Katherine R Carman, Bram HL Carr**
Grade 11,11 - **Team** - Solar-Hydro-Powered Generator
Project At Electricity Wall

- 1081T **Connor V Duffy**
Grade 12 - Enhanced Drug Delivery via PEG-crosslinked Mucin Hydrogels
- 1082T **Jackson L Gilman**
Grade 10 - How much can it hold?
- 1083W **Felicia Y Hamann**
Grade 12 - Water Extractor
Project At Electricity Wall
- 1084W **Carolyn K Jons**
Grade 9 - A New Innovation in Food Preservation
- 1085T **Kevin J Kucera**
Grade 10 - Correlation between Thermal Resistance and Noise Cancellation
Project At Electricity Wall
- 1086T **Jasmine J Lim**
Grade 10 - Cellulose vs. Cotton Insulation: Is One Better?
- 1087W **Peter J Metzger**
Grade 11 - Improving Organic Solar Cell Materials by Characterizing Fundamental Physics in PtOEP
- 1088T **Stefan M Remund**
Grade 10 - Water for everyone
- 1089S **Jahlil M Rivers**
Grade 10 - The effect Light has on solar Panels
- 1090T **Suraj H Shah**
Grade 10 - Engineering a Cost-Effective, Portable Syringe Pressure-Based Water Filter Using a Hollow Fiber Membrane from 3M Water Purification Inc.
- 1091S **Liya Tessema, Martha Taye**
Grade 11,11 - **Team** - Detecting Genetically Modified Foods through DNA
- 1092W **Elliott C Weiler**
Grade 11 - Origins of Life: Engineering a Biosphere to Study Phospholipid Self-assembly
- 1093S **Samantha Yang**
Grade 10 - Is cooking spray or cookie sheet better for baking
- 1094W **Sophia Lin Zhang**
Grade 11 - Effective Cardiac Myocyte Differentiation of Human Induced Pluripotent Stem Cells Requires VEGF
- Environmental Sciences (EV)*
- 1095S **Jupiter Adams-Phipps**
Grade 10 - The Importance of pH Measurements and Water Quality
- 1096T **Sydney L Botz**
Grade 10 - Comparison between the Decomposition Rate of Compost in a Windrow Pile and an Original Design
- 1097T **Alicia Bruce**
Grade 9 - Affects Of A Hot Dry Summer On The Minnehaha Creek
- 1098W **Paige C Dempsey**
Grade 12 - Characteristics that Contribute to Nest Success of Endangered Red-headed Woodpeckers (*Melanerpes erythrocephalus*)
- 1099S **Cole M Dunlap**
Grade 11 - Dirty Snow
- 1100T **Jane Koch**
Grade 10 - Hydroponics vs. Soil
- 1101T **Kayla M Kruse**
Grade 10 - Are Diatoms Affected by Acid Rain and Global Warming?
- 1102S **Maipa Lee, Pa Voua Thao**
Grade 9,9 - **Team** - How to make a cloud
- 1103S **Hto Lwee, Caulty Heng**
Grade 10,10 - **Team** - Protist In River Contaminated With Drugs
- 1104T **Cheyenne R Mason-Brousseau, Alex C Manos**
Grade 12,12 - **Team** - Branchinecta gigas: Evidence of climate change in Minnesota.
- 1105T **Benjamin T Nhan**
Grade 10 - Insulation Components Project
- 1106S **Pheng Vang**
Grade 11 - Arsenic in Rice
- Mathematical Sciences (MA)*
- 1107S **James C Earl**
Grade 12 - Infinite Minesweeper Arrays With Constant Value
- 1108T **Matt S Weiss**
Grade 10 - Order In Chaos
- Medicine and Health Sciences (ME)*
- 1109T **Redeat F Abegaz**
Grade 12 - Effects of Natural Extracts and Menthol Combined with Salicylic Acid on S. epidermis: Year 2
- 1110T **Allison R Bearnose**
Grade 12 - Native American Teens and Diabetes
- 1111T **Anthony J Benecke**
Grade 10 - What Mouthwash is the Most Effective at Killing Bacteria

- 1112T **Max F Dunstan**
Grade 10 - Effect of Chewing Gum on Mouth Microbes
- 1113T **Trinidad M Flores, Danielle M Pineiro**
Grade 10,10 - **Team** - Does Price Matter For Facial Cleansers?
- 1114W **Kira G Hinz**
Grade 12 - Killer Carbs: Effects of 50% Dextrose Treatment on Postnatal Hypoglycemia Rats
- 1115W **Arush Jain**
Grade 9 - Positron Emission Tomography – Mathematical Model To Offset Partial Volume Effect Utilizing Aligned MRI To Improve Cancer Diagnosis
Project At Electricity Wall
- 1116T **Kyle K. Johnson**
Grade 9 - The Body
- 1117W **Jenny Lai**
Grade 12 - Development of an ELISA Prototype to Detect the Presence of Novel Peptide TUF1 in Serum and Its Role on Stress Management
Project At Electricity Wall
- 1118W **Jeffrey Y Lee**
Grade 9 - The relationship between the polarity of amino acids from gene mutations and genetic Alzheimer's Disease
Project At Electricity Wall
- 1119T **Ahmed A Mohamed**
Grade 10 - Effects of Anxiety on Memory
- 1120T **Nina R Moll**
Grade 10 - A study of the cardiovascular system of a *Carassius auratus*.
- 1121T **Marisa C Mortari**
Grade 10 - Novel Genetically Engineered Drugs Targeting Cancer Stem Cells
- 1122T **Marah K Mustafa**
Grade 10 - Orbicularis Oculi Muscle's Reaction to Light(s) in Five Seconds
- 1123W **Apekshya Panda**
Grade 11 - Preparation of primary neuronal cultures for use as an in vitro model in elucidating the role of -synuclein in Alzheimer's disease
Project At Electricity Wall
- 1124W **Jessica Ryvlin**
Grade 12 - Bioengineering the lung: Determining ideal oxygen concentrations to stimulate stem-cell growth on a transplantable lung matrix
- 1125T **Robby W Scholl**
Grade 10 - Comparison of Sports Helmets' Protection Capabilities
- 1126T **Nathan D. Shadick**
Grade 10 - The Gatorade Series
- 1127T **Peace Sinyigaya**
Grade 10 - Is our currency a fomite? An investigation of the role of currency in pathogen transmission and potential methods of remediation
- 1128W **Camille I Smith**
Grade 10 - Analyzing the link between degree of neuronal damage following traumatic brain injury and the corresponding response of microglial cells
Project At Electricity Wall
- 1129T **Brett M Staniforth**
Grade 10 - "Too Much Or Too Little"
- 1130T **Madeline M Thomas**
Grade 10 - Which Color is a Sight for Sore Eyes?
- 1131T **Courtney L Wolfe**
Grade 10 - Strong Pulse vs. Strong Beat
- Microbiology (MI)*
- 1132T **Sarah Davidson, Emily Wollmuth**
Grade 12,12 - **Team** - The Effect of Human Airway Secretions on *Pseudomonas aeruginosa*
- 1133T **Maitreya A Mujumdar**
Grade 9 - How do microbes in compost react to changes in temperature?
- 1134W **Bhargavi Papisetty**
Grade 11 - Infectivity Study of Prions Using In-Vitro Converted Y145stop in Ex-Vivo Conditions
Project At Electricity Wall
- 1135S **Janet A Peralta**
Grade 11 - Honey and Bacterial Zone of Inhibition
- Physics and Astronomy (PH)*
- 1136T **Abdufatah Abdi, Abdullahi Maxamed, Abdiaziz Nur**
Grade 9,9,9 - **Team** - What's the Fastest Way to Cool a Soda?
- 1137T **Abdiaziz Ahmed, Ahmed Ahmed, Zakariye Hashi**
Grade 9,9,9 - **Team** - Building a Lightbulb: Circuit Science
- 1138T **Ben T Davidson**
Grade 10 - Effect of Temperature on Spin
- 1139W **Zach L Donahue**
Grade 11 - Engineering an Inexpensive Mobile Hub to Track Changes in Stratospheric Pollution
- 1140S **Graham L Gabrielson**
Grade 12 - The effect of molar mass of a fluid on the speed of a sound wave

1141W **David Grzan**
Grade 12 - Effects of Cathode Shielding Methods
in an Inertial Electrostatic Confinement Fusion
Reactor

1142S **Nicolina Mao**
Grade 11 - Wheel of Friction

1143W **Vikram Nagarajan**
Grade 12 - Investigation of Supersymmetric
Evidence by Calibration of Particle Energies with
Respect to Time
Project At Electricity Wall

1144W **Merrick Pierson Smela**
Grade 10 - Modeling the exit velocity of a
compressed air cannon

1145S **Christian R Sanda, Tyler J Willier**
Grade 9,9 - **Team** - Not all pucks are weighted
equally

1146S **Kong Meng Thao, Thao Xiong**
Grade 11,11 - **Team** - Different Reflective
Properties of Metal

1147T **Ryan M Tomas**
Grade 10 - The Science of Spin; A Baseball
Pendulum

1148S **KaNuechi E Yang**
Grade 10 - Can we boil water in a paper cup?

1149T **Andrew S Ylitalo**
Grade 12 - Functionalization of Hexagola Boron
Nitride Nomolayers and Analysis with
Transmission Electron Microscopy
Project At Electricity Wall

Plant Sciences (PS)

1150S **Deeh (Andy) Chah, Cha S Vang**
Grade 11,11 - **Team** - Aquarium Plants and
Oxygen Production

1151T **Aditi Das**
Grade 11 - Building New Agrobacterium Strains
for High Efficiency Transformation of Plants
Project At Electricity Wall

1152T **Matthew W Dorow**
Grade 10 - The Effects of Irradiation on Radish
Seeds

1153S **Hanan C Farah**
Grade 10 - How High Fructose Corn Syrup Affects
Plant Growth

1154S **Almarely Guerrero-Sanchez**
Grade 11 - Does Color Matter? Spectrum Colors
and How They Affect the Growth of a Plant.

1155T **Elliott A Hopen**
Grade 10 - Early Effects of Growth After Grafting
Watermelon Plants

1156S **Luz M Lopez- Rosas**
Grade 11 - How much water does it take to kill a
plant?

1157T **Abbey J Luckraft**
Grade 10 - Does Fall Change Into Winter as
Rapidly as It Appears?

1158W **Tiffany Ravelomanantsoa, Elisa B Villafana**
Grade 12,11 - **Team** - Effects of Cold Exposed
Milkweed on Monarch Butterfly (*Danaus
plexippus*) Health and Development

1159W **Christopher Spencer, Chaitanya Chittineni**
Grade 11,11 - **Team** - Over Expression of Osmotin
for Improved Salt Resistance in Soybean
Project At Electricity Wall

1160S **Sam P Wang**
Grade 9 - Can Cranberry Juice water plants, better
than water can?



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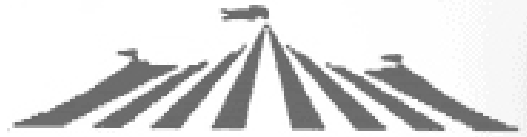
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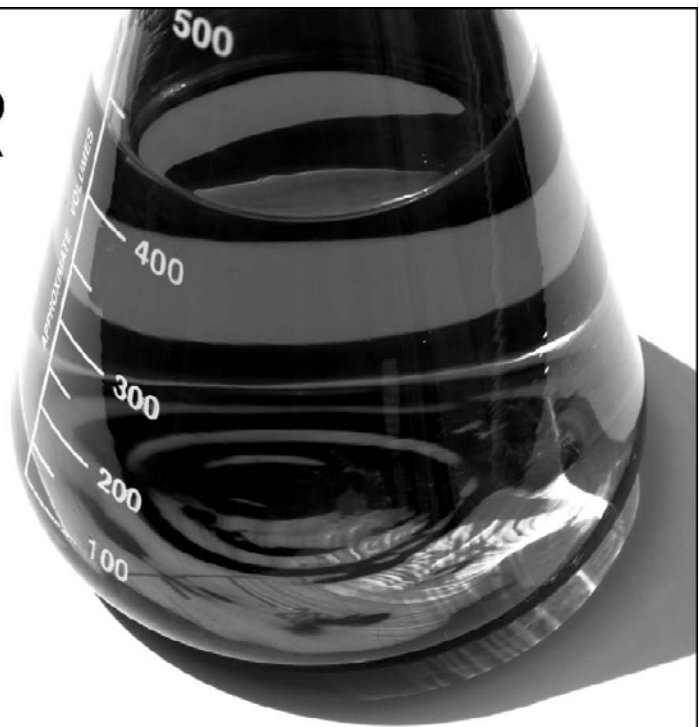
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Note: In teams with mixed grades, students compete at the highest grade of the team.

Grade 6					
Adams, Kristiana	6014W	O'Hara-David, Jonah K	6024S	Bowen, Caroline G	7085W
Ali, Mohamed S	6036W	Olson, Celia J	6058S	Brands, Micah T.	7061W
Anderson, William R	6032S	P, Andje T	6007S	Bremer, Jane Ann	7075W
Azeez, Sumaiya N	6043W	Papisetty, Karthik	6008W	Busch, Annie M	7104W
Bares, Valerie Cavender	6074S	Pearson, Elise	6009W	Calvin-Stokes, Keith	7135T
Bloom, Erin M	6015T	Peden, Samantha R	6001S	Carlson, Ellen A	7037S
Caliguire, Victoria M	6003T	Pedrolie, Joe	6059W	Cave, Sophia Ann	7008T
Camacho, Julia	6013S	Petruconis, Cecilia	6025T	Clark, Sophia R	7001S
Clayton King, Bobby J	6004S	Polk, Mecca	6010W	Commers Jr., Grace T	7027S
Cohen, Zipporah C	6005S	Rachac III, Will F	6046S	Copland, Lauren M	7086W
Cunningham, Caleb I	6016S	Rahn, Alijandra I	6076W	Crotty, Aidan Mae	7008T
Davis, Michael C	6033S	Reeder, Abigail L	6047S	Daher, Hailey	7045W
Ebert, Anna R	6017S	Rorer, Glenn D	6072T	Daley, Patrick D	7124W
Enzler, Joseph A	6030W	Rumley, Anna	6026W	Davies, Matt W	7009S
Etter, Thomas R	6044S	Schaack, Cecelia K	6027W	Davis, Claire N	7028S
Foss, Lukas G	6006S	Sheehan, Hadley C	6031W	Davis, Allen	7038S
Glassman, Andrew L	6037T	Sivula, Antero J	6048S	Dayib, Miski A.	7010T
Gorwor, Natalie	6050W	Smith, Benjamin	6011S	DeJong, David	7149W
Gouni, Hemant S	6064W	Snow, Alexandra N	6060T	DelCastillo, Mariah Jo	7068S
Gunderson, John T	6032S	Spain, Celita	6028S	Deng, Cassidy	7087W
Happe, Callan	6042W	Stahl, Jameson	6072T	Devens, Eve A	7029S
Henseler, Maximilian J	6046S	Stern, Jacob P	6077W	di Girolamo, Arturo T	7136S
Hodges, Trayvon D.	6065W	Stillwell Jardine, Isak	6063S	Dick, Kelsey Marie	7102T
Horstmann, Joel	6075W	Sullivan, Toby	6049W	Dileepan, Gayathri	7069S
Hulteen, Jacob	6018T	Tesarczyk, Katia I	6061S	Donnelly, Eliza M	7059S
Hunter Jr., Latron D.	6065W	Thompson, Abigail	6078W	Dorn, Nicole C	7039W
Jain, Avni	6038W	Walsh, Meghan E	6002T	Doyle, Sam M	7002S
Jostes, Milan E	6066T	Welborn, Yvonne M	6079S	Doyle, Michael	7150W
Jostes, Haley C	6067T	Will, Claire	6029W	Dunn, Lydia R	7088S
Kelzenberg, Henry	6040T	Wright , Logan T.	6036W	DuPont, Emma	7040T
Kerin, Catherine G	6062W	Zenzen, Grace M	6012S	Enneking-Norton, Flannery M	7105S
Kester, Ella R	6051W	Zindren, Olivia R	6073S	Ertel, Zach John	7062W
Kiely, Brendan	6068W			Farah, Jimmy J	7106W
Killen, Emily	6019W			Foley, Jack A	7076T
Knoer, Grace	6020W	Grade 7		Foley, Grace M	7107T
Kolar, Luke	6052W	Abdi, Hana	7074T	Frye, Catherine M	7077T
Kuiah, Prince	6021W	Abdi, Khadija A.	7010T	Fryxell, Beth S.	7125S
Lagos, Eric G	6069S	Acomb, Jack Ryan	7084W	Gallagher, Sami M	7117T
Langenbrunner, Eva M	6022S	Ahmed, Fartun	7074T	Gomes, Anna Marie	7041T
Lenzmeier, Benjamin	6023T	Ahrens, Forrest Clay	7067S	Graves, Nikki	7089W
Malm, Soren C	6070S	Atkinson, Ansley	7033S	Gulet, Habsa A.	7010T
Manoj, Rahul	6053W	Avwunuma, Oghenechuko	7034S	Halloran, Mara E	7151S
Marchio, Matteo M	6054S	Baca, Amalia Rencina	7006W	Her, Kang Zoua	7042S
Martinez, Nicholas R	6055S	Barnier, Steven C	7134W	Hoveland, Jessica	7108S
Middleton, Anna E	6041S	Barton, Andrew L	7026T	Huss, Evan Joseph	7152T
Mittal, Jamin L	6039S	Beard , Sydney M.	7099W	Ibach, Sam R.	7090W
Mork, Maddie C	6045W	Beltz, Caleigh C	7100S	Johnson, Noah F.	7126S
Moua, Xwm C	6056S	Berger, Christian R	7035S	Jurek, James M	7063W
Nagarkar, Jui A	6071T	Berglof, Madison R	7123T	Kai, Junior	7137W
Neira, Eva M	6057S	Betts, Sarah E	7101W	Kamm, Will	7127W
Norman, Hannah	6034W	Bidwell, Jenna Rose	7102T	Kelleh, N'jallah V	7109W
O'Brien, Joseph p	6035W	Bjorklund, Hannah L	7007T	Kelley, Gwendolyn Dehler	7091W
		Boehme, Erin M	7036S	Kelzenberg, Katie	7011T
		Bogolub, Tony	7103S	Kendall, Devon Jordan	7138W
		Book, Katherine R	7123T		

King, Catherine E	7043W	Ryan, Grace T	7003W	Clapp, Abigail J	8067S
Kinsella, James A.	7092S	Salverda, Shyann M	7021S	Cook , Dylan T	8006T
Knorr-Wegener, Collin TE	7057T	Schearer, Katelyn S.	7051S	Cordero, Ashley M	8102W
Kruchten, Elizabeth A.	7012W	Schiltz, Anna M	7118T	Corhouse, Mason Asher	8014S
LaBonne, Josie Marie	7013W	Schmidt, Grace	7004W	Dahl, Joey R	8051W
Lackay, Jamie T	7128S	Segelstrom, David	7141W	Daoutidou, Euphrosyne I	8090W
Larsson, Isak T	7129S	Senthilkumar, Ashwin	7081W	Davies, Omoyemi O	8021T
Lightfoot, Alice S.	7130S	Shaw, Julian	7072T	Davis, Jacinta B	8091T
Linke, Sarah E	7044S	Sheehy, Regan	7052W	Deering, Rachel	8108W
Litecky, Olivia J	7045W	Shirk, Nathan J	7053T	Demitroff, Elizabeth M	8022S
Loney, Nate J	7131W	Solomon, Noah Y	7142S	Demmings, Ice	8068S
Mack, Clara G	7110S	Steege, Paul C	7073W	Devaney, Hanna	8047S
Macon, Nya	7153W	Stende, Ava M	7082W	Dobihal, Greg P	8109T
Malmon-Andrews, Ellie R	7093S	Teal, Melissa	7054S	Domler , Riley R	8110S
Martin, Anaiya	7046W	Thompson, Justin R	7119T	Duffy, Maddie J	8092W
McGrath, Maria C	7154W	Thompson-Nelson, Paul	7143S	Elsen, Emmalyn R	8093W
McKane, Kellie M	7111T	Thompson-Nelson, Takele P	7144S	Extrand, Elena	8007W
Medcraft, Walter J.	7139S	Tibbetts, Christopher M	7005S	Farmer, Nathaniel R	8001T
Mendoza, Lauren E	7094S	Tipler, Marina	7120S	Farnam, Nolan S	8058W
Meniboon, Lancedell W	7030T	Topp-Johnson, Emilia F	7132S	Flynn, Seamus H	8069S
Meyer, Megan K	7078T	Totzke, Molly M	7145W	Gardner, Sovigne P	8052S
Morgan-Anderson, Evelyn R	7014S	Twiss, Annie Rose	7155S	Gardner, Grace L	8070S
Moseman, Abigail R	7095S	Vang, Pajfuabcha	7146S	Gerteis, Samuel C.	8008S
Moua, Baonyiag	7064S	Vang, Pasia	7022S	Gilbertson, Linnea	8010W
Nelson, Elijah C	7063W	Velgersdyk, Isaac Lee	7147W	Hamilton, Denasia A	8063S
Nelson, Grace E.	7047S	Vergara -Zuniga, Estefany	7148T	Hart, Damyam W	8019S
Nelson, Emily J	7070W	Veurink, Joey A	7156W	Hawkins, Maddie A	8023S
Nevells, Kylie M	7048W	Votel, Daniel S	7023T	Hedrick, Sophie T.	8071W
Newsome, Sean Newsome	7071W	Warmka, Matthew Paul	7157T	Henkes, Sam J	8109T
Nguyen, Austin H	7030T	Warner, Samuel L	7083S	Henschell, Katie T	8024T
Nur , Ilham Omar	7015W	Warsame, Hafsa	7074T	Hienz, Andrew C	8130W
O'Connell, Annie K	7112W	Weber, Cameron J	7024T	Holman, Iris	8094S
O'Keefe, Quinn T	7016S	Weiland, Moira	7121T	Horttor, Charles	8025S
Olson, Elise	7113W	Weimann, Matt J.	7055T	Hoy, Andrew J	8111W
Olson, Seth D	7140W	Wild Crea, Peter A	7097S	Hughes Jr, Kevin	8009W
Olson, Evan C	7065W	Williams, Morgan E	7133W	Ince, Duncan	8064T
Olson-Bengry, Paislee ann	7079W	Wolters, Dominic	7025S	Jackson, Jenna L	8026W
Omar, Bilan	7032S	Wylie, Charles	7122W	Janda, Kate S	8072W
Omwena, Lucille K	7114S	Xiong, Melinda	7098S	Johnson, Molly E	8112S
Oubaha, Sophie N	7060T	Zitek, Madeline R	7056T	Johnson, Tyler Lee	8053S
Padilla, Florencia I	7096W			Juckel, Nicholas T	8113S
Peichel, Caleb E	7031T	Grade 8		Jurek, Anthony L	8114W
Plouff, Andrew J	7017W	Alamiri, Huda Q	8005W	Kammueler, Mira E	8115S
Portillo, Serafin	7049T	Arms, Kate C	8020W	Kane, Emma R	8116W
Pryor, Meg M	7115W	Becker, Ben	8105W	Kelly, Keithton C	8117T
Qualah, James	7116W	Bellovich, Zack	8062S	Kemp, Ben	8118T
Quinn, Thomas J	7058S	Bergthold, Colin M	8106T	Kethar, Harini	8010W
Ranum, Christopher Carl	7066S	Bollensen, Abby	8050W	Knapp, Nicholas F	8073T
Reinboldt, Nathan	7050S	Bosler, Paige L	8018S	Knoer, Carson L	8027W
Reser, Raquel Brooke	7018T	Bowman, Courtney	8066W	Kolar, Jane C	8074W
Reynolds, Gabriel N	7019S	Carballo, Jose F	8129S	Konop Defreitas, Jada M	8002S
Reynolds, Nicole L	7080W	Casement , Liam H	8006T	Koski, Giles D	8119W
Rohleder, Grace E	7117T	Cavello III, Edward M	8107W	Krawczyk, Johnny F	8120S
Rosch, Caylyn C	7020T	Chang, Maikong	8057S	Kroening, Nick M	8051W
				Lane, Sonu	8075S

Lee, Jeffrey Y	1118W	San Juan, Carmel C	1022T
Lee, Sor	1074S	Sanda, Christian R	1145S
Lim, Jasmine J	1086T	Scholl, Robby W	1125T
Lofthus, Darby J	1001T	Shadick, Nathan D.	1126T
Lopez- Rosas, Luz M	1156S	Shah, Suraj H	1090T
Lor, Xa	1074S	Shekhar, Apurv H	1056W
Luckraft, Abbey J	1157T	Silver, Maxwell J	1034S
Lwee, Hto	1103S	Simpson, Claire M	1050W
Lyons, Nicki	1043T	Sinyigaya, Peace	1127T
Maertz, Teslin R	1016T	Smith, Zaria T	1023T
Manos, Alex C	1104T	Smith, Camille I	1128W
Mao, Michelle	1070S	Spaulding, William	1007T
Mao, Nicolina	1142S	Spencer, Christopher	1159W
Martin-Senna, Jahkobi	1014T	Sridher, Siddharth	1051T
Mason, Kevin Z	1017T	Srivastava, Sanjana	1024W
Mason-Brousseau, Cheyenne R	1104T	Staniforth, Brett M	1129T
Maxamed, Abdullahi	1136T	Stefanik, Sarah E	1003W
McMillan, Matthew R	1044W	Sylvestre, Jason J	1077W
McNurlin, Sophie M	1040T	Tangney, Jacob W	1025T
Metzger, Peter J	1087W	Taye, Martha	1091S
Moe, Aeh B	1069S	Tessema, Liya	1091S
Mohamed, Muna A.	1049T	Thao, Pa Voua	1102S
Mohamed, Ahmed A	1119T	Thao, Kong Meng	1146S
Moll, Nina R	1120T	Thomas, Madeline M	1130T
Mortari, Marisa C	1121T	Toenjes, Dennis W	1026T
Moua, Mai S	1045S	Tomas, Ryan M	1147T
Mueske, Tess M	1018T	Treimer, Nathaniel G	1027T
Mujumdar, Maitreya A	1133T	Ulrich, Abigail T	1028T
Murali, Achinth K	1019W	Van Dorpe, Colton V	1064T
Mustafa, Marah K	1122T	Vang, Cha S	1150S
Nagarajan, Vikram	1143W	Vang, Mai Yer	1065S
Narayan, Priyanka R	1033W	Vang, Pheng	1106S
Nayar, Abhishek	1020W	Villada, Jocelyne V	1029S
Nelson, A'nashai S	1046S	Villafana, Elisa B	1158W
Nguyen, Jonathan D	1021T	Villamor, Louie Chelle B	1030T
Nguyen, Travis K	1047T	Vue, Xylina	1065S
Nhan, Benjamin T	1105T	Wade, Andrew D	1078T
Noor, Salma H	1048T	Wang, Sam P	1160S
Nur, Abdiaziz	1136T	Warmka, Lauren R	1079T
Oubaha, Aceif J	1055T	Wedan, Riley J	1031T
Pakzad, Iman	1002W	Weiler, Elliott C	1092W
Panda, Apekshya	1123W	Weiss, Matt S	1108T
Papisetty, Bhargavi	1134W	Wells, Midahkota	1060S
Peralta, Janet A	1135S	Willier, Tyler J	1145S
Pierson Smela, Merrick	1144W	Wolfe, Courtney L	1131T
Pineiro, Danielle M	1113T	Wollmuth, Emily	1132T
Qureshi, Bee Bee R.	1049T	Xiong, Karen	1065S
Racek, Derek J	1075T	Xiong, Thao	1146S
Ravelomanantsoa, Tiffany	1158W	Yang, Kao Soua	1032S
Redmond, Marya A	1063T	Yang, Samantha	1093S
Remund, Stefan M	1088T	Yang, KaNuechi E	1148S
Rivers, Jahlil M	1089S	Yang, James	1052S
Robison, Kristofer T	1076S	Ylitalo, Max	1066T
Ryvlin, Jessica	1124W	Ylitalo, Andrew S	1149T
		Zhang, Sophia Lin	1094W

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TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

1973	Timara Kulzer Underbakke Harding High School, St. Paul	1987	Ann Bailey Mahtomedi High School, Mahtomedi
1974	Craig Johnson Harding High School, St. Paul	1988	Sara Greenslit Mounds View High School, Arden Hills
1975	Dennis Scanlon Harding High School, St. Paul	1988	Ann Marie Gentes Westonka High School, Mound
1976	Mark Foertsch Grace High School, Fridley	1989	Ann Marie Gentes Westonka High School, Mound
1976	Linda Ann MacDonald Mounds View High School, Arden Hills	1989	Todd Capistrant Minnesota Zoo School
1977	Steve Rabatin Benilde-St. Margaret, St. Louis Park	1990	Cynthia Schaumburger Harding High School, St. Paul
1977	Charles Clevenger Westonka High School, Mound	1990	Ryan Egeland Wayzata High School, Wayzata
1978	Mitchell Voechl	1991	Ryan Egeland Wayzata High School, Wayzata
1978	Charles Clevenger Westonka High School, Mound	1991	Jonathon Kubik Sibley High School, West St. Paul
1979	Jeffrey Rabatin Benilde-St. Margaret, St. Louis Park	1992	Heidi Konkler Wayzata High School, Wayzata
1979	Joseph Rabatin Benilde-St. Margaret, St. Louis Park	1992	Ryan Egeland Wayzata High School, Wayzata
1980	Jeffrey Rabatin Benilde-St. Margaret, St. Louis Park	1993	Ryan Egeland Wayzata High School, Wayzata
1980	Joseph Rabatin Benilde-St. Margaret, St. Louis Park	1993	Andrew Grande St. Thomas Academy, Mendota Heights
1981	Jeffrey Rabatin Benilde-St. Margaret, St. Louis Park	1993	Kelly Lohman Harding High School, St. Paul
1981	Joseph Rabatin Benilde-St. Margaret, St. Louis Park	1993	Jens Strand St. Paul Academy, St. Paul
1982	Micheal Rabatin Benilde-St. Margaret, St. Louis Park	1994	John Hassett Burnsville High School, Burnsville
1982	Brian Hallberg Harding High School, St. Paul	1994	Ana Navarro Minnetonka High School, Minnetonka
1983	Thinh Hoang Tran Westonka High School, Mound	1994	Victoria Miller St. Agnes High School, St. Paul
1983	UNKNOWN	1994	Julia Goetzke Harding High School, St. Paul
1984	Susan Kain Edina High School, Edina	1995	John Hassett Burnsville High School, Burnsville
1984	Steve Herrman Mahtomedi High School, Mahtomedi	1995	Adam Tatarynowicz Burnsville High School, Burnsville
1985	Brenda Zenk Sibley High School, West St. Paul	1995	Victoria R. Miller St. Agnes High School, St. Paul
1985	Steve Herrman Mahtomedi High School, Mahtomedi	1995	Marcus Rollins St. Paul Open School, St. Paul
1986	Brenda Zenk Sibley High School, West St. Paul	1995	Anna Navarro Minnetonka High School, Minnetonka
1986	Steve Herrman Mahtomedi High School, Mahtomedi	1995	Samuel Rush Minnetonka High School, Minnetonka
1987	Brenda Zenk Sibley High School, West St. Paul		

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

1996	Laurie Louis Parker Roseville High School, Roseville	1999	Alison Boutin Burnsville High School, Burnsville
1996	David Loy Bowe Burnsville Senior High School, Burnsville	1999	Jennica Slattery Minnehaha Academy, Minneapolis
1996	Michael Scott Lohman Expo III High School, St. Paul	1999	Chrissy Jones Minnetonka High School, Minnetonka-Team
1996	Victoria Reynolds Miller St. Agnes High School, St. Paul	1999	Elizabeth Larkin Breck School, Minneapolis
1996	Anna Navarro Minnetonka High School, Minnetonka	1999	Melissa Borke Minnetonka High School, Minnetonka
1996	Michelle Lee Monnens Minnetonka High School, Minnetonka	1999	Alli Kellogg Minnetonka High School, Minnetonka-Team
1996	James Justin Wilson Minnetonka High School, Minnetonka-Team	2000	Mark Galatowitsch Highland High School, St. Paul
1996	Michael Gary Grotenhuis Minnetonka High School, Minnetonka-Team	2000	Jennica Slattery Minnehaha Academy, Minneapolis
1997	Nguyen Trung Burnsville Senior High School, Burnsville	2000	Chrissy Jones Minnetonka High School, Minnetonka
1997	Samuel Rush Minnetonka High School, Minnetonka	2000	Michael Chansky Burnsville High School, Burnsville
1997	Anna Navarro Minnetonka High School, Minnetonka	2000	A. Ben Suri Harding High School, St. Paul
1997	Victoria Reynolds Miller St. Agnes High School, St. Paul	2000	Emily Letourneau Central High School, St. Paul-Team
1997	Michael Scott Lohman Expo III High School, St. Paul	2000	Anna Bishop Como Park, St. Paul-Team
1997	Travis Smith Burnsville Senior High School, Burnsville	2001	Megan Bailey Breck School, Minneapolis
1997	James Justin Wilson Minnetonka High School, Minnetonka-Team	2001	Kathryn Gieselmann Burnsville High School, Burnsville
1997	Justin Rainey Minnetonka High School, Minnetonka-Team	2001	A. Ben Suri Harding High School, St. Paul
1998	Dean Harvey Burnsville Senior High School-Team	2001	Li Mei Wayzata High School, Wayzata
1998	Dan Harakh Burnsville Senior High School-Team	2001	Laura Egerdal Burnsville High School, Burnsville
1998	Bryce Gillespie Breck School, Minneapolis	2001	Anna Bishop Como High School, St. Paul-Team
1998	Preeya Kshetry Breck School, Minneapolis	2001	Emily Letourneau Central High School, St. Paul-Team
1998	Phally Seak Burnsville Senior High School	2002	Jacob Fitzpatrick Burnsville High School, Burnsville
1998	Raj Pai Burnsville Senior High School	2002	Kaonhou Her Johnson High School, St. Paul-Team
1998	Michael Scott Lohman Expo III High School, St. Paul	2002	PaCha Yang Johnson High School, St. Paul-Team
1998	A. Ben Suri Harding High School, St. Paul	2002	Stephen Morris Breck School, Minneapolis
1999	Michael Scott Lohman Expo III High School, St. Paul	2002	Arun Saini Burnsville High School, Burnsville

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

2002	A. Noel Suri Harding High School, St. Paul	2007	Ummul Kathawalla Blake High School
2003	Jessica Swatrz ISD 287	2007	Daniel Zeng St. Paul Academy & Summit School
2003	Ning Zhou ISD 287	2007	Kyra Underbakke Maranatha Christian Academy, Brooklyn Park
2003	PaCha Yang Johnson High School, St. Paul	2007	Brandon Lew Breck School
2003	A. Noel Suri Harding High School, St. Paul	2007	John Earl Harding High School, St. Paul - Team
2003	Brendan Doms Breck School, Minneapolis	2007	Lucas Gabrielson Harding High School, St. Paul - Team
2003	Javier Cabrera-Perez Breck School, Minneapolis	2007	Jacob Stramer Harding High School, St. Paul - Team
2004	Adam Yock Breck School, Minneapolis	2008	Prithwis Mukhopadhyay Lake Junior High, Woodbury
2004	William Mitchell Breck School, Minneapolis	2008	Michael Cherkassky Edina High School, Edina
2004	Noel Suri Harding High School, St. Paul	2008	Madeline Taft-Ferguson Breck School, Minneapolis
2004	Adam Hahn Robbinsdale Armstrong High School	2008	Kyra Underbakke Maranatha Christian Academy, Brooklyn Park
2004	Akash Kumar Wayzata High School, Wayzata	2008	Aly Xiong Johnson High School, St. Paul
2004	Laura Heeter Breck School, Minneapolis - Team	2008	Iola Edwards Johnson High School, St. Paul
2004	Kristina Naranjo-Rivera Breck School, Minneapolis - Team	2008	Stephen Trusheim Breck School, Minneapolis - Team
2005	Kyrstin Underbakke Maranatha Christian Academy, Brooklyn Park	2008	Daniel Mohktari Breck School, Minneapolis - Team
2005	Janet Li Wayzata High School, Plymouth	2009	Prithwis Mukhopadhyay Woodbury Sr High School, Woodbury
2005	Heidi Chun St. Paul Academy, St. Paul	2009	Tiffanie Stone AFSA High School, Vadnais Heights
2005	Zachary Howland Burnsville High School, Burnsville	2009	Michael Fuad Breck School, Minneapolis
2005	Eric Halverson Como Park Senior High, St. Paul	2009	Stephen Trusheim Breck School, Minneapolis
2005	Kahli Her Johnson High School, St. Paul	2009	Chee Xiong Como Park Senior High, St. Paul
2006	Jenna Johnson Burnsville High School, Burnsville	2009	Martin Camacho Central Senior High School, St. Paul
2006	Andrea Jensen Burnsville High School, Burnsville	2009	Sahar Hakim-Hashemi Breck School, Minneapolis - Team
2006	Daniel Zeng St. Paul Academy & Summit School	2009	Sierra Danforth Breck School, Minneapolis - Team
2006	Matthew Weiss Breck School, Minneapolis	2009	Nicholas NaSal Burnsville High School, Burnsville - Team
2006	Katherine Schaeffer Breck School, Minneapolis	2009	Joseph Lane Burnsville High School, Burnsville - Team

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

- | | |
|--|---|
| <p>2010 Prithwis Mukhopadhyay
Woodbury Sr High School, Woodbury</p> <p>2010 Tiffanie Stone
AFSA High School, Vadnais Heights</p> <p>2010 Martin Camacho
Central Senior High School, St. Paul</p> <p>2010 Houa Xiong
Johnson High School, St. Paul</p> <p>2010 Gavin Ovsak
Eden Prairie Senior High School</p> <p>2010 Charles Morris
Breck School, Minneapolis</p> <p>2010 Ava Mokhtari
Breck School, Minneapolis - Team</p> <p>2010 Addison Weiler
Breck School, Minneapolis - Team</p> <p>2010 Ashley Santilli
Burnsville High School, Burnsville - Team</p> <p>2010 Emily Bostrom
Burnsville High School, Burnsville - Team</p> <p>2011 Alysia Flores
Johnson High School, St. Paul</p> <p>2011 Andrew Ylitalo
Stillwater High School, Stillwater</p> | <p>2011 Martin Anderson
Burnsville High School, Burnsville</p> <p>2011 Redeat Abegaz
Burnsville High School, Burnsville</p> <p>2011 Gavin Ovsak
Eden Prairie Senior High School</p> <p>2011 (Ernst) Tom Erdmann
Breck School, Minneapolis</p> <p>2012 Andrew Ylitalo
Stillwater High School, Stillwater</p> <p>2012 Keshav Mangalick
Mounds View High School</p> <p>2012 Margaret Green
Burnsville High School, Burnsville - Team</p> <p>2012 Laura Landgraf
Burnsville High School, Burnsville - Team</p> <p>2012 Caleb Kumar
Breck School, Minneapolis</p> <p>2012 Taylor McCanna
Breck School, Minneapolis</p> <p>2012 Alejandro Fenn
Breck School, Minneapolis - Team</p> <p>2012 William Engel
Breck School, Minneapolis - Team</p> <p>2012 Thomas Vennemann
Johnson High School, St. Paul</p> |
|--|---|

Science doesn't start in a laboratory

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Chairman and Chief Executive Officer

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2013 Research Papers

Name	Grade	Title
Avni Jain	6	Utilization of Parabolic Reflectors to enhance energy generation through the power of Solar and Thermoelectric
Jui A Nagarkar	6	Archimedes Principle: Principle of Floatation
Andje T P	6	How Does Color Affect Taste?
Grace M Zenzen	6	The Power of Thought
Olivia R Zindren	6	Hidden Harmonics
Sydney M. Beard	7	Save A Life: selecting the right disinfectant
Sarah E Betts	7	An Exercise Therapy Program and Hand Device Invented To Benefit Osteoarthritic Patients
Erin M Boehme	7	Let the Flames Begin!
Tony Bogolub	7	Putting the 'p' in pH
Caroline G Bowen	7	Polluting Our Earth? Analyzing Nitrogen Levels in Fertilizer Runoff
Micah T. Brands	7	Shaping Parachute Future
Sophia R Clark	7	Mississippi Mussel Movement
Lauren M Copland	7	Go With The Flow, Darcy's Law and Hazardous Waste
Flannery M Enneking-Norton	7	Got Speed?
John T. Gisselquist	7	The Answer is Blowin' in the Prints
Kelly Chelsea Gonzalez III	7	Paw Preferences in Dogs
Audrey V Gorman	7	The Role of Enzymes in DNA Extraction
Thomas S Hayden	7	Nanotechnology and how it will Shape Our World
Catherine E King	7	Sweet Dreams and Laser Beams
Collin TE Knorr-Wegener	7	The Importance of CPU Cooling
Lauren E Mendoza	7	Soil: Dig it!
Evelyn R Morgan-Anderson	7	The Effect Of Music On Concentration
Annie K O'Connell	7	Brain Power: Concentration Level
Meg M Pryor	7	Does Your Birth Month Affect Your Success In Sports
Caylyn C Rosch	7	Does chewing gum affect your test score?
Brooke B Sheehy	7	Solar Energy
Emilia F Topp-Johnson	7	Battle of the Fungicides
Estefany Vergara -Zuniga	7	Temperature Affecting Distance
Morgan E Williams	7	Does It Pay To Spend?
Hannah E Bierbaum	8	Which Active Ingredient in Disinfectants Kills the Most Bacteria?
Ryan R Carter	8	Colorful Emotions: Are Colors Associated With Emotions
Laura M Deutz	8	Eww! My Bread is Moldy!

2013 Research Papers (continued)

Name	Grade	Title
Kayla V Doughty	8	Uncovering Hidden Sugar in Our Drinks
Emmalyn R Elsen	8	Germes Be Gone
Nathaniel R Farmer	8	Investigating association preference behavior of wild caught fathead minnows (<i>Pimephales promelas</i>)
Seamus H Flynn	8	A Clean Drink of Water?: Part Two
Grace L Gardner	8	Oil Spills: Taking Oil Out of Water
Sovigne P Gardner	8	Dye-sensitized Solar Cells: Is there a correlation between acidity & anthocyanin effectiveness?
Iris Holman	8	How Pre-Exercise Nutrition Affects Workout Performance
Harini Kethar, Linnea Gilbertson	8,8	Effects of background music on short-term memory
McKenna A Knapp	8	Is The Airport Floor Safe?
Carson L Knoer	8	Which Biodegradable Material Gives Off The Most Biogas?
Jane C Kolar	8	Achieving Thermophilic Bacteria Growth Using Compost Activators
Tessa B Newman-Heggie	8	Grasses, Seeds and Salt: The Effect of Road Salt on Native Plants
Grace Ann F Rerat	8	Electrolyte Challenge
Stephanie V R Roberts	8	Which Type Of Exterior Paint Base Best Protects Metal From Rust
Madeline R Schaeppi	8	The Effects of Locations on Quality of Water
Maggie R Sullivan	8	Do Different Colors of Light Affect the Accuracy of the <i>Pilobolus</i> Fungus
Andrew C Torrance	8	Is A Dog's Mouth Dirtier Than A Human's
Colleen E Wagner	8	Ever So Sweet: Measuring the Sugar Content in Fruit
Arush Jain	9	Positron Emission Tomography – Mathematical Model To Offset Partial Volume Effect Utilizing Aligned MRI To Improve Cancer Diagnosi
Carolyn K Jons	9	A New Innovation in Food Preservation
Jeffrey Y Lee	9	The relationship between the polarity of amino acids from gene mutations and genetic Alzheimer's Disease
Siddharth Sridher	9	Burning Calories: How much energy is stored in each type of food?
Max Ylitalo	9	Food or Fuel? Can Arrowroot or Cassava Replace Corn in the Production of Ethanol?
Jack T Andersen	10	Video Games And The Brain
Ben W Andrews	10	How Far does Shocky Shoot?
Amy Bendtsen	10	Boys vs. Girls; Who Pays More Attention?
Anthony J Benecke	10	What Mouthwash is the Most Effective at Killing Bacteria
Riley L Bergsten	10	The Effects of Music
Claire R Boatman	10	The Role Gender Plays in Reaction Time
Sydney L Botz	10	Comparison between the Decomposition Rate of Compost in a Windrow Pile and an Original Design
Selvi S Bunce	10	The Effect of Color on Memory
Monica Lee Burt	10	Correlation between Kinesthetic Learning and Test Taking
Connor Bye	10	Composite Faces and First Impressions

2013 Research Papers (continued)

Name	Grade	Title
Autumn J Calvin	10	The Correlation Between Home Life And Happiness
Joseph H Carlstrom	10	Piezoelectric Energy Harvesting
Hanna M Cindric	10	Comparison Between Colored Paper and the Short Term Memory of a Sentence
Elijah k Clements	10	Does Involvement in a High School Music Program Affect a Person's Ability to Judge Musical Performance?
Samantha R Corcoran	10	Imagination Wars: Children vs. Adults
Delaney G Cox	10	Gender vs. Learning Styles
Vincent Dam	10	Paintball precision
Ben T Davidson	10	Effect of Temperature on Spin
CJ H Decker	10	Difference in Elasticities of Baseball Bats
Maddie S Dockry	10	The Relationship Between the Effects of Color an the Mind and Learning
Kyle A Domek	10	Learning Styles: Audio versus Visual
Matthew W Dorow	10	The Effects of Irradiation on Radish Seeds
Jessica M Drymon	10	Can You Really Taste the Rainbow?
Marisa J Dunning	10	Effects of Color on Memorization
Max F Dunstan	10	Effect of Chewing Gum on Mouth Microbes
Carter L Dupre	10	Cleaning Fruit With and Without Soap.
Samuel A Eckstrom	10	Herbs and Friends against Microbes
AnnMarie S Engebretson	10	Flammability of Fabrics
Megan Engle	10	Is Your Exercise Affected By Your Choice of Tunes
Caleb Bryce Erickson	10	The Effect of Music On Plants
Amanda J Fee	10	Subliminal Messages: Mind Control? An Experiment of the Effectiveness of Subliminal Messaging
Isabel M Fox	10	Memorization for Effective Learning
Evan J Fuller	10	A Study of the Efficiency of and Public Opinion on Incandescent Light Bulbs, Compact Fluorescent Bulbs, and Light-Emitting Diodes
Becca A Fundaun	10	Does Color Truly Affect Your Memory?
Jackson L Gilman	10	How much can it hold?
Hercules Earl Goss-Kuehn	10	Is Beauty in the Eye of the Beholder?
Tommy D Grittner	10	The Effects of Various Insulation Materials on Home Heat Loss
Nicholas J Hall	10	Winds of Change
Jack J Hanson	10	Logical Intelligence Based on Various Demographics
Marissa A Harrison	10	How Color Affects Memory
Marie E Heim	10	Testing of Different Potting Soils
Vincent L Ho	10	Effect of Music on Accuracy While Shooting
Elliott A Hopen	10	Early Effects of Growth After Grafting Watermelon Plants

2013 Research Papers (continued)

Name	Grade	Title
Jordan N Horner	10	Bicycle Tire Pressure: High or Low?
Alexander M Hughes	10	What Color Do You Taste?
Minh V Huynh	10	The Effect of Sugar on Crops
Tianna A Jenks-Fulton	10	The Effects of Age on Reaction Time of Varying Senses
Sam E Johnson	10	The Effects of Altering the Structural Design of Bridge Trusses on Bridge Strength and Wind Deflection
Theodore E Ko	10	The Effect of Surface Area Touching on Resistance in Copper Wires
Jane Koch	10	Hydroponics vs. Soil
Kayla M Kruse	10	The effects of acid rain and global warming on diatoms.
Kevin J Kucera	10	Correlation between Thermal Resistance and Noise Cancellation with Readily Available Insulators
Nick R Lane	10	The Effects of Acid rain on Plant Growth
Jasmine J Lim	10	Cellulose vs. Cotton Insulation: Is One Better?
Logan D Litman	10	An experiment on the effect of temperature on water quality.
Darby J Lofthus	10	The Effects of Exercise on Respiration Rate, Body Mass, and Swimming Patterns of <i>Carassius auratus</i> at Two Different Elevations
Abbey J Luckraft	10	Does Fall Change Into Winter as Rapidly as it Appears?
Nicole K Lynch	10	The effects of context and gender on facial recognition
Matt B McDavid	10	Calculating Liquid Density Using Light Refraction
Courtney E Miller	10	Correlation of Color and Appetite
Ahmed A Mohamed	10	Effects of Anxiety on Memory
Nina R Moll	10	A study of the cardiovascular system of a <i>Carassius auratus</i> .
Tess M Mueske	10	Perceptions of Organic Food
Marah K Mustafa	10	Orbicularis Oculi Muscle's Reaction to Light(s) in Five Seconds
Tessa G Nania	10	The Smell of Short-term Memory
Jonathan D Nguyen	10	Appeal of Color
Travis K Nguyen	10	Quickest Oxidation Materials
Benjamin T Nhan	10	Insulation Components Paper
Jade D Norton	10	Musical Distractions
Meg E O'Brien	10	Which mulch works best while growing plants?
Alyssa M Palmer	10	Soda Testing
Justice L Phoenix	10	Marble physics
Merrick Pierson Smela	10	Modeling the exit velocity of a compressed air cannon
Derek J Racek	10	Diamagnetic Strength of Common Materials
Stefan M Remund	10	Water for everyone
Jacob D Ruffing	10	Nitrate Effects on Plant Growth

2013 Research Papers (continued)

Name	Grade	Title
Erin J Russell	10	Radon Study in ISD 191
Ilham A Sahal	10	Antibacterial VS. Non-Antibacterial
Carmel C San Juan	10	The Complex Relationship between Handedness and Brain Lateralization among Humans
Robby W Scholl	10	Comparison of Sports Helmets' Protection Capabilities
Nathan D. Shadick	10	The Gatorade Series
Suraj H Shah	10	Engineering a Cost-Effective, Portable Syringe Pressure-Based Water Filter Using a Hollow Fiber Membrane from 3M Water Purification Inc.
Brett M Staniforth	10	"Too Much Or Too Little"
Jacob W Tangney	10	Correlation between one's favorite music and their concentration
Madeline M Thomas	10	Which Color is a Sight for Sore Eyes?
Ryan M Tomas	10	The Science of Spin; A Baseball Pendulum
Kien M Truong	10	Heat Insulation
Abigail T Ulrich	10	Analysis of Preference to Various Meal Plating Techniques
Colton V Van Dorpe	10	The Effects of Temperature on the Voltage Output of a Photovoltaic Cell
Louie Chelle B Villamor	10	The Study of Multitasking Efficiency on Teenagers
Lauren R Warmka	10	Retrofitting Structures to Withstand Seismic Waves
Riley J Wedan	10	The Hidden Intelligence of Crowds
Matt S Weiss	10	Order In Chaos
Evan J Wenzinger	10	The Effects of an Oil Spill on Aquatic Plant Life
Dakota J Wickham	10	Hydrogen Engine
Courtney L Wolfe	10	Strong Pulse vs. Strong Beat
Sarah Wright	10	Mnemonics and Test Scores
Amy O Zellman	10	Microwave Radiation From Cell Phones
Katherine R Carman, Bram HL Carr	11,11	An Engineering Report: The Evolution and Design of the Solar-Hydro-Powered Generator
Emily J Chen	11	The Effect of FANCD2 on ATR kinase function
Aditi Das	11	Building New Agrobacterium Strains for High Efficiency Transformation of Plants
Zach L Donahue	11	Engineering an Inexpensive Mobile Hub to Track Changes in Stratospheric Pollution
Matthew R McMillan	11	Engineering a polyelectrolyte-based film with a novel carbon nanotube base layer
Peter J Metzger	11	Improving Organic Solar Cell Materials by Characterizing Fundamental Physics in PtOEP
Priyanka R Narayan	11	Improving the Oral Absorption of Chemotherapeutic Drugs Through the Use of Novel Nanoparticles
Iman Pakzad	11	Host Fish Response to Mussel Lure
Bhargavi Papisetty	11	Infectivity Study of Prions Using In-Vitro Converted Y145stop in Ex-Vivo Conditions
Rachel Rippberger	11	The Effects of Music on Plants
Apurv H Shekhar	11	Location, Location, Capacity: A Second Generational Study on Capacity Constrained K-Means Clustering

2013 Research Papers (continued)

Name	Grade	Title
Claire M Simpson	11	Writing and applying Monte Carlo simulation software to examine aerosol nucleation—a primary contributor to climate change
Sanjana Srivastava	11	Identifying Executive Functioning Deficits From Gameplay Behavior Using Machine Learning
Heather J Stone	11	Invention of a Tef Seeder and Conduction of Field Trials
Elliott C Weiler	11	Origins of Life: Engineering a Biosphere to Study Phospholipid Self-assembly
Sophia Lin Zhang	11	Effective Cardiac Myocyte Differentiation of Human Induced Pluripotent Stem Cells Requires VEGF
Redeat F Abegaz	12	Effects of Natural Extracts and Menthol combined with Salicylic Acid on Staphylococcus epidermis: Year 2
Kevin Barry	12	The Effect of Water on the Temperature of Land
Darius W Bieganski	12	A telemedicine tool for monitoring Parkinson's: Using Microsoft Kinect to engineer the ParkinsonsProtoTracker
Sarah Davidson, Emily Wollmuth	12,12	The Effect of Human Airway Secretions on Pseudomonas aeruginosa
Paige C Dempsey	12	Characteristics that Contribute to Nest Success of Endangered Red-headed Woodpeckers (<i>Melanerpes erythrocephalus</i>)
Connor V Duffy	12	Enhanced Drug Delivery via PEG-crosslinked Mucin Hydrogels
James C Earl	12	Infinite Minesweeper Arrays With Constant Value
Abby Erdmann	12	Stop: A Study of Distracted Driving Behaviors in the Vicinity of Breck School
Nirupa Galagedera	12	Bike Share System Growth and Physical Activity
David Grzan	12	Effects of Cathode Shielding Methods in an Inertial Electrostatic Confinement Fusion Reactor
Alexandria C Herr	12	Characterization of Novel Fe(III) Reducing and Fe(II) Oxidizing Bacteria of the Soudan Mines
James L Kruse	12	Does Protein Still Exist in the Soft Tissue Found in Mosasaur Teeth?
Caleb J Kumar	12	There's an App for That: An iPhone Application for Post-stroke Upper Extremity Rehabilitation
Jenny Lai	12	Development of an ELISA Prototype to Detect the Presence of Novel Peptide TUF1 in Serum and Its Role in Stress Management
Tiffany Ravelomanantsoa, Elisa B Villafana	12,11	Effects of Cold Exposed Milkweed on Monarch Butterfly (<i>Danaus plexippus</i>) Health and Development
Jessica Ryvlin	12	Ideal oxygen environment for mesenchymal induction to stimulate lung epithelial cell growth on a transplantable lung matrix
Nathaniel G Treimer	12	A Scientific Analysis of the Effects of Auditory Performance Feedback on Motor Skill Refinement
Andrew S Ylitalo	12	Functionalization of Hexagonal Boron Nitride Monolayers and Analysis with Transmission Electron Microscopy



Twin Cities Regional Science Fair Awards

(This list is an expected list of awards to be given from this fair but does not constitute a guarantee that the award will be given this year.)



3M Inventor Award
 3M Renewable Energy Award
 American Chemical Society
 American Psychological Association
 American Council of Engineering Companies
 American Meteorological Society
 American Psychology Association
 ASM Materials Education International
 Foundation
 Association of Women Geoscientists
 Broadcom-Discovery Alumnus award -
 Carolyn Jons
 Broadcom MASTERS (Math, Applied Science,
 Technology, and Engineering for Rising Stars)
 Caffeinated Student Award – Kyra
 Underbakke
 East Side Science Club Alumni
 Frog Impact Award in memory of Penny
 Lohman
 Glen & Jacob Domeier Memorial
 Graduate Women in Science
 I SWEEP
 Integrated Approach to Science
 Intel Excellence in Computer Science
 International Science & Engineering Fair
 (ISEF)
 ISEF Alumni Award – Mike Lohman, Jr.
 (1996, 1997, 1998, 1999)
 ISEF Alumni Awards – Kyra Underbakke
 (2007, 2008)
 ISEF Alumni Awards – Kyrstin Underbakke
 (2005)
 ISEF Alumni Awards – Timara Underbakke
 (1973)
 Joel Wagner Caring Bridge Award
 Junior Science & Humanities Symposium
 Killeen Memorial Award
 Minnesota Academy of Science Inquiry award
 Medalists (6th grade)
 Minnesota Agriculture in the Classroom
 Minnesota Astronomical Society
 Minnesota Chapter of American Fisheries
 Society
 Minnesota Space Frontier Society
 Minnesota State Science & Engineering Fair
 Mu Alpha Theta Mathematics
 National Society of Professional Engineers



NOAA National Oceanic and Atmospheric
 Administration
 North Central Tri-state Junior Science &
 Humanities Symposium Research Papers
 Penny Lohman Memorial Award
 Radio City
 Research Paper trophies
 Ricoh Sustainable Development Award
 SAVE-Students Achieving Volunteer
 Excellence
 Schools trophies
 Society for In Vitro Biology
 Sponsor: 3M Foundation
 Sponsor: Alliant Techsystems
 Sponsor: Dow Chemical
 Sponsor: Ecolab
 Sponsor: General EC Rawlings
 Sponsor: Medtronic
 Sponsor: Midway Party Rental
 Sponsor: Mintáhoe Hospitality Services
 Sponsor: Office Max
 Sponsor: Slattery Sales
 Sponsor: St. Paul Youth Fund
 Sponsor: University of Minnesota
 State Science Fair – Research Papers
 State Science Fair - Projects
 Stockholm Junior Water Prize
 TCRSF Award for Excellence
 Teacher Excellence Award
 University of Minnesota College of Science
 and Engineering Award
 US Air Force
 US Army
 US Department of Health and Human
 Services
 US Metric Association
 US Navy/Marine
 USDA Forest Service
 USDA Research Service
 West Metro Medical Society Alliance
 Yale Science and Engineering Association

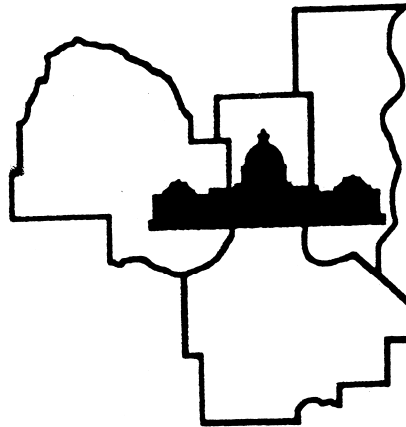


Project presentation hosted by the University of Minnesota

Research paper program hosted on our website at www.tcrsf.org

Special thanks to all our volunteers, new & old, especially the U.S.S. Nokomis

Special thanks to the University of Minnesota US Military ROTC for their assistance in setting up, judging, and tear down.



2012-2013 Twin Cities Regional Science Fair Committee

Science Fair Director:	Timara Underbakke	Committee At Large:	Scientific Review:
SRC Chair:	Karin Ostrand	Nancy Day	Karin Ostrand, Chair
Facilities:	Michael Lohman, Sr.	Jess Day	Dr. Denise Beusen
Public Relations:	Michael Lohman, Sr & Terry Slattery	Phill Goldmann	Kyrstin Underbakke
Funding	Michael Lohman, Sr	Lynne Tauer	Dr. Douglas Erbeck
Treasurer:	Dr. Gary Kwong	Amy Stone	Dr. Wendy Slattery
Special Awards Chair:	Nancy Day	Gary Ostrand	Timara Underbakke
Judging Coordinator:	David & Timara Underbakke	Dr. Douglas Erbeck	Dr Jyothsna Rayadurg
Website & Databases:	David Underbakke & Timara Underbakke	Faye Erbeck	Dr. Gary Kwong
Data Processing:	David Underbakke	Sonja Dunlap	Art Payne
Safety & Display:	<i>open</i>	Lois Fruen	Michael Lohman, Sr.
Board of Directors:	Timara Underbakke	Kyrstin Underbakke	David Underbakke
	Michael Lohman, Sr.	Kyra Underbakke	Amy Stone
	Karin Ostrand	Dr. Jennifer Hugstad-Vaa	Tim Ford
	Dr. Gary Kwong	Dr. Caroline Ylitalo	Dr. Caroline Ylitalo
	David Underbakke	Arthur C. Johnson	
	Nancy Day	Art Payne	
	Amv Stone	Judy Payne	
		Michael Lohman, Jr	
		Jacinda Lohman	