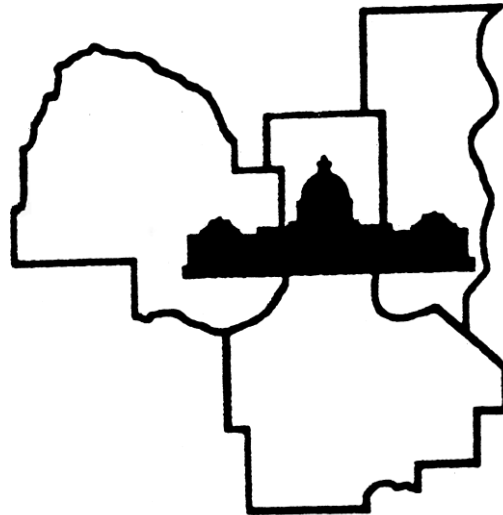


WELCOME TO THE

**81st Annual Twin Cities Regional Science Fair
27th Annual St. Paul Science Fair
25th Annual Western Suburbs Science Fair**

Twin Cities Regional Science Fairs



**2019
March 1 - 2**



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



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**WELCOME TO THE 81st ANNUAL TWIN CITIES REGIONAL SCIENCE FAIR,
THE 27th ANNUAL ST. PAUL REGIONAL SCIENCE FAIR,
THE 25th ANNUAL WESTERN SUBURBS REGIONAL SCIENCE FAIR.**

Our Host this year is the Minnesota State Fairgrounds – Warner Coliseum

Students: YOUR NAME BADGE is required both Friday and Saturday.

All projects must have a **vertically displayed abstract** at their exhibit. Print a copy of this abstract by logging into your student account at www.tcrsf.net and View TCRSF Abstract from your Student Home page. All projects who required a **Form 1C** (for work done in any site other than home, school or field) and/or **Form 7** (for projects that are a continuation from a previous year) must post these vertically on the project exhibit. Save all your project forms after the fair. TCRSF will send project forms to state for those projects advancing to state, but you will still need a copy at your project exhibit during state. Alternates to state: you may be promoted to become a state presenter. Save your display and forms!

1. The 4 numbers & 1 letter 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." *Floor only projects* are at the end of Electricity Row.
2. After your project is completely set up, self-check your display to make sure it meets all the requirements on the green Display & Safety checklist. If you need help, ask. This year, put the green Display & Safety page that you checked on your exhibit table top. Our Display & Safety team members will walk up and down the aisles. Wait for them to check your display. If you have any videos or photos to show judges, please be ready to show them to the Display & Safety team. You will need to correct any violations before competition.
3. **There is no food or beverage allowed anywhere in the competition area.** A closed bottle of drinking water is the only exception. (Food may be eaten in the lobby area by the concessions food, or very carefully in the seats around the coliseum. Keep the building clean!)
4. **Wear your TCRSF name badge in a clearly visible place, BOTH Friday and Saturday. Do NOT forget. You need your badge for the awards program!**

TCRSF requires that ALL TEAM members of team projects must be present at judging on Friday night and that all ISEF winners must be at the Saturday Awards Ceremony (unless cleared by the fair director and the SRC chair). Winners of **sponsor's awards must be present** at the Saturday Awards Ceremony to win, have their photo taken with their award and the sponsor. An alternate will become the winner if the student winner is not present.

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.

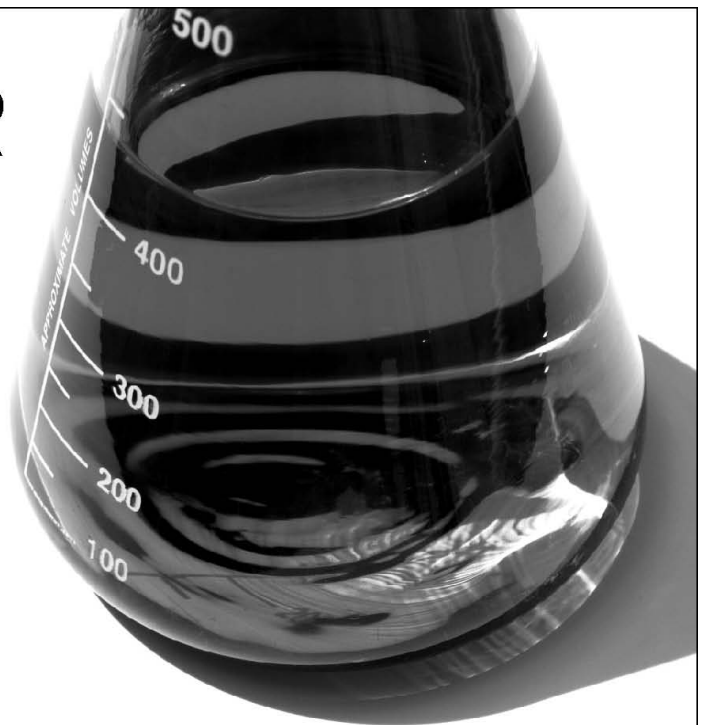
Green, Red, and Blue ribbon winners are all eligible to win special awards. Some special awards are specifically for certain fields of science or other criteria that are separate from the ribbon earned. All students: please listen carefully for your name during the awards program on Saturday. In order to shorten the awards program, the large groups of winners will be posted on a bulletin board Saturday morning in lieu of the students being all called up to the podium. 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.**

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Star Trek Fan Club
<http://www.usnokomis.org/>

Volunteering to make a difference.

NORTHROP GRUMMAN

Northrop Grumman is a long-time sponsor of STEM in the community and this Science Fair. The hands-on event is inspiring to not only the students, but those from our company who participate as volunteers and judges. We feel that by inspiring curiosity and interest today, we develop our future scientists, engineers and astronauts. Good Luck To All Our Participants – today and for the future.

Northrop Grumman's Plymouth facility has been a sponsor for 30+ years, dating back to the organizations roots as divisions of Honeywell, ATK and Orbital ATK.

SCHEDULE

Friday, March 1, 2019

<u>Time</u>	<u>Activity</u>	<u>Location</u>
1:00 - 3:30 p.m.	Registration	Warner Coliseum Concourse
1:00 - 3:30 p.m.	Set up Projects / Clear Display&Safety Grades 6-8 must be set up by 3:30 Grades 9-12 must be set up by 3:30	Warner Coliseum Arena
4:00-9:30 p.m.	Judging (grades 6,7,&8 done earlier)	Warner Coliseum Arena

Saturday, March 2, 2019

8:00- 10:00a.m.	Exhibits open to the public	Warner Coliseum Arena
9:00 - 9:30 a.m.	All Paper and Project Participants pick up envelopes containing ribbons (may be open early!)	Warner Coliseum Concourse

TEACHERS: Please arrange for someone to pick up papers, awards, & exhibits of any students not able to attend the award ceremony. *Research paper ribbons are also available for pickup.*

DO NOT DISMANTLE YOUR PROJECT UNTIL AFTER THE AWARD CEREMONY!

10:00 a.m. to 12:15 p.m.	Award Ceremony for projects & research papers	Warner Coliseum (seating around arena)
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Winners of Special Sponsor Awards must be present at the Award Ceremony or an alternate will become the winner. Sponsor Award winners must have their photo taken by the official Fair Photographer with the award

If you are picking up awards for a student not present, please do so at the Awards Podium right AFTER the awards ceremony. Remember to pick up their project and/or research paper envelope as well – and be sure their project exhibit is removed and returned to 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 (unless cleared by the Fair Director and the SRC chair).

After Award Ceremony	*ISEF Finalists, Alternates and Advisors meet with the Fair Directors & SRC chair.	Arena near awards podium
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Everyone: 1:30 p.m.	PLEASE help clean up. Throw all trash. ALL PROJECTS MUST BE REMOVED	Please help throw trash & leave the Fairgrounds clean.
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Minnesota State Science & Engineering Fair (grades 6-12 projects)

March 30-31, 2019, **Earl Browne Heritage Center**, 6155 Earle Brown Dr, Brooklyn Center, MN 55430.

JSHS: Junior Science & Humanities Symposium (grades 9-12 research papers)

March 23, 2019, **University of Northwestern, St. Paul.**

State Science Fair canceled their grades 6-8 research paper competition for 2019.

ISEF: Intel International Science & Engineering Fair (grades 9-12 projects)

Phoenix, Arizona May 12–17, 2019 (Twin Cities flies out May 11th)



Water & Process Solutions



Dow Water & Process Solutions congratulates your achievements in competing at the Twin Cities Regional Science Fair.

We thank Dow Water & Process Solutions for their sponsorship of this event!

The quality and scarcity of freshwater has become a critical issue worldwide. More than one billion people lack access to safe drinking water today, and experts estimate that by 2025, five billion people will live in areas of significant water stress. While water conservation is one of the most cost-efficient answers, technology, in combination with sound management practices, can help effectively solve the world's worsening water crisis.

Dow Water & Process Solutions, a subsidiary of The Dow Chemical Company, is committed to advancing water treatment technologies and ensuring availability of clean water to those who need it-through advanced research and industry-leading application expertise.

NORTHROP GRUMMAN

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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) & D&S (Display & Safety) before judging begins at 4:00 p.m. You also need to have the TCRSF photographer take your photo at your project.
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 your grade. If you leave early you may be missing out on judging for other special awards.
5. TCRSF and the Minnesota State Fairgrounds do not accept responsibility for equipment or 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. Team members must be all in either middle school or all in high school, not a mix. This year, middle school teams compete at the grade of the team leader.

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. If you entered ONLY a research paper, pick up your competitor's name badge near the research paper envelopes Saturday morning. We will also post a list of competitors & alternates advancing with their research papers. Pick up your envelopes! All who advance to JSHS will present a PowerPoint version of their paper to a panel of judges & observers. Additional awards for papers will be handed out at the Award Ceremony on Saturday morning at 10:00 a.m. in the Warner Coliseum Arena.

TCRSF AND THE State Fairgrounds ARE NOT RESPONSIBLE FOR PAPERS, SRC PAPERWORK, PROJECTS, RIBBONS, AWARDS, PERSONAL ITEMS, OR EQUIPMENT LEFT AT THE State Fairgrounds Coliseum!

REMEMBER - We are guests of the State Fairgrounds. 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.



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<https://premierbanks.com/>

Premier Banks is a local, community bank, with global reach and supports science education by donating to the Twin Cities Regional Science Fairs.

A black and white photograph of a young woman in a lab coat and safety goggles, holding a rock specimen in a laboratory setting.

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Office Depot supports the Twin Cities Regional Science Fairs and applauds the creativity and hard work of the regional competitors.

Grade 6

Animal Sciences (ANIM)

6001T **Lillie Wagner**
Tapir Food Tablets

Biochemistry (BCHM)

6002T **Kaitlynn Patterson**
Does double dipping really spread germs

Biomedical and Health Sciences (BMED)

6003W **Ruhi Kurdikar, Rahael Achett, Indra Khariwala Team** - Comparative analysis of bacterial load on classroom desks with Clorox intervention

6004T **Joseph Ong**
Organic vs. Non-organic

6005T **Ben Phommachanh**
Heart of Golden Wood

Biomedical Engineering (ENBM)

6006T **Noah Spencer**
How Bright Is Your Light

Cellular and Molecular Biology (CELL)

6007S **Daedreaon Dozier**
DNA Extraction

Chemistry (CHEM)

6008T **Sumaya Abdulkadir**
HOB

6009T **Kasim Abdullahi**
Recrystallization of Stalagmites

6010T **Connor Draves**
Stalactites

6011S **Praise Ezedi**
Gases and Soda

6012T **Michelle Farrell**
Flour Power

6013S **Sharnelle Kouakou**
Does Sugar Melt Ice Faster Than Salt

6014W **Rita Maloney**
Electrolysis of Water

6015T **Alex Mason**
Convenience Tastes Better

6016T **Peter Mendez**
Soda Explosion

6017T **Alessandro Ortega-Setala**
Color Changing Slime

6018T **Mary Redden**
Soaked In Color

6019T **Bianca Sirju**
The truth about red velvet cake

6020S **Chance Thor Saykao**
Growing Alum Crystals

6021S **Tega Uvwoh**
Rock Salt vs Regular Salt Crystals

Earth and Environmental Sciences (EAEV)

6022T **Grace Agort**
Erosion

6023W **Quinn Hughes, Tyler Clair Team** - Microplastics in our water; a study of Minnesota lakes indicated by Dreissena polymorpha

Embedded Systems (EBED)

6024T **Tavia Bookey**
To mold or not to mold that is the question

Energy: Chemical (EGCH)

6025T **Alexander O'Konski**
Getting warm in your car

Energy: Physical (EGPH)

6026T **Anais Calva-Navarro**
A Hair-Raising Discovery

6027T **Emma Conley**
Over The Rainbow

6028T **Kason Jonland**
Heat of Light

Engineering Mechanics (ENMC)

6029T **Peter Genis**
Catapult Kick-Off

6030T **Blake Haase**
Demolition Day

6031T **Dylan Streeter**
DIY Cars!

6032T **LaRaya Zuniga-Corr**
Solar Oven

Environmental Engineering (ENEV)

6033T **Carolina Gjevre**
Quick Dam!

Materials Science (MATS)

6034T **Annika Clift**
Blocking Blue Light

6035T **Sam Crawford**
Super Soaker Upper

6036T **Braidon Dukart**
Hockey Pucks Bounce?/What is the Best
Temperature to Limit How Much a Hockey Puck
Bounces

6037S **Ryan Dunlap**
No Friction!

6038T **Hazel Kubisiak**
Wash Em' Away

Microbiology (MCRO)

6039T **Mya Halliday**
The Five Second Rule

6040T **Lillie Hanto**
Is it Safe To Know Your Shade?

6041W **Wilson Schaefer**
Bacteria In Water Fountains

Physics and Astronomy (PHYS)

6042T **Calvin Beamer**
Time Flies

6043T **Luke Jolly**
Airplanes vs Pennies

6044T **Renna Zirbel**
An Eggsillient-Experiment

Plant Sciences (PLNT)

6045T **Samantha Bergh**
Let It Grow

6046T **Maryam Bradai**
Plant Growth

6047T **Kaylee Crampton**
Wake up with Caffeine

6048T **Anthony Nguyen**
Indoor Gardening

6049S **Isaac Robertson**
How does caffeine affect bean plant growth?

Robotics and Intelligent Machines (ROBO)

6050T **Sriram Sureshkumar**
Race towards Artificial Intelligence

Grade 7

Animal Sciences (ANIM)

7001T **Lewis Jemtrud**
Dog Treat Preferences

7002T **Abigail Noll**
Battle of the Worms

7003T **Ava Telep**
Do Individual Cats Have Scent Preferences?

7004S **Alice Wagner Hemstad**
How does prey type affect the phantom midges
feeding efficiency?

Behavioral and Social Sciences (BEHA)

7005W **William Anderson**
The Ultimate Relay: The Effects of Atherosclerosis
on the Pumping of the Heart
Project At Electricity Wall

7006T **Joseph Botros**
Speed of Age: Which is Faster?

7007T **Alaina DeCrans**
The Pressure is On!

7008T **Kylee Dunnell**
Does color affect memory?

7009T **Yordanos Eshete**
Does Reading Affect Heart Rate?

7010S **Molly Hanley**
Does Color Matter?

7011S **Anna Lovat**
How Does Age Affect Memory?

7012T **Theresa Nguyen**
The Uncanny Valley

7013T **Jariah Ratcliff**
Chewing away the competition

7014T **Thomas Rise**
Hey! I'm Trying to Read!

7015T **Rosa Segura Caudana**
Three Study Methods: Which is Best?

7016S **Audrey Snowbeck, Lily St Dennis
Team** - Starburst Science

7017T **Jesus Sosa Iguanero**
How Does Changing the Aspect of Photos Affect
How Quickly a Person Recognizes the Image?

7018S **Faith Wood**
Are You Really Telling The Truth

Biochemistry (BCHM)

- 7019S **Asia Mohamed**
How does the different sweetener affect how high the cupcake rises
- 7020S **Garrett Seppanen**
The pasteurization of milk and the FDA
- Biomedical and Health Sciences (BMED)***
- 7021S **Latif Alhumam**
How does exercise affect reaction time v.s reading
- 7022W **Jaclyn Brouwer**
Making Gluten Great Again: The Impact of Gluten Digestive Enzymes on Gliadin Solubility
- 7023T **Kathleen Gaston**
Does Eye Color Affect Vision
- 7024T **Morgan Harrison**
I Can't Breathe
- 7025T **Zoey Meier**
Optimum Flexibility
- 7026W **Taylor Miedema**
Do Kids Count The Amount? The Effect of Calorie Listings on Middle Schoolers Food Choices
- 7027T **Andrew Prochnow**
Morning Noon or Night?

Biomedical Engineering (ENBM)

- 7028T **Shauna McCrory**
How An Artificial Pancreas Model Responds To High Glucose Levels

Chemistry (CHEM)

- 7029T **Gustavo Albino**
Which Kind of Salt Melts Ice the Fastest
- 7030T **David Alcantara**
Elephant toothpaste
- 7031T **Maggie Banks**
A Multi-Faceted Solution: How Decanting Frequency Affects Growth of Single Crystals
- 7032S **Zach Bollman**
Alchemy for Real: electroplating
- 7033T **Alaina Bruce**
Miskwaabik niibi (Copper Water)
- 7034T **Carissa Chow**
How Effective Is Your Medicine?
- 7035T **Sara Cooney**
Color With Embroidery

- 7036W **Clare Danz**
Skin Savior: The Affect of Skin Moisturizer on Skin Conditions

- 7037T **Luke Foley**
What Drink Is Best For Sports?
- 7038T **Selene Herrera Sanchez**
What liquid dissolves candy fastest?
- 7039T **Gerald Johnson, Collin Boyum Team** - Residual Boiling
- 7040T **Katherine Kuffel**
The Crackdown on Hand Moisturizer
- 7041T **Joseph Ludewig**
Dose Salt or Sugar Affect the Freezing Point of Water
- 7042T **Hailey Montecinos Sanchez**
Acetone vs Styrofoam
- 7043S **Samantha O'Brien , Greta Goodspeed Team** - Sugar, Sugar, and more Sugar
- 7044S **Emmanuel Ogenyi**
Acidity of Orange and Apple Juice
- 7045T **Maya Orellana Sprung , Sophia Bongaarts Team** - Making a fire: The Effects of Fabric Softener

- 7046T **Franceska Palma**
Artificial Sugar Cakes

- 7047S **Evadne Pond**
Chocolate Melting

- 7048S **Wyatt Shirley**
Crystal Growth

- 7049T **Derek Stock**
Rate of an Oscillating Reaction

- 7050S **Alaina Zugay, Ella Arbuckle Team** - Reason for the Rise

Earth and Environmental Sciences (EAEV)

- 7051S **Anders Ahlberg**
Carbonic acid
- 7052S **Mairin Blank**
How does the order of filtration materials affect the TDS left in water?
- 7053T **Catriona Formby**
How Water Temperature Affects the Speed of Water Vortexes
- 7054W **Gerrit Hedman Hedman**
Temperature and Herbicide Vs. Milkweed and Monarchs the effect of Temperature on Milkweed

- 7055S **Siri Pattison**
How does the volume of water affect how quickly it changes temperature?
- 7056W **Adithi Rupireddy**
Plant growth in an enriched carbon environment: Success of *Trigonella foenum-graecum* and *Cicer arietinum* under elevated CO₂
- 7057S **Maddy Schilling**
The effect of magnesium chloride (sidewalk salt) on freshwater amphipods
- 7058W **Madeline Schmidt**
Location, Location, Pollution: Effect of Location on Air Particulates
- 7059T **Matthew Trussell**
Oil Vs Worms
- 7060W **Julianna Velgersdyk**
Heart of the Matter: The Effect of pH on *Daphnia* Heart rate
- 7061W **Jack Zylstra**
Battle of the Worms: The Effect of Different Types of Worms on Soil
- Energy: Chemical (EGCH)*
- 7062T **Sophie Cossitt**
Icing out the competition
- 7063T **Brayden Lange**
The Effect of Temperature on Batteries
- Energy: Physical (EGPH)*
- 7064T **Vivian Chen**
Running with Height
- 7065T **Oliver Jones**
Boiling Point Elevation
- 7066W **Samuel Oelschlaeger**
Walking in Darkness: Measuring Lux from Street Lights to Test Street Safety
- 7067T **Lenny Rodriguez**
Electricity
- 7068T **Isaac Schlichting**
Temperature's Influence on Solar Panels
- 7069W **Shreshth Shrivastava**
Charge phone during power outage
- 7070T **Adrian Singh**
How's Your Performance? Cold or Hot.
- 7071T **Joshua Trussell**
Any Way the Wind Blows

Engineering Mechanics (ENMC)

- 7072S **Elise Dunne**
How Does the Type of Traffic Control Affect the Amount of Drivers That Stop for a Pedestrian
- 7073W **Noah Hong**
Up Up and Away, The best combination for the best rocket.
- 7074T **Neil Mendez**
They All Fell Down

Environmental Engineering (ENEV)

- 7075S **Alessandro Fusco**
An Efficient Winter Refrigerator
- 7076T **Joe Warmka**
Can It Compost?

Materials Science (MATS)

- 7077T **Liam Clift**
What is the best combination for an Electromagnet?
- 7078T **MaKenna Dunn**
Moldy Bread
- 7079W **Jaaron Konkell**
Go With the Flow, How Size Affects the Flow of Granular Materials
- 7080T **Grace Lieber Ms., Haylie Smith Ms. Team** - What diaper to choose for your babies do's
- 7081T **Kenna Naughton**
Watching Paint Dry
- 7082T **Maison Roudabush**
Wood Sealants: Which repels household chemicals the best?

Mathematics (MATH)

- 7083T **Dominic Bauer**
A Chilling Effect

Microbiology (MCRO)

- 7084W **Liliana Seyller**
What's In Your Yogurt? The Impact Of Red Bell Peppers On Yogurt Probiotics

Physics and Astronomy (PHYS)

- 7085W **Eli DeKam**
When Monkeys Fly, How Launch Angle Impacts the Distance That an Object Flies
- 7086T **Edwin Guasco**
Which Type of Wood Will Hold More Weight Before it Sinks

7087T **Raphael Ignacio**
Kick the Football!

7088T **Aiyana Meeks**
Play Dough, Citrus Fruit, and Conductivity

7089S **Decklin Merkt**
Sand Waves

7090T **Timothy Trussell**
Shakin It Up

7091T **Wesley Willett**
Falling Bottles

7092T **Samantha Wolf**
Do Different Air Pressures Affect How Far A Volleyball Travels

Plant Sciences (PLNT)

7093W **Andrew Beekman**
EW Big Ears, Does Row Orientation Affect Corn Yield

7094S **Keira Deiman**
The Lively Ivy

7095T **Luke Honerman**
Which Type of Water Works Best for Hydroponics?

7096T **Aidan Josephs, Noah Leipnitz**
Team - Radiation it really grows on you

7097T **Joshua Marin Torres**
Do different colors of light affect the rate of plant growth

7098T **Yesenia Nava Ramirez**
Does the Type of Water Affect a Plant's Growth

7099T **Julia Osmolski, Madison Spears**
Team - Weeds Be Gone

Robotics and Intelligent Machines (ROBO)

7100T **Luis Alvarez**
Does Different Color Light Affect the Speed of a Robot

7101W **Jannes Kamp**
Weighted Consequences

7102S **Kai Sackreiter**
How Does Line Color Affect The Accuracy Of A LEGO EV3 Color Sensor

Systems Software (SOFT)

7103W **Braden Vis**
The WiFi Is Down, Again!!! Determining the Materials that Block WiFi.

Grade 8

Animal Sciences (ANIM)

8001S **Anise Bates**
How Does The Size of The Dog Affect Their Tennis Ball Size Preference?

8002S **Matthew McConville**
Stop The Buzz From Driving You Batty

Behavioral and Social Sciences (BEHA)

8003S **Bedria Ali**
How does the golden ratio connect to the real world?

8004T **Cassandra Atkinson**
Cognitive Ability- Stroop Effect

8005S **Nick Collins**
How Does Being Telling Students That They Will Be Graded Affect Their Performance, Stress Level, Mood, and Effort

8006S **Greta Cunningham Cunningham**
What is the Effect of Introversion and Extraversion on Family Dynamics and how does it Behave as a Genetic Trait?

8007T **Logan Jones**
Do You Remember More If You Read or Listen to a Book

8008S **Bernadette Latham**
How is the Application of Gender Stereotypes Affected by Age?

8009S **Katarina Scholtz**
Video games vs sports: which one improves reaction time?

8010S **Lily Scott**
Do Synesthetic Techniques Benefit Student's Memory?

8011S **Kaya Solheid**
How does peer pressure affect how teens answer a simple question?

8012S **Ned Summers**
Cute or Creepy

8013W **Grace Vetter, Lillian Marquette**
Team - T-shirt Based Actions

8014T **Macy Weinman, Gizelle Wilkins**
Team - Are Astrological Stereotypes Correct

8015S **Lydia Westerlund**
How does the type of candy affect test scores

8016S **Samirah Young**
Genre focus and contiontration

Biochemistry (BCHM)

8017S **Veronica Sikorski**
How Does Music Affect Plant Growth

Biomedical and Health Sciences (BMED)

8018S **Madeline Johnson**
Which Age Group Washes Their Hands the Best?

8019S **Kendall Olson**
Do Licorice Root Teas Affect Vocal Range?

8020W **Romy Peterson, Amira Sinclair**
Team - How do the different materials of reusable water bottles effect the growth rate of Bacillus megaterium?

8021W **Trisha Samba, Luke Rowen**
Team - Music In My Blood

Biomedical Engineering (ENBM)

8022T **Jocelyn McBride**
Improved Stereotatic Positioning Method for Radiation Therapy

8023S **Rahmanimo Yusuf**
Collecting dew for water consumption

Cellular and Molecular Biology (CELL)

8024S **Violet Eicher**
How does the Temperature of Isopropyl Alcohol Affect the Amount of DNA Isolated from a Strawberry?

8025S **Gus Ostby**
What is the most effective way of sterilizing polluted water?

8026T **Isabelle Parker**
Bacteria

Chemistry (CHEM)

8027S **Pariz Battee**
What 3 types of milk affect the distance when soap is added?

8028S **Ayden Brudnak-Voss**
How does temperature affect dissolvents in water?

8029S **Maggie Fuller**
How does the type of fat affect the density of a shortened cake

8030S **Diego Guevara**
How Does The Environment Effect The Ripening Of A Banana?

8031T **Jacob Johnson**
From Plastic Bag to Water Filter

8032S **Alexander Le**
Water purity across water bottle brands

8033S **Kevin Torstenson**
How does the ratio between resin and hardener in an epoxy mixture affect the adhesion between two wood blocks?

Computational Biology and Bioinformatics (CBIO)

8034W **Dureti Gamada**
The Genes of Dementia

Earth and Environmental Sciences (EAEV)

8035S **Pia Banat**
How do different areas (cities, towns) in MN affect people's water quality?

8036S **Adam Gaudio**
How do different chemical compounds affect the rate at which ice melts?

8037W **Vaughn Hughes, Arjav Krishna**
Team - Impact of Long-Term Ocean Acidification on Phytoplankton and its Potential Effects on Earth's Ecosystem

8038S **Gabriel Michalski**
How fish affect a storm water pond

8039W **Harini Senthilkumar**
Assessing Effectiveness of Biopolymers to Reduce Soil Erosion by Water

8040W **Susan Sherman**
Mesuring the change in the ozone level in a classroom when house plants are introduced

8041S **Leah Stoltz**
How the Speed of Water Affects the Water quality

Energy: Chemical (EGCH)

8042T **Yohanes Eshete**
Let's Heat Things Up!

Energy: Physical (EGPH)

8043S **Ayrion Gordon-Jackson**
How does the Design of the Athletic shoe affect the Athlete's Performance?

8044S **Max Mills**
How Does The Roughness of A Wind Turbines Blade Effect Efficiency

Engineering Mechanics (ENMC)

8045T **Arjun Acharya**
Thermoelectrics

- 8046T **Michael Siv**
Aqua Bridge
- 8047T **Sneha Sureshkumar**
How does the placement of supporting beams affect how much weight is held?

- 8048S **Charles Wriedt**
How does the intensity of light affect the amount of electricity produced from a solar panel

Environmental Engineering (ENEV)

- 8049S **Abby Altman**
Wind at work

- 8050S **Peter Her**
How does the watts of the light bulb affect how much voltage the light produces?

- 8051S **Nolan Keefe**
Do Types of Sand and Sandbags Patterns Affect How Much Water Pass By

Materials Science (MATS)

- 8052S **Collett Akins**
The Effect of Food and Common Household Cleaning Products on Sealed and Unsealed Marble

- 8053T **Rachel Zillig**
To Tie or Knot to Tie

Mathematics (MATH)

- 8054T **Olivia Munro**
Does the length of a PIN matter

Microbiology (MCRO)

- 8055S **Caitlyn Coyle**
How Does the Type of Topical Antiseptic Agent Affect the Amount of Bacteria Growth

- 8056S **Gajan Dileepan**
How does the washing of a vegetable affect the amount of bacteria grown?

- 8057S **Katherine Kozak**
Is it expensive to treat acne?

- 8058S **Hadley Ninow**
How do different disinfectants impact the growth of bacteria?

- 8059S **Ashlyn Petit**
Does the brand of toothpaste effect how much bacteria is grown?

Physics and Astronomy (PHYS)

- 8060S **Elijah Jackson**
How does the amount of light affect the dry time on different colored water

- 8061S **Drew Lancaster**
How does the temperature of a soccer ball affect how high it bounces

Plant Sciences (PLNT)

- 8062S **Alice Guion**
What Soil Additives Increase the Growth of Bean Plants?

- 8063W **Mara Larson, Miranda Chance Team** - Power Plants

- 8064T **Sam Murray**
The Effects of Temperature and pH on the Germination Rate of Seeds

- 8065W **Adarsh Nayar**
No plant will die in my home again

Robotics and Intelligent Machines (ROBO)

- 8066W **Anna Mary Southern**
"I am The Duke": Teaching AI to Deceive
Project At Electricity Wall

High School

Animal Sciences (ANIM)

- 1001W **Theo Coval**
Grade 10 - Horseshoe Crab Sanctuary (Year 2)

- 1002W **Megan Daubenberger, Abbiella O'Neil**
Grade 12,12 - **Team** - The Effects of Vaping on the Cognitive and Olfactory Abilities of Mice
Project At Electricity Wall

- 1003W **Byron Jia, Julian Moyer**
Grade 11,11 - **Team** - Sculptors of the Oak Savanna: Reevaluating the Red-headed Woodpecker Population

- 1004W **Thomas Lane**
Grade 11 - Captive Breeding of Sahyadria denisonii Without the Use of Hormonal Treatments

- 1005W **Catherine Pirtle, Christiana Wilke**
Grade 12,12 - **Team** - Monkeying Around: Comparing Isotope Distributions in Baboon Tissue

- 1006W **Gabriela Queiroz Miranda**
Grade 12 - Engineering weighted 3d printed vests for sea turtles with "bubble butt syndrome"

Behavioral and Social Sciences (BEHA)

- 1007T **Shane Andersen**
Grade 10 - Ear training in relation to gender

- 1008T **Kayla Becker**
Grade 10 - An Analysis Of The Authenticity Of Genealogy Assessments

- 1009W **Elizabeth Berman, Thomas Peterson**
Grade 11,12 - **Team** - Analyzing Autistic Traits
- 1010W **Treven Bolton**
Grade 11 - Analyzing The Differences Between The Effects of Esports to Traditional Sports
- 1011S **Natalie Braga**
Grade 10 - To E-Read or Not to E-Read: The Effect of the Medium of a Passage on Memory
- 1012T **Alexis Bunnell**
Grade 10 - Are Teens on Snapchat Crack?
- 1013W **John Cardwell, Grayson Roberts**
Grade 10,10 - **Team** - Video Games and Standardized Testing Scores
- 1014S **Andrea Cruz**
Grade 11 - The Limitations of The Placebo Effect.
- 1015T **Chyanne Gorney**
Grade 10 - How Does Music Affect the Mind
- 1016T **Aeriana Hanif**
Grade 10 - How Gender Relates to Attentiveness
- 1017W **Grace Knoer Ms., Nicole Clark Ms.**
Grade 12,12 - **Team** - Feminizing the Voice Through Manipulation of Vocal Factors
- 1018W **Jarrett Krouss, Zachary Hansen**
Grade 12,12 - **Team** - Analyzing the importance of different personal and political factors in swaying electorates
- 1019T **Zoe Lewis**
Grade 10 - Enhancing Sensory Input to Improve Focus
- 1020T **Angela Linh**
Grade 10 - Crowd Patterns Between Males and Females
- 1021T **Nahomi Merid**
Grade 10 - Childproof Containers
- 1022T **Maribel Monjaras-Rodriguez**
Grade 10 - How Temperature Affects Nonverbal Communication
- 1023W **Giselle Munoz-Semple**
Grade 12 - Examination of misinformation about mental health disorders in the Twin Cities, MN
Project At Electricity Wall
- 1024T **Y Nguyen**
Grade 10 - White Noise
- 1025S **Stee Paw, Htin Lin**
Grade 11,10 - **Team** - Do people eat more during funny movies or scary movies?
- 1026T **Anthony Reynolds**
Grade 10 - How Music Affects Memory
- 1027W **Ayush Shah**
Grade 12 - Evaluating the impact of a community health fair on the underserved population of Ahmedabad, India
- 1028T **Mike Wang**
Grade 12 - Yontrepreneur LLC
- 1029W **Ayres Warren**
Grade 9 - The Effects of Group Size and Age on Social Conformity between Males and Females in High School.
- Biochemistry (BCHM)***
- 1030S **Ifrah Ahmed, Sabrin Adan**
Grade 9,9 - **Team** - Rubber Eggs
- 1031W **Meili Gong**
Grade 12 - Waste Not, Want Not: Engineering Water Stable Bioplastics from Chicken Feather
- 1032S **Yahya Hussein Mr, Eh Ler**
Grade 10,10 - **Team** - What type of candy bar decomposes the fastest?
- 1033W **Trisha Trinh**
Grade 11 - The Effects of DEHP Exposure on Thyroid Gland in Oryzias Latipes
- Biomedical and Health Sciences (BMED)***
- 1034W **Thomas Atwood**
Grade 12 - The Effect of Moving from an Aerobic to Anaerobic State of Exercise on O2 Saturation of Male Adolescent Nordic Skiers, Ages 15-18
- 1035S **Madeleine Breton**
Grade 11 - The Effects of Painkiller Exposure on Zebrafish Embryonic Development
Project At Electricity Wall
- 1036T **Kathryn Christian**
Grade 10 - Personal Genetic Testing Generational Differences
- 1037W **Taylor Damberg**
Grade 12 - The Soy Diet: A study of rats' physiological and hormonal changes
- 1038T **Michael Finch**
Grade 11 - The Effects of Oxygen Deprivation and Carbon Dioxide Retention on Athletic Performance
- 1039W **Caitlin Fox**
Grade 12 - Planarian Regrowth with Depressants & Stimulants
- 1040W **Olivia Graupmann**
Grade 11 - The Implications of the Relationship of Relaxin on Injury in Female Athletes

- 1041W **Iesh Gujral**
Grade 9 - Sunshine Dandelion - a miracle powerhouse
- 1042W **Rachel Gunderson, Boatemaa Agyeman-Mensah**
Grade 11,11 - **Team** - Healing a Broken Heart: Examining the Role of Polycomb Group Protein Asx12 in Regulating Cardiomyocyte Proliferation
- 1043T **Sophia Herzog**
Grade 10 - Point of Yeast Resistance
- 1044T **Amanda Lin**
Grade 10 - How sleep affects the way we perceive the aura of colors
- 1045W **Doreen Liu**
Grade 12 - The Effect of Temperature and Pressure on Sterilization of Medical Equipment
- 1046S **Fadumo Mahmood, Maryam Mohamed**
Grade 10,10 - **Team** - Gummi Membranes
- 1047T **Emma McCann**
Grade 12 - The Impact of Antibiotics on Harmful Bacteria vs. Healthy Bacteria
- 1048T **Grace Milhaupt**
Grade 10 - The Impact of Occluded Arteries on Cardiovascular Health
- 1049W **Devika Narayan**
Grade 12 - Understanding interactions between Insulin and Amyloid-Beta Fibril Formation in Alzheimer's patients: Year II
Project At Electricity Wall
- 1050W **Riley Norman**
Grade 12 - Effects of Age on the Recovery of Sun Damaged Skin throughout the Winter Months
- 1051W **Jack Peterson, Emre Adabag**
Grade 11,11 - **Team** - Defeating Diastolic Dysfunction: Analyzing the correlation between serum magnesium and diastolic dysfunction
- 1052W **Ava Raffel, Mary O'Grady**
Grade 11,11 - **Team** - Facing off with FSHD: Designing a cell line to model facioscapulohomeral muscular dystrophy
- 1053W **Simren Samba, Nell Ganley**
Grade 10,10 - **Team** - Can Natural Medicine Prevent the Growth of E. Coli?
- 1054W **Nathan Schneider**
Grade 11 - Exploring the Option of a Tau-Targeted Immunotherapy as a Treatment for Alzheimer's
- 1055S **Kaw Soe, Gay Paw**
Grade 11,10 - **Team** - Does time of day affect your heart rate?
- 1056W **Breelyn Stelle, Alison Sundem**
Grade 12,12 - **Team** - Examination of the role of N-linked glycans on the ability of immunoglobulin E to bind to Fce-R1
- 1057S **Nitya Thakkar**
Grade 12 - Sulforaphane improves oxidative stress response in Caenorhabditis elegans via SKN-1
Project At Electricity Wall
- 1058W **Mayuresh Vernekar**
Grade 12 - Analyzing the effectiveness of viral vectors in gene modification: Cell-specificity of GFAP-promoted DREADDs and Cre proteins using Adeno-associated viruses
- 1059S **Kelby Wittenberg**
Grade 12 - Differentiation of mES C7 A2-GFP cells into keratinocytes for skin regeneration
Project At Electricity Wall
- Biomedical Engineering (ENBM)*
- 1060W **Alexander Anderson, Nathan Tank**
Grade 12,12 - **Team** - From Screen To Silicone: 3D printing anatomically and mechanically accurate organ models for preoperative planning
- 1061W **Annabel Cho**
Grade 12 - Mesenchymal stem cells as theranostics
- 1062W **Nicholas Kachkovsky**
Grade 12 - Synthesizing a pH-sensitive hydrogel for localized drug delivery.
- 1063W **Saketh Kollipara, Aniketh Naidu**
Grade 12,12 - **Team** - Improving Prostate Cancer Treatment: Optimizing Targeted Drug Delivery Using Nanoparticles
- 1064S **Anindita Rajamani**
Grade 10 - Wearable Sensor System and Machine Learning Algorithms for Fall Detection
- 1065W **Lana Trautman, Samuel Putnam**
Grade 12,12 - **Team** - Precision Peptides: Exploring the role of TAT-functionalized nanoparticles in stem-cell based targeted cancer treatment
- Cellular and Molecular Biology (CELL)*
- 1066S **Fahti Abdi, Salma Adan**
Grade 10,10 - **Team** - What rises yonder in the yeast?
- 1067W **George Cai**
Grade 11 - Drug Discovery for Treating Heart Disease: Validating Compound Screening for Ryanodine Receptor 2

1068S **Ethan Dincer**
Grade 12 - Determination of Mutant JUP
Localization in an iPSC Model of ARVC:
Implications for Diagnosis and Pathogenesis
Project At Electricity Wall

1069W **Oliver Forst**
Grade 12 - Effects of Combining Phage Therapy
with Antibiotic Treatment in Escherichia coli

1070S **Say Htoo, Soe Htoo**
Grade 10,11 - **Team** - Does ethnicity affect
physical traits?

1071W **Thijs Larson**
Grade 12 - Spectrophotometer Light Absorbance
Measurements of Vibrio fischeri Growth in Culture
vs. NaCl Salinity Levels, Indicating Bioremediation
of Octane as a Nutrient Source

1072T **Kyra Miklowski**
Grade 10 - Aeration of Yeast

1073X **Gautham Nair**
Grade 11 - Understanding the effects of
disinhibition: Analyzing the impact of synaptic
disinhibition on neural activities and patterns

1074T **Joslyn Reuter**
Grade 10 - Hand Sanitizer vs Liquid Soap

1075S **Joseph Smith, Friday Htoo**
Grade 9,9 - **Team** - Moldy Bread

1076W **Kylie Spangler, Anna Janzen**
Grade 12,12 - **Team** - Continuing the Cure:
Expanding the use of immunotoxins to treat more
forms of cancer

Chemistry (CHEM)

1077T **Caroline Dickhausen**
Grade 10 - Drug Dissolution Testing

1078S **Jury Htoo, Kalid Mahamed**
Grade 11,11 - **Team** - How does temperature affect
carbonation for Pepsi Cola?

1079T **Sandra "Maggie" Irwin, Elizabeth "Betsy"
McGinley**
Grade 9,9 - **Team** - Which Orange Juice Has The
Most Vitamin C?

1080T **Laura Martinez**
Grade 10 - Which wheat bread is the best?

1081T **Henry O'Brien**
Grade 10 - The Battle of the Brands

1082T **Benjamin Reinhard, Nate Griffin**
Grade 11,11 - **Team** - More Efficient Electrolysis

1083T **Tia Rian**
Grade 10 - Styrofoam Degrading Citrus

1084W **Francesca Scherer**
Grade 12 - Diffusion of Cannabinoid Oil (CBD)
into epidermal/dermal layers of skin

1085T **Lucas Trussell**
Grade 10 - The Effects of Carbon Filters on
Different Contaminants

1086S **Qeng Xiong**
Grade 11 - Protein Prenylation: Farnesyl
Diphosphate Analog and its Usage in Disease
Research

Computational Biology and Bioinformatics (CBIO)

1087W **Frank Isaacson**
Grade 11 - Simulating the Spread of a Disease
through a Realistic Mock Population

1088W **Anna (Ace) Laikind**
Grade 10 - Bacterial Breakdown: A Study Into
Phospholipase A2

1089W **Dean Matteson**
Grade 12 - Using a neural network to predict water
quality conditions from eDNA sequencing data

1090W **Dylan Vincent, Roberaa Ayana**
Grade 11,11 - **Team** - Solving a Protein Puzzle:
Countering inflammatory disease by engineering an
accurate model of the C3aR protein receptor

Earth and Environmental Sciences (EAEV)

1091T **Zamira Abdi**
Grade 10 - The Vanishing Act

1092T **Grace Campbell, Tatum Frey**
Grade 12,12 - **Team** - An Environmentally
Friendly Approach to Ice Management

1093W **Christine Cannon**
Grade 12 - Examination of the effect of growth
under elevated atmospheric carbon dioxide on the
pollen protein concentration of flowers of rapeseed
(Brassica napus) and dwarf sunflower (Helianthus
annuus)

1094W **Samuel Dahl**
Grade 12 - Climate change effects on coastal
marine ecosystem productivity

1095S **Margaret Feng, Olivia Johnson**
Grade 11,11 - **Team** - Scoring and the rate of
germination

1096S **Margaret Hlavka**
Grade 12 - Early Growth of Tallgrass Under
Variable Precipitation and Species Evenness
Scenarios
Project At Electricity Wall

1097T **Salmaan Hussein**
Grade 10 - How Strong is Cotton?

- 1098T **Marwah Ismail, Nawal Mahamed**
Grade 11,11 - **Team** - The Ultimate Plan: Using the Sahara Desert to Create Enough Solar Energy to Power Earth
- 1099S **Gabriel Konar-Steenberg**
Grade 12 - Analyzing Predicted Temperature and Diurnal Temperature Range Trends Using Regional Climate Model Output
Project At Electricity Wall
- 1100T **Matthew Krzmarzick**
Grade 10 - Zebra Muscles in Minnesota Lakes
- 1101T **Emma Lindahl**
Grade 11 - Can Wax Worms Eat Plastic
- 1102T **Evalin Olson**
Grade 12 - Bioremediation of Retention Ponds Using Minnesota Native Plants
- 1103T **Sirui Qi**
Grade 12 - Influence of the losing of the soil under the different kinds of irrigation
- 1104W **Darlene Radichel, Louise Kim**
Grade 12,12 - **Team** - Give Me The Dirt: Determining the effect of urban garden soil amendments on soil microbes and plant growth
- 1105W **Abirami Rajasekaran**
Grade 9 - Chopsticks, A Colossal Catastrophe
- 1106S **Samantha Ries**
Grade 12 - Associations Between Garlic Mustard (*Alliaria petiolata*) and Above-Ground Soil Fungi in a Minnesota Oak Woodland
Project At Electricity Wall
- 1107S **Betsy Romans**
Grade 12 - The Effect of Silver Nanoparticles on Aquatic Vegetation
Project At Electricity Wall
- 1108W **Mikayla Schultz**
Grade 12 - Effect of application of nitric-oxide reductase to *Aiptasia Palladia* prior to heat stress to reduce symbiont expulsion.
- 1109T **McKenzie Schwarz**
Grade 10 - How will soil affect the pH level of water
- 1110T **Walter Weber**
Grade 10 - GMO study
- 1111T **Nick Wong**
Grade 12 - The Effect of Rural and Urban Freshwater on Cellular Respiration and Photosynthesis of Algae
- Embedded Systems (EBED)*
- 1112W **James Clinton, Nathan Rockafellow**
Grade 11,11 - **Team** - Field Yield Revealed: Creating a radar-based system for pre-harvest potato yield mapping
- 1113T **Nickolas Zander**
Grade 9 - Critter Distracter
- Energy: Chemical (EGCH)*
- 1114T **Connor Gruenes**
Grade 12 - Energy Efficiency of Wood
- 1115W **Connor Hansen**
Grade 12 - Examination of metal-organic frameworks as efficient, cost-effective alternative catalysts in hydrogen fuel cells.
- 1116S **Hser N Paw , Oh Paw**
Grade 10,10 - **Team** - Which type of hamburger decomposes the fastest at room temperature?
- 1117S **Mohamed Said, Salman Hussein**
Grade 9,9 - **Team** - Current Cents
- 1118T **Ava Shovein**
Grade 10 - Environmental Conditions on the Effects of Algae Oil Stored
- 1119T **Giwon Sung**
Grade 11 - Investigating the Power Performance of Electrochemical Batteries Coupled with Metal Electrodes and Electrolytes
- Energy: Physical (EGPH)*
- 1120W **Julian Byrne**
Grade 10 - Underwater Energy Storage
- 1121T **Jack Holmstrom**
Grade 10 - A comparison of Environmentally Friendly Isolation Materials
- 1122S **Baw Htoo, Kevin Aleman, Lwee Moo**
Grade 11,10,10 - **Team** - How high does a soccer ball bounce at different pressure levels?
- 1123S **Abdelrahman Mokbel A.M**
Grade 11 - Optimizing the Vibrational Energy Harvesting Efficiency of the Duffing Oscillator
Project At Electricity Wall
- 1124S **Sail Moo , Seree Male**
Grade 11,10 - **Team** - Does air pressure affect the juggling ability of a soccer ball?
- 1125W **Quentin Mooney**
Grade 11 - Development of Speed Bump Energy Harvester and Energy Storage Technologies for The Minnetonka High School

- 1126S **Blor Wah, Thein Kyaw**
Grade 10,10 - **Team** - How does the amount of pressure influence how far you can head a soccer ball?
- 1127W **Kerui Yang**
Grade 11 - Harvesting the Blue Wave Energy by Circular Electromagnetic Generator
Project At Electricity Wall
- Engineering Mechanics (ENMC)*
- 1128S **Jama Aden, Abdullahi Hassan**
Grade 9,9 - **Team** - Will It Go Round In Circles?
- 1129S **Richard Chang**
Grade 11 - The Safety and Reliability of Hobby-Grade Quadcopters
Project At Electricity Wall
- 1130T **Samuel Elting-Ballard**
Grade 12 - Bracket to Hold Laser Sensors for a Robot
- 1131T **William Erbes**
Grade 10 - The Effect of Fluids on Hydraulics
- 1132W **Samuel Leville, Spencer Yueh**
Grade 12,12 - **Team** - Stretching the Spine: Engineering an apparatus to determine the properties of the facet capsular ligament
- 1133W **Sahana Mangipudi**
Grade 10 - Hallolights: The Key to Pedestrian Safety
- 1134T **Lauren Meyer**
Grade 11 - Reclaiming Satellites
- 1135W **Raymond Richter**
Grade 12 - Microcontrollers with photovoltaic energy sources
Project At Electricity Wall
- 1136T **Nathan Trussell**
Grade 10 - Effect of Chord Length on Propeller Efficiency
- 1137T **Orion Tyrrell**
Grade 9 - RF Radio Propagation Using a Nontraditional Magnetic Loop Antenna
- 1138T **Osman Warfa**
Grade 10 - The Stability of an Aircraft Wing During Descent
- Environmental Engineering (ENEV)*
- 1139T **Samuel Harris**
Grade 11 - Increasing the Efficiency of Solar Panels
- 1140W **Fiona Kinney, Abby Samuel**
Grade 10,10 - **Team** - Finding a eco-friendly plastic
- 1141W **Ilana Levine**
Grade 12 - Enrichment cultures of environmental aquatic sediment samples to identify microbial metabolism of and resistance to Perfluorooctanoic acid
- 1142S **Cora-Rose Michel**
Grade 10 - Build it High
- 1143W **Jacob Otolski**
Grade 12 - Experimentation on the Optimization of Relationships in Self-Sustaining Miniaturized Aquaponic Systems
- 1144T **Nancy Wang**
Grade 11 - Disaster Resistant House X
- Materials Science (MATS)*
- 1145T **Alex Gibson, Judah Jupka**
Grade 11,11 - **Team** - Re-Fitted Sheets
- 1146T **Chris Haekenkamp**
Grade 10 - How Shoes Grip
- 1147S **Brian Saldana Almaraz**
Grade 11 - Understanding Effective Oil Dispersion With Help From Lecithin and Tween 80
- Mathematics (MATH)*
- 1148W **Justin Carter**
Grade 11 - Creating a Predictive Model for the 2019 Men's NCAA Tournament
- 1149W **Alexander Johnson**
Grade 12 - A Study of Minor League Baseball Rankings and Their Correlation to Future MLB Value
- 1150W **Neil Khadilkar**
Grade 12 - Monte Carlo Analysis of Therapeutic Food Programs for Malnourished Children
- Microbiology (MCRO)*
- 1151W **Cole Forsmark**
Grade 12 - Optimizing the pathway from Mevalonate to Anhydro Mevalonolactone using siderophore homologs, to create sustainable plastics.
- 1152T **Jackson Kieffer**
Grade 10 - Which Alcohol Percentage Disinfects the Best?
- 1153W **Declan Lee-Gilligan**
Grade 12 - Asthma and it's germs
- 1154T **Manashree Padiyath**
Grade 11 - Thyme and Thyme again! Investigation of synergistic antimicrobial activity of Thymus vulgaris Essential Oil in combination with 'superfood' Essential Oils

- 1155S **Hser K Paw, Kpree Paw**
Grade 10,10 - **Team** - What type of cheese decomposes the fastest?
- 1156W **Priscilla Prouty**
Grade 12 - Amphibian Secretions from *Rana pipiens* and its application for inhibition of *Staphylococcus epidermidis*
- 1157W **Ethan Taddy**
Grade 12 - Caffeine as a Quorum Sensing Inhibitor
- 1158S **Izabella Usitalo**
Grade 9 - Zap Away Zit: Which OTC Acne Medicine Works Best?
- Physics and Astronomy (PHYS)*
- 1159T **Sadik Bouari**
Grade 10 - Bank shot Vs. Swish shot
- 1160T **Andrew Bunnell**
Grade 10 - PSI affects distance and accuracy for a football kicking
- 1161T **Zachary Carlson**
Grade 11 - Effect of Bicycle Gear Ratio on Power Generation
- 1162T **Conrad Gayner, Daniel Block, Caleb Loomis**
Grade 12,11,11 - **Team** - Sugar Rocket Efficiency
- 1163W **Belinda Neset**
Grade 10 - Up, Up and Away! A Comparison of Dosimeter and Geiger Counter Readings in the Upper Atmosphere
- 1164W **Chloe Smith**
Grade 11 - Analysis and Imaging of Micrometeorites
- Plant Sciences (PLNT)*
- 1165S **Hamze Ahmed**
Grade 12 - Drought conditions in *arabidopsis*
- 1166S **Sameer Bijwadia**
Grade 11 - The Effect of Rising Sea Levels on the Growth of Florida Everglades Plants
Project At Electricity Wall
- 1167T **Olivia Caldwell**
Grade 10 - Evaluating Sugar Content in Fruits
- 1168S **Phoebe Chaw, Kyi Kyi Linn**
Grade 10,10 - **Team** - What kind of soda pop decomposes cherry tomatoes the fastest?
- 1169S **Anthony Chen**
Grade 10 - The Effects of EMFs on Seedling Germination and Photosynthesis
Project At Electricity Wall
- 1170T **Madeleine Danzberger**
Grade 12 - Martian Regolith Plant Growth
- 1171T **Monica Dinh**
Grade 10 - Effects of an Artificial Cuticle on Plants
- 1172W **Quentin Hughes**
Grade 9 - How Can the Earth Feed 10 Billion People? Development of an Energy-Efficient Method for Significantly Increasing Vertical Farm Output without Sacrificing Nutrition
- 1173T **Haley Jostes**
Grade 12 - Combating Undernutrition in Developing Countries with a Compact Aeroponics System Utilizing Contaminated Water
- 1174S **Brennan Keogh**
Grade 11 - A Novel Approach to Utilizing an Invasive Species: Eurasian Water Milfoil as a Substitute for Conventional Chemical Fertilizer
Project At Electricity Wall
- 1175W **Andrea Lund**
Grade 12 - The influence of light exposure on ascorbic acid content of postharvest arugula microgreens
- 1176S **Nahomi Nakazono Luque, Juliana Perez-Garcia, Geberelwa Animut**
Grade 10,10,10 - **Team** - Drought stress in *Arabidopsis thaliana*
Project At Electricity Wall
- 1177T **Elena Pearce**
Grade 10 - Cleansing In Fencing
- 1178S **Nathan Sobotka**
Grade 11 - The Effects of Plastic Pollutants on the Growth of Wisconsin Fast Plants
Project At Electricity Wall
- 1179S **Tar Soe, November Paw**
Grade 10,11 - **Team** - Do strawberries decompose faster in brown sugar or white sugar solutions?
- 1180S **Eh Wah, Jway Gay**
Grade 11,11 - **Team** - How does packaging affect the amount of mold that grows on strawberries at room temperatures?
- 1181S **Lia Wallace, Stephanie Hulander**
Grade 12,12 - **Team** - The Key to Happenness
- Robotics and Intelligent Machines (ROBO)*
- 1182W **Jai Chadha**
Grade 11 - Low-Cost Concealed Weapon Detection for School Environments Using Acoustic Signatures
- 1183W **Linghang Kong, Ethan Miandrisoa**
Grade 12,12 - **Team** - Making the Teamwork Dream Work

- 1184W **Parthiv Krishna**
Grade 12 - Robust Autonomous Micro Aerial Vehicle (MAV) Navigation with Onboard, Environment-Agnostic, Multi-Sensor SLAM
- 1185W **Joshua Levy**
Grade 12 - Identification of Mutations in Non-Small Cell Lung Cancer Tumors Using CT Scan Image Analysis
- 1186S **Melissa Nie**
Grade 11 - Applying Thermopile Array Sensors and Machine Learning to Detect Falls of Older Adults
Project At Electricity Wall
- 1187W **William Rehm**
Grade 12 - Evaluation of Deep Neural Networks Trained in Synthesis of Original Music
- 1188W **Abigail Roh, Samantha Deter**
Grade 11,11 - **Team** - Searching the Shadows: Using Machine Learning to Classify Trees in Aerial Imagery
- 1189W **William Roslansky**
Grade 12 - The use of artificial feathers and various biomechanical movements in robotic ornithopters to improve efficiency and maneuverability

Systems Software (SOFT)

- 1190S **Mani Chadaga, Akshay Nambudiripad, Alexander Hydrie**
Grade 10,10,10 - **Team** - Creating and Training a LightGBM Machine Learning Model to Predict Malware Susceptibility Based on the System Properties of a Windows Device
Project At Electricity Wall
- 1191W **Charlie Horn, Lauren Hagen**
Grade 12,12 - **Team** - Creating a Program to Teach Improvisational Skills on a Bass Guitar Using Augmented Reality Systems
Project At Electricity Wall
- 1192T **Milan Jostes**
Grade 10 - Developing FourS 1.0 - A Java Software Utilizing Quick Response Code and Smartphone Technology to Reduce the Number of School Shootings
Project At Electricity Wall
- 1193T **Ruicheng Li**
Grade 12 - ResPay via QR
- 1194W **Max Lindholm**
Grade 11 - Investigating the use-potential of Rhetorical Structure Theory in a novel re-ranking method for research-oriented search engines

Translational Medical Science (TMED)

- 1195W **Jordan Zais**
Grade 12 - Analysis and treatment of nickel immune responses within *Drosophila melanogaster*



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Grade 6

Abdulkadir, Sumaya 6008T
 Abdullahi, Kasim 6009T
 Achett, Rahael 6003W
 Agort, Grace 6022T
 Beamer, Calvin 6042T
 Bergh, Samantha 6045T
 Bookey, Tavia 6024T
 Bradai, Maryam 6046T
 Calva-Navarro, Anais 6026T
 Clair, Tyler 6023W
 Clift, Annika 6034T
 Conley, Emma 6027T
 Crampton, Kaylee 6047T
 Crawford, Sam 6035T
 Dozier, Daedreaon 6007S
 Draves, Connor 6010T
 Dukart, Braidon 6036T
 Dunlap, Ryan 6037S
 Ezedi, Praise 6011S
 Farrell, Michelle 6012T
 Genis, Peter 6029T
 Gjevre, Carolina 6033T
 Haase, Blake 6030T
 Halliday, Mya 6039T
 Hanto, Lillie 6040T
 Hughes, Quinn 6023W
 Jolly, Luke 6043T
 Jonland, Kason 6028T
 Khariwala, Indra 6003W
 Kouakou, Sharnelle 6013S
 Kubisiak, Hazel 6038T
 Kurdikar, Ruhi 6003W
 Maloney, Rita 6014W
 Mason, Alex 6015T
 Mendez, Peter 6016T
 Nguyen, Anthony 6048T
 O'Konski, Alexander 6025T
 Ong, Joseph 6004T
 Ortega-Setala, Alessandro 6017T
 Patterson, Kaitlynn 6002T
 Phommachanh, Ben 6005T
 Redden, Mary 6018T
 Robertson, Isaac 6049S
 Schaefer, Wilson 6041W
 Sirju, Bianca 6019T
 Spencer, Noah 6006T
 Streeter, Dylan 6031T
 Sureshkumar, Sriram 6050T
 Thor Saykao, Chance 6020S
 Uvwoh, Tega 6021S
 Wagner, Lillie 6001T
 Zirbel, Renna 6044T

Zuniga-Corr, LaRaya

6032T

Grade 7

Ahlberg, Anders 7051S
 Albino, Gustavo 7029T
 Alcantara, David 7030T
 Alhumam, Latif 7021S
 Alvarez, Luis 7100T
 Anderson, William 7005W
 Arbuckle, Ella 7050S
 Banks, Maggie 7031T
 Bauer, Dominic 7083T
 Beekman, Andrew 7093W
 Blank, Mairin 7052S
 Bollman, Zach 7032S
 Bongaarts, Sophia 7045T
 Botros, Joseph 7006T
 Boyum, Collin 7039T
 Brouwer, Jaclyn 7022W
 Bruce, Alaina 7033T
 Chen, Vivian 7064T
 Chow, Carissa 7034T
 Clift, Liam 7077T
 Cooney, Sara 7035T
 Cossitt, Sophie 7062T
 Danz, Clare 7036W
 DeCrans, Alaina 7007T
 Deiman, Keira 7094S
 DeKam, Eli 7085W
 Dunn, MaKenna 7078T
 Dunne, Elise 7072S
 Dunnell, Kylee 7008T
 Eshete, Yordanos 7009T
 Foley, Luke 7037T
 Formby, Catriona 7053T
 Fusco, Alessandro 7075S
 Gaston, Kathleen 7023T
 Goodspeed, Greta 7043S
 Guasco, Edwin 7086T
 Hanley, Molly 7010S
 Harrison, Morgan 7024T
 Hedman, Gerrit Hedman 7054W
 Herrera Sanchez, Selene 7038T
 Honerman, Luke 7095T
 Hong, Noah 7073W
 Ignacio, Raphael 7087T
 Jemtrud, Lewis 7001T
 Johnson, Gerald 7039T
 Jones, Oliver 7065T
 Josephs, Aidan 7096T
 Kamp, Jannes 7101W
 Konkel, Jaaron 7079W
 Krishna, Arjav 8037W
 Kuffel, Katherine 7040T

Lange, Brayden 7063T
 Leipnitz, Noah 7096T
 Lieber Ms., Grace 7080T
 Lovat, Anna 7011S
 Ludewig, Joseph 7041T
 Marin Torres, Joshua 7097T
 McCrory, Shauna 7028T
 Meeks, Aiyana 7088T
 Meier, Zoey 7025T
 Mendez, Neil 7074T
 Merkt, Decklin 7089S
 Miedema, Taylor 7026W
 Mohamed, Asia 7019S
 Montecinos Sanchez, Hailey 7042T
 Naughton, Kenna 7081T
 Nava Ramirez, Yesenia 7098T
 Nguyen, Theresa 7012T
 Noll, Abigail 7002T
 O'Brien, Samantha 7043S
 Oelschlaeger, Samuel 7066W
 Ogenyi, Emmanuel 7044S
 Orellana Sprung, Maya 7045T
 Osmolski, Julia 7099T
 Palma, Francesca 7046T
 Pattison, Siri 7055S
 Pond, Evadne 7047S
 Prochnow, Andrew 7027T
 Ratcliff, Jariah 7013T
 Rise, Thomas 7014T
 Rodriguez, Lenny 7067T
 Roudabush, Maison 7082T
 Rupireddy, Adithi 7056W
 Sackreiter, Kai 7102S
 Schilling, Maddy 7057S
 Schlichting, Isaac 7068T
 Schmidt, Madeline 7058W
 Segura Caudana, Rosa 7015T
 Seppanen, Garrett 7020S
 Seyller, Liliana 7084W
 Shirley, Wyatt 7048S
 Shrivastava, Shreshth 7069W
 Singh, Adrian 7070T
 Smith Ms., Haylie 7080T
 Snowbeck, Audrey 7016S
 Sosa Iguanero, Jesus 7017T
 Spears, Madison 7099T
 St Dennis, Lily 7016S
 Stock, Derek 7049T
 Telep, Ava 7003T
 Trussell, Joshua 7071T
 Trussell, Matthew 7059T
 Trussell, Timothy 7090T
 Velgersdyk, Julianna 7060W
 Vis, Braden 7103W

Wagner Hemstad , Alice	7004S	Ostby, Gus	8025S	Bunnell, Andrew	1160T
Warmka, Joe	7076T	Parker , Isobelle	8026T	Byrne, Julian	1120W
Willett, Wesley	7091T	Peterson, Romy	8020W	Cai, George	1067W
Wolf, Samantha	7092T	Petit, Ashlyn	8059S	Caldwell, Olivia	1167T
Wood, Faith	7018S	Rowen, Luke	8021W	Campbell, Grace	1092T
Zugay, Alaina	7050S	Samba, Trisha	8021W	Cannon, Christine	1093W
Zylstra, Jack	7061W	Scholtz, Katarina	8009S	Cardwell, John	1013W

Grade 8

Acharya, Arjun	8045T	Senthilkumar, Harini	8039W	Carlson, Zachary	1161T
Akins, Collett	8052S	Sherman, Susan	8040W	Carter, Justin	1148W
Ali, Bedria	8003S	Sikorski, Veronica	8017S	Chadaga, Mani	1190S
Altman, Abby	8049S	Sinclair, Amira	8020W	Chadha, Jai	1182W
Atkinson, Cassandra	8004T	Siv, Michael	8046T	Chang, Richard	1129S
Banat, Pia	8035S	Solheid, Kaya	8011S	Chaw, Phoebe	1168S
Bates , Anise	8001S	Southern, Anna Mary	8066W	Chen, Anthony	1169S
Battee, Pariz	8027S	Stoltz, Leah	8041S	Cho, Annabel	1061W
Brudnak-Voss, Ayden	8028S	Summers, Ned	8012S	Christian, Kathryn	1036T
Chance, Miranda	8063W	Sureshkumar, Sneha	8047T	Clark Ms., Nicole	1017W
Collins, Nick	8005S	Torstenson, Kevin	8033S	Clinton, James	1112W
Coyle, Caitlyn	8055S	Vetter, Grace	8013W	Coval, Theo	1001W
Cunningham, Greta	8006S	Weinman, Macy	8014T	Cruz, Andrea	1014S
Cunningham		Westerlund, Lydia	8015S	Dahl, Samuel	1094W
Dileepan, Gajan	8056S	Wilkins, Gizelle	8014T	Damberg, Taylor	1037W
Eicher, Violet	8024S	Wriedt, Charles	8048S	Danzberger, Madeleine	1170T
Eshete, Yohanes	8042T	Young, Samirah	8016S	Daubenberger, Megan	1002W
Fuller, Maggie	8029S	Yusuf, Rahmanimo	8023S	Detor, Samantha	1188W
Gamada, Dureti	8034W	Zillig, Rachel	8053T	Dickhausen, Caroline	1077T

High School

Gaudio, Adam	8036S	Abdi, Zamira	1091T	Dincer, Ethan	1068S
Gordon-Jackson , Ayrion	8043S	Abdi, Fahti	1066S	Dinh, Monica	1171T
Guevara, Diego	8030S	Adabag, Emre	1051W	Elting-Ballard, Samuel	1130T
Guion, Alice	8062S	Adan, Salma	1066S	Erbes, William	1131T
Her, Peter	8050S	Adan, Sabrin	1030S	Feng, Margaret	1095S
Hughes, Vaughn	8037W	Aden, Jama	1128S	Finch, Michael	1038T
Jackson, Elijah	8060S	Agyeman-Mensah, Boatemaa	1042W	Forsmark, Cole	1151W
Johnson, Jacob	8031T	Ahmed, Hamze	1165S	Forst, Oliver	1069W
Johnson, Madeline	8018S	Ahmed, Ifrah	1030S	Fox, Caitlin	1039W
Jones, Logan	8007T	Aleman, Kevin	1122S	Frey, Tatum	1092T
Keefe, Nolan	8051S	Andersen, Shane	1007T	Ganley, Nell	1053W
Kozak, Katherine	8057S	Anderson, Alexander	1060W	Gay, Jway	1180S
Lancaster, Drew	8061S	Animut, Geberelwa	1176S	Gayner, Conrad	1162T
Larson, Mara	8063W	Atwood, Thomas	1034W	Gibson, Alex	1145T
Latham, Bernadette	8008S	Ayana, Roberaa	1090W	Gong, Meili	1031W
Le, Alexander	8032S	Becker, Kayla	1008T	Gorney, Chyanne	1015T
Marquette, Lillian	8013W	Berman, Elizabeth	1009W	Graupmann, Olivia	1040W
McBride, Jocelyn	8022T	Bijwadia, Sameer	1166S	Griffin, Nate	1082T
McConville, Matthew	8002S	Block, Daniel	1162T	Gruenes, Connor	1114T
Michalski, Gabriel	8038S	Bolton, Treven	1010W	Gujral, Iesh	1041W
Mills, Max	8044S	Bouari, Sadik	1159T	Gunderson, Rachel	1042W
Munro, Olivia	8054T	Braga, Natalie	1011S	Haekenkamp, Chris	1146T
Murray, Sam	8064T	Breton, Madeleine	1035S	Hagen, Lauren	1191W
Nayar, Adarsh	8065W	Bunnell, Alexis	1012T	Hanif, Aeriana	1016T
Ninow, Hadley	8058S			Hansen, Connor	1115W
Olson, Kendall	8019S			Hansen, Zachary	1018W

Hlavka, Margaret	1096S	Loomis, Caleb	1162T	Putnam, Samuel	1065W
Holmstrom, Jack	1121T	Lund, Andrea	1175W	Qi, Sirui	1103T
Horn, Charlie	1191W	Mahamed, Nawal	1098T	Queiroz Miranda, Gabriela	1006W
Htoo, Jury	1078S	Mahamed, Kalid	1078S	Radichel, Darlene	1104W
Htoo, Say	1070S	Mahmood, Fadumo	1046S	Raffel, Ava	1052W
Htoo, Soe	1070S	Male, Seree	1124S	Rajamani, Anindita	1064S
Htoo, Baw	1122S	Mangipudi, Sahana	1133W	Rajasekaran, Abirami	1105W
Htoo, Friday	1075S	Martinez, Laura	1080T	Rehm, William	1187W
Hughes, Quentin	1172W	Matteson, Dean	1089W	Reinhard, Benjamin	1082T
Hulander, Stephanie	1181S	McCann, Emma	1047T	Reuter, Joslyn	1074T
Hussein, Salman	1117S	McGinley , Elizabeth	1079T	Reynolds, Anthony	1026T
Hussein Mr, Yahya	1032S	"Betsy"		Rian, Tia	1083T
Hussein, Salmaan	1097T	Merid, Nahomi	1021T	Richter, Raymond	1135W
Hydrie, Alexander	1190S	Meyer, Lauren	1134T	Ries, Samantha	1106S
Irwin, Sandra "Maggie"	1079T	Miandrisoa, Ethan	1183W	Roberts, Grayson	1013W
Isaacson, Frank	1087W	Michel, Cora-Rose	1142S	Rockafellow, Nathan	1112W
Ismail, Marwah	1098T	Miklowski, Kyra	1072T	Roh, Abigail	1188W
Janzen, Anna	1076W	Milhaupt, Grace	1048T	Romans, Betsy	1107S
Jia, Byron	1003W	Mohamed, Maryam	1046S	Roslansky, William	1189W
Johnson, Alexander	1149W	Mokbel A.M, Abdelrahman	1123S	Said, Mohamed	1117S
Johnson, Olivia	1095S	Monjaras-Rodriguez,	1022T	Saldana Almaraz, Brian	1147S
Jostes, Milan	1192T	Maribel		Samba, Simren	1053W
Jostes, Haley	1173T	Moo, Lwee	1122S	Samuel, Abby	1140W
Jupka, Judah	1145T	Moo , Sail	1124S	Scherer, Francesca	1084W
Kachkovsky, Nicholas	1062W	Mooney, Quentin	1125W	Schneider, Nathan	1054W
Keogh, Brennan	1174S	Moyer, Julian	1003W	Schultz, Mikayla	1108W
Khadilkar, Neil	1150W	Munoz-Semple, Giselle	1023W	Schwarz, McKenzie	1109T
Kieffer, Jackson	1152T	Naidu, Aniketh	1063W	Shah, Ayush	1027W
Kim, Louise	1104W	Nair, Gautham	1073X	Shovein, Ava	1118T
Kinney, Fiona	1140W	Nakazono Luque, Nahomi	1176S	Smith , Chloe	1164W
Knoer Ms., Grace	1017W	Nambudiripad, Akshay	1190S	Smith, Joseph	1075S
Kollipara, Saketh	1063W	Narayan, Devika	1049W	Sobotka, Nathan	1178S
Konar-Steenberg, Gabriel	1099S	Neset, Belinda	1163W	Soe, Kaw	1055S
Kong, Linghang	1183W	Nguyen , Y	1024T	Soe, Tar	1179S
Krishna, Parthiv	1184W	Nie, Melissa	1186S	Spangler, Kylie	1076W
Krouss, Jarrett	1018W	Norman, Riley	1050W	Stelle, Breelyn	1056W
Krzmarzick, Matthew	1100T	O'Brien, Henry	1081T	Sundem, Alison	1056W
Kyaw , Thein	1126S	O'Grady, Mary	1052W	Sung, Giwon	1119T
Laikind, Anna (Ace)	1088W	O'Neil, Abbiella	1002W	Taddy, Ethan	1157W
Lane, Thomas	1004W	Olson, Evalin	1102T	Tank, Nathan	1060W
Larson, Thijs	1071W	Otolowski, Jacob	1143W	Thakkar, Nitya	1057S
Lee-Gilligan, Declan	1153W	Padiyath, Manashree	1154T	Trautman, Lana	1065W
Ler, Eh	1032S	Paw, Gay	1055S	Trinh, Trisha	1033W
Leville, Samuel	1132W	Paw , Hser N	1116S	Trussell, Lucas	1085T
Levine, Ilana	1141W	Paw, Oh	1116S	Trussell, Nathan	1136T
Levy, Joshua	1185W	Paw, Stee	1025S	Tyrrell, Orion	1137T
Lewis, Zoe	1019T	Paw, November	1179S	Usitalo, Izabella	1158S
Li, Ruicheng	1193T	Paw, Hser K	1155S	Vernekar, Mayuresh	1058W
Lin, Amanda	1044T	Paw, Kpree	1155S	Vincent, Dylan	1090W
Lin , Htin	1025S	Pearce, Elena	1177T	Wah, Blor	1126S
Lindahl, Emma	1101T	Perez-Garcia, Juliana	1176S	Wah, Eh	1180S
Lindholm, Max	1194W	Peterson, Thomas	1009W	Wallace, Lia	1181S
Linh, Angela	1020T	Peterson, Jack	1051W	Wang, Mike	1028T
Linn, Kyi Kyi	1168S	Pirtle, Catherine	1005W	Wang, Nancy	1144T
Liu, Doreen	1045W	Prouty, Priscilla	1156W	Warfa, Osman	1138T

Warren, Ayres	1029W
Weber, Walter	1110T
Wilke, Christiana	1005W
Wittenberg, Kelby	1059S
Wong, Nick	1111T
Xiong, Qeng	1086S
Yang, Kerui	1127W
Yueh , Spencer	1132W
Zais, Jordan	1195W
Zander, Nickolas	1113T

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Maggie Banks	7	A Multi-Faceted Solution: How Decanting Frequency Affects Growth of Single Crystals
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Zamira Abdi	10	Disappearing Act
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Sadik Bouari	10	Bank Shot Vs. Swish Shot
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Bradley Bruha	10	Fresh vs. Vegetable Calories
Kirsten Buckner	10	Acidic Aquatic Plants
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Andrew Bunnell	10	PSI affects distance and accuracy for a football kicking
Sierra Burtnett	10	Cooling down Solar Panels
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Kathryn Christian	10	Personal Genetic Testing Generational Differences
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Tyler Durnen	10	Power source comparison
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Chyanne Gorney	10	How does music affect the mind
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Suad Hassan	10	Kinetic Energy and Tennis Rackets
Sophia Herzog	10	Anti-fungal Medications Affect on Yeast
Jack Holmstrom	10	A Comparison of Environmentally Friendly Insulation Materials
Nicholas Hughes	10	Flammability of Fabrics
Salmaan Hussein	10	What soil does to cotton
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Ishioma Ineh	10	How pH balance of the skin affected : Diet VS skincare product.
Wyatt Isakson	10	The Affect of Magnetism on the Memory of a Regenerated Planaria
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Milan Jostes	10	Developing FourS 1.0 - A Java Software Utilizing Quick Response Code and Smartphone Technology to Reduce the Number of School Shootings
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Regan Kittams	10	How Green are Green Detergents?
Kara Klavins	10	Tooth Appearance and Enhancement
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Zachary LaMotte	10	Does Temperature Affect the Movement of Hockey Pucks?
Isaiah Larson	10	What Is The Best Form Of Natural Fertilizer?
Connor Lattery	10	The Effect of Computers vs Paper and Pencil on Test Accuracy
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Jude Le	10	Memorization
Erika Leeman	10	Alzheimer's and Therapy dogs
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Arione Lewis	10	Finding the Justification of Coffee Addiction
Amanda Lin	10	How sleep affects the way we perceive the aura of colors
Zach Lind	10	Correlations Between Plant Growth And The Temperature of Water
Angela Linh	10	Crowd Patterns Between Males and Females
Dalton Lutz	10	Effect of Chemical Floral Preservatives on the Lifespan of Cut Flowers
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Kyra Miklowski	10	Aeration of Yeast
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Brie-Anna Moeller	10	The Effects of Light on the Bioluminescent Level of Pyrocystis Fusiformis Cells
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Allan Mokandu	10	Shooting percentage project
Maribel Monjaras-Rodriguez	10	How Temperature Affects Nonverbal Communication
Erin Mountain	10	Effects of walking in a straight line
Kevin Navarro	10	Effectiveness of Mouthwash
Sara Negasi	10	Starch Ethanol Production
Y Nguyen	10	White noise
Sophie Nilsson	10	The Result of Warped Words on the Stroop Effect
Marshall Norring	10	Effect of Sodium Bicarbonate on the Flammability of Paint
Heather Nulf	10	If children will cheat
Hannah Nunez	10	Rusting on Nails
Kwesi Nyame	10	The Way Clothing Affects Peoples Perception
Ciara Nyberg	10	Hydrogen: An Alternative Fuel
Henry O'Brien	10	The Battle of the Brands
Samuel Olson	10	Rebound Height of a Ball Compared to the Kind of Ball and Kind of Floor Used
Cassandra Oppong-Bio Brown	10	How Right is Rain?
Daisy Osebe	10	Population Density
Kaitlyn Palacios	10	The Effects of Various Hazardous Waste on Spirulina
Elena Pearce	10	Cleansing In Fencing
Maria Pena Chavez	10	Banana's Sugar vs Temperature
Gunnar Peterson	10	The Tempering of Metal
Mackenzie Peterson	10	The removal of oil from bird feathers using common household solvents
Paige Peterson	10	How much energy is in our food?
Lauren Pettis	10	Effect of Building Materials on Wifi Signal
Annawon Phommasengkeo	10	Tempo & Task Performance
Sophie Potter	10	Which Moisturizer is the Most Effective? A Jello Case Study
Ruby Pozorski	10	Fueling the Future
Michael Raasch	10	How much Vermiculite should be in Soil?
Chantal Ramos	10	How Vitamin C Decreases Over Time
Joslyn Reuter	10	Hand Sanitizer vs Liquid Soap
Anthony Reynolds	10	How Music Affects Memory
Tia Rian	10	Styrofoam Degrading Citrus
Maxwell Rippentrop	10	How accurate is the cannon mechanism of the Pilobolus Fungi?
Ethan Rossow	10	Which Whitening Toothpaste is Most Effective?

2019 Research Papers (continued)

Name	Grade	Title
Gunnar Rypkema	10	Frozen vs. Not Frozen: Which baseball travels further?
Jacqueline Santana	10	Visual and Auditory Memory
McKenzie Schwarz	10	How will soil affect the pH level of water
Ava Shovein	10	Environmental Conditions on the Effects of Algae Oil Stored
Jada Somsanouk	10	Hand hygiene
Ryan Sosinske	10	Measuring Sugar Levels in Bananas
Kaela Sterner	10	Can you predict animal population growth with models?
Richard Tamayo Montoya	10	Lights wasted heat energy
Ashton Thompson	10	The Effect of Temperature on Solar Panels
Hannah Topping	10	Brain Lateralization of Dogs
Dao Tran	10	Antiseptic Contact Solutions
Lucas Trussell	10	Carbon Filtering
Nathan Trussell	10	How does the chord length affect propeller efficiency?
Isaac Vang	10	Effect of Different Soil pH on Plant
Osman Warfa	10	The Stability of an Aircraft Wing During Descent
Zachary Warns	10	Caffeine and Puzzles
Walter Weber	10	GMO Study Research Paper
Ariana Whitbeck	10	Chemicals in Water: Plastic vs. Aluminum
Kylie White	10	Calories In Low Fat/ Fat Free Snacks Vs Regular Snacks
Maria Widen	10	Microbial Life vs Fertilizer
Allen Yoeun	10	Audio VS. Vision Memory
Milan Ysaguirre	10	How Gender Affects Walking Blindfolded
Rodrigo Zaragoza	10	Perceiving color through peripheral vision
Carson Zerr	10	Can Musical Instruments Improve A Person's Memory
Nancy Zheng	10	How Environmental Factors Affect Zebra Mussels
Maxfield Zitnick	10	An Exploration of Encryption
Gabrielle Bell	11	How does leaving different types of seeds to soak In water overnight affect the rate of germination?
Elizabeth Berman, Thomas Peterson	11,12	Analyzing Autistic Traits: a machine learning approach to classifying ASD symptom risk in 18-month-old infants
Sameer Bijwadia	11	The Effect of Rising Sea Levels on the Growth of Florida Everglades Plants
Madeleine Breton	11	The Effects of Painkiller Exposure on Zebrafish Embryonic Development
George Cai	11	Drug Discovery for Treating Heart Disease: Validating Compound Screening for Ryanodine Receptor 2
Richard Chang	11	The Reliability and Safety of Hobby-Grade Quadcopters
James Clinton, Nathan Rockafellow	11,11	Field Yield Revealed: Creating a radar-based system for pre-harvest potato yield mapping
Michael Finch	11	The Effects of Oxygen Deprivation and Carbon Dioxide Retention on Athletic Performance
Rachel Gunderson, Boatemaa Agyeman-Mensah	11,11	Healing a Broken Heart: Examining the Role of Polycomb Group Protein Asx12 in Regulating Cardiomyocyte Proliferation
Samuel Harris	11	Increasing the Efficiency of Solar Panels
Byron Jia, Julian Moyer	11,11	Sculptors of the Oak Savanna: Reevaluating the Red-headed Woodpecker Population
Abigail Johnson Abby	11	Intermolecular Forces Lab

2019 Research Papers (continued)

Name	Grade	Title
Brennan Keogh	11	A Novel Approach to Utilizing Invasive Species: Eurasian Water Milfoil as a Substitute for Conventional Chemical Fertilizer
Max Lindholm	11	Investigating the use-potential of Rhetorical Structure Theory in a novel re-ranking method for research-oriented search engines
Lauren Meyer	11	Reclaiming Satellites
Abdelrahman Mokbel A.M	11	Optimizing the Vibrational Energy Harvesting Efficiency of the Duffing Oscillator
Melissa Nie	11	Applying Thermopile Array Sensors and Machine Learning to Detect Falls of Older Adults
Manashree Padiyath	11	Thyme and Thyme again: Investigation of synergistic antimicrobial activity of <i>Thymus vulgaris</i> Essential Oil in combination with 'superfood' Essential Oils
Jack Peterson, Emre Adabag	11,11	Defeating Diastolic Dysfunction: Analyzing the correlation between serum magnesium and diastolic dysfunction
Ava Raffel, Mary O'Grady	11,11	Facing off with FSHD: Designing a cell line to model a type of muscular dystrophy
Benjamin Reinhard, Nate Griffin	11,11	Improving the Efficiency of Electrolysis
Abigail Roh, Samantha Detor	11,11	Searching the Shadows: Using Machine Learning to Classify Trees in Aerial Imagery
Brian Saldana Almaraz	11	Oil Dispersion- Understanding Effective Dispersion through Phase Equilibria and Nano Structure Formation.
Nathan Sobotka	11	The Effects of Plastic Pollutants on the Growth of Wisconsin Fast Plants.
Giwon Sung	11	Investigating the Power Performance of Electrochemical Batteries Coupled with Metal Electrodes and Electrolytes
Isabella Vazquez	11	The Formation of Bacteria in Differing Water Sources
Dylan Vincent, Roberaa Ayana	11,11	Solving a Protein Puzzle: Countering inflammatory disease by engineering an accurate model of the C3aR protein receptor
Qeng Xiong	11	Protein Prenylation: Farnesyl Diphosphate Analog and its Usage in Disease Research
Kerui Yang	11	Harvesting the Blue Wave Energy by Circular Electromagnetic Generator
Maya Zheng	11	The affect of color on depth perception
Alexander Anderson, Nathan Tank	12,12	From Screen To Silicone: 3D printing anatomically and mechanically accurate organ models for preoperative planning
Madeleine Danzberger	12	Regolith Plant Growth
Ethan Dincer	12	Determination of Mutant JUP Localization in an iPSC Model of ARVC: Implications for Diagnosis and Pathogenesis
Samuel Elting-Ballard	12	Bracket to Hold Laser Sensors for a robot
Conrad Gayner, Daniel Block, Caleb Loomis	12,11,11	Sugar Rocket Efficiency
Connor Gruenes	12	Energy Efficiency of Wood
Margaret Hlavka	12	Early Growth of Tallgrass Under Variable Precipitation and Species Evenness Scenarios
Haley Jostes	12	Combating Undernutrition in Developing Countries with a Compact Aeroponics System Utilizing Contaminated Water
Neil Khadilkar	12	Monte Carlo Analysis of Therapeutic Food Programs for Malnourished Children

2019 Research Papers (continued)

Name	Grade	Title
Saketh Kollipara, Aniketh Naidu	12,12	Improving Prostate Cancer Treatment: Optimizing Targeted Drug Delivery Using Nanoparticles
Gabriel Konar-Steenberg	12	Analyzing Predicted Temperature and Diurnal Temperature Range Trends Using Regional Climate Model Output
Linghang Kong, Ethan Miandrisoa	12,12	Making the Teamwork Dream Work
Parthiv Krishna	12	Development of Autonomous Unmanned Aerial Systems for Semi-Dense Point Cloud Generation in Disaster Scenarios
Samuel Leville, Spencer Yueh	12,12	Stretching the Spine: Engineering an apparatus to determine the properties of the facet capsular ligament
Ilana Levine	12	Enrichment cultures of environmental aquatic sediment samples to identify microbial metabolism of and resistance to Perfluorooctanoic acid
Emma McCann	12	The Impact of Antibiotics on Harmful Bacteria vs. Healthy Bacteria
Devika Narayan	12	Understanding interactions between insulin and amyloid-beta in Alzheimer's patients: Year II
Evalin Olson	12	Bioremediation of Retention Ponds Using Minnesota Native Plants
Catherine Pirtle, Christiana Wilke	12,12	Monkeying Around: Comparing Isotope Distributions in Baboon Tissue
Sirui Qi	12	Influence of the losing of the soil under the different kinds of irrigation
Darlene Radichel, Louise Kim	12,12	Give Me The Dirt: Determining the effect of urban garden soil amendments on soil microbes and plant growth
Samantha Ries	12	Associations Between Garlic Mustard (<i>Alliaria petiolata</i>) and Above-Ground Soil Fungi in a Minnesota Oak Woodland
Betsy Romans	12	The Effect of Silver Nanoparticles on Aquatic Vegetation
Kylie Spangler, Anna Janzen	12,12	Continuing the Cure: Expanding the use of immunotoxins to treat more forms of cancer
Christopher Tadros	12	Analyzing the effects of brain-derived neurotrophic factor on microglia.
Nitya Thakkar	12	The health benefits of cruciferous vegetables as an antioxidant: sulforaphane improves oxidative stress response in <i>Caenorhabditis elegans</i> via SKN-1
Lana Trautman, Samuel Putnam	12,12	Precision Peptides: Exploring the role of TAT-functionalized nanoparticles in stem-cell based targeted cancer treatment
Mayuresh Vernekar	12	Analyzing the effectiveness of viral vectors in gene modification: Cell-specificity of GFAP-promoted DREADDs and Cre proteins using Adeno-associated viruses
Kelby Wittenberg	12	Differentiation of mES C7 A2-GFP cells into keratinocytes for skin regeneration
Nick Wong	12	The Effect of Rural and Urban Freshwater on Cellular Respiration and Photosynthesis of Algae



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

TWIN CITIES REGIONAL SCIENCE FAIR “ISEF” ALUMNI
Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

1995 Anna Navarro Minnetonka High School, Minnetonka	1998 Michael Scott Lohman Expo III High School, St. Paul
1995 Samuel Rush Minnetonka High School, Minnetonka	1998 A. Ben Suri Harding High School, St. Paul
1996 Laurie Louis Parker Roseville High School, Roseville	1999 Michael Scott Lohman Expo III High School, St. Paul
1996 David Loy Bowe Burnsville Senior High School, Burnsville	1999 Alison Boutin Burnsville High School, Burnsville
1996 Michael Scott Lohman Expo III High School, St. Paul	1999 Jennica Slattery Minnehaha Academy, Minneapolis
1996 Victoria Reynolds Miller St. Agnes High School, St. Paul	1999 Chrissy Jones Minnetonka High School, Minnetonka-Team
1996 Anna Navarro Minnetonka High School, Minnetonka	1999 Elizabeth Larkin Breck School, Minneapolis
1996 Michelle Lee Monnens Minnetonka High School, Minnetonka	1999 Melissa Borken Minnetonka High School, Minnetonka
1996 James Justin Wilson Minnetonka High School, Minnetonka-Team	1999 Alli Kellogg Minnetonka High School, Minnetonka-Team
1996 Michael Gary Grotenhuis Minnetonka High School, Minnetonka-Team	2000 Mark Galatowitsch Highland High School, St. Paul
1997 Nguyen Trung Burnsville Senior High School, Burnsville	2000 Jennica Slattery Minnehaha Academy, Minneapolis
1997 Samuel Rush Minnetonka High School, Minnetonka	2000 Chrissy Jones Minnetonka High School, Minnetonka
1997 Anna Navarro Minnetonka High School, Minnetonka	2000 Michael Chansky Burnsville High School, Burnsville
1997 Victoria Reynolds Miller St. Agnes High School, St. Paul	2000 A. Ben Suri Harding High School, St. Paul
1997 Michael Scott Lohman Expo III High School, St. Paul	2000 Emily Letourneau Central High School, St. Paul-Team
1997 Travis Smith Burnsville Senior High School, Burnsville	2000 Anna Bishop Como Park, St. Paul-Team
1997 James Justin Wilson Minnetonka High School, Minnetonka-Team	2001 Megan Bailey Breck School, Minneapolis
1997 Justin Rainey Minnetonka High School, Minnetonka-Team	2001 Kathryn Gieselmann Burnsville High School, Burnsville
1998 Dean Harvey Burnsville Senior High School-Team	2001 A. Ben Suri Harding High School, St. Paul
1998 Dan Harakh Burnsville Senior High School-Team	2001 Li Mei Wayzata High School, Wayzata
1998 Bryce Gillespie Breck School, Minneapolis	2001 Laura Egerdal Burnsville High School, Burnsville
1998 Preeya Kshetry Breck School, Minneapolis	2001 Anna Bishop Como High School, St. Paul-Team
1998 Phally Seak Burnsville Senior High School	2001 Emily Letourneau Central High School, St. Paul-Team
1998 Raj Pai Burnsville Senior High School	2002 Jacob Fitzpatrick 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	Kaonhou Her	2006	Jenna Johnson
	Johnson High School, St. Paul-Team		Burnsville High School, Burnsville
2002	PaCha Yang	2006	Andrea Jensen
	Johnson High School, St. Paul-Team		Burnsville High School, Burnsville
2002	Stephen Morris	2006	Daniel Zeng
	Breck School, Minneapolis		St. Paul Academy & Summit School
2002	Arun Saini	2006	Matthew Weiss
	Burnsville High School, Burnsville		Breck School, Minneapolis
2002	A. Noel Suri	2006	Katherine Schaeffer
	Harding High School, St. Paul		Breck School, Minneapolis
2003	Jessica Swatrz	2007	Ummul Kathawalla
	ISD 287		Blake High School, Minneapolis
2003	Ning Zhou	2007	Daniel Zeng
	ISD 287		St. Paul Academy & Summit School
2003	PaCha Yang	2007	Kyra Underbakke
	Johnson High School, St. Paul		Maranatha Christian Academy, Brooklyn Park
2003	A. Noel Suri	2007	Brandon Lew
	Harding High School, St. Paul		Breck School, Minneapolis
2003	Brendan Doms	2007	John Earl
	Breck School, Minneapolis		Harding High School, St. Paul - Team
2003	Javier Cabrera-Perez	2007	Lucas Gabrielson
	Breck School, Minneapolis		Harding High School, St. Paul - Team
2004	Adam Yock	2007	Jacob Stramer
	Breck School, Minneapolis		Harding High School, St. Paul - Team
2004	William Mitchell	2008	Prithwis Mukhopadhyay
	Breck School, Minneapolis		Lake Junior High, Woodbury
2004	Noel Suri	2008	Michael Cherkassky
	Harding High School, St. Paul		Edina High School, Edina
2004	Adam Hahn	2008	Madeline Taft-Ferguson
	Robbinsdale Armstrong High School, Robbinsdale		Breck School, Minneapolis
2004	Akash Kumar	2008	Kyra Underbakke
	Wayzata High School, Wayzata		Maranatha Christian Academy, Brooklyn Park
2004	Laura Heeter	2008	Aly Xiong
	Breck School, Minneapolis - Team		Johnson High School, St. Paul
2004	Kristina Naranjo-Rivera	2008	Iola Edwards
	Breck School, Minneapolis - Team		Johnson High School, St. Paul
2005	Kyrstin Underbakke	2008	Stephen Trusheim
	Maranatha Christian Academy, Brooklyn Park		Breck School, Minneapolis - Team
2005	Janet Li	2008	Daniel Mohktari
	Wayzata High School, Plymouth		Breck School, Minneapolis - Team
2005	Heidi Chun	2009	Prithwis Mukhopadhyay
	St. Paul Academy, St. Paul		Woodbury Sr High School, Woodbury
2005	Zachary Howland	2009	Tiffanie Stone
	Burnsville High School, Burnsville		AFSA High School, Vadnais Heights
2005	Eric Halverson	2009	Michael Fuad
	Como Park Senior High, St. Paul		Breck School, Minneapolis
2005	Kahli Her	2009	Stephen Trusheim
	Johnson High School, St. Paul		Breck School, Minneapolis

TWIN CITIES REGIONAL SCIENCE FAIR “ISEF” ALUMNI
Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

2009	Chee Xiong	2012	Margaret Green
	Como Park Senior High, St. Paul		Burnsville High School, Burnsville - Team
2009	Martin Camacho	2012	Laura Landgraf
	Central Senior High School, St. Paul		Burnsville High School, Burnsville - Team
2009	Sahar Hakim-Hashemi	2012	Caleb Kumar
	Breck School, Minneapolis - Team		Breck School, Minneapolis
2009	Sierra Danforth	2012	Taylor McCanna
	Breck School, Minneapolis - Team		Breck School, Minneapolis
2009	Nicholas NaSal	2012	Alejandro Fenn
	Burnsville High School, Burnsville - Team		Breck School, Minneapolis - Team
2009	Joseph Lane	2012	William Engel
	Burnsville High School, Burnsville - Team		Breck School, Minneapolis - Team
2010	Prithwis Mukhopadhyay	2012	Thomas Vennemann
	Woodbury Sr High School, Woodbury		Johnson High School, St. Paul
2010	Tiffanie Stone	2013	Andrew Ylitalo
	AFSA High School, Vadnais Heights		Stillwater Area High School, Stillwater
2010	Martin Camacho	2013	Aditi Das
	Central Senior High School, St. Paul		Roseville Area High School, Roseville
2010	Houa Xiong	2013	Connor Duffy
	Johnson High School, St. Paul		Mounds View High School, Arden Hills
2010	Gavin Ovsak	2013	Graham Gabrielson
	Eden Prairie Senior High School, Eden Prairie		Harding High School, St. Paul
2010	Charles Morris	2013	Mai Moua
	Breck School, Minneapolis		Harding High School, St. Paul
2010	Ava Mokhtari	2013	Carolyn Jons
	Breck School, Minneapolis - Team		Eden Prairie Senior High School - Eden Prairie
2010	Addison Weiler	2013	Jessica Ryvlin
	Breck School, Minneapolis - Team		Breck School, Minneapolis
2010	Ashley Santilli	2013	Apurv Hirsh Shekhar
	Burnsville High School, Burnsville - Team		Blake High School - Northrop campus
2010	Emily Bostrom	2014	Carolyn Jons
	Burnsville High School, Burnsville - Team		Eden Prairie Senior High School - Eden Prairie
2011	Alysia Flores	2014	Jason Sylvestre
	Johnson High School, St. Paul		Benilde-St. Margaret's, St. Louis Park
2011	Andrew Ylitalo	2014	Jacob W Levy
	Stillwater Area High School, Stillwater		Breck School, Minneapolis - Team
2011	Martin Anderson	2014	Sofie M Kim
	Burnsville High School, Burnsville		Breck School, Minneapolis - Team
2011	Redeat Abegaz	2014	Aditi Das
	Burnsville High School, Burnsville		Roseville Area Senior High, Roseville
2011	Gavin Ovsak	2014	Heather J Stone
	Eden Prairie Senior High School, Eden Prairie		Mounds View High School, Arden Hills
2011	(Ernst) Tom Erdmann	2014	Amrita Mohanty
	Breck School, Minneapolis		Woodbury Sr High School, Woodbury
2012	Andrew Ylitalo	2014	Nicolina Mao
	Stillwater Area High School, Stillwater		Harding High School, St. Paul
2012	Keshav Mangalick	2014	Rosemary O Olatunbosun
	Mounds View High School		Harding High School, St. Paul

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI
Students Chosen to Represent the Twin Cities Fairs at International Science & Engineering Fair

2015 Amrita Mohanty
Woodbury Sr High School, Woodbury

2015 Maxwell Ylitalo
Stillwater Area High School, Stillwater

2015 Aadarsh Padiyath
Woodbury Sr High School, Woodbury

2015 Carolyn Jons
Eden Prairie Senior High School - Eden Prairie

2015 Arush Jain
Eden Prairie Senior High School - Eden Prairie

2015 Emilia Topp-Johnson
St Paul Academy and Summit School, St. Paul

2015 Serena Jing
Central Senior High School, St. Paul

2016 Maxwell Ylitalo
Stillwater Area High School, Stillwater

2016 Nathaniel R Farmer
Stillwater Area High School, Stillwater

2016 Claire E Wentzloff
Burnsville High School, Burnsville

2016 Prashant Godishala
Breck School, Minneapolis - Team

2016 Brennan Clark
Breck School, Minneapolis - Team

2016 Avni Jain
Eden Prairie Senior High School - Eden Prairie

2016 Jessica Weng
Wayzata High School, Plymouth

2016 Emilia Topp-Johnson
St Paul Academy and Summit School, St. Paul

2016 Serena Jing
Central Senior High School, St. Paul

2017 Alex Li
Mounds View High School, Arden Hills - Team

2017 Rebecca Li
Mounds View High School, Arden Hills - Team

2017 Everett Kroll
Stillwater Area High School, Stillwater

2017 Claire E Wentzloff
Burnsville High School, Burnsville

2017 Archana Murali
Breck School, Minneapolis

2017 Gauri Binoy
Wayzata High School, Plymouth

2017 Meghana Iyer
Edina High School, Edina

2017 Serena Jing
Central Senior High School, St. Paul

2017 Geeta Rajamani
Highland Park Senior High, St. Paul

2018 Everett Kroll
Stillwater Area High School, Stillwater

2018 Manashree Padiyath
Woodbury Sr High School, Woodbury

2018 Justin Duffy
Mounds View High School, Arden Hills

2018 Flannery Enneking-Norton
St.Paul Academy and Summit School, St. Paul

2018 Michael Hall
St.Paul Academy & Summit School, St.Paul-Team

2018 Daniel Ellis
St.Paul Academy & Summit School, St.Paul-Team

2018 Cole Maxwell
Breck School, Minneapolis

2018 Siyuan Ma
Breck School, Minneapolis - Team

2018 Alexander Anderson
Breck School, Minneapolis - Team

2018 Leonardo Clarke
Minnetonka Senior High School, Minnetonka



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Good luck to all participants

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 Commercial Solutions Division Award
3M Film & Material Resource Division Award
3M Young Inventor Award
American Chemical Society
American Meteorological Society
American Psychological Association
ASM Materials Education Foundation
Association of Women Geoscientists
Award for Science Potential
Broadcom MASTERS (Math, Applied Science, Technology, and Engineering for Rising Stars)
Caffeinated Student Award
Excellence Award
Graduate Women in Science for Excellence in Research
Graduate Women in Science for Excellence in Writing
Inspiring Excellence Award
Intel Excellence in Computer Science
International Science & Engineering Fair (ISEF)
ISEF Alumni Awards – Kyra Zimmerman (2007, 2008)
ISEF Alumni Awards – Dr. Kyrstin Ball (2005)
ISEF Alumni Awards – Timara Underbakke (1973)
Joel Wagner Caring Bridge Award
Junior Science & Humanities Symposium
Leonardo's Largely Irrational Math Prize
Minnesota Agriculture in the Classroom
Minnesota Chapter of American Fisheries Society

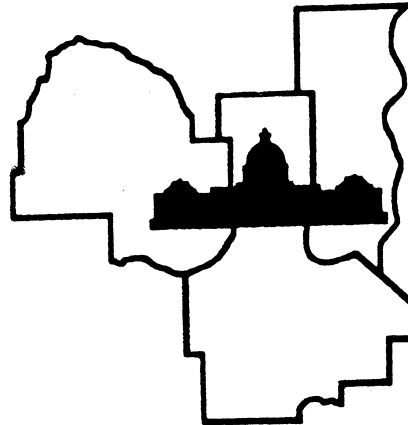
Minnesota Horticulture Society
Minnesota State Science & Engineering Fair
Mu Alpha Theta Mathematics
NASA EARTH System Science Award
NOAA National Oceanic and Atmospheric Administration
North Central Tri-state Junior Science & Humanities Symposium Research Papers
Research Paper trophies
Ricoh Sustainable Development Award
Schools trophies
Society for In Vitro Biology
Sponsor: 3M Foundation
Sponsor: DuPont Dow Water & Process Solutions
Sponsor: Ecolab
Sponsor: Mintáhoe Hospitality Services
Sponsor: Northrop Grumman
Sponsor: Premier Bank
Sponsor: St. Paul Youth Fund
Stockholm Junior Water Prize
TCRSF Excellence Award
Teacher Excellence Award
USDA-ARS Ag in the Classroom
US Air Force
US Department of Health and Human Services
US Metric Association
US Navy/Marine Office of Naval Research
USDA Research Service
Yale Science and Engineering Association

The logo for 3M, consisting of the numbers '3' and 'M' in a bold, sans-serif font.The logo for ECOLAB, featuring the word 'ECOLAB' in a bold, sans-serif font with a registered trademark symbol (®). The letter 'O' is replaced by a stylized sunburst or starburst icon.

Project presentation hosted by the Minnesota State Fairgrounds

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

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



2018-2019 Twin Cities Regional Science Fair Committee

Director:	Timara Underbakke	Committee At Large:	Scientific Review:
SRC Chair:	Karin Ostrand	Nancy Day	Karin Ostrand, Chair
Facilities:	Amy Stone	Jess Day	Dr. Denise Beusen
Public Relations:	Michael Lohman, Sr.	Dr. Denise Beusen	Dr. Kyrstin Ball
Development Director	Karilyn Jons	Dr. Gary Kwong	Dr. Douglas Erbeck
Funding	Michael Lohman, Sr, Karilyn Jons, & Timara Underbakke	Gary Ostrand	Timara Underbakke
Treasurer:	Dr. Gary Kwong	Dr. Caroline Ylitalo	Dr. Jennifer Hugstad-Vaa
Special Awards Chair:	Nancy Day	Dr. Douglas Erbeck	Dr. Caroline Ylitalo
Judging Coordinator:	David & Timara Underbakke	Amy Stone	Matthew Weingartz
Website & Databases:	David & Timara Underbakke	Martin Stone	Dr. Gary Kwong
Data Processing:	David Underbakke	Karilyn Jons	Dr. Steven Jons
Display & Safety:	Anu Jain	Dr. Steven Jons	Karilyn Jons
IT Department:	Jess Day & David Underbakke	Dr. Jennifer Hugstad-Vaa	David Underbakke
Volunteer Coordinator:	Denise Jostes	Dr. Kyrstin Ball	Amy Stone
Educational Outreach:	Dr. Steven Jons	Kyra Zimmerman	Tiffanie Stone
Board of Directors:	Timara Underbakke	Phill Goldmann	
	Michael Lohman, Sr.	Lynne Tauer	We have additional volunteer openings for those interested. We are currently looking for a Social Media Coordinator. Do you have other ideas or talent to contribute? If you have time to help, we are 100% Volunteer educational non-profit.
	Karin Ostrand	Arthur C. Johnson	
	Dr. Gary Kwong	Anu Jain	
	David Underbakke	Christine Kroll	
	Nancy Day	Denise Jostes	
	Amy Stone	Devi Kyanam	
	Dr. Steven Jons	Chandra Papisetty	