

WELCOME TO THE

**83rd Annual Twin Cities Regional Science Fair**  
**29th Annual St. Paul Science Fair**  
**27th Annual Western Suburbs Science Fair**

# **Twin Cities Regional Science Fairs**



Now serving Ramsey, Hennepin, Washington, Dakota, Anoka,  
Chisago, Isanti, Sherburne, and Wright Counties

**Virtual Fair 2021**  
**February 16 – 28**



REGENERON  
**ISEF**  
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**WELCOME TO THE 83rd ANNUAL TWIN CITIES REGIONAL SCIENCE FAIR,  
THE 29th ANNUAL ST. PAUL REGIONAL SCIENCE FAIR,  
THE 27th ANNUAL WESTERN SUBURBS REGIONAL SCIENCE FAIR.**

**2021** is our first virtual fair because we were able to be in-person at the Minnesota State Fairgrounds in February 2020. Our virtual fair is hosted on [tcrsf.zfairs.com](http://tcrsf.zfairs.com), with the research paper competition on [tcrsf.net](http://tcrsf.net). This year we welcome Ramsey, Hennepin, Washington, Dakota, Anoka, Chisago, Isanti, Sherburne, and Wright Counties.

**Our schedule`**

**Monday, Feb.15** - all project materials and SRC form fixes must be done. Your presentation video URL must be entered and saved. You can test it by logging in, going to Fair tab, Showcase page, then find your project and see how it looks. Try the hotlinks! Students/teachers - make sure you have credited your photos, diagrams, charts, and graphs in your display! It is also a GREAT IDEA to upload a school or other photo with your parent's permission to put a face to the work the judges will be judging.

**Tuesday Feb 16 - Thursday Feb. 18** - Display and Safety inspection of all projects. (Students are not present for virtual inspection.) Students must work with TCRSF to fix any issues.

**Friday, Feb. 19 - Wednesday, Feb. 24** Both scoring judges and special awards judges will be looking at student exhibits and videos and research papers if they were uploaded into the project exhibit. Students - just relax here! This all goes on without you.

**Thursday, Feb. 25** - Watch your email for details. We may try to schedule a short practice round - no scores - so students and judges can test the video interface to make sure they will be able to connect.

**FRIDAY, Feb. 26** - Just like for the in-person fair, judges will get to talk to students about the students' projects. Students: the judges have already reviewed your exhibit... so now is the time to interact, answer questions, ask questions, and have fun talking about your project (but not repeating the video presentation). **This is likely 4 PM CST** to done before 9 PM. We are trying to see if we can build a schedule so we can cut it down to only about 3 hours. **Watch your email (likely on Thursday, Feb. 25)**

**Saturday Feb 27** Exhibits are Open to the Public (may require registration as an "Attendee", but is free).

**Sunday Feb. 28 Awards program online 1 PM**

**NOTE: Sponsor award winners** will be asked to provide a photo to TCRSF to use as a requirement to receive this award.

**Monday, March 1** in the evening we will certify our ISEF Finalists. ALL ISEF FINALISTS ARE REQUIRED TO ATTEND This will be of interest to students who are ISEF alternates and ISEF finalists and their parents. Those announced at the Awards program are NOT certified until during this March 1st virtual meeting. You will receive directions to the meeting. Students have a parent nearby to authorize your participation in ISEF even if you are 18.

In March, awards will be mailed to the students' home addresses from in their registration.

**Our research paper competition** is hosted on our website **tcrsf.net**. This is open to students in grades 6-12. The high school winners (grades 9-12) advance to the North Central Regional Tri-State Symposium for Minnesota, North Dakota, and South Dakota. Winners from JSHS advance to the National JSHS (jshs.org).

**Our virtual project competition** is hosted on **tcrsf.zfairs.com**. It is open to students in grades 6-12. Winners from grades 6-12 advance to the Minnesota State Science and Engineering Fair, which will be virtual in late May (hosted on mnmas.zfairs.com). The top 10% of our middle school students will advance to the national Broadcom MASTERS competition held online. Our top high school projects will advance to become Finalists at the 2021 Regeneron ISEF (International Science and Engineering Fair), which will be virtual in May. ISEF will have judging and awards despite being virtual.

## What about the awards?

We have two kinds of judges.

1. **Ribbon Judges:** All projects will have judges that are scoring their project according to our scoring rubric which is available on our website (Judging Criteria). This is the same rubric as is used at state science fair.
2. **Special Awards Judges:** There are special awards judges who are selecting projects based on the criteria for the award. Any project may win a special award regardless of their ribbon score, if they happen to best match the award criteria. These special awards come from 3 areas:
  - a. **Regional affiliated awards** from our affiliations with international
  - b. **Sponsor awards** which are in honor of the annual financial donations that pay for 80% of the costs of running Twin Cities Regional Science Fairs (registration fees cover only about 17% of our annual budget). ***Remember, we are an ALL-volunteer 501c3 educational nonprofit, so our sponsors are donating directly into the costs of this youth program!***
  - c. **Awards from Individuals/Groups.**

Research papers have ribbon judges, and a few papers may be judged for special awards. Special awards for research papers vary more since there are only special awards from individuals/groups (no regionally affiliated and no sponsor awards).

## What do the colored ribbons mean?

Congratulations in competing at the regional science fair! Great job! Both projects and research papers entered in TCRSF receive a Twin Cities regional ribbon based on a statistical analysis of the judges' scores.

All projects and papers will earn a **green ribbon, red ribbon, or a blue ribbon**. Each student in a team will receive their own ribbon.

**Green ribbon:** You competed at regions! Great job!!!

**Red ribbon:** This is like a second place. There are multiple second places.

**Blue ribbon:** This is a first place. There are multiple first places and these projects and research papers are in the top portion of the fair.

**Purple ribbon:** This signifies Advancement! The top of the blue ribbons to move on to state science fair or research paper competition. Congratulations!

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Explanation of this year's project numbers:

The first letter indicates which affiliation your school is in.

T = Twin Cities

S = St. Paul

W = Western Suburbs

Next is your division: HS or MS

HS =grades 9-12 and

MS = grades 6-8

Next is a 4 letter abbreviation to your science category.

Last is a 4 digit number – assigned in order of registration.

## USS Nokomis Twin Cities Star Trek Fan Club

<http://www.ussnokomis.org/>

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**Northrop Grumman** is a long-time sponsor of STEM in the community and the Twin Cities Regional 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.

# Twin Cities Regional Science Fairs

## Animal Sciences

		Project ID	Project Title
Ahern, Henry	6	T-MS-ANIM-0158	Coke Vs. Pepsi

## Biomedical and Health Sciences

		Project ID	Project Title
Engebretson, Annika	6	T-MS-BMED-0253	Blood Sugar

## Chemistry

		Project ID	Project Title
Wening, Isaac	6	T-MS-CHEM-0249	Dissolving Sugar Cubes
Sum, Alex	6	T-MS-CHEM-0254	Sunscreen Panic

## Earth and Environmental Sciences

		Project ID	Project Title
Christman, Abby	6	T-MS-EAEV-0136	Plant Pool Party
Shrivastava, Shagun	6	W-MS-EAEV-0104	100% Biodegradable Plastics!!! Is it true?

## Environmental Engineering

		Project ID	Project Title
Le, Minhphuong	6	T-MS-ENEV-0155	Which Animal Manure Fire lasts the Longest?

## Materials Science

		Project ID	Project Title
McGlynn, Liam	6	T-MS-MATS-0202	Wood vs Composite Hockey Sticks
Tepoxteco Reza, Leslie	6	T-MS-MATS-0216	Let's paint the town

## Physics and Astronomy

		Project ID	Project Title
Larson, John (Jack)	6	T-MS-PHYS-0207	Hydro Flask Versus Yeti - Which One Stays Hotter or Colder?

## Plant Sciences

		Project ID	Project Title
Burns, Harper	6	T-MS-PLNT-0130	Does Salt Effect Cat Grass Growth?


## Twin Cities Regional Science Fairs

### Plant Sciences

		Project ID	Project Title
Carlson, Izzy	6	T-MS-PLNT-0231	The effect of water tempature on plant growth

### Systems Software

		Project ID	Project Title
Singhvi, Riddhi	6	T-MS-SOFT-0062	ICU Car Sentry: An Intelligent Car Safety System



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Parents, Judges and  
Volunteers!**

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## Twin Cities Regional Science Fairs

### Animal Sciences

		Project ID	Project Title
Fuls, Ian	7	T-MS-ANIM-0175	What Type of Seed Do Local Birds Prefer?
Telep, Kaitlin	7	T-MS-ANIM-0191	A Hamster's Preference: Which Food Will it Pick?
Doebler, Joseph	7	T-MS-ANIM-0192	Do Dogs have a Color Preference?
Sekar, Shreya	7	T-MS-ANIM-0211	Reptile Recovery: How local actions can protect endangered species
Chastek, Francesca	7	T-MS-ANIM-0255	Does Your Sight Deceive?

### Behavioral and Social Sciences

		Project ID	Project Title
DeCrans, Elias	7	T-MS-BEHA-0177	Perception vs Reality
Caron, Kacia	7	T-MS-BEHA-0178	Ready, Set, Go; Does Age Affect Reaction Time?
Nguyen, Nathan	7	T-MS-BEHA-0180	Were You Lied To?
Elfering, Michael	7	T-MS-BEHA-0183	Top 5 Sleepy Activitiezzzzzz
Kucko, Eleanora	7	T-MS-BEHA-0184	Does Your Zodiac Sign Predict Your Personality Type?
Vega, Ashley	7	T-MS-BEHA-0186	How Does Music Affect Your Mood?
Miller, Kayla	7	T-MS-BEHA-0187	How Does Color Affect Your Memory?
Sosa Escobar, Christopher	7	T-MS-BEHA-0212	How Does Food Affect Taste and Thoughts?
Kollipara, Sanjana	7	W-MS-BEHA-0105	Inside the Mind: Studying the Effect of Daily Tasks on Short Term Memory
Hagen, Anelli	7	W-MS-BEHA-0142	Do Different Oder's Move Your Motor
Nelson, Kelsey	7	W-MS-BEHA-0143	Optical Illusions: Are You Just Bad at Seeing Them or are Other Ages and Genders Just Better

### Biomedical and Health Sciences

		Project ID	Project Title
Martin, Lila	7	T-MS-BMED-0188	The Effects of Fast Acting Sugars on Diabetics and Non-Diabetics
Hamann, Olivia	7	T-MS-BMED-0243	Don't Fall Flat
Danz, Evelyn	7	W-MS-BMED-0151	Stop the Clot: The Effect of Anticoagulants on Thrombosis
Heddle, Iona	7	W-MS-BMED-0215	Kids vs. Screens



# Twin Cities Regional Science Fairs

## Biomedical and Health Sciences

		Project ID	Project Title
Miedema, Carter	7	W-MS-BMED-0232	Do masks affect your oxygen levels and heart rate?

## Chemistry

		Project ID	Project Title
Nelson, Summer	7	T-MS-CHEM-0169	Slime: A Scientifically Tangled Mess
Guasco Paucar, Giselle	7	T-MS-CHEM-0179	Does Temperature Affect a Volcano's Eruption?
Stel, Lily	7	W-MS-CHEM-0140	On your mark, get set, bake
Cantwell, Avery	7	W-MS-CHEM-0141	Cookie Flour Power
Craig, Matthew	7	W-MS-CHEM-0269	Coin Cleaning
Craig, Lauren	7	W-MS-CHEM-0270	Exploding Experiments

## Earth and Environmental Sciences

		Project ID	Project Title
Escobar, Ruby	7	T-MS-EAEV-0210	Sunsets and Sunrises In Twelve Days
Willaert, Joseph	7	T-MS-EAEV-0230	Natural Solutions for Dust Reduction
Hoekstra, Mac	7	W-MS-EAEV-0225	O2 Is For You! Why Oxygen Is Important To Fish Population

## Energy: Sustainable Materials and Design

		Project ID	Project Title
Chinokoro, Chipso	7	T-MS-EGSD-0189	Citrus Battery
Portillo, Edwin	7	T-MS-EGSD-0201	Does the Temperature of a Battery Affect How Long It Lasts?
Peterson, Brady	7	W-MS-EGSD-0242	Picking metal up like nothing ; Will wire winding affect the strength of an electromagnet?

## Engineering Mechanics

		Project ID	Project Title
Abbring, Levi	7	W-MS-ENMC-0150	Bridging the Gap
Rewey, Thomas	7	W-MS-ENMC-0223	Gliding Through the Sky. How Stabilizers Affect Distance

# Twin Cities Regional Science Fairs

## Environmental Engineering

		Project ID	Project Title
March, Mercy	7	W-MS-ENEV-0209	Purification with Desalination

## Materials Science

		Project ID	Project Title
Bandstra, Noah	7	W-MS-MATS-0144	Feel The Pull
Gottsch, Liam	7	W-MS-MATS-0222	Hooked! Fishing Line Experiment

## Microbiology

		Project ID	Project Title
Chimbo, Kari	7	T-MS-MCRO-0193	The Effect of Homemade Wipes Vs. Clorox Wipes
Rathore, Prisha	7	T-MS-MCRO-0200	Investigation of the Antimicrobial Properties of Natural Ingredients

## Physics and Astronomy

		Project ID	Project Title
Beyene, Elroi	7	T-MS-PHYS-0176	The Strobe Effect of a Monitor
Mattson, William	7	T-MS-PHYS-0190	Temperature Magnets and Perpetual Motion Machines

## Plant Sciences

		Project ID	Project Title
Gaston, Cassidy	7	T-MS-PLNT-0181	The Great Wall of Plants: The Effect of Plants on Soil Erosion
Molina Alvarado, William	7	T-MS-PLNT-0182	Do LED Lights Affect a Plant?
Foley, Elizabeth	7	T-MS-PLNT-0185	pH and Plants!
Skjod, Kayleigh	7	T-MS-PLNT-0199	Sudsy Basils
De Leon, Marco	7	T-MS-PLNT-0213	The Effects of Music on Plants
Estrada, Victor	7	T-MS-PLNT-0224	Does Saliva Affect the Growth Rate of A Bean Seed?
Grosser, Hannah	7	W-MS-PLNT-0196	If You Plant It, They Will Come: Planting for Pollinator Diversity in Your Home Garden



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applauds the creativity and hard work of the regional competitors.*

## Twin Cities Regional Science Fairs

### Behavioral and Social Sciences

		Project ID	Project Title
Tenaye, Selamawit	8	S-MS-BEHA-0027	Videos and Heart Rate
Neil, Leah	8	S-MS-BEHA-0057	Can you tell if someone is lying based on how their body language changes?
Erickson, Audrey	8	S-MS-BEHA-0058	Do Children Who Read More Have Better Vocabularies?
Akins, Noelle	8	S-MS-BEHA-0059	How Does Age Affect Your Memory?
OShaughnessy, Ben	8	S-MS-BEHA-0113	How Does Cell Phone Usage Affect Reaction Time?
Stangler, Jane	8	S-MS-BEHA-0114	If Someone Smiles At You, Will You Smile Back?
Palm, Samantha	8	S-MS-BEHA-0134	Smell vs. Taste
Walsh, Quinn	8	S-MS-BEHA-0134	Smell vs. Taste
Johnson, Morgan	8	S-MS-BEHA-0137	Maple Syrup Candy
King, Molly	8	S-MS-BEHA-0139	Music and Test Performance
Moen Grear, Elijah	8	S-MS-BEHA-0139	Music and Test Performance
Reilly, Shannon	8	T-MS-BEHA-0265	How Does gender and Marketing stereotypes affect color preference?

### Biochemistry

		Project ID	Project Title
Summers, James	8	S-MS-BCHM-0090	Does Adding Different Kinds of Yeasts to a Wort Affect the Overall Gravity of the Solution

### Biomedical and Health Sciences

		Project ID	Project Title
Johnson, Ian	8	S-MS-BMED-0060	What Types of Masks Are The Safest to Wear
Kane, Maggie	8	S-MS-BMED-0094	Does Acetazolamide Reduce the Amount of Electrical Activity in the Brain, as Measured by Spike-Wave Index, During Sleep for Children with a Specific Type of Epilepsy Called LKS
Levinshteyn, Elizabeth	8	W-MS-BMED-0026	Testing, Testing: Developing an All-Strain-Inclusive Test for SARS-CoV2

### Earth and Environmental Sciences

		Project ID	Project Title
Leshner, Tristan	8	T-MS-EAEV-0170	Which Salt Melts Ice Most Efficiently

# Twin Cities Regional Science Fairs

## Earth and Environmental Sciences

		Project ID	Project Title
Sureshkumar, Sriram	8	T-MS-EAEV-0220	Impact of Chemicals and Pesticide residue on compost
Murphy, Liam	8	T-MS-EAEV-0237	Is it nice to add spice to ice?
Clair, Tyler	8	W-MS-EAEV-0248	Can Machine Learning Predict Hurricane Damage in a Changing Climate?
Hughes, Quinn	8	W-MS-EAEV-0248	Can Machine Learning Predict Hurricane Damage in a Changing Climate?

## Energy: Sustainable Materials and Design

		Project ID	Project Title
Pilgrim, Grant	8	T-MS-EGSD-0161	Solar Powered Phone Charger

## Engineering Mechanics

		Project ID	Project Title
Butler, Joshua	8	T-MS-ENMC-0171	Redesigning New Life Disc Golf Course
Borner, Ella	8	T-MS-ENMC-0214	Homework Helper
Hegewald, Audryn	8	T-MS-ENMC-0218	Rice Pack Holder
Farina, Olivia	8	T-MS-ENMC-0219	AmbidextriCut

## Environmental Engineering

		Project ID	Project Title
Cunningham, Will	8	S-MS-ENEV-0093	Can Using Magnets as a Growth Stimulant Overcome Poor Plant Growing Conditions?
Wagner, Lillie	8	T-MS-ENEV-0238	Recycled Material Floating Bio-Habitat

## Materials Science

		Project ID	Project Title
Brondum, Bud	8	S-MS-MATS-0092	Grip the Greatness? Do Football Gloves really help you catch better then bare hands?
Guion, Will	8	S-MS-MATS-0115	Which fishing line holds the most weight; testing braid, mono, and fluorocarbon lines.

## Physics and Astronomy

		Project ID	Project Title
Deegan, Mason	8	S-MS-PHYS-0133	The Most Eggcellent Science Project

## Twin Cities Regional Science Fairs

### Plant Sciences

		Project ID	Project Title
Kirchberg, Jack	8	T-MS-PLNT-0159	Which Color of Light Makes Plants Grow the Tallest
McCarthy, Conor	8	T-MS-PLNT-0166	Which Liquid Helps Radish Seeds Grow Best?

### Robotics and Intelligent Machines

		Project ID	Project Title
Nobrega, Michael	8	S-MS-ROBO-0116	If the Use of Drones in Search and Rescue (SAR) Operations Affects the Efficiency of the Mission and the Likelihood of a Rescue

### Translational Medical Science

		Project ID	Project Title
Singhvi, Coolsjes	8	T-MS-TMED-0030	D-PREDICT: An Artificial Intelligence Model for Predicting Likelihood of Early Stage Diabetes

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## Twin Cities Regional Science Fairs

### Behavioral and Social Sciences

		Project ID	Project Title
Moran, Corinne	9	W-HS-BEHA-0031	Facts vs Anecdotes and how they persuade
Wellmann, Elin	9	W-HS-BEHA-0031	Facts vs Anecdotes and how they persuade
Witherspoon, Camille	9	W-HS-BEHA-0031	Facts vs Anecdotes and how they persuade

### Biomedical and Health Sciences

		Project ID	Project Title
Khadilkar, Rushil	9	W-HS-BMED-0173	Impact of Nutritional and Human Factors on Blood Glucose in Diabetic and non-Diabetic Subjects

### Earth and Environmental Sciences

		Project ID	Project Title
Rupireddy, Adithi	9	W-HS-EAEV-0206	A Breath of Fresh Air: Characterizing changes in atmospheric carbon monoxide in the United States to mitigate climate change

### Energy: Sustainable Materials and Design

		Project ID	Project Title
Banks, Maggie	9	S-HS-EGSD-0153	Salt and Paper: Using Papermaking Techniques to Engineer a Plant-Based Piezoelectric Transducer with Rochelle Salt to Generate a Resilient, Eco-Friendly Source of Voltage

### Engineering Mechanics

		Project ID	Project Title
Gray, Ruthie	9	T-HS-ENMC-0128	RK Divides
Mekenye, Kerubo	9	T-HS-ENMC-0128	RK Divides

### Microbiology

		Project ID	Project Title
Guo, Ellen	9	T-HS-MCRO-0154	Distinctive mutation profiles of SARS-CoV-2 spike protein in different geographic regions of the United States
Murillo, Isabelle	9	W-HS-MCRO-0251	Small But Mighty: The Power of Silver Nanoparticles

### Robotics and Intelligent Machines

		Project ID	Project Title
Armstrong   , Kevin	9	W-HS-ROBO-0063	Robotic Arm Plants for Climate Change

## Twin Cities Regional Science Fairs

### Systems Software

		Project ID	Project Title
Li, Rita	9	T-HS-SOFT-0087	ProFit: introduces a new way to seek and complete daily paid jobs.
Shrivastava, Shreshth	9	W-HS-SOFT-0103	WI-CARE: Wifi Computer-Assisted Remote Eldercare (Year 2)



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# Twin Cities Regional Science Fairs

## Behavioral and Social Sciences

		Project ID	Project Title
Penaloza, Valentina	10	T-HS-BEHA-0260	Sibling Relationship
Deaven, Eleri	10	T-HS-BEHA-0268	What Causes the Most Stress On Teenagers?
Khamseh, Mahdi	10	W-HS-BEHA-0049	The effects of Tamarkoz (R) meditation on adolescents aged 15-18
Senthilkumar, Harini	10	W-HS-BEHA-0102	Predicting compensatory exercise behaviors from anxiety symptomatology in patients with eating disorders: secondary analysis of a publicly available dataset

## Biochemistry

		Project ID	Project Title
Zewde, Bitaniya	10	T-HS-BCHM-0263	Concluding if Denser fruits and vegetables contain more vitamin C

## Biomedical and Health Sciences

		Project ID	Project Title
Affeldt, Grace	10	T-HS-BMED-0120	Drug Solubility of Acetaminophen
Tenkir, Liyu	10	T-HS-BMED-0131	Extracting Iron from Breakfast Cereal
Machacek, Jack	10	T-HS-BMED-0149	Electrolyte Levels in Sports Drinks
Shero, Evelyn	10	T-HS-BMED-0172	The Affect Different Forms of Sugar Have on Glucose Levels During Metabolization
Hughes, Vaughn	10	W-HS-BMED-0247	Using Artificial Intelligence and Electronic Health Records to Build a COVID-19 Testing Model

## Chemistry

		Project ID	Project Title
Route, Camden	10	T-HS-CHEM-0124	How different types of liquids are affected by different types of heat transfer
Scheuneman, Maisy	10	T-HS-CHEM-0245	How do different pH levels and different nail coating affect the formation of rust on nails?

## Computational Biology and Bioinformatics

		Project ID	Project Title
Balaji, Rahul	10	T-HS-CBIO-0109	Betting on Bioinformatics: A fight to the death for SARS-CoV-2! Decoding the effectiveness of the SARS-CoV-2 vaccines against its many variants
Benson, Corrina	10	T-HS-CBIO-0262	Genes and Data Science... where do they cross paths?

# Twin Cities Regional Science Fairs

## Earth and Environmental Sciences

		Project ID	Project Title
Moalim, Irshad	10	T-HS-EAEV-0132	The effect of sunlight on the salinity of water and the impact of black and white construction paper on the amount of desalinated water.

## Energy: Sustainable Materials and Design

		Project ID	Project Title
Samba, Trisha	10	W-HS-EGSD-0029	Easy Piezy Electricity

## Engineering Mechanics

		Project ID	Project Title
Baldauff, Sarah	10	T-HS-ENMC-0250	Water Balloon Launcher

## Environmental Engineering

		Project ID	Project Title
Jama, Deq	10	T-HS-ENEV-0135	Effect of solar panel angles on voltage output

## Materials Science

		Project ID	Project Title
Chen, Ben	10	S-HS-MATS-0236	Incorporation of Recycled Plastics In Road Materials
Nure, Hamza	10	T-HS-MATS-0148	Basketball and Noise
Adabag, Mina	10	W-HS-MATS-0028	The Effect of Chitosan on the Durability of Keratin Bioplastic
White, Kendall	10	W-HS-MATS-0061	Everlasting Elastics

## Microbiology

		Project ID	Project Title
Drobnick, Ava	10	T-HS-MCRO-0112	Killing Bacteria: Green vs. Mean
Marinero Chanta, Mario	10	T-HS-MCRO-0226	Mouthwash Mashup
Makppho, Vilasinee	10	T-HS-MCRO-0228	Salt of the Earth
Moseti, Abigael	10	T-HS-MCRO-0258	Mouthwash Mixup
Johnson, Audra	10	T-HS-MCRO-0261	The Effects of Disinfectants on Escherichia Coli Bacteria

## Twin Cities Regional Science Fairs

### Physics and Astronomy

		Project ID	Project Title
France, Todd	10	T-HS-PHYS-0122	Optical Tweezers
Johnson, Jacob	10	T-HS-PHYS-0125	The Result of Common Building Materials on the Strength of a Radio Signal
Bunnell, Cade	10	T-HS-PHYS-0257	Correlation between type of glove and catch performance

### Plant Sciences

		Project ID	Project Title
Genis, Eliazbeth	10	T-HS-PLNT-0111	Survival of the Plants

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## Twin Cities Regional Science Fairs

### Behavioral and Social Sciences

		Project ID	Project Title
Konar-Steenberg, Naci	11	S-HS-BEHA-0239	Significant zero: the effect of personality questionnaires on identity-relevant choices
Ham, Ahreum	11	T-HS-BEHA-0146	Pandemic Pragmatism: The impact of COVID-19 on sustainable living
Tyrrell, Orion	11	T-HS-BEHA-0244	Exercise: Virtual Reality vs. Physics
Rajasekaran, Abirami	11	W-HS-BEHA-0102	Predicting compensatory exercise behaviors from anxiety symptomatology in patients with eating disorders: secondary analysis of a publicly available dataset
Nothom, Lily	11	W-HS-BEHA-0160	Defeating the Divide: Creating sustainable partnerships in global healthcare between academic institutions and the communities they serve
Ambrose, Ramira	11	W-HS-BEHA-0234	Women and Women of Color in College Coaching: A Quantitative Report on Head Coach Composition and Turnover for NCAA Division I Soccer.

### Biochemistry

		Project ID	Project Title
Andrews, Madison	11	W-HS-BCHM-0040	Comparison of the indole and ammonia detection methods of E. coli and creation of a streamlined testing process

### Biomedical and Health Sciences

		Project ID	Project Title
Bhargava, Divya	11	S-HS-BMED-0118	No Change? Impact of FDA Warning on the Use of Opioids and Benzodiazepines and Their Effects in Older Allogeneic Hematopoietic Stem Cell Transplant Patients
Groeneweg, Kaitlyn	11	T-HS-BMED-0121	Testing Hearing Frequency
Guo, Elisa	11	T-HS-BMED-0152	CD8 T cell epitope generation toward the mutating SARS-CoV-2 spike protein in genetically diverse human population: Implications for disease control and prevention
Goduguchinta, Sarayu	11	W-HS-BMED-0208	Successful Cessation: Thwarting Tobacco Addiction Using Very Low Nicotine Content Cigarettes without Exacerbating Depression Symptoms
He, Hubert	11	W-HS-BMED-0235	Analysis of Gene Expression Changes Influenced by Various Severe COVID-19-associated Single Nucleotide Polymorphisms
Hughes, Quentin	11	W-HS-BMED-0246	An Active Role for Machine Learning in the Diagnosis of Cardiac Arrhythmias, Year 2

### Biomedical Engineering

		Project ID	Project Title
Rabe, Cole	11	W-HS-ENBM-0033	Evaluating the effectiveness of Cellulose Acetate membranes as a replacement for mouse skin in permeability studies

# Twin Cities Regional Science Fairs

## Twin Cities Regional Science Fairs

### Cellular and Molecular Biology

		Project ID	Project Title
Diaz, Adelyn	11	W-HS-CELL-0084	Examination of serotonin levels in crayfish exposed to high ambient temperatures
Gupta, Arnav	11	W-HS-CELL-0108	In the nick of time: Determining the positive and negative regulators of nickase Cas9

### Chemistry

		Project ID	Project Title
Sun, Nathan	11	W-HS-CHEM-0041	De-Enhancing the Permeability and Retention Effect

### Computational Biology and Bioinformatics

		Project ID	Project Title
Yue, Johnny	11	T-HS-CBIO-0126	Upsurge of the Glycolytic Pathway in Cancer: A Dynamic Network Analysis of Oncogenic Mutations in Phosphofructokinase-1

### Earth and Environmental Sciences

		Project ID	Project Title
Sedo, Will	11	S-HS-EAEV-0256	Identifying the Growth Window for Didymosphenia geminata: A Method for In-lab Growth
Ferstan, Ivy	11	W-HS-EAEV-0083	Pulling Apart Plastic: Measuring the effectiveness of wax worms, bacteria, and fungus in breaking down biodegradable plastic
Menon, Amrit	11	W-HS-EAEV-0083	Pulling Apart Plastic: Measuring the effectiveness of wax worms, bacteria, and fungus in breaking down biodegradable plastic

### Energy: Sustainable Materials and Design

		Project ID	Project Title
Fung, Kyla	11	W-HS-EGSD-0034	Pathway to a Sustainable Future: Economic and technical feasibility of hydrothermal carbonization (HTC) processing plants
Kaung, Grace	11	W-HS-EGSD-0048	Comparison of energy output levels of the upper Mississippi River sediment using sediment microbial fuel cells

### Engineering Mechanics

		Project ID	Project Title
Anderson, William	11	S-HS-ENMC-0240	A Comparison of Three Wing Configurations at Different Heights in Ground Effect
Zander, Nickolas	11	T-HS-ENMC-0147	The Engineering Behind Theme Park Rides: Creating and Coding a Model Theme Park Ride

# Twin Cities Regional Science Fairs

## Twin Cities Regional Science Fairs

### Environmental Engineering

		Project ID	Project Title
Hlavka, Jack	11	S-HS-ENEV-0138	Treatment of Acid Mine Drainage with Desulfovibrio desulfuricans

### Materials Science

		Project ID	Project Title
Carver, Nick	11	W-HS-MATS-0064	The potential application of super elastic Nitinol alloy for use in type III body armor

### Microbiology

		Project ID	Project Title
Chen, Ava	11	W-HS-MCRO-0068	Analyzing the effects of Lactobacillus Rhamnosus as an alternative to antidepressants on Caenorhabditis elegans model organisms by determining its impact on locomotion, lifespan and pharyngeal pumping rates

### Physics and Astronomy

		Project ID	Project Title
Kota, Tarun	11	T-HS-PHYS-0198	Detection and Characterization of Astronomical Dwarfs using CatWISE
Chen, Zhaomeng	11	W-HS-PHYS-0197	Investigating the Relationship Between Young's Modulus and Temperature Using Inline Digital Holography

### Plant Sciences

		Project ID	Project Title
Chen, Eleanor	11	S-HS-PLNT-0099	The Effects of Storage Temperature and Exogenous Ethylene Exposure on the Ripening Rate, Quality, and Glucose Level of Postharvest Ripened Tomatoes (Solanum lycopersicum)
Montague, George	11	S-HS-PLNT-0233	The effect of UVC exposure on germination rate, time until germination and growth rate in radishes (Raphanus sativus)
Radichel, Christina	11	W-HS-PLNT-0074	You Are My Soil-Mate: The Effects of Fertilizer Composition on Radish Plant Growth
Warren, Ayres	11	W-HS-PLNT-0074	You Are My Soil-Mate: The Effects of Fertilizer Composition on Radish Plant Growth

### Robotics and Intelligent Machines

		Project ID	Project Title
Arvind, Ananyaa	11	W-HS-ROBO-0157	Innovative Chatbot Solutions: Designing a conversational agent to promote student success during distance learning

### Systems Software

		Project ID	Project Title
Soltau, Alexander	11	W-HS-SOFT-0043	Artificial Neural Network News Sentiment and Keyword-Based Stock Price Prediction

## Twin Cities Regional Science Fairs

### Twin Cities Regional Science Fairs

#### Systems Software

		Project ID	Project Title
Miskiw, Kiefer	11	W-HS-SOFT-0050	Rapid development of 3D worlds
Wherry, Jack	11	W-HS-SOFT-0053	Improving the efficiency of sanitizer-guided fuzzing through libFuzzer-style in-process mechanisms
Pirtle, Caroline	11	W-HS-SOFT-0073	A Schedule a Day Keeps the Doctor Okay: An algorithmic and user-friendly approach
Elamri, Omar	11	W-HS-SOFT-0089	Easing the facilitation and creation of scalable global internet based applications

#### Translational Medical Science

		Project ID	Project Title
Bhavsar, Atreyus	11	W-HS-TMED-0252	The Spread of Macroscopic Droplets from a Simulated Cough with and without the Use of Masks or Barriers

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## Twin Cities Regional Science Fairs

### Animal Sciences

		Project ID	Project Title
Abdulwali, Ahlaam	12	W-HS-ANIM-0046	The Effects of Artificial Food Colors on the Release of Neurotransmitters within Model Organisms
Kinney, Fiona	12	W-HS-ANIM-0081	Fruit Fly Frenzy: Investigating the Development of Insecticide Resistance in Drosophila Melanogaster
Samba, Simren	12	W-HS-ANIM-0081	Fruit Fly Frenzy: Investigating the Development of Insecticide Resistance in Drosophila Melanogaster

### Behavioral and Social Sciences

		Project ID	Project Title
Restad, Holly	12	T-HS-BEHA-0229	Harnessing Innovation in Healthcare: Solving Disparities and Inequities in Minnesota's Healthcare Services Using Creative Solutions Proposed by Medical Providers
Pak, Lena	12	W-HS-BEHA-0047	Mixed people in violation of race: can mixed people debunk the race myth?
DeMichaelis, Nathan	12	W-HS-BEHA-0071	Learning in the Living Room: What Skills Contribute to Success in Distance Learning?
Murphy, Owen	12	W-HS-BEHA-0078	Assessment of Post-Injury Mental Health and Analysis of Emotions
Crest, Peyton	12	W-HS-BEHA-0086	Investigating the effect of the severity of activity based anorexia in Drosophila melanogaster on the gut microbiome
Thomas, Tori	12	W-HS-BEHA-0119	Saving Lives Through Legislation: Addressing Gaps in Coverage for Breast Cancer Screening
Liden, Emil	12	W-HS-BEHA-0168	Comparison of educational success between high affiliation-need and high autonomy-need students in an online learning environment.
Zhao, Lorien	12	W-HS-BEHA-0204	Change, Opportunity, Vision, Innovation, and Decision-making (COVID): Business and Personal Strategies for Surviving a Global Pandemic
Goldade, Greta	12	W-HS-BEHA-0205	More than Just a Runner's High: Single-bout exercise and its lasting effects on cognition in the brain

### Biochemistry

		Project ID	Project Title
Bricker, Anna	12	W-HS-BCHM-0051	Effects of N-3 series fatty acids on the quantity and quality of pleopodal eggs and juveniles in freshwater crayfish

### Biomedical and Health Sciences

		Project ID	Project Title
Millerhaller, Maxanne	12	S-HS-BMED-0264	The In Vitro Digestion of Animal-based Meat versus Plant-based Meat Alternatives
Wipf, Lisa	12	W-HS-BMED-0067	Examination of the direct effect of the Janus kinase inhibitor ruxolitinib on melanocytes
Yeoh, Ming Ying	12	W-HS-BMED-0098	A better approach to treating Alzheimer's? Multi-drug combination therapies in a C. elegans model



# Twin Cities Regional Science Fairs

## Biomedical and Health Sciences

		Project ID	Project Title
Liu, Grace	12	W-HS-BMED-0167	The Effect of Frequencies on Healing in Crayfish
DuLac, Brynn	12	W-HS-BMED-0194	Platelet rich plasma and its effectiveness in regenerative medicine

## Biomedical Engineering

		Project ID	Project Title
Eldahshoury, Kareem	12	W-HS-ENBM-0056	Prosthetic Index Finger Operated by Surface Electromyography
Benoit, Lauren	12	W-HS-ENBM-0085	The impact of green tea on bacterial nanocellulose's biomedical properties

## Cellular and Molecular Biology

		Project ID	Project Title
Kumar, Shreya	12	W-HS-CELL-0088	Investigating the effect of Lactobacillus plantarum, Lactobacillus reuteri and Lactobacillus gasseri on the gut microbiome of the model organism C. elegans using a lifespan assay
Mohamed Prem Navaz, Fazila	12	W-HS-CELL-0174	Mitigating Metastasis: Utilizing cancer-associated fibroblasts to stop the spread of cancer
Karls, Julia	12	W-HS-CELL-0221	Mighty Muscles: Examining Teratoma-derived Muscle Stem Cells and the Behavioral Tendencies of These Powerful Cells

## Chemistry

		Project ID	Project Title
Greco, Dominic	12	W-HS-CHEM-0077	Mighty MOFs: Investigating 1-butene dimerization on UiO-66 variants to improve alpha-olefin production
Kroul, Benjamin	12	W-HS-CHEM-0077	Mighty MOFs: Investigating 1-butene dimerization on UiO-66 variants to improve alpha-olefin production

## Computational Biology and Bioinformatics

		Project ID	Project Title
Peng, Sydney	12	T-HS-CBIO-0126	Upsurge of the Glycolytic Pathway in Cancer: A Dynamic Network Analysis of Oncogenic Mutations in Phosphofructokinase-1

## Earth and Environmental Sciences

		Project ID	Project Title
Kimmel, Gavin	12	S-HS-EAEV-0127	Examining the Relationship Between Socioeconomic Status and Soil Macronutrient Levels
Medrano, Isabel	12	S-HS-EAEV-0145	The Impact of Elapsed Burn Time on Restored Prairie Plant Biodiversity and Soil Nutrient Content

# Twin Cities Regional Science Fairs

## Earth and Environmental Sciences

		Project ID	Project Title
Saavedra-Weis, Pilar	12	S-HS-EAEV-0203	The Effect of Rising Temperature on the Polystyrene Degradation Rate of the Superworm, Zophobas atratus
Raveendran, Rashmi	12	S-HS-EAEV-0266	The Effect of Ammonium Nitrate Concentration on Escherichia coli Temperature Resistance
Lundheim, Tessa	12	W-HS-EAEV-0076	Seasonal analysis of human impact on ammonia oxidizing archaea in soil microbial communities within a suburban area
Geldert, Anna	12	W-HS-EAEV-0082	Using mycoremediation as a treatment technique to reduce heavy metal concentration in model mine effluent
Carroll, Caitlyn	12	W-HS-EAEV-0095	The Effect of Atmospheric Sulfur Dioxide On Lichen Population and Size

## Embedded Systems

		Project ID	Project Title
Liepins, Nikolas	12	S-HS-EBED-0217	SPYGLASS: Eye-controlled camera glasses
Mellin, Levi	12	S-HS-EBED-0217	SPYGLASS: Eye-controlled camera glasses
Roemig, Grace	12	W-HS-EBED-0052	Improved Wearable Device for Drowning Detection System
Levy, Zachary	12	W-HS-EBED-0054	Development of an affordable ultrasonic array for recording and analysis

## Energy: Sustainable Materials and Design

		Project ID	Project Title
Rex, Benjamin	12	W-HS-EGSD-0079	Growing Fuel: Enhancing Phytoplankton Growth with Ferrous Sulfate to Reduce the Cost of Biofuel
Roberts, Grayson	12	W-HS-EGSD-0079	Growing Fuel: Enhancing Phytoplankton Growth with Ferrous Sulfate to Reduce the Cost of Biofuel

## Engineering Mechanics

		Project ID	Project Title
Richards, George	12	W-HS-ENMC-0072	A.L.M.E. Assistive Lifting Machine for Elders: Engineering a solution to fall-recovery-related injuries in seniors and caregivers
Sweeney, William	12	W-HS-ENMC-0072	A.L.M.E. Assistive Lifting Machine for Elders: Engineering a solution to fall-recovery-related injuries in seniors and caregivers
Rega, Bryce	12	W-HS-ENMC-0080	Designing a more practical and efficient multipurpose autonomous VTOL delivery drone
Parnerkar, Rohan	12	W-HS-ENMC-0100	CFD and wind tunnel analysis of variable cant angle winglets for aircraft control and multiphase drag reduction

# Twin Cities Regional Science Fairs

## Environmental Engineering

		Project ID	Project Title
Rich, Aidan	12	W-HS-ENEV-0055	Implementing an Ecological, Self Sustaining Home Incorporated with the Natural Surroundings
Cardwell, John	12	W-HS-ENEV-0129	Testing the Waters: Engineering an Innovative Method of Water Health Analysis Year II

## Materials Science

		Project ID	Project Title
Sandum, Ethan	12	W-HS-MATS-0044	The effects of 3D printing parameters on mechanical properties
Thomasson, Rebekah	12	W-HS-MATS-0096	The formation of edible packaging from food waste streams and its applications as alternative packaging to low density polyethylene and oriented polypropylene

## Microbiology

		Project ID	Project Title
Choi, Maya	12	S-HS-MCRO-0117	Degradation of Microplastics: The Efficacy of Various Bacteria in Breaking Down Microplastics in the Environment
Rojas Garcia, Frannys	12	T-HS-MCRO-0226	Mouthwash Mashup
Rojas, Frank	12	T-HS-MCRO-0258	Mouthwash Mixup
Albrecht, Ella	12	W-HS-MCRO-0065	Assessing the anti-quorum sensing activity of essential oils on Escherichia coli K-12 samples
Cummings, Berit	12	W-HS-MCRO-0069	Degradation of PET-based plastic pollution using Ideonella sakaiensis
Crandell, Alison	12	W-HS-MCRO-0075	Effects of methoxsalen and UV radiation on subcutaneous P. destructans infections through the use of S. cerevisiae and G. mellonella as models
Stoebe, Emily	12	W-HS-MCRO-0091	Crayfish DNA decay rates in sediment and water

## Physics and Astronomy

		Project ID	Project Title
Draheim, Justin	12	T-HS-PHYS-0122	Optical Tweezers
Hunter, Austin	12	W-HS-PHYS-0037	The impact of drafting in cross country skiing
Stine, Ian	12	W-HS-PHYS-0042	Analyzing the Impact of Snowboarding on an Intermediate Rider

## Plant Sciences

		Project ID	Project Title
Toghradjian, Isabel	12	S-HS-PLNT-0241	Optimizing photoperiod to improve drought resistance in Arabidopsis thaliana

## Twin Cities Regional Science Fairs

### Plant Sciences

		Project ID	Project Title
Escalante, Isabella	12	W-HS-PLNT-0036	The Elucidation of a Novel Laccase-Producing Fungal Strain with an Alkaline pH
Silver, Maya	12	W-HS-PLNT-0070	Applied natural selection: the effect of sethoxydim on lipid production in algae

### Robotics and Intelligent Machines

		Project ID	Project Title
Berlin, Isaac	12	W-HS-ROBO-0035	Using Machine Learning to detect Phishing Scams
Turcotte, Nathan	12	W-HS-ROBO-0038	Developing a video game AI opponent capable of maintaining a skill level proportional to that of the player
Byrne, Julian	12	W-HS-ROBO-0039	Training Machine Learning Models to Determine Archery Scores
Hooker Reese, Eli	12	W-HS-ROBO-0045	Teaching Manufacturing Robots with Kinesthetic Learning from Demonstration in a Miniature Replication of the Work Environment
Wang, Steven	12	W-HS-ROBO-0195	Examination of Natural Language Processing for Courtroom Semantic Analysis

### Systems Software

		Project ID	Project Title
Mangipudi, Sahana	12	W-HS-SOFT-0073	A Schedule a Day Keeps the Doctor Okay: An algorithmic and user-friendly approach

### Translational Medical Science

		Project ID	Project Title
Mhaskar, Tanishka	12	W-HS-TMED-0123	Exploring Electroencephalography: Feasibility of EEG in conjunction to evaluation after sports-related concussion





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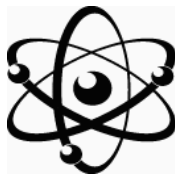
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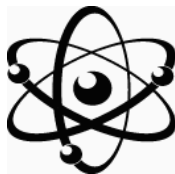
612-253-0025

[ahanson@mintahoe.com](mailto:ahanson@mintahoe.com)



## Twin Cities Regional Science Fairs

	Project ID	Category
Abbring, Levi	W-MS-ENMC-0156	Engineering Mechanics
Abdulwali, Ahlaam	W-HS-ANIM-0046	Animal Sciences
Adabag, Mina	W-HS-MATS-0028	Materials Science
Affeldt, Grace	T-HS-BMED-0120	Biomedical and Health Sciences
Ahern, Henry	T-MS-ANIM-0158	Animal Sciences
Akins, Noelle	S-MS-BEHA-0059	Behavioral and Social Sciences
Albrecht, Ella	W-HS-MCRO-0068	Microbiology
Ambrose, Ramira	W-HS-BEHA-0234	Behavioral and Social Sciences
Anderson, William	S-HS-ENMC-0240	Engineering Mechanics
Andrews, Madison	W-HS-BCHM-0040	Biochemistry
Armstrong   , Kevin	W-HS-ROBO-0063	Robotics and Intelligent Machines
Arvind, Ananyaa	W-HS-ROBO-0157	Robotics and Intelligent Machines
Balaji, Rahul	T-HS-CBIO-0109	Computational Biology and Bioinformatics
Baldauff, Sarah	T-HS-ENMC-0250	Engineering Mechanics
Bandstra, Noah	W-MS-MATS-0144	Materials Science
Banks, Maggie	S-HS-EGSD-0153	Energy: Sustainable Materials and Design
Benoit, Lauren	W-HS-ENBM-0085	Biomedical Engineering
Benson, Corrina	T-HS-CBIO-0262	Computational Biology and Bioinformatics
Berlin, Isaac	W-HS-ROBO-0035	Robotics and Intelligent Machines
Beyene, Elroi	T-MS-PHYS-0176	Physics and Astronomy
Bhargava, Divya	S-HS-BMED-0118	Biomedical and Health Sciences
Bhavsar, Atreyus	W-HS-TMED-0252	Translational Medical Science
Borner, Ella	T-MS-ENMC-0214	Engineering Mechanics
Bricker, Anna	W-HS-BCHM-0051	Biochemistry
Brondum, Bud	S-MS-MATS-0092	Materials Science
Bunnell, Cade	T-HS-PHYS-0257	Physics and Astronomy
Burns, Harper	T-MS-PLNT-0130	Plant Sciences
Butler, Joshua	T-MS-ENMC-0171	Engineering Mechanics
Byrne, Julian	W-HS-ROBO-0035	Robotics and Intelligent Machines
Cantwell, Avery	W-MS-CHEM-0147	Chemistry
Cardwell, John	W-HS-ENEV-0129	Environmental Engineering
Carlson, Izzy	T-MS-PLNT-0231	Plant Sciences
Caron, Kacia	T-MS-BEHA-0178	Behavioral and Social Sciences
Carroll, Caitlyn	W-HS-EAEV-0095	Earth and Environmental Sciences
Carver, Nick	W-HS-MATS-0064	Materials Science
Chastek, Francesca	T-MS-ANIM-0255	Animal Sciences
Chen, Ava	W-HS-MCRO-0068	Microbiology
Chen, Ben	S-HS-MATS-0236	Materials Science
Chen, Eleanor	S-HS-PLNT-0099	Plant Sciences
Chen, Zhaomeng	W-HS-PHYS-0197	Physics and Astronomy
Chimbo, Kari	T-MS-MCRO-0193	Microbiology
Chinokoro, Chipso	T-MS-EGSD-0189	Energy: Sustainable Materials and Design
Choi, Maya	S-HS-MCRO-0117	Microbiology
Christman, Abby	T-MS-EAEV-0136	Earth and Environmental Sciences
Clair, Tyler	W-MS-EAEV-0248	Earth and Environmental Sciences
Craig, Lauren	W-MS-CHEM-0270	Chemistry
Craig, Matthew	W-MS-CHEM-0268	Chemistry
Crandell, Alison	W-HS-MCRO-0078	Microbiology



## Twin Cities Regional Science Fairs

	Project ID	Category
Crest, Peyton	W-HS-BEHA-0086	Behavioral and Social Sciences
Cummings, Berit	W-HS-MCRO-0065	Microbiology
Cunningham, Will	S-MS-ENEV-0093	Environmental Engineering
Danz, Evelyn	W-MS-BMED-0151	Biomedical and Health Sciences
De Leon, Marco	T-MS-PLNT-0213	Plant Sciences
Deaven, Eleri	T-HS-BEHA-0268	Behavioral and Social Sciences
DeCrans, Elias	T-MS-BEHA-0177	Behavioral and Social Sciences
Deegan, Mason	S-MS-PHYS-0133	Physics and Astronomy
DeMichaelis, Nathan	W-HS-BEHA-0071	Behavioral and Social Sciences
Diaz, Adelyn	W-HS-CELL-0084	Cellular and Molecular Biology
Doebler, Joseph	T-MS-ANIM-0192	Animal Sciences
Draheim, Justin	T-HS-PHYS-0122	Physics and Astronomy
Drobnick, Ava	T-HS-MCRO-0112	Microbiology
DuLac, Brynn	W-HS-BMED-0194	Biomedical and Health Sciences
Elamri, Omar	W-HS-SOFT-0089	Systems Software
Eldahshoury, Kareem	W-HS-ENBM-0056	Biomedical Engineering
Elfering, Michael	T-MS-BEHA-0183	Behavioral and Social Sciences
Engbretson, Annika	T-MS-BMED-0253	Biomedical and Health Sciences
Erickson, Audrey	S-MS-BEHA-0058	Behavioral and Social Sciences
Escalante, Isabella	W-HS-PLNT-0036	Plant Sciences
Escobar, Ruby	T-MS-EAEV-0210	Earth and Environmental Sciences
Estrada, Victor	T-MS-PLNT-0224	Plant Sciences
Farina, Olivia	T-MS-ENMC-0219	Engineering Mechanics
Ferstan, Ivy	W-HS-EAEV-0083	Earth and Environmental Sciences
Foley, Elizabeth	T-MS-PLNT-0185	Plant Sciences
France, Todd	T-HS-PHYS-0122	Physics and Astronomy
Fuls, Ian	T-MS-ANIM-0175	Animal Sciences
Fung, Kyla	W-HS-EGSD-0034	Energy: Sustainable Materials and Design
Gaston, Cassidy	T-MS-PLNT-0181	Plant Sciences
Geldert, Anna	W-HS-EAEV-0082	Earth and Environmental Sciences
Genis, Eliazbeth	T-HS-PLNT-0111	Plant Sciences
Goduguchinta, Sarayu	W-HS-BMED-0208	Biomedical and Health Sciences
Goldade, Greta	W-HS-BEHA-0205	Behavioral and Social Sciences
Gottsch, Liam	W-MS-MATS-0222	Materials Science
Gray, Ruthie	T-HS-ENMC-0128	Engineering Mechanics
Greco, Dominic	W-HS-CHEM-0077	Chemistry
Groeneweg, Kaitlyn	T-HS-BMED-0121	Biomedical and Health Sciences
Grosser, Hannah	W-MS-PLNT-0196	Plant Sciences
Guasco Paucar, Giselle	T-MS-CHEM-0179	Chemistry
Guion, Will	S-MS-MATS-0115	Materials Science
Guo, Elisa	T-HS-BMED-0152	Biomedical and Health Sciences
Guo, Ellen	T-HS-MCRO-0154	Microbiology
Gupta, Arnav	W-HS-CELL-0108	Cellular and Molecular Biology
Hagen, Anelli	W-MS-BEHA-0142	Behavioral and Social Sciences
Ham, Ahreum	T-HS-BEHA-0146	Behavioral and Social Sciences
Hamann, Olivia	T-MS-BMED-0243	Biomedical and Health Sciences
He, Hubert	W-HS-BMED-0235	Biomedical and Health Sciences
Heddle, Iona	W-MS-BMED-0215	Biomedical and Health Sciences



## Twin Cities Regional Science Fairs

	Project ID	Category
Hegewald, Audryn	T-MS-ENMC-0218	Engineering Mechanics
Hlavka, Jack	S-HS-ENEV-0138	Environmental Engineering
Hoekstra, Mac	W-MS-EAEV-0225	Earth and Environmental Sciences
Hooker Reese, Eli	W-HS-ROBO-0045	Robotics and Intelligent Machines
Hughes, Quentin	W-HS-BMED-0246	Biomedical and Health Sciences
Hughes, Quinn	W-MS-EAEV-0248	Earth and Environmental Sciences
Hughes, Vaughn	W-HS-BMED-0247	Biomedical and Health Sciences
Hunter, Austin	W-HS-PHYS-0037	Physics and Astronomy
Jama, Deq	T-HS-ENEV-0135	Environmental Engineering
Johnson, Audra	T-HS-MCRO-0261	Microbiology
Johnson, Ian	S-MS-BMED-0060	Biomedical and Health Sciences
Johnson, Jacob	T-HS-PHYS-0125	Physics and Astronomy
Johnson, Morgan	S-MS-BEHA-0137	Behavioral and Social Sciences
Kane, Maggie	S-MS-BMED-0094	Biomedical and Health Sciences
Karls, Julia	W-HS-CELL-0221	Cellular and Molecular Biology
Kaung, Grace	W-HS-EGSD-0048	Energy: Sustainable Materials and Design
Khadiikar, Rushil	W-HS-BMED-0173	Biomedical and Health Sciences
Khamseh, Mahdi	W-HS-BEHA-0049	Behavioral and Social Sciences
Kimmel, Gavin	S-HS-EAEV-0127	Earth and Environmental Sciences
King, Molly	S-MS-BEHA-0139	Behavioral and Social Sciences
Kinney, Fiona	W-HS-ANIM-0081	Animal Sciences
Kirchberg, Jack	T-MS-PLNT-0159	Plant Sciences
Kollipara, Sanjana	W-MS-BEHA-0105	Behavioral and Social Sciences
Konar-Steenberg, Naci	S-HS-BEHA-0239	Behavioral and Social Sciences
Kota, Tarun	T-HS-PHYS-0198	Physics and Astronomy
Kroul, Benjamin	W-HS-CHEM-0077	Chemistry
Kucko, Eleanora	T-MS-BEHA-0184	Behavioral and Social Sciences
Kumar, Shreya	W-HS-CELL-0088	Cellular and Molecular Biology
Larson, John (Jack)	T-MS-PHYS-0207	Physics and Astronomy
Le, Minhphuong	T-MS-ENEV-0155	Environmental Engineering
Leshner, Tristan	T-MS-EAEV-0170	Earth and Environmental Sciences
Levinshteyn, Elizabeth	W-MS-BMED-0026	Biomedical and Health Sciences
Levy, Zachary	W-HS-EBED-0054	Embedded Systems
Li, Rita	T-HS-SOFT-0087	Systems Software
Liden, Emil	W-HS-BEHA-0168	Behavioral and Social Sciences
Liepins, Nikolas	S-HS-EBED-0217	Embedded Systems
Liu, Grace	W-HS-BMED-0167	Biomedical and Health Sciences
Lundheim, Tessa	W-HS-EAEV-0076	Earth and Environmental Sciences
Machacek, Jack	T-HS-BMED-0149	Biomedical and Health Sciences
Makppho, Vilasinee	T-HS-MCRO-0228	Microbiology
Mangipudi, Sahana	W-HS-SOFT-0073	Systems Software
March, Mercy	W-MS-ENEV-0209	Environmental Engineering
Marinero Chanta, Mario	T-HS-MCRO-0226	Microbiology
Martin, Lila	T-MS-BMED-0188	Biomedical and Health Sciences
Mattson, William	T-MS-PHYS-0190	Physics and Astronomy
McCarthy, Conor	T-MS-PLNT-0166	Plant Sciences
McGlynn, Liam	T-MS-MATS-0202	Materials Science
Medrano, Isabel	S-HS-EAEV-0145	Earth and Environmental Sciences





## Twin Cities Regional Science Fairs

	Project ID	Category
Mekenye, Kerubo	T-HS-ENMC-0128	Engineering Mechanics
Mellin, Levi	S-HS-EBED-0217	Embedded Systems
Menon, Amrit	W-HS-EAEV-0083	Earth and Environmental Sciences
Mhaskar, Tanishka	W-HS-TMED-0123	Translational Medical Science
Miedema, Carter	W-MS-BMED-0232	Biomedical and Health Sciences
Miller, Kayla	T-MS-BEHA-0187	Behavioral and Social Sciences
Millerhaller, Maxanne	S-HS-BMED-0264	Biomedical and Health Sciences
Miskiw, Kiefer	W-HS-SOFT-0050	Systems Software
Moalim, Irshad	T-HS-EAEV-0132	Earth and Environmental Sciences
Moen Grear, Elijah	S-MS-BEHA-0139	Behavioral and Social Sciences
Mohamed Prem Navaz, Fazila	W-HS-CELL-0174	Cellular and Molecular Biology
Molina Alvarado, William	T-MS-PLNT-0182	Plant Sciences
Montague, George	S-HS-PLNT-0233	Plant Sciences
Moran, Corinne	W-HS-BEHA-0031	Behavioral and Social Sciences
Moseti, Abigael	T-HS-MCRO-0258	Microbiology
Murillo, Isabelle	W-HS-MCRO-0257	Microbiology
Murphy, Liam	T-MS-EAEV-0237	Earth and Environmental Sciences
Murphy, Owen	W-HS-BEHA-0078	Behavioral and Social Sciences
Neil, Leah	S-MS-BEHA-0057	Behavioral and Social Sciences
Nelson, Kelsey	W-MS-BEHA-0143	Behavioral and Social Sciences
Nelson, Summer	T-MS-CHEM-0169	Chemistry
Nguyen, Nathan	T-MS-BEHA-0180	Behavioral and Social Sciences
Nobrega, Michael	S-MS-ROBO-0116	Robotics and Intelligent Machines
Nothom, Lily	W-HS-BEHA-0160	Behavioral and Social Sciences
Nure, Hamza	T-HS-MATS-0148	Materials Science
OShaughnessy, Ben	S-MS-BEHA-0113	Behavioral and Social Sciences
Pak, Lena	W-HS-BEHA-0047	Behavioral and Social Sciences
Palm, Samantha	S-MS-BEHA-0134	Behavioral and Social Sciences
Parnerkar, Rohan	W-HS-ENMC-0100	Engineering Mechanics
Penaloza, Valentina	T-HS-BEHA-0260	Behavioral and Social Sciences
Peng, Sydney	T-HS-CBIO-0126	Computational Biology and Bioinformatics
Peterson, Brady	W-MS-EGSD-0242	Energy: Sustainable Materials and Design
Pilgrim, Grant	T-MS-EGSD-0161	Energy: Sustainable Materials and Design
Pirtle, Caroline	W-HS-SOFT-0073	Systems Software
Portillo, Edwin	T-MS-EGSD-0201	Energy: Sustainable Materials and Design
Rabe, Cole	W-HS-ENBM-0033	Biomedical Engineering
Radichel, Christina	W-HS-PLNT-0074	Plant Sciences
Rajasekaran, Abirami	W-HS-BEHA-0102	Behavioral and Social Sciences
Rathore, Prisha	T-MS-MCRO-0200	Microbiology
Raveendran, Rashmi	S-HS-EAEV-0266	Earth and Environmental Sciences
Rega, Bryce	W-HS-ENMC-0080	Engineering Mechanics
Reilly, Shannon	T-MS-BEHA-0265	Behavioral and Social Sciences
Restad, Holly	T-HS-BEHA-0229	Behavioral and Social Sciences
Rewey, Thomas	W-MS-ENMC-0223	Engineering Mechanics
Rex, Benjamin	W-HS-EGSD-0079	Energy: Sustainable Materials and Design
Rich, Aidan	W-HS-ENEV-0055	Environmental Engineering
Richards, George	W-HS-ENMC-0072	Engineering Mechanics
Roberts, Grayson	W-HS-EGSD-0079	Energy: Sustainable Materials and Design



## Twin Cities Regional Science Fairs

	Project ID	Category
Roemig, Grace	W-HS-EBED-0052	Embedded Systems
Rojas Garcia, Frannys	T-HS-MCRO-0226	Microbiology
Rojas, Frank	T-HS-MCRO-0258	Microbiology
Route, Camden	T-HS-CHEM-0124	Chemistry
Rupireddy, Adithi	W-HS-EAEV-0206	Earth and Environmental Sciences
Saavedra-Weis, Pilar	S-HS-EAEV-0203	Earth and Environmental Sciences
Samba, Simren	W-HS-ANIM-0081	Animal Sciences
Samba, Trisha	W-HS-EGSD-0029	Energy: Sustainable Materials and Design
Sandum, Ethan	W-HS-MATS-0044	Materials Science
Scheuneman, Maisy	T-HS-CHEM-0245	Chemistry
Sedo, Will	S-HS-EAEV-0256	Earth and Environmental Sciences
Sekar, Shreya	T-MS-ANIM-0211	Animal Sciences
Senthilkumar, Harini	W-HS-BEHA-0102	Behavioral and Social Sciences
Shero, Evelynnn	T-HS-BMED-0172	Biomedical and Health Sciences
Shrivastava, Shagun	W-MS-EAEV-0104	Earth and Environmental Sciences
Shrivastava, Shreshth	W-HS-SOFT-0103	Systems Software
Silver, Maya	W-HS-PLNT-0070	Plant Sciences
Singhvi, Coolsjes	T-MS-TMED-0030	Translational Medical Science
Singhvi, Riddhi	T-MS-SOFT-0062	Systems Software
Skjod, Kayleigh	T-MS-PLNT-0199	Plant Sciences
Soltau, Alexander	W-HS-SOFT-0043	Systems Software
Sosa Escobar, Christopher	T-MS-BEHA-0212	Behavioral and Social Sciences
Stangler, Jane	S-MS-BEHA-0114	Behavioral and Social Sciences
Stel, Lily	W-MS-CHEM-0146	Chemistry
Stine, Ian	W-HS-PHYS-0042	Physics and Astronomy
Stoebe, Emily	W-HS-MCRO-0097	Microbiology
Sum, Alex	T-MS-CHEM-0254	Chemistry
Summers, James	S-MS-BCHM-0090	Biochemistry
Sun, Nathan	W-HS-CHEM-0041	Chemistry
Sureshkumar, Sriram	T-MS-EAEV-0220	Earth and Environmental Sciences
Sweeney, William	W-HS-ENMC-0072	Engineering Mechanics
Telep, Kaitlin	T-MS-ANIM-0191	Animal Sciences
Tenaye, Selamawit	S-MS-BEHA-0027	Behavioral and Social Sciences
Tenkir, Liyu	T-HS-BMED-0131	Biomedical and Health Sciences
Tepoxteco Reza, Leslie	T-MS-MATS-0216	Materials Science
Thomas, Tori	W-HS-BEHA-0119	Behavioral and Social Sciences
Thomasson, Rebekah	W-HS-MATS-0096	Materials Science
Toghramadjian, Isabel	S-HS-PLNT-0241	Plant Sciences
Turcotte, Nathan	W-HS-ROBO-0036	Robotics and Intelligent Machines
Tyrrell, Orion	T-HS-ENMC-0244	Engineering Mechanics
Vega, Ashley	T-MS-BEHA-0186	Behavioral and Social Sciences
Wagner, Lillie	T-MS-ENEV-0238	Environmental Engineering
Walsh, Quinn	S-MS-BEHA-0134	Behavioral and Social Sciences
Wang, Steven	W-HS-ROBO-0195	Robotics and Intelligent Machines
Warren, Ayres	W-HS-PLNT-0074	Plant Sciences
Wellmann, Elin	W-HS-BEHA-0031	Behavioral and Social Sciences
Wening, Isaac	T-MS-CHEM-0249	Chemistry
Wherry, Jack	W-HS-SOFT-0053	Systems Software



## Twin Cities Regional Science Fairs

	Project ID	Category
White, Kendall	W-HS-MATS-0061	Materials Science
Willaert, Joseph	T-MS-EAEV-0230	Earth and Environmental Sciences
Wipf, Lisa	W-HS-BMED-0067	Biomedical and Health Sciences
Witherspoon, Camille	W-HS-BEHA-0031	Behavioral and Social Sciences
Yeoh, Ming Ying	W-HS-BMED-0098	Biomedical and Health Sciences
Yue, Johnny	T-HS-CBIO-0126	Computational Biology and Bioinformatics
Zander, Nickolas	T-HS-ENMC-0147	Engineering Mechanics
Zewde, Bitaniya	T-HS-BCHM-0263	Biochemistry
Zhao, Lorien	W-HS-BEHA-0204	Behavioral and Social Sciences



Working together for a  
clean-water future

## 2021 Research Papers

Name	Grade	Title
Elroi Beyene	7	Strobe Effect of a Monitor
Kacia Caron	7	Ready, Set, Go: Does Age Affect Reaction Time?
Evelyn Danz Ms.	7	Stop the Clot: The Effect of Anticoagulants of Thrombosis
Michael Elfering	7	Top 5 Sleepy Activitiezzzzzz
Cassidy Gaston	7	The Great Wall of Plants: The Effect of Plants on Soil Erosion
Natalie Hoekman	7	Water You Filtering
Mercy March	7	Purification with Desalination: Distillation vs. Reverse Osmosis
Lila Martin	7	The Effects of Fast Acting Sugars on Diabetics and Non-Diabetics
Edwin Portillo	7	"Does the Temperature of a Battery Affect How Long and Lasts?"
Lily Stel	7	On your Mark Get Set Bake
Kaitlin Telep	7	A Hamster's Preference: Which Food Will it Pick?
Elizabeth Levinshteyn	8	Testing, Testing: Developing an All-Strain-Inclusive Test for SARS-CoV2
Liam Murphy	8	The Science of Hot Sauce
Sriram Sureshkumar	8	Impact of chemicals and pesticide residue on Compost
Maggie Banks	9	Salt and Paper: Engineering a Plant-Based Piezoelectric Transducer with Rochelle Salt to Generate a Resilient, Eco-Friendly Source of Voltage
Ellen Guo	9	Distinctive mutational profiles of SARS-CoV-2 spike protein in different geographic regions of the United States
Rushil Khadilkar	9	Impact of Nutritional and Human Factors on Blood Glucose in Diabetic and non-Diabetic Subjects
Shreshth Shrivastava	9	WI-CARE: Wifi Computer-Assisted Remote Eldercare (Year 2)
Grace Affeldt	10	Drug Solubility of Acetaminophen
Shami Aung	10	Effects of Temperature on Enzymes
Corrina Benson	10	Genes and Data Science... where do they cross paths?
Cecelia Benson	10	The Result of Manipulating the Stroop Effect
Vincent Birch	10	How the Type of Light Affects the Growth of Butterhead Lettuce
Cade Bunnell	10	Correlation between type of glove and catch performance
Leonard Christenson	10	How Temperature of a Battery Affects Internal Resistance
Alex Christian	10	The Consistency of Engine Oil Viscosity at Different Temperatures
Anna Dennis	10	Temperature and Pill Bugs
Ava Drobnick	10	Killing Bacteria: Green vs. Mean
Yohanes Eshete	10	The Effect Pollutants have on Daphnia Magna
Kiyilah Franke	10	The Results of The Amount of Airflow That is Allowed to Pass Through Different Types of Face Masks
Bianca Froebe	10	How do Different Brands of Water Purifiers Affect the Conductivity of Water?
Elizabeth Genis	10	Survival of The Plants
Michael Goettl	10	Chlorine Levels in Drinking Water and How Different Types of Drinking Water Differ in Chlorine Levels
John Goettl	10	Sports Drinks vs. Orange Juice
Roselyn Hamann	10	Pill Solubility
Emily Hey	10	Testing Electrolytes in Sports Drinks vs Fruit Juices
Gabriel Hubbard	10	The Result of Cooling a Solar Heater
Vaughn Hughes	10	Using Artificial Intelligence and Electronic Health Records (EHR) to Design a COVID-19 Testing Model

## 2021 Research Papers (continued)

Name	Grade	Title
Deq Jama	10	Effect of solar panel angles on voltage output
James Johnson	10	The Effect of Temperature on the Distance Golf Balls Travel
Audra Johnson	10	The Effects of Disinfectants on Escherichia Coli Bacteria
Jacob Johnson	10	The Result of Common Building Materials on the Strength of a Radio Signal
Mahdi Khamseh	10	The effects of Tamarkoz Meditation on adolescents aged 15-18
Reilly Klug	10	How Acid Rain Affects Diatoms
Avery Krick	10	Sugar Content In A Banana As It Ripens
Calvin Kruger	10	Vertical Farming and It's Effect on the Use of Resources
Eddie Lara Gonzales	10	Ultraviolet Rays Effect on Yeast Colony Growth
Tia Luong	10	Correlation Between Fruit Density and Vitamin C Concentrations of Citrus Fruits
Gavin Lutz	10	Distances Achieved by Different Golf Balls
Jack Machacek	10	Electrolyte Levels in Sports Drinks
Paul Martynow	10	The Statistics of Non-Precise Dice
Charles McGuire	10	Effect of types of nails and wood on nail corrosion
Nicholas Meuser	10	Comparing calorie content of different food
Irshad Moalim	10	The effect of sunlight on the salinity of water and the impact of black and white construction paper on the amount of desalinated water.
William Moe	10	How does dehydration affect the calorie amount of fruit
Karen Nakamura	10	Martial arts technique assessment using voluntary muscle contraction and relaxation cycle by surface electromyography (EMG)
Andrew Ngo	10	Neutralizing Water: A Comparison of Water Purification Methods
Hamza Nure	10	Sounds and Basketball
Bryanna Onsongo	10	Parachutes
Valentina Penaloza	10	Sibling Relationship
Kyan Ponzio	10	Curling Stones: Rotation and Curl
Khiya Rath	10	Which Laundry Stain Remover Works Best?
Drew Rian	10	Affects of Temperature on a Luminol Reaction
Camden Route	10	How different types of liquids are affected by different types of heat transfer
Maisy Scheuneman	10	How do different pH levels and different nail coating affect the formation of rust on nails?
William Szczepanski	10	Sugar Content Changing In Ripening Bananas.
Evelynn Shero	10	The Affect Different Forms of Sugar Have on Glucose Levels During Metabolization
Bryce Soberski S	10	The Results of the Fishing Line Test
Liyu Tenkir	10	Extracting Iron from Breakfast Cereal
Olivia Tilbury	10	Results of Stain Fighting
Dan Tran	10	Airflow of Fabrics
Peter Voigt	10	Resins vs Solvents
Ella White	10	Preventative methods for san diego erosion
Evan Wilkens	10	The traction of hiking shoes on multiple surfaces
Martha Wondimu	10	Correlation Between Vitamin C and the Density of Fruit
William Anderson	11	A Comparison of Three Wing Configurations at Different Heights in Ground Effect

## 2021 Research Papers (continued)

Name	Grade	Title
Ananyaa Arvind	11	Innovative Chatbot Solutions: Designing a conversational agent to promote student success during distance learning
Divya Bhargava	11	No Change? Impact of FDA Warning on the Use of Opioids and Benzodiazepines and Their Effects in Older Allogeneic Hematopoietic Stem Cell Transplant Patients
Atreyus Bhavsar	11	The Spread of Macroscopic Droplets from a Simulated Cough with and without the Use of Masks or Barriers
Eleanor Chen	11	The Effects of Storage Temperature and Exogenous Ethylene Exposure on the Ripening Rate, Quality, and Glucose Level of Postharvest Ripened Tomatoes ( <i>Solanum lycopersicum</i> )
Ivy Ferstan, Amrit Menon	11,11	Pulling Apart Plastic: Measuring the effectiveness of wax worms, bacteria, and fungus in breaking down biodegradable plastic
Kyla Fung	11	Economic and Technical Feasibility of Hydrothermal Carbonization Processing Plants in the United States; case study in Minnesota
Elisa Guo	11	CD8 T cell epitope generation toward the mutating SARS-CoV-2 spike protein in genetically diverse human population: Implications for disease control and prevention
Ahreum Ham	11	Pandemic Pragmatism: The impact of COVID-19 on sustainable living
Hubert He	11	Analysis of Gene Expression Changes Influenced by Various Severe COVID-19-associated Single Nucleotide Polymorphisms
Jack Hlavka	11	Treatment of Simulated Acid Mine Drainage with <i>Desulfovibrio</i> Desulfuricans
Quentin Hughes	11	An Active Role for Machine Learning in the Diagnosis of Cardiac Arrhythmias, Year 2
Naci Konar-Steenberg	11	Significant zero: the effect of personality questionnaires on identity-relevant choices
Tarun Kota	11	Detection and Characterization of Astronomical dwarfs using CatWISE
George Montague	11	The effect of UVC exposure on germination rate, time until germination and growth rate in radishes ( <i>Raphanus sativus</i> )
Lily Nothom	11	Defeating the Divide: Creating sustainable partnerships between academic institutions and the communities they serve
Caroline Pirtle, Sahana Mangipudi	11,12	Optimizing Residential Schedules for Increased Clinic and Patient Continuity
Abirami Rajasekaran, Harini Senthilkumar	11,10	Predicting compensatory exercise behaviors from anxiety symptomatology in patients with eating disorders: secondary analysis of a publicly available dataset
Sofia Rodriguez	11	Identifying Genetic Components of Bipolar Disorder
Will Sedo	11	Exploring the Physiology of <i>D. Geminata</i>
Ayres Warren, Christina Radichel	11,11	The Effects of Varied Fertilizer Treatments on Radishes
Johnny Yue, Sydney Peng	11,12	Upsurge of the Glycolytic Pathway in Cancer: A Dynamic Network Analysis of Oncogenic Mutations in Phosphofructokinase-1
Ahlaam Abdulwali	12	The effect of artificial food colors on the release of neurotransmitters within model organisms
John Cardwell	12	Testing the Waters: Engineering an Innovative Method of Water Health Analysis, Year II
Maya Choi	12	Degradation of Microplastics: The Efficacy of Various Bacteria in Breaking Down Microplastics in the Environment

## 2021 Research Papers (continued)

<b>Name</b>	<b>Grade</b>	<b>Title</b>
Nathan DeMichaelis	12	Learning in the Living Room: What Skills Contribute to Success in Distance Learning?
Greta Goldade	12	More than Just a Runner's High: Single-bout exercise and its lasting effects on cognition in the brain
Austin Hunter	12	Determining the impact of drafting formation on the aerodynamic drag experienced by a group of cross country skiers
Julia Karls	12	Mighty Muscles: Examining Teratoma-derived Muscle Stem Cells and the Behavioral Tendencies of These Powerful Cells
Gavin Kimmel	12	Examining the Relationship Between Socioeconomic Status and Soil Macronutrient Levels
Benjamin Kroul, Dominic Greco	12,12	Mighty MOFs: Investigating 1-butene dimerization on UiO-66 variants to improve alpha-olefin production
Isabel Medrano	12	Determining the impact of burn management on plant biodiversity and soil nutrient content in restored prairies
Levi Mellin, Nikolas Liepins	12,12	SPYGLASS: Eye-controlled camera glasses
Tanishka Mhaskar	12	Exploring electroencephalography: Feasibility of EEG in conjunction to evaluation after sports-related concussion
Maxanne Millerhaller	12	The In Vitro Digestion of Animal-based Meat versus Plant-based Meat Alternatives
Fazila Mohamed Prem Navaz	12	Mitigating Metastasis: Utilizing cancer-associated fibroblasts to stop the spread of cancer
Rashmi Raveendran	12	The Effect of Ammonium Nitrate Concentration on Escherichia coli Temperature Resistance
Holly Restad	12	Harnessing Innovation in Healthcare: Solving Disparities and Inequities in Minnesota's Healthcare Services Using Creative Solutions Proposed by Medical Providers
Benjamin Rex, Grayson Roberts	12,12	Effectively and Efficiently Growing Phytoplankton for Creating Biofuels
George Richards, William Sweeney	12,12	A.L.M.E. Assistive Lifting Machine for Elders: Engineering a solution to fall-recovery-related injuries in seniors and caregivers
Pilar Saavedra-Weis	12	The Effect of Rising Temperature on the Polystyrene Degradation Rate of the Superworm, Zophobas atratus
Simren Samba, Fiona Kinney	12,12	Fruit Fly Frenzy: Investigating the Development of Insecticide Resistance in Drosophila Melanogaster
Tori Thomas	12	Saving Lives Through Legislation: Addressing Gaps in Coverage for Breast Cancer Screening
Isabel Toghramadjian	12	Optimizing photoperiod to improve drought resistance in Arabidopsis thaliana
Lorien Zhao	12	Change, Opportunity, Vision, Innovation, and Decision-making (COVID): Business and Personal Strategies for Surviving a Global Pandemic



**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  
1974 Craig Johnson  
Harding High School, St. Paul  
1975 Dennis Scanlon  
Harding High School, St. Paul  
1976 Mark Foertsch  
Grace High School, Fridley  
1976 Linda Ann MacDonald  
Mounds View High School, Arden Hills  
1977 Steve Rabatin  
Benilde-St. Margaret, St. Louis Park  
1977 Charles Clevenger  
Westonka High School, Mound  
1978 Mitchell Voechl  
1978 Charles Clevenger  
Westonka High School, Mound  
1979 Jeffrey Rabatin  
Benilde-St. Margaret, St. Louis Park  
1979 Joseph Rabatin  
Benilde-St. Margaret, St. Louis Park  
1980 Jeffrey Rabatin  
Benilde-St. Margaret, St. Louis Park  
1980 Joseph Rabatin  
Benilde-St. Margaret, St. Louis Park  
1981 Jeffrey Rabatin  
Benilde-St. Margaret, St. Louis Park  
1981 Joseph Rabatin  
Benilde-St. Margaret, St. Louis Park  
1982 Micheal Rabatin  
Benilde-St. Margaret, St. Louis Park  
1982 Brian Hallberg  
Harding High School, St. Paul  
1983 Tinh Hoang Tran  
Westonka High School, Mound  
1983 UNKNOWN  
1984 Susan Kain  
Edina High School, Edina  
1984 Steve Herrman  
Mahtomedi High School, Mahtomedi  
1985 Brenda Zenk  
Sibley High School, West St. Paul  
1985 Steve Herrman  
Mahtomedi High School, Mahtomedi  
1986 Brenda Zenk  
Sibley High School, West St. Paul  
1986 Steve Herrman  
Mahtomedi High School, Mahtomedi

1987 Brenda Zenk  
Sibley High School, West St. Paul  
1987 Ann Bailey  
Mahtomedi High School, Mahtomedi  
1988 Sara Greenslit  
Mounds View High School, Arden Hills  
1988 Ann Marie Gentes  
Westonka High School, Mound  
1989 Ann Marie Gentes  
Westonka High School, Mound  
1989 Todd Capistrant  
Minnesota Zoo School  
1990 Cynthia Schaumburger  
Harding High School, St. Paul  
1990 Ryan Egeland  
Wayzata High School, Wayzata  
1991 Ryan Egeland  
Wayzata High School, Wayzata  
1991 Jonathon Kubik  
Sibley High School, West St. Paul  
1992 Heidi Konkler  
Wayzata High School, Wayzata  
1992 Ryan Egeland  
Wayzata High School, Wayzata  
1993 Ryan Egeland  
Wayzata High School, Wayzata  
1993 Andrew Grande  
St. Thomas Academy, Mendota Heights  
1993 Kelley Lohman  
Harding High School, St. Paul  
1993 Jens Strand  
St. Paul Academy, St. Paul  
1994 John Hassett  
Burnsville High School, Burnsville  
1994 Ana Navarro  
Minnetonka High School, Minnetonka  
1994 Victoria Miller  
St. Agnes High School, St. Paul  
1994 Julia Goetzke  
Harding High School, St. Paul  
1995 John Hassett  
Burnsville High School, Burnsville  
1995 Adam Tatarynowicz  
Burnsville High School, Burnsville  
1995 Victoria R. Miller  
St. Agnes High School, St. Paul  
1995 Marcus Rollins  
St. Paul Open School, St. Paul



# **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

1995 Samuel Rush  
Minnetonka High School, Minnetonka

1996 Laurie Louis Parker  
Roseville High School, Roseville

1996 David Loy Bowe  
Burnsville Senior High School, Burnsville

1996 Michael Scott Lohman  
Expo III High School, St. Paul

1996 Victoria Reynolds Miller  
St. Agnes High School, St. Paul

1996 Anna Navarro  
Minnetonka High School, Minnetonka

1996 Michelle Lee Monnens  
Minnetonka High School, Minnetonka

1996 James Justin Wilson  
Minnetonka High School, Minnetonka-Team

1996 Michael Gary Grotenhuis  
Minnetonka High School, Minnetonka-Team

1997 Nguyen Trung  
Burnsville Senior High School, Burnsville

1997 Samuel Rush  
Minnetonka High School, Minnetonka

1997 Anna Navarro  
Minnetonka High School, Minnetonka

1997 Victoria Reynolds Miller  
St. Agnes High School, St. Paul

1997 Michael Scott Lohman  
Expo III High School, St. Paul

1997 Travis Smith  
Burnsville Senior High School, Burnsville

1997 James Justin Wilson  
Minnetonka High School, Minnetonka-Team

1997 Justin Rainey  
Minnetonka High School, Minnetonka-Team

1998 Dean Harvey  
Burnsville Senior High School-Team

1998 Dan Harakh  
Burnsville Senior High School-Team

1998 Bryce Gillespie  
Breck School, Minneapolis

1998 Preeya Kshetry  
Breck School, Minneapolis

1998 Phally Seak  
Burnsville Senior High School

1998 Raj Pai  
Burnsville Senior High School

1998 Michael Scott Lohman  
Expo III High School, St. Paul

1998 A. Ben Suri  
Harding High School, St. Paul

1999 Michael Scott Lohman  
Expo III High School, St. Paul

1999 Alison Boutin  
Burnsville High School, Burnsville

1999 Jennica Slattery  
Minnehaha Academy, Minneapolis

1999 Chrissy Jones  
Minnetonka High School, Minnetonka-Team

1999 Elizabeth Larkin  
Breck School, Minneapolis

1999 Melissa Borken  
Minnetonka High School, Minnetonka

1999 Alli Kellogg  
Minnetonka High School, Minnetonka-Team

2000 Mark Galatowitsch  
Highland High School, St. Paul

2000 Jennica Slattery  
Minnehaha Academy, Minneapolis

2000 Chrissy Jones  
Minnetonka High School, Minnetonka

2000 Michael Chansky  
Burnsville High School, Burnsville

2000 A. Ben Suri  
Harding High School, St. Paul

2000 Emily Letourneau  
Central High School, St. Paul-Team

2000 Anna Bishop  
Como Park, St. Paul-Team

2001 Megan Bailey  
Breck School, Minneapolis

2001 Kathryn Gieselman  
Burnsville High School, Burnsville

2001 A. Ben Suri  
Harding High School, St. Paul

2001 Li Mei  
Wayzata High School, Wayzata

2001 Laura Egerdal  
Burnsville High School, Burnsville

2001 Anna Bishop  
Como High School, St. Paul-Team

2001 Emily Letourneau  
Central High School, St. Paul-Team

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  
Johnson High School, St. Paul-Team  
2002 PaCha Yang  
Johnson High School, St. Paul-Team  
2002 Stephen Morris  
Breck School, Minneapolis  
2002 Arun Saini  
Burnsville High School, Burnsville  
2002 A. Noel Suri  
Harding High School, St. Paul  
2003 Jessica Swatz  
ISD 287  
2003 Ning Zhou  
ISD 287  
2003 PaCha Yang  
Johnson High School, St. Paul  
2003 A. Noel Suri  
Harding High School, St. Paul  
2003 Brendan Doms  
Breck School, Minneapolis  
2003 Javier Cabrera-Perez  
Breck School, Minneapolis  
2004 Adam Yock  
Breck School, Minneapolis  
2004 William Mitchell  
Breck School, Minneapolis  
2004 Noel Suri  
Harding High School, St. Paul  
2004 Adam Hahn  
Robbinsdale Armstrong High School, Robbinsdale  
2004 Akash Kumar  
Wayzata High School, Wayzata  
2004 Laura Heeter  
Breck School, Minneapolis - Team  
2004 Kristina Naranjo-Rivera  
Breck School, Minneapolis - Team  
2005 Kyrstin Underbakke  
Maranatha Christian Academy, Brooklyn Park  
2005 Janet Li  
Wayzata High School, Plymouth  
2005 Heidi Chun  
St. Paul Academy, St. Paul  
2005 Zachary Howland  
Burnsville High School, Burnsville  
2005 Eric Halverson  
Como Park Senior High, St. Paul  
2005 Kahli Her  
Johnson High School, St. Paul

2006 Jenna Johnson  
Burnsville High School, Burnsville  
2006 Andrea Jensen  
Burnsville High School, Burnsville  
2006 Daniel Zeng  
St. Paul Academy & Summit School  
2006 Matthew Weiss  
Breck School, Minneapolis  
2006 Katherine Schaeffer  
Breck School, Minneapolis  
2007 Ummul Kathawalla  
Blake High School, Minneapolis  
2007 Daniel Zeng  
St. Paul Academy & Summit School  
2007 Kyra Underbakke  
Maranatha Christian Academy, Brooklyn Park  
2007 Brandon Lew  
Breck School, Minneapolis  
2007 John Earl  
Harding High School, St. Paul - Team  
2007 Lucas Gabrielson  
Harding High School, St. Paul - Team  
2007 Jacob Stramer  
Harding High School, St. Paul - Team  
2008 Prithwis Mukhopadhyay  
Lake Junior High, Woodbury  
2008 Michael Cherkassky  
Edina High School, Edina  
2008 Madeline Taft-Ferguson  
Breck School, Minneapolis  
2008 Kyra Underbakke  
Maranatha Christian Academy, Brooklyn Park  
2008 Aly Xiong  
Johnson High School, St. Paul  
2008 Iola Edwards  
Johnson High School, St. Paul  
2008 Stephen Trusheim  
Breck School, Minneapolis - Team  
2008 Daniel Mohktari  
Breck School, Minneapolis - Team  
2009 Prithwis Mukhopadhyay  
Woodbury Sr High School, Woodbury  
2009 Tiffanie Stone  
AFSA High School, Vadnais Heights  
2009 Michael Fuad  
Breck School, Minneapolis  
2009 Stephen Trusheim  
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  
Como Park Senior High, St. Paul  
2009 Martin Camacho  
Central Senior High School, St. Paul  
2009 Sahar Hakim-Hashemi  
Breck School, Minneapolis - Team  
2009 Sierra Danforth  
Breck School, Minneapolis - Team  
2009 Nicholas NaSal  
Burnsville High School, Burnsville - Team  
2009 Joseph Lane  
Burnsville High School, Burnsville - Team  
2010 Prithwis Mukhopadhyay  
Woodbury Sr High School, Woodbury  
2010 Tiffanie Stone  
AFSA High School, Vadnais Heights  
2010 Martin Camacho  
Central Senior High School, St. Paul  
2010 Houa Xiong  
Johnson High School, St. Paul  
2010 Gavin Ovsak  
Eden Prairie Senior High School, Eden Prairie  
2010 Charles Morris  
Breck School, Minneapolis  
2010 Ava Mokhtari  
Breck School, Minneapolis - Team  
2010 Addison Weiler  
Breck School, Minneapolis - Team  
2010 Ashley Santilli  
Burnsville High School, Burnsville - Team  
2010 Emily Bostrom  
Burnsville High School, Burnsville - Team  
2011 Alysia Flores  
Johnson High School, St. Paul  
2011 Andrew Ylitalo  
Stillwater Area High School, Stillwater  
2011 Martin Anderson  
Burnsville High School, Burnsville  
2011 Redeat Abegaz  
Burnsville High School, Burnsville  
2011 Gavin Ovsak  
Eden Prairie Senior High School, Eden Prairie  
2011 (Ernst) Tom Erdmann  
Breck School, Minneapolis  
2012 Andrew Ylitalo  
Stillwater Area High School, Stillwater  
2012 Keshav Mangalick  
Mounds View High School

2012 Margaret Green  
Burnsville High School, Burnsville - Team  
2012 Laura Landgraf  
Burnsville High School, Burnsville - Team  
2012 Caleb Kumar  
Breck School, Minneapolis  
2012 Taylor McCanna  
Breck School, Minneapolis  
2012 Alejandro Fenn  
Breck School, Minneapolis - Team  
2012 William Engel  
Breck School, Minneapolis - Team  
2012 Thomas Vennemann  
Johnson High School, St. Paul  
2013 Andrew Ylitalo  
Stillwater Area High School, Stillwater  
2013 Aditi Das  
Roseville Area High School, Roseville  
2013 Connor Duffy  
Mounds View High School, Arden Hills  
2013 Graham Gabrielson  
Harding High School, St. Paul  
2013 Mai Moua  
Harding High School, St. Paul  
2013 Carolyn Jons  
Eden Prairie Senior High School - Eden Prairie  
2013 Jessica Ryvlin  
Breck School, Minneapolis  
2013 Apurv Hirsh Shekhar  
Blake High School - Northrop campus  
2014 Carolyn Jons  
Eden Prairie Senior High School - Eden Prairie  
2014 Jason Sylvestre  
Benilde-St. Margaret's, St. Louis Park  
2014 Jacob W Levy  
Breck School, Minneapolis - Team  
2014 Sofie M Kim  
Breck School, Minneapolis - Team  
2014 Aditi Das  
Roseville Area Senior High, Roseville  
2014 Heather J Stone  
Mounds View High School, Arden Hills  
2014 Amrita Mohanty  
Woodbury Sr High School, Woodbury  
2014 Nicolina Mao  
Harding High School, St. Paul  
2014 Rosemary O Olatunbosun  
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 Wentzlaff  
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 Wentzlaff  
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

2019 Manashree Padiyath  
Woodbury Sr High School, Woodbury

2019 Haley Jostes  
Stillwater Area High School, Stillwater

2019 Osman Warfa  
Burnsville High School, Burnsville

2019 Melissa Nie  
St.Paul Academy and Summit School, St. Paul

2019 Ethan Dincer  
St.Paul Academy and Summit School, St. Paul

2019 Parthiv Krishna  
Minnetonka Senior High School, Minnetonka

2019 Kerui Yang  
Edina Senior High School, Edina

2019 Rachel Gunderson  
Breck School, Minneapolis - Team

2019 Boatemaa Agyeman-Mensah  
Breck School, Minneapolis - Team

2020 Milan Jostes  
Stillwater Area High School, Stillwater

2020 Bingsheng "Andrew" Guo  
Mounds View High School, Arden Hills

2020 Eric Feng  
Mounds View High School, Arden Hills

2020 Anindita Rajamani  
Highland Park Senior High, St. Paul

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

2020 Mani Chadaga  
Central Senior High School, St. Paul - Team  
2020 Akshay Nambudiripad  
Central Senior High School, St. Paul - Team  
2020 Quentin "Xander" Hughes  
Minnetonka Senior High School, Minnetonka  
2020 William Sepesi  
Minnetonka Senior High School, Minnetonka  
2020 Abigail Roh  
Breck School, Minneapolis - Team  
2020 Samantha Detor  
Breck School, Minneapolis - Team

***REGENERON***

**ISEF**

A PROGRAM OF 

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 **SOCIETY FOR SCIENCE & THE PUBLIC**

## **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 Film & Material Science, Manufacturing Technology and Engineering Award (Film Group)*

*3M Film & Material Science, Manufacturing Technology and Engineering Award (Materials Group)*

*3M Display Materials Systems Division Award*

*3M Personal Safety Division Award*

*3M Young Inventor Recognition 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*

*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*

*Lemelson Early Inventor Prize*

*Middle School Medals*

*Minnesota American Society of Microbiology*

*Minnesota Academy of Science Middle School Research Paper Award*

*Minnesota Chapter of American Fisheries 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*

*Science Potential Award*

*Society for In Vitro Biology*

*Sponsor: 3Mgives*

*Sponsor: DuPont Water Solutions*

*Sponsor: Ecolab*

*Sponsor: Mintáhoe Hospitality Services*

*Sponsor: Northrop Grumman*

*Sponsor: Office Depot*

*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 Metric Association*

*US Navy/Marine Office of Naval Research*

*USAID – US Agency for International Development*

*USDA Research Service*

*Yale Science and Engineering Association*



Virtual project presentation hosted by [tcrsf.zfairs.com](http://tcrsf.zfairs.com)

Research paper program hosted on our website at [www.tcrsf.net](http://www.tcrsf.net)

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

## THANK YOU TO OUR PLATINUM SPONSORS:



### 2020-2021 Twin Cities Regional Science Fair Committee

<b>Director:</b>	Timara Underbakke	<b>Committee At Large:</b>	<b>Scientific Review:</b>
<b>SRC Chair:</b>	Karin Ostrand	Nancy Day	Karin Ostrand, Chair
<b>Public Relations:</b>	Michael Lohman, Sr.	Jess Day	Dr. Denise Beusen
<b>Development Director</b>	Karilyn Jons	Dr. Denise Beusen	Dr. Kyrstin Ball
<b>Funding</b>	Michael Lohman, Sr, Karilyn Jons, & Timara Underbakke	Dr. Gary Kwong	Dr. Douglas Erbeck
<b>Treasurer:</b>	Dr. Gary Kwong	Gary Ostrand	Timara Underbakke
<b>Special Awards Chair:</b>	Nancy Day	Dr. Caroline Ylitalo	Dr. Jennifer Hugstad-Vaa
<b>Judging Coordinator:</b>	David & Timara Underbakke	Dr. Douglas Erbeck	Dr. Caroline Ylitalo
<b>Website &amp; Databases:</b>	David & Timara Underbakke	Haley Jostes	Matthew Weingartz
<b>Data Processing:</b>	David Underbakke	Karilyn Jons	Dr. Steven Jons
<b>Display &amp; Safety Chair:</b>	Devi Kyanam & Chandra Papisetty	Dr. Steven Jons	Karilyn Jons
<b>IT Department:</b>	Jess Day & David Underbakke	Dr. Jennifer Hugstad-Vaa	David Underbakke
<b>Volunteer Coordinator:</b>	Denise Jostes	Dr. Kyrstin Ball	Denise Jostes
<b>Educational Outreach:</b>	Dr. Steven Jons	Kyra Zimmerman	Tom Sinn
<b>Social Media Coordinator:</b>	position open	Phill Goldmann	<b>Board of Directors:</b>
<b>Science Clubs Outreach:</b>	Mike Lohman & Gary Kwong	Lynne Tauer	Timara Underbakke
		Tom Sinn	David Underbakke
		Denise Jostes	Karin Ostrand
		Devi Kyanam	Dr. Gary Kwong
		Chandra Papisetty	Michael Lohman, Sr.
		Christine Kroll	Nancy Day
			Dr. Steven Jons
			Karilyn Jons

We have additional volunteer openings for those interested. We are currently looking for a Social Media Coordinator and a Logistics person. Do you have other ideas or talent to contribute?

If you have time to help, we are 100% Volunteer educational 501c3 non-profit. All donations are tax deductible & are invested in our youth!