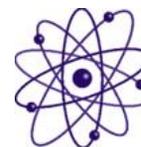
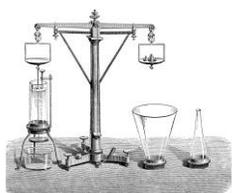
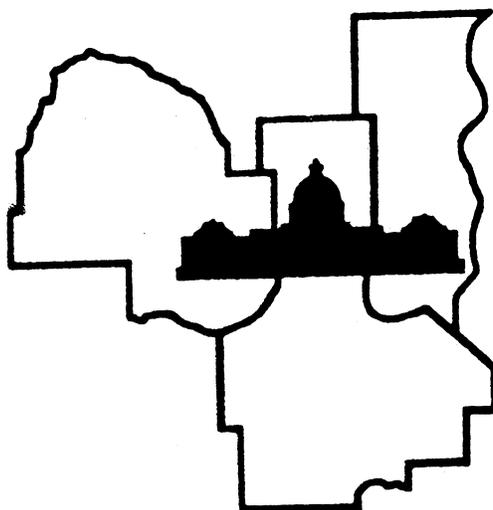


WELCOME TO THE

78th Annual Twin Cities Regional Science Fair
24th Annual St. Paul Science Fair
22nd Annual Western Suburbs Science Fair

Twin Cities Regional Science Fairs



2016

February 26 – 27



**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 78th ANNUAL TWIN CITIES REGIONAL SCIENCE FAIR,
THE 24th ANNUAL ST. PAUL REGIONAL SCIENCE FAIR,
THE 22nd ANNUAL WESTERN SUBURBS REGIONAL SCIENCE FAIR.**

Our Host this year is the University of Minnesota.

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

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

Students must have a complete correct set of project forms at their exhibit during competition. Save your project forms after the fair. They may be needed for next year's project, too. TCRSF will send project forms to state for those projects advancing to state, but you will still need a copy at your project during state. (Alternates, you may be promoted to state presenter. Save your forms & display!)

1. The number by your name is your project number. It shows you where to set up your project. When you find your place, set up your project. If you ordered electricity, find your place in "Electricity Row."
2. 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. Please drop off the Display & Safety page in the **IN BOX at Display & Safety** (next to SRC & Judges areas). 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 food, or very carefully in the bleachers. Keep the Field House clean!)
4. **Wear your TCRSF name badge in a clearly visible place at all times, both Friday and Saturday.**

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 have a signed parental consent form already on file with TCRSF. 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.**

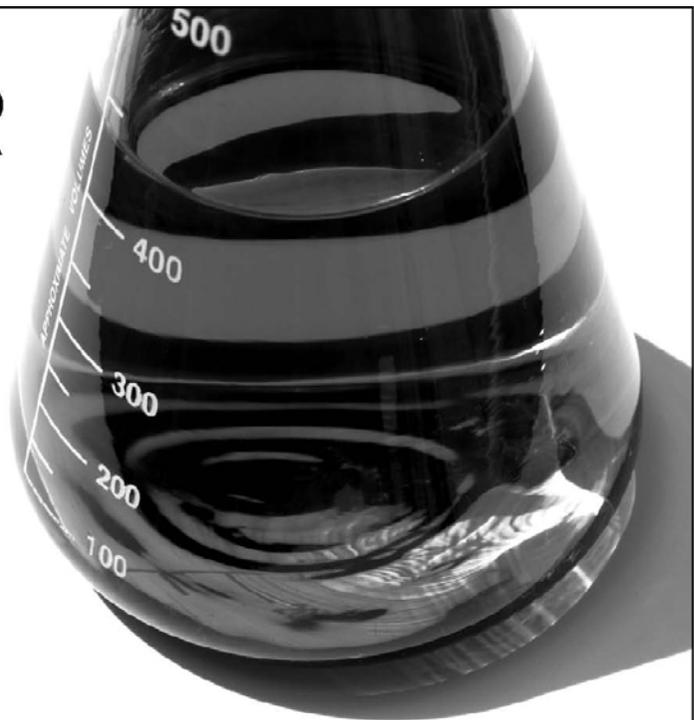


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Orbital ATK

Orbital ATK is proud to sponsor this hands-on event that helps provide an opportunity for Twin Cities' youth to better understand the sciences and technology. By inspiring curiosity and interest today, we develop our future scientists, engineers and astronauts. Congratulations and good luck to all participants. Headquartered in Dulles, Virginia, **Orbital ATK** is a leading provider of advanced weapon and space systems with \$4.4 billion in annual sales, approximately 12,000 employees, and operations in 17 states. The company is the world's leading supplier of solid rocket motors and the nation's largest manufacturer of ammunition.

SCHEDULE

Friday, February 26, 2016:

<u>Time</u>	<u>Activity</u>	<u>Location</u>
1:00 - 3:30 p.m.	Registration	Field House – No heeled Shoes
1:00 - 3:30 p.m.	Set up Projects / Clear Display&Safety Grades 6-8 must be set up by 3:30 Grades 9-12 must be set up by 3:30	Field House – No heeled Shoes
4:00-9:30 p.m.	Judging (grades 6,7,&8 done earlier)	Field House – No heeled Shoes

Saturday, February 27, 2016

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

TEACHERS: Please arrange for someone to pick up papers, folders, & exhibits of any students not able to attend the award ceremony. 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	Field House - University of Minnesota
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Winners of Special Sponsor Awards must be present at the Award Ceremony or an alternate will become the winner. ONLY projects with their signed Parental Media Release (generated during registration) turned in before judging starts will be eligible for awards which require a photograph. ALL team members must have signed media release forms on file for a team project to be eligible. Sponsor Award winners must have their photo taken by the official Fair Photographer with the award

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.	South end of bleachers Field House
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Everyone:	PLEASE HELP OUR VOLUNTEERS TEAR DOWN TABLES & CHAIRS	Please help throw trash & leave the Field House clean.
1:30 p.m.	ALL PROJECTS MUST BE REMOVED	

Minnesota State Science & Engineering Fair (grades 6-12 projects, grades 6-8 papers)
April 3-5, 2016, **Doubletree by Hilton** (formerly Sheraton Bloomington Hotel)

JSHS: Junior Science & Humanities Symposium (grades 9-12 research papers)
April 2-3, 2016, **Doubletree by Hilton** (formerly Sheraton Bloomington Hotel)

**I-SWEEEP: International Sustainable World EnergyEngineering Environment Project
Olympiad** (grades 9-12 projects), Houston, Texas, April 24–May 1, 2016

ISEF: Intel International Science & Engineering Fair (grades 9-12 projects)
Phoenix, Arizona, May 8–13, 2016 (Twin Cities flies out May 7th)



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**Congratulations, Twin
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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.
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 University of Minnesota do not accept responsibility for equipment/instruments brought to the Fair. DO NOT LEAVE SUCH ITEMS OVERNIGHT OR UNATTENDED.

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

ALL TIMES ARE APPROXIMATE. PLEASE LISTEN FOR ANNOUNCEMENTS!

PROJECT LISTING

Student projects are listed by number, grade and affiliation and broken down by category within each grade level. Following this listing is an alphabetical list of all entries by grade. To find a project, or to find out where you are to set up your project, look for the signs. 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. We will also post a list of competitors & alternates advancing with their research papers, but pick up your envelopes! Grades 6-8 winners advance to state science fair with their research paper. Students who advance in both research paper & projects will be able to compete in both events at state. Grades 9-12 research paper winners advance to Junior Science & Humanities Symposium (JSHS). Additional awards for papers will be handed out at the Award Ceremony on Saturday morning at 10:00 a.m. in the Field House.

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

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

Grade 6

Animal Sciences (ANIM)

- 6001S **Lucia Abrego, Kishori Patel**
Team - How Do Different Sounds Affect Dog Reactions?
- 6002S **Gabriel Simon**
Do Mice Have a Food Preference?
- 6003S **Anna L Zindren**
Caffeine and Focus

Behavioral and Social Sciences (BEHA)

- 6004W **Merrick G Bearson**
What Age Do Childproof Containers Stop Being Effective?
- 6005W **Sydney S Drees**
How Fear Changes With Age
- 6006T **Patrick C Gainor**
Headphones vs. Parent: How much volume is needed to get a kid's attention
Project At Electricity Wall
- 6007W **Kate M Happe**
Liar, Liar, Pants On Fire!
- 6008S **Isabella Ly**
Are You Left Brain or Right Brain?

Biochemistry (BCHM)

- 6009S **Kiyomi Callahan**
How does acidity affect the rate of reaction in yeast enzymes?
- 6010S **Will Hamilton**
Swimming with Eggs: What type of liquid stains your teeth the most?

Biomedical and Health Sciences (BMED)

- 6011T **Sophia E Hendren**
Does Music Affect your Heart rate?
- 6012W **Max J Herro**
Are fingerprints inherited
- 6013S **Siri Hokanson**
Which sunscreen is the most effective for the price?
- 6014W **Colin M Jennings**
Does a Cell Phone Conversation Have an Affect on Reaction Time
- 6015T **Logan R Olson**
Keeping Warm
- 6016S **Madelyne Yang**
Does the type of game you play affect your pulse rate?

Chemistry (CHEM)

- 6017S **Usrah Abawari**
How Does Microwave Radiation Affect Different Organisms?
- 6018S **Coral Crutchfield**
Ice Cream and Ice Crystals
- 6019W **Nicole E Doering**
The Science of Making Perfume
- 6020W **Michael D Gross**
Iron Absorption
- 6021T **Anika E Jackson**
pH Study : Edible Explosions
Project At Electricity Wall
- 6022W **John K Johannson Jr.**
Electrolyte Challenge
- 6023W **Tatiana M Trembath**
Turning Yogurt Into Ravioli
- 6024S **Jeneigha Voss**
Which Brand of Laundry Detergent is Most Efficient?
- 6025W **Cullen P White**
The Leidenfrost Effect

Earth and Environmental Sciences (EAEV)

- 6026W **Maeve G Katics, Lulu M Skroch**
Team - The Effects of Two Different Fabric Softeners on Seed Germination
- 6027S **Kevin A Kereakos-Fairbanks**
Lichen and Air Health
- 6028W **Chase Konezny**
Which Wood Burns Longer Hardwood Or Softwood
- 6029W **Kate Norman**
Organic vs. Synthetic A Study of Fertilizers in Hydroponics
- 6030S **Guillemette Schroeffer**
Which Liquid Creates the Most Runoff
- 6031S **Iris Steiner-Manning**
Which Gas Station Has The Least Healthy Soil?

Energy: Physical (EGPH)

- 6032T **Rikhil L Seshadri**
Suitable light sources for in-home photoelectric generation
Project At Electricity Wall

Engineering Mechanics (ENMC)

- 6033W **Penelope A Casper**
Golf Course Bunker Sand Comparison
- 6034S **Malcolm Fares**
Power to the Plating
- 6035T **Shayaan H Gandhi**
Smoke under Water
Project At Electricity Wall
- 6036S **Xander Herrmann**
Do wheels or treads make the best Martian rover?
- 6037T **Alexander H Hulteen**
Breaking Bridges
- 6038S **Pa Kou Moua**
Which Building Design Will Best Withstand an Earthquake?
- 6039T **Orion Tyrrell**
Fin cross sections - Square Round or Airfoil
- 6040W **Cooper J Voita**
Wood Speaker

Materials Science (MATS)

- 6041S **Charlie Ostergren**
Does Ski Wax Matter?
- 6042T **Vincent C Ramirez**
Conductive Paste
Project At Electricity Wall
- 6043S **Sophie Shuster**
Do the shoes you wear affect rock climbing abilities?

Mathematics (MATH)

- 6044W **Dani I Hayes**
Creating a Video Game for the Blind

Microbiology (MCRO)

- 6045W **Shungu Zimbwa**
Soap vs. Sanitizer

Physics and Astronomy (PHYS)

- 6046W **Daniela Beatriz Amadeo-Muñiz**
Music from Outer Space
- 6047W **Joseph P Kolar**
Self-Driving Cars Aren't a Drag
- 6048W **Ethan Kruse**
Does Spin Affect a Basketball Shot?
- 6049T **William Merrigan**
Heavy Load

- 6050T **Max Nealy**
What's the Sweet Spot?
- 6051S **Uyiosa Omorodion**
How does the type of shoe affect accuracy?
- 6052W **Alex Remick**
Comparing the Effectiveness of Infrared and Radio Frequencies
- 6053S **Max Rouillard-Horne**
The Power of Attraction!
- 6054S **Tori Vennemann**
Does the Flex of a Stick Affect Accuracy?
- 6055W **Andrew Wolfson**
Ready, Aim ... Fire

Plant Sciences (PLNT)

- 6056S **Vivian Bui, Eden Hunt, Nora Jahn Team** - Will They Grow?
- 6057S **Erik Hanhan**
Does Sound Affect the Growth of a Plant?

Robotics and Intelligent Machines (ROBO)

- 6058W **Brennan B Fitzgerald**
Weigh Station-All trucks stop

Grade 7

Animal Sciences (ANIM)

- 7001S **Olivia Grace Barnes**
Energy of a Dog
- 7002W **Norah Madson, Simren Samba, Siobhan Palmer Team** - Abiotic Factors That Impact Mammal Remote Game Camera Captures
- 7003S **Madeleine S Maher**
Guinea Pig Maze

Behavioral and Social Sciences (BEHA)

- 7004S **Natalie Braga**
The Visual Illusion Test
- 7005S **Emily Duncan, Celia Morris Team** - Perception of Illusion
- 7006S **Ruby J Kosiak**
Concentration at its Best
- 7007T **Joey T Manor**
What Factors Affect Reaction Time
- 7008T **Maria I Marin Torres**
Does Color Affect Your Memory?
- 7009T **Rachel D Meniboon**
Dominant Vs. Nondominant

- 7010T **Molly M Moore, Katie R Marshall**
Team - Audio vs Visual Reading
- 7011S **Amelia J Moseman**
Testing Our Testing
- 7012S **Yohana J Otto, Emma K Beveridge, Lucy Canick**
Team - How Does Background Stimuli Affect the Brain's Ability to Retain Information?
- 7013T **Rynne M. Skof**
Does a Certain Color Affect Male and Female Preference of an Item?
- 7014S **Nora A Thomey**
The Feeling in Your Hands

Biochemistry (BCHM)

- 7015S **Dixon Hedges**
What is the actual amount of saturated fat vs. advertised amount
- 7016T **Abbey C O'Brien , Shannon E Heymans**
Team - Hands on Bacteria
- Biomedical and Health Sciences (BMED)*
- 7017T **Ingrid M Blanco-Abundez**
Does the Amount of Sport Drinks Affect How Fast Someone Runs?
- 7018W **Esme E Eubanks**
Does sweetness sensitivity effect sugar consumption in teenagers and adults.
- 7019T **Bruk F. Kassie**
Mental Distractions Reduce Pain Sensation
- 7020T **Savannah L LeMieux**
To HEAT or NOT to Heat
- 7021T **Elizabeth Pineda**
Does a Person's Skin Color Affect how Red their Cheeks Get?
- 7022S **Anindita Rajamani**
Fast Food Assistant
- 7023S **Daniel R Rauenhurst**
Which Toothpaste is the most Effective
- 7024T **Maura Salchow R Salchow**
Increase Life Span
- 7025T **Robert Jon Wessel**
Eye Color To Vision

Cellular and Molecular Biology (CELL)

- 7026S **Morgan Nichols**
How does the temperature of alcohol affect the amount of DNA you are able to precipitate from a given sample?

Chemistry (CHEM)

- 7027W **Mackenzie Coval, Nell Ganley**
Team - A Comparison of Urban, Suburban, and Rural Locations on Snow Acidity
- 7028S **Cleo Foley**
Evaporation
- 7029S **Asma M Guantai**
The Race For Vitamins
- 7030W **Katarina S Johanns**
How do you measure the percent of sugar in soda?
- 7031S **Bridget E Lee**
Removability of Permanent Marker
- 7032T **Lauren E Loeffler**
Does the type of salt affect how much water is melted in an hour?
- 7033S **Emmanuel E Murphy, Jabbari N Scotti**
Team - Which Drink Can Stain Your Teeth?
- 7034W **Eli Vincent Padilla**
Does Water Evaporate Faster Than Other Liquids?
- 7035S **Otto Schmidt**
Banana Ripening at Different Temperatures
- 7036S **Anna Schmidt, Lily Osmond**
Team - Apple Browning: A Study in Enzymatic Browning

- 7037S **Madeline Rose Thompson**
Which brand of dish washing detergent cleans Crisco off of wine glasses?
- 7038T **Katherine G Warmka**
Can Cooking Compromise the C?
- 7039S **Melissa Xiong, Hleeja Xiong**
Team - Salt, Sugar And Ice

Earth and Environmental Sciences (EAEV)

- 7040T **Josh M Biermaier**
I soiled my plants
- 7041S **Maeli Bryn Engelmann**
Soil Erosion
- 7042W **Ilse K Fredrickson**
Soil Erosion What Can Stop It Rock Grass or Nothing

- 7043S **Paola Guerrero Abrego**
Evaporation
- 7044T **Erin Jones, Abigail Kleist**
Team - Water Works 2.0: A Comparison of Water Chemistry at Different Times of Year
- 7045W **Grant A Park**
Global Ozone and Black Carbon: The Seemingly Unstoppable Atmospheric Pollutants
- 7046S **Audrey A Percich**
The Effect of pH on Capillary Action
- 7047S **Janey C Post**
Minnesota: Land Of 10,000 Acidic Lakes
- 7048T **Liliana M Rojas**
Evaporation Rate of Liquids
- 7049S **Iren j Sanchez, Amaya D Withers**
Team - Where is the best place to put a bird feeder on our school grounds?
- Energy: Chemical (EGCH)*
- 7050W **Grant Seyller**
Putting the Green into Green Energy
- 7051W **Braedon John Ziemer**
Super Charged
- Energy: Physical (EGPH)*
- 7052T **Brandon Doan**
The Power of Colors
Project At Electricity Wall
- 7053S **Ronan G Heal**
Renewable Energy
- 7054S **Derek Johnson**
Geothermal Energy Efficiency
- 7055S **Jevon A Jones, Jeremy J Rivera**
Team - Battery Powered Hotdog Cooker
- 7056T **Katie Pattee**
The Science of Wax: Which Type of Wax Makes the Longest Lasting Candle?
- 7057T **Joshua P Waulters**
The Optimal Angle of Incidence
Project At Electricity Wall
- Engineering Mechanics (ENMC)*
- 7058W **Jack S Alexander**
How Does Cold Affect Weight-Bearing Abilities in Steel?
- 7059W **Alexander Etzell**
The Effect of Dihedral on Model Airplane Flight Time
- 7060W **Carolina C Scott**
Get to the Pointe!
- Environmental Engineering (ENEV)*
- 7061S **Phelameena Lee**
How much faster can food cook from a solar oven?
- 7062W **Ani Tonoyan**
The Effect of Seasons on the Bacteria levels in Minnesota Ponds and Streams
- Materials Science (MATS)*
- 7063T **Julian Byrne**
Quantitative Analysis of Heel Strike on Ice
- 7064S **Anna M. Gaudio**
Which type of material makes the strongest paper?
- 7065W **Gabriel J Heinen**
QUAD-MOD
- 7066S **Everett J Ries**
Arrow Material and Tip Shape vs. Speed and Penetration
- 7087T **Emma F. Riley**
Does the Amount of Fat in Cheese Affect Its Stretchiness?
- 7067S **Audrey C Westerberg**
Fastest Flames
- Mathematics (MATH)*
- 7068T **Hussein H Rmaile**
A Model for Choosing Stocks that Outperform the Dow Jones Industrial Average
- Microbiology (MCRO)*
- 7088T **Emma Powers**
Smartboard Bacteria
- 7069W **Briana M Zuniga-Mejia**
Conventional or Organic Produce?
- Physics and Astronomy (PHYS)*
- 7070S **Aishat Daud**
Bouncy Ball
- 7071T **Liam G Linares**
Foot V.S Shoe
- 7072T **Connor L Niznick**
The Biomechanics of Pitching
- 7073S **Claire M Olson**
Testing Slip Resistance on Ice
- 7074S **Dan D Rueter**
Is it Newtonian or Non-Newtonian?

Plant Sciences (PLNT)

7075W **Julia A Brouwer**
Leafy Green Astronauts: How Space Radiation Affects Seed Germination and Plant Growth

7076T **William W Dahlke**
How Vitamins A and D affect plant growth

7086T **Grace Hoepfner**
What Keeps A Rose Alive?

7077T **Jezel Guadalupe Jara Molina**
Does Coffee Help Plants Grow ?

7078T **Wesley Juarbe**
Organic vs Non-organic

7079T **Rachel L Kawiecki**
Sunlight and Grass

7080S **Tana Grace Ososki**
How does salt/salinity affect a plant?

7081T **Adaline Kay Lorraine Scheerz**
The Affect of Liquids to a Roses Bloom

7082S **Malee Yang**
How Climate Change affects Bean Growth

7083T **Kyleigh N. Zent**
Do Different Liquids Affect the Absorption Rate and Color of a Carnation?

Robotics and Intelligent Machines (ROBO)

7084T **Milan E Jostes**
Moving Soft Grip Robot

Systems Software (SOFT)

7085S **John Walbran**
Python vs. C

Grade 8

Animal Sciences (ANIM)

8001S **Will Altman**
Caffeine

8002S **Lily S Gordon**
Do Small Dogs Still Exhibit Wolf-like Behaviors?

8003T **Sydney R Stone**
Splash

Behavioral and Social Sciences (BEHA)

8004S **Muhammad Abdur-Raheem**
Keepy Up Challenge

8005S **Olivia D Ahrens**
Is your dominant hand more affected by cold than your non-dominant hand?

8006W **Porter A Ball**
What Liquid Cleans Coins the Best

8007S **Lucille Elizabeth Black**
How do different personality types affect emotion coping

8008S **Alexis Lee Danielson, Morgan Brandt Team** - Is taste the key to speed

8009S **Stephanie R Gomez, Trinity Vang Team** - The Illusional Brain

8010S **Anders Hanhan, Nick Torstenson Team** - Can you taste candy without sight?

8011S **Peter J Hommes**
Does Smell Wear Out?

8012S **Amad Jalloh**
Speedy Shoes

8013S **Molly K Laird**
Does Driving While Talking on the Phone Affect Reaction Time of the Driver?

8014S **Kabao Lee**
Project Multitask

8015T **Cindy Z Lor**
Peppermint

8016S **Natalie Norquist, Anna Grundhoefer Team** - Consciousness of Color

8017T **Caitlin O'Gary**
Memory Makers...Ears or Eyes

8018S **Oliver Paleen, Zachary Glaser Team** - Verbal Cue Ball

8019S **Dylan J Sand**
Do Students Work More Accurately in Gender Specific or Coed Groups

8020S **Sophia Tambornino**
Are There Gender Stereotypes With Color Still Present in Today's Society?

8021S **Connor Yang**
Weather Project

Biochemistry (BCHM)

8022S **Skye Y Her**
A Buggy, Caloric Delicacy

8023S **Aaliyah M McQueen**
How Where You Store Your Leftovers Effect It?

8024S **Abdinajib Mohamed, Alexander Xiong Team** - Garlic Mustard Being Allopathic

- 8025W **Sienna Lynn Peacock**
The antibacterial properties of essential oils.
- 8026S **De'shanti Phillips, Kyra Thor, Lalisha Biswa Team** - How Does Food Coloring Affect the Taste In Food?
- 8027S **Mason Robert Salverda**
The Chicken Bone Experiment
- 8028S **Ong Vang**
Cut Flower Longevity
- Biomedical and Health Sciences (BMED)*
- 8029S **Sami N-J Banat**
Which Gender Can Grow Bigger Muscles- Males or Females?
- 8030T **Alexandra A Belde**
Hello Acid Goodbye Teeth
- 8031T **Samantha Burrows**
What is the Best way to Preserve a Cut Apple
- 8032W **Jennie Ehlert, Elizabeth Berman Team** - Russel's Wristle: Predicting Meltdowns in an FASD Child
- 8033S **Ethan L Mills**
How does field type affect bounce
- 8034W **Mary R O'Grady**
Safety and Tolerance Testing for the Commercialization of Sambusa
- 8035S **John N Schray**
Cellular Bacteria
- 8036S **Amelia A Schucker**
How does the amount of time in bed affect reaction time?
- Cellular and Molecular Biology (CELL)*
- 8037S **Carter H Brown**
How Do Different Conditions Affect the Oxidation of an Apple Slice?
- 8038S **Molly K Swanson**
Which Method Works Best at Killing Bacteria
- Chemistry (CHEM)*
- 8039S **Sunniva G Berg**
In A Sticky Situation
- 8040S **Alexandra M Connors**
Carbon Dioxide vs. Temperature
- 8041S **Claire Dwyer**
How Different Fuels Affect Energy Release in Combustion
- 8042S **Nebeyou Wolde Elias**
Refreshmints
- 8043T **Abigail R Enderlein**
The Cool Blue Light of Luminol
- 8044T **Hannah E Farmer**
Investigating Exotic Protein Sources
- 8045T **Zach C Giese**
Dissolve It!
- 8046W **Madison W Guelich**
Effect of shaking time on ice cream density
- 8047T **Luke E Illgen**
Pop n Fizz
- 8048W **Lauren M Jasper**
Dry Ice
- 8049S **Kaylee Kipfmuller**
Do name brand pain relievers dissolve faster than generic pain relievers?
- 8050W **Ann E Knapp**
Permanent?
- 8051T **Kenny Larmie**
Powerful Peppers
- 8052S **John Ngoc Nguyen, SuVaknie H Yang Team** - Now You See It, Now You Don't, Exploring How Fast Acids, Bases, and Neutrals Evaporate
- 8053T **Catherine E Nolde**
Which Bomb Has the Most BANG?
- 8054T **Paige Paulos**
Which Laundry Detergent Works Best
- 8055S **Matt J Ray**
What is the Most Reliable Rust Resistant Coating?
- 8056S **Amanye Reynolds**
Egshell Transformation
- 8057S **Elsa Snowbeck**
A Study in Soundproofing
- 8058T **Max J Vogel**
Got Gas v2: A Follow-up Investigation into the Efficiency of Ethanol
- 8059S **Mariah Waslie**
Rocketology
- 8060W **Elizabeth G Weber**
The Rotting Apples Experiment
- 8061S **Sawyer Woods, Lucy Lipscomb Team** - The Enamel Battle

8062S **Txuj Ci I Yang**
Caffeinated Drinks VS Teeth

Computational Biology and Bioinformatics (CBIO)

8063S **Thomas R Cunningham**
Does CPU Speed Weaken Over Time?

Earth and Environmental Sciences (EAEV)

8064S **Jillian M Brenner**
pH of Rainwater

8065T **Corrine N Brown**
An In-Depth Study About Waves

8066S **Nathalia Maria Cortes Vazquez, Cassidy Duachee Yang**
Team - Purify River Water

8067T **Remington D Keopple**
Fizzy Gas

8068T **Brett J Oberle**
How many ounces can an egg hold before cracking?

8069T **Manashree S Padiyath**
Mining My Business: Biochar Remediation of Acid Mine Drainage Impacted Soil

8070W **Jack Peterson, Sohil Patel**
Team - The Pure Solution: A Portable Water Filter For Third World Countries

8071S **Noah Putz-Yang**
How Surface Area Affects Melting Rate of Ice

8072T **Josephine L Ramirez**
Solar Heat Storage for Use in Greenhouses

8073S **Seamus O Regan**
Does Warmer Water Produce Stronger Hurricanes

8074T **Michael Tschida, Christopher M Bergthold**
Team - Rock Erosion

8075T **Luke D Zillig**
Riverbeds and Erosion

Energy: Chemical (EGCH)

8076S **Maasia S Apet**
CO2 Is An Predictor Of Ethanol Production Potential

8077S **Heaven Aschalew**
The Power Inside Energy Drinks

8078S **Christina T Treacy**
Which Type of Food Gives You the Most Energy?

Energy: Physical (EGPH)

8079S **Charles R Fraser III**
The Silent Treatment

8080T **Jessica L Jennings**
Internal Temperatures of Colored Birdhouses

8081T **Drew K Lundin**
Mountain Bike PSI

8082S **Ruby Misok**
Exposing the Effects of Visible Light

8083T **Samuel Ogata**
Cup Type vs. Water Temperature

8084T **Sophia M Schroepfer**
Inductive Charging

8085S **Nick J Tucci**
Does Temperature Affect the Strength of a Beam of Light

8086T **Calvin L Wilde**
Bounce

8087W **Kerui Yang**
How Icing on Wind Turbine Blades Affects Power Generation: Physical Equation and Quantitative Analysis
Project At Electricity Wall

Engineering Mechanics (ENMC)

8088S **Lillian R Barnes**
How To Make A Roller Skate Faster With Only An Axle Wrench

8089W **Alex B Bion**
Bridges

8090T **Jack D Engels**
Tee Time

8091S **Nicholas J Jacobsen V**
How is WiFi strength affected by building material

8092T **Jack Lowe**
Building A Better Lint Trap

8093S **Spencer D Marchetti**
How Cool is That?

8094T **Benjamin Robert Rocheford**
"Holy Hover Board!"

8095W **Abigail Roh, Sam Detor**
Team - Redesigning Cold Frame Operation For Food Justice

8096S **Elias L Sorenson Pearson, Jeremiah Bauer**
Team - The Reality of Virtual Reality

- 8097W **Gabriel C Stark**
A.M. radio
Project At Electricity Wall
- 8098W **Michael J Thompson**
The Effect of wraps and amps on an electromagnets field stength
- 8099T **Luke T Wells**
Geodesic Dome How Much Do You Hold?

Environmental Engineering (ENEV)

- 8100W **Morgan Richter, Henry Koch**
Team - Wrapper Reclamation From The Waste Stream
- 8101S **Charles H Rogers Jr.**
Wind Energy
- 8102S **Raina E Sommer**
Schmutzdecke! A test of how well slow sand filters with and without a schmutzdecke can remove different water contaminants

Materials Science (MATS)

- 8103S **James A Carlson**
How do different textures affect drag in water?
- 8104T **Kate Fields**
Elasticity of Rubber Bands
- 8105S **Sawyer E Wall**
The Steel Deal

Microbiology (MCRO)

- 8106S **Alena M Almanza**
Don't Go Bananas! I have a solution
- 8107T **Andrew William Giel**
Five Second Rule
- 8108T **Megan P Matara**
The Invisible Monster : Where it Lives and How to Prevent It
- 8109S **Molly S Silberhorn**
What Cleaning Methods are Most Effective in Remving Bacteria
- 8110S **Gao Sheng Thao**
Germ War
- 8111S **Kira Vega**
At Least They're Zit Free: Effects of Microbead Facial Cleanser on Black Bean Germination
- 8112W **Dylan Vincent, Derek Turner III, Roberaa Ayana**
Team - Antibacterial Properties of Colloidal Silver

Physics and Astronomy (PHYS)

- 8113T **Michael Finch Jr**
How Does The Fin Length Affect a Swimmer's Speed?
- 8114S **Peter Fortier**
How Does the Viscosity of a Non-Newtonian Fluid Affect the Angle of Refraction
- 8115S **William J Gray**
A Reflection on the Nature of Refraction
- 8116S **Tristan Kmoch, Conor Gregg**
Team - Under Pressure
- 8117T **Cecilia A Thibault**
Neon Lights
- 8118S **Joseph J Westermeyer VI**
Which Type of Winglet Increases Lift the Most?

Plant Sciences (PLNT)

- 8119W **Rajani Lamichhane**
The Effect of Compost Made of Organic or GMO Waste on the Growth of Barley
- 8120S **Avery R Liuzzi , Soe Oo**
Team - How do you think plants are grown
- 8121S **Ellie L McConville**
The Effects of Pond Vegetation on Nitrogen Levels in Polluted Water Using the Theory of Phytoremediation
- 8122S **Sarah E Moynihan**
Do Plants Enjoy Music?-The Effect of Music on Plants
- 8123S **Nicole M Muetzel**
Is H2O the Way to Go?
- 8124S **Alejandro A Najera-Wolcott**
Does Aspirin Help Plants Grow?
- 8125T **Bianna Taylor Warzeka**
Tap vs. Recycled Water

Robotics and Intelligent Machines (ROBO)

- 8126S **Christian K Agaba**
Which IPA is the Best?

High School

Animal Sciences (ANIM)

- 1001S **Sumaya Ahmed Khalif, Naddi B. Jillo, Lizbeth Antunez Miranda**
Grade 10,9,9 - **Team** - Testing Yeast Enzymes
- 1002T **Madeline C Drummer**
Grade 10 - Canine Voice Recognition

- 1003T **Dyanne S. Garibay**
Grade 12 - Neurological Effects of Nicotine, Caffeine, and MSG on Acheta Domesticus
- 1004T **Haley Jostes**
Grade 9 - What is Ophryocystis Elektroscirra and how does it affect the monarch population?
- 1005S **Samantha A Mckinney**
Grade 9 - Daphnia Response to Light
- 1006S **Tessa B Newman-Heggie**
Grade 11 - Factors Affecting the Classical Conditioning of Dugesia tigrina
- 1007S **Mohamedamin Sheekh**
Grade 9 - Cricket Chamber
- 1008T **Abigail R Tucci**
Grade 10 - Effects of Detergents on Worms
- 1009S **Charvaye DM Williams, Elaina R Jones, Desiree D Williams**
Grade 9,9,9 - **Team** - Memory Mealworms - Does a Darkling Beetle Remember Anything From Its Larval Stage?
- Behavioral and Social Sciences (BEHA)*
- 1010T **Daniel K Akah**
Grade 10 - Cognitive Processing of Words and Colors Among Adults and Children Using the Stroop Effect
- 1011T **Kennedy Anderson**
Grade 10 - Conditioning People to Perceive Music in the Absence of Music
- 1012T **Cameron M Bedford**
Grade 10 - The Effect of Mint Gum on Students Bodies and Test Scores
- 1013T **Marin E Brandt, Annabelle T Jones**
Grade 9,9 - **Team** - Relation of test anxiety to color paper
- 1014T **Kristine C Brinkman**
Grade 10 - Analyzing Human Recognition Through Vision and Voice
- 1015T **Austin A Buus**
Grade 10 - Vision
- 1016T **Madelyn I Chilton**
Grade 10 - Effect Music Has On Heart Rate
Project At Electricity Wall
- 1017T **Michelle F Dolan**
Grade 10 - Appearances Vs. Perception
- 1018T **Talori A Dunsworth**
Grade 10 - Attention Span Effects on Memory Retention
- 1019T **Aliyah J Gackle**
Grade 10 - How Clothing Affects Others' Behaviors Around Us
- 1020T **Luke M Haddorff**
Grade 10 - Pitch Perfect
- 1021T **Noelle M Hinrichs**
Grade 12 - Manipulating Memory Using Suggestion
- 1022T **Taylor R Horner**
Grade 11 - The Effects of Timed Versus Untimed Testing on Students Performance in Elementary Years
- 1023S **Isabella Isett**
Grade 12 - Getting in Tune with the Brain
- 1024T **Dylan Jackson**
Grade 10 - How Sleep Deprivation Affects Academic Performance
- 1025T **Makaela M Kallstrom**
Grade 10 - The Effects Talking and Texting Has on Reaction Time
- 1026S **Reagan M Kerr, Madeleine G McPhee**
Grade 9,9 - **Team** - Evolving Thoughts: An Evolution Experiment
- 1027S **Darnell J King, Sumar R Hanley, Cecero J Garcia**
Grade 9,9,9 - **Team** - Video games and aggression
- 1028W **Roman Kouznetsov, Sunag Udupa**
Grade 12,12 - **Team** - Science: The Clash of Facts and Beliefs
Project At Electricity Wall
- 1029T **Marla J Krzmarzick**
Grade 10 - Cell Phone Distraction
- 1030T **Hayley S Ladwig**
Grade 10 - Preferences Vs. Placement
- 1031T **Shannon B Lee**
Grade 10 - Color Preference in Relation to Age
- 1032S **Anna L Lennington-Chaffee, Abigail J Clapp**
Grade 11,11 - **Team** - Music and Memory
- 1033T **Kevin Lin**
Grade 10 - Investigating the Effect of Age in Identifying Emotions in Semantically Neutral Words
- 1034T **Madison R Norton**
Grade 10 - Two x Two
- 1035T **Nivian M Nyakundi**
Grade 10 - The Effects of Hand/Eye Dominance on Basketball Shooting Percentage

- 1036T **Lillian E Olson**
Grade 10 - How Race Effects Facial Recognition
- 1037T **Christian J Opheim, Zachary M Reynolds**
Grade 12,12 - **Team** - The Effects of Caffeine on Test taking
- 1038T **Isaac W Reed**
Grade 10 - Reading Between the Lines
- 1039T **Emily M Reynolds**
Grade 10 - Auditory Versus Visual Feedback
- 1040T **Samuel W Rossow**
Grade 10 - The Effect of Font Color and Type on test Scores
- 1041T **Hannah Jo Schliemann**
Grade 10 - Texting While Driving: Distracting?
- 1042T **Brock V Schultz**
Grade 10 - What Is More Effective In Memory Recall; Auditory or Visual Input
- 1043T **Samantha M Simonsen**
Grade 10 - Remembering Things Visually Versus Auditorily
- 1044T **Max Stauffer, Chester Hearne, Jack Maloney**
Grade 9,9,9 - **Team** - Pictures or Words?
- 1045S **Andy Teng Thao**
Grade 9 - How does rich or poor clothing affect the way others think/feel/say about you
- 1046T **Jackson F Thellin**
Grade 10 - Musics' affect on the brain
- 1047T **Percy Thomas, Vincent M Mwebi**
Grade 11,11 - **Team** - The Effect of Vision on Proprioception
- 1048T **Dan-Thanh E. Tran**
Grade 10 - The Accuracy of Spatial Recognition With Vision Impairment And Correlation to Age
- 1049T **Grace Ulrich**
Grade 10 - Are People Drawn to Others with the Same Personality Traits
- 1050T **Anna M Warmka**
Grade 10 - Dog reaction to Different Visual Stimuli
- 1051T **Chelsea R Zerr**
Grade 10 - Reading Comprehension on Paper versus Screen
- Biochemistry (BCHM)*
- 1052S **Areianna E Anderson, Alexis N Yang, Noucheng Lee**
Grade 10,10,10 - **Team** - How does liquid concentration affect tofu hardness
- 1053S **GaoNou Lee, Areya Khue**
Grade 9,9 - **Team** - Cow Milk vs soy Milk - Protein Source
- 1054T **Alana Redday**
Grade 12 - Blood Glucose Spikes: Maple Sugar Versus Cane Sugar
- 1055S **Kaozong Xia Yang , Arianna Sia Klotz, Maria Gadea**
Grade 9,9,9 - **Team** - Mangoes
- Biomedical and Health Sciences (BMED)*
- 1056T **Omar A. Abdullahi**
Grade 10 - Artificial Pancreas Simulation: The use of electrical circuits to model the negative feedback loop mechanism used by the pancreas.
- 1057S **Nicholas W Berg, Akira Z Callahan**
Grade 11,11 - **Team** - Calorie Burning Efficiency
- 1058T **Danielle N Gauthier**
Grade 10 - The effect of temperature on the function of lipase
- 1059S **Kanyell S Gray, Piper Flemming**
Grade 9,9 - **Team** - Athletic Lung Capacity
- 1060W **Harini Kethar**
Grade 11 - Bioengineered RGS5 Induced Adenoviral Drug Delivery and Smooth Muscle Cell Differentiation to Suppress Cardiac Disease Vasoconstrictor Remodeling
Project At Electicity Wall
- 1061T **Mitchell T Kohler**
Grade 10 - Charge Up
- 1062T **Nicole H Kolmer**
Grade 10 - Bacteria Resistance to the Frequent use of Antibiotics
- 1063T **Kaitlyn E Lakson**
Grade 10 - Effect of handedness on lateralization
- 1064T **Stephanie P Nkatia**
Grade 11 - Optogenetics: New Light Switch?
- 1065T **Sophia A Olson**
Grade 10 - Effects of Ethyl Alcohol on Bacteria Growth
- 1066T **Samantha J Panos**
Grade 10 - Its Just Your Hair
- 1067T **Kenzie J Schroeder**
Grade 10 - Difference in Heart Rate with Different Style of Video Games
- 1068T **John S Toomire Jr.**
Grade 10 - The Effect of Mindfulness Meditation on Heart Rate

- 1069W **Jessica Weng**
Grade 12 - Can APOBEC3B gene be a therapeutic target for breast cancer?
Project At Electricity Wall
- 1070T **Nicholas C Willmert**
Grade 10 - Changes in Blood Pressure When Given Caffeine and a Banana

Biomedical Engineering (ENBM)
- 1071W **William J Drew**
Grade 11 - Next Generation Brain-Sensing Interface for Brain Signal Analysis and Rapid Closed Loop Deep Brain Stimulation Algorithm Development
- 1072T **Jeffrey He**
Grade 10 - Effects of Soft Drinks on Performance of Brain Computer Interface
- 1073W **Meghana Iyer**
Grade 11 - Bioengineering the Lung: Investigating the Effects of a Lung Extracellular Matrix on the Growth and Differentiation of Stem Cells into Definitive Endoderm
Project At Electricity Wall
- 1074S **Serena L Jing**
Grade 11 - Inexpensive, portable glucose monitor for diabetics via a crosslinked sensing fluid
Project At Electricity Wall
- 1075T **Michelle Mao**
Grade 12 - Utilizing Surface Interactions in the Investigation of Spontaneous Thrombosis in Whole Plasma and Fibrinogen Self-Assembly
- 1076W **Madeline C McCue, Evelyn G McChesney**
Grade 12,12 - **Team** - Turning probiotics into antibiotics: Engineering a broad-spectrum antibacterial probiotic via inclusion of antimicrobial peptide-encoding DNA, year two
- 1077W **Samuel J Rex, Genevieve C Weiler**
Grade 11,11 - **Team** - Printing an organ: Developing a protocol to 3-D bioprint a gastro-esophageal junction

Cellular and Molecular Biology (CELL)
- 1078W **Gauri C Binoy**
Grade 11 - A microscopic analysis of cells within the pituitary in blastocyst complement pigs
- 1079S **Cristina M Ebner Pradas**
Grade 11 - Enzymes and Gelatin
- 1080T **Felix Oh**
Grade 11 - Genetically Engineered Biological Drugs for Human Sarcoma
- 1081S **Tu Lor Eh Paw**
Grade 10 - Malaria Prevention Medication Toxicity in Eukaryotic Organisms
- 1082S **Geeta Rajamani**
Grade 11 - Controlling Noxa Protein Expression by a Novel Approach to Study its Function in Leukemic Cells

Chemistry (CHEM)
- 1083T **Maedin Abegaz, Danielle L Thompson**
Grade 12,11 - **Team** - The Use of Electrolysis to Create a Reverse Hydrolysis Reaction
- 1084S **Margaret L Cudahy**
Grade 11 - Gummy Bear Osmosis Lab
- 1085T **Gabrielle E Day**
Grade 10 - Effects of Different Temperatures of Hydrogen Peroxide on Human Hair
- 1086S **Samsam A Dirie**
Grade 12 - Effects of injection solvent on retention time and peak shape in Reverse Phase Liquid Chromatography-Mass Spectrometer (RPLC-MS)
- 1087S **Bella Marie Gillespie-Cuesta**
Grade 11 - How Ionization Affects Emission Spectra
- 1088T **Dylan Halberg**
Grade 9 - School Meat Adulteration
- 1089W **Avni Jain**
Grade 9 - An eco-friendly approach for removal of toxic pentavalent arsenic from oryza satvia (rice)
- 1090S **Indira Kharel**
Grade 9 - Does heat make things freeze
- 1091T **Megan L Kortenhof**
Grade 10 - Flame Retardant Paint
- 1092T **Levi C Prunty**
Grade 9 - At What Temperature Do Hand Warmers Thrive?
- 1093S **Ramon Angel Reynaga**
Grade 9 - Concentration of Salt Affect to Water Freezing Point
- 1094S **Hetta R Williams**
Grade 11 - Dirty Money

Computational Biology and Bioinformatics (CBIO)
- 1095W **Bridget Carroll**
Grade 12 - Plastics Bioremediation Model using Microorganisms Genomics
Project At Electricity Wall
- 1096W **Darartu M Gamada**
Grade 12 - Identifying gene function in antibody mediated kidney rejection

1097W **Isabella R Jennings, Cole Maxwell**
Grade 11,10 - **Team** - Biomolecular modeling, simulation, and design of a bivalent CB2-CCR5 ligand for the potential treatment of HIV/AIDS in the brain

1098W **Christine Luo**
Grade 11 - A Machine Learning Approach for Accurate Diagnosis of Heart Disease

1099W **Archana B Murali, Elena Berman**
Grade 11,11 - **Team** - Window to the brain: Using retinal biomarkers to diagnose Alzheimer's disease

1100T **Aadarsh S Padiyath**
Grade 12 - The Bitter Truth! Investigation of the Mechanism of Action of Common Sweeteners on Gut Microbiota

Earth and Environmental Sciences (EAEV)

1101T **Maria R Ambrose**
Grade 10 - The Effects of Density on the Evaporation Rate of Liquids

1102S **Donzello Barros, Mya Fitzgerald**
Grade 9,9 - **Team** - How Do Different Biomes Affect the Size of Small Mammal Populations?

1103T **Matusola F Bein**
Grade 10 - Effects of salicylic acid (Aspirin) water in growing of household plants

1104T **Chamnuu Chamnan**
Grade 10 - Water and Electricity

1105T **Julie Dao**
Grade 10 - Effects of Gasoline on Soil pH Levels

1106T **Alexander Dodd, Braxton Kukulka**
Grade 11,11 - **Team** - The Effectiveness of Deicer and Antifreeze

1107T **Johanna L Engebretson**
Grade 10 - Quantity of Organisms in Various Bodies of Water

1108S **Alondra G Fuentes**
Grade 9 - How Does the Amount of Food in the Trap Affect How Many Small Mammals are Captured in NE Minnesota

1109T **Devin J Geegan**
Grade 10 - The Effects of Microwave Radiation on *Phaseolus vulgaris*

1110W **Alexander L Guzman, Cassidy Yueh**
Grade 12,11 - **Team** - Can fish poop power aquaponics systems?

1111T **Payton C Handrahan**
Grade 10 - Effects of environmental factors on air pressure in a tire

1112S **Victoria M Hartwich, Lilianna F Barton**
Grade 9,9 - **Team** - How does Location Affect Worm Populations of Northern Minnesota?

1113T **Cleo G Haugen, Sydney C Connor, Meade H Acers**
Grade 9,9,9 - **Team** - Nitrate Levels Along The St. Croix River

1114T **Gregory L Johnson**
Grade 10 - Effectiveness of Limonene from Citrus Fruit as a Natural Alternative in Reducing Polystyrene

1115T **Larissa Knudsen**
Grade 11 - Hexavalent Chromium in Minneapolis Runoff Water

1116T **Kaylee M Martynow**
Grade 10 - Polycyclic Aromatic Hydrocarbons and Their Effects On Wetlands

1117S **Iyanna Rodgers-Neely, Evelyn Dominguez**
Grade 9,10 - **Team** - Erosion of Soils

1118T **Caden R Sillman**
Grade 10 - Salt Water Energy

1119T **Jadyn A Smith**
Grade 10 - How Changes In Acidity Affect The Survival Rates In An Invertebrate Population

1120S **Sylvian M Vang**
Grade 9 - How Does Percolation Affect Soil pH?

1121T **Robert S Wedan**
Grade 10 - Phantom Energy Consumption in Suburban Homes

1122T **Claire E Wentzlaff**
Grade 10 - How Does Supplemental Carbon Dioxide Affect The Growth of Algae

1123S **Kao Nou Yang, Curtis C Love Jr**
Grade 9,9 - **Team** - How Does Human Activity Affect Small Mammal Population in Northern Minnesota

1124S **Jahziah j Zapata-Leonard, D'Amari L Johnson**
Grade 10,10 - **Team** - Erosion of Soils

Embedded Systems (EBED)

1125T **Emanuel Kassie**
Grade 9 - How Do Christmas Lights Affect Wi-Fi Speed?

Energy: Chemical (EGCH)

1126W **Arush Jain**
Grade 12 - Energy Density and Commercial Viability Assessment of Solid Waste to Biofuel Generation using Pyrolysis

1127W **Abhi Kamboj**
Grade 11 - Economic Viability of Hydrogen as a Fuel
Project At Electricity Wall

1128T **Max Ylitalo**
Grade 12 - Energy Production from Waste Reduction Phase III: Experimental Design Optimization of Surfactant Enhanced Waste Paper Hydrolysis
Project At Electricity Wall

Energy: Physical (EGPH)

1129S **Lucia M Calatayud**
Grade 11 - Maximum Solar Energy

1130T **Andrew J Carlson**
Grade 9 - Correlation Between Mass & Distance Measured by a Trebuchet

Engineering Mechanics (ENMC)

1131T **Jake T Chudecke**
Grade 10 - Radar Invisability

1132T **Joseph D Dahl**
Grade 12 - Golf Ball Bobber
Project At Electricity Wall

1133T **Nathaniel R Farmer**
Grade 11 - Wearable Mask Fit Monitor

1134T **Everett AJ Kroll**
Grade 9 - Improving Leonardo da Vinci's Armored Tank

1135T **Zachary Matthews**
Grade 10 - Air Pressure at it's Finest

1136T **Garrett W Riedesel**
Grade 10 - The Effect of Base Pitch and Length Alteration on the Height a Propeller Achieves
Project At Electricity Wall

Environmental Engineering (ENEV)

1137T **Fiona W. Chow**
Grade 10 - All About Those Blades
Project At Electricity Wall

1138W **Siddarth Eswarachari, Sarah Carlson**
Grade 12,12 - **Team** - Cleaner Water: Investigating homogenisate chemotaxis receptors in Pseudomonas putida F1 for bioremediation of aromatic hydrocarbons, year two

Materials Science (MATS)

1139T **Mingyi Chen, Brenna Martin**
Grade 12,12 - **Team** - Clarity of Hologram
Project At Electricity Wall

1140S **Andy L Moua**
Grade 12 - Change of Index of Refraction of Light as Concentration of Sugar Increases

1141T **Victor H Sanchez Villegas**
Grade 10 - Correlation between resistance of insulators and conductors and increases in temperature.
Project At Electricity Wall

1142T **Martin J Sandvig**
Grade 10 - Slip and Slide

Mathematics (MATH)

1143T **Mackenzie L Duncan**
Grade 10 - Ideal Bat Types of Major League Players According to Stats

1144W **Arun Kethar**
Grade 12 - Investigating the Effectiveness of Pricing Models for Consumer Goods in Generation Z
Project At Electricity Wall

1145T **Mallory L O'Brien**
Grade 10 - Gaussian probability and bell curve function test

1146T **Dawson D Quimby**
Grade 10 - The Streaks and Slumps of Baseball

1147T **Nicholas M Schatz**
Grade 10 - A Novel Stylometric Solution to the Problem of Many Potential Authors

Microbiology (MCRO)

1148W **Abhinav Bhaskar**
Grade 12 - A Partial Knockout of the Chondroitin Sulfate Proteoglycan 4 Gene Slows Growth in Melanoma Tumor Cells

1149T **Emily N Carlson**
Grade 12 - Effects of short-term temperature abuse on the bacterial content of raw ground beef

1150T **Thanhminh T Dinh**
Grade 10 - The Effects of Music on Microbial Growth

1151T **Nate A Drobnick**
Grade 10 - A Comparison of Bacteria Levels in Hockey and Football Protective Equipment

1152T **Thinh Nguyen**
Grade 10 - Effect of UV Light Exposure on Bacteria

1153T **Megan R Osterhaus**
Grade 10 - Correlation Between Different Methods of Mummification and Amount of Bacterial Growth/ Variation from Subject's Original Condition

Physics and Astronomy (PHYS)

- 1154T **Ethan M Andersen**
Grade 10 - Golf Ball Battle
- 1155S **Matt R Bluhm**
Grade 11 - Meteor Impact
- 1156T **Allie M Draper**
Grade 10 - Winglets and their effect on the lift of an airplane's wing
- 1157T **Harvey D Duong**
Grade 10 - Natural and Harmonic Sound Waves: Differences and Similarities
- 1158T **Max C Fox**
Grade 10 - Measuring the Speed of Light with a Microwave and Egg Whites
- 1159T **Maggie J Hennessy**
Grade 10 - Sound Transmission Through Various Materials
- 1160S **Andy RW Hotchkiss**
Grade 12 - How height affects Frequency
- 1161S **Blake Jerue**
Grade 12 - Center of Percussion of a Baseball Bat
- 1162S **Sophia H Kouay**
Grade 10 - How does a rockets mass effect its time in air and distanced travel
- 1163S **Danusorn Lee**
Grade 10 - Racing weights
- 1164T **Kirstyn R Loyva**
Grade 10 - Correlation Between Number of Magnet Stages and Force
- 1165T **Katie M Lyon**
Grade 10 - Analysis of Effectivity of Wolf Tone Suppressors
- 1166S **Spencer D Marx**
Grade 10 - Angle of Attack: Eight Degrees of Optimal Launch
- 1167S **Chaltu A Musse**
Grade 12 - Effect of Hydrocarbons on Refractive Index of Alcohols
- 1168S **Julio I Nakazono Luque, Paw Sar Khu**
Grade 10,10 - **Team** - Rockets
- 1169T **Ernesto J Santiago Rivera**
Grade 10 - Bruh, do you even lift?
- 1170T **Kelly A Solberg**
Grade 10 - Vitamin C Concentration in Oranges of Different Masses
- 1171S **Yusanat Tway**
Grade 9 - Angles of Serving

1172S **Ramona White**
Grade 11 - A Look into Immortality

1173T **Tianhe Zhang**
Grade 12 - Watch Eternity

Plant Sciences (PLNT)

1174T **Travis K Agarano**
Grade 10 - Sugar Content in Ripening Bananas

1175S **Navor F Antonio**
Grade 9 - How do different fertilizers affect plant growth

1176T **Alea B Branham**
Grade 10 - Physiological requirements of algae for maximum growth.

1177W **Rajiv S Dharnipragada**
Grade 11 - Insect Immune Response to Fungal Pathogens
Project At Electricity Wall

1178T **Gavin C Donnelly**
Grade 10 - Wheatgrass Growth

1179S **William Fox**
Grade 10 - How does soil pH affect plant growth?

1180T **Abigail R Herzog, Ian M Johnson, Lucas M Senta**
Grade 11,11,11 - **Team** - The Effects of Microwave Radiation on the Growth Patterns of Bean Plants

1181S **Mackenzie L Mazhari, Kami L Hanson-Best**
Grade 11,11 - **Team** - Don't let your plants do acid

1182S **Dareon M Meridith, Victor W Woefel, Santino D Urbina**
Grade 10,10,10 - **Team** - A better fertilizer

1183S **Sha K Tray Say, Nay B Say**
Grade 10,10 - **Team** - How does water affect plant growth?

1184S **Liza M Strom**
Grade 11 - Sweet Germination

1185T **Madeline M Stuart**
Grade 10 - The Effects of Vitamins on Plant Growth

1186S **Katherine A Tennis**
Grade 12 - Unorganized Plants in the Unorganized Thunder Bay District

1187S **Emilia F Topp-Johnson**
Grade 10 - Behind the Kernels III: An Evaluation of Fungal Endophytes of Maize and their Hypothesized Mitigation of Temperature Stress

Robotics and Intelligent Machines (ROBO)

- 1188T **Taylor Andrie**
Grade 10 - Effects of Radiation on an Organisms' growth
- 1189W **Ryan T Etwiler, Moira Southern**
Grade 12,12 - **Team** - Programming a socially assistive humanoid NAO robot to deliver Down syndrome physical therapy
Project At Electricity Wall
- 1190S **Ezequiel Gavilan**
Grade 10 - The Project

Systems Software (SOFT)

- 1191T **Akin Campbell**
Grade 12 - Collaboration Pals: Increasing opportunities for inter-generational relationships
Project At Electricity Wall
- 1192T **Matthew A Volner**
Grade 10 - Effects of Temperature Change on a Computer
Project At Electricity Wall

Translational Medical Science (TMED)

- 1193W **Prashant Godishala, Brennan Clark**
Grade 12,12 - **Team** - Predicting a cancerous outcome: Creating a test for assessing risk of human papilloma virus-associated oropharyngeal cancer
- 1194W **Carlos A Sanchez, Jiahao Liang**
Grade 12,12 - **Team** - Real-time Human Breath Analysis: Designing an Ion Mobility-Mass Spectrometer for the Detection of Volatile Organic Compounds

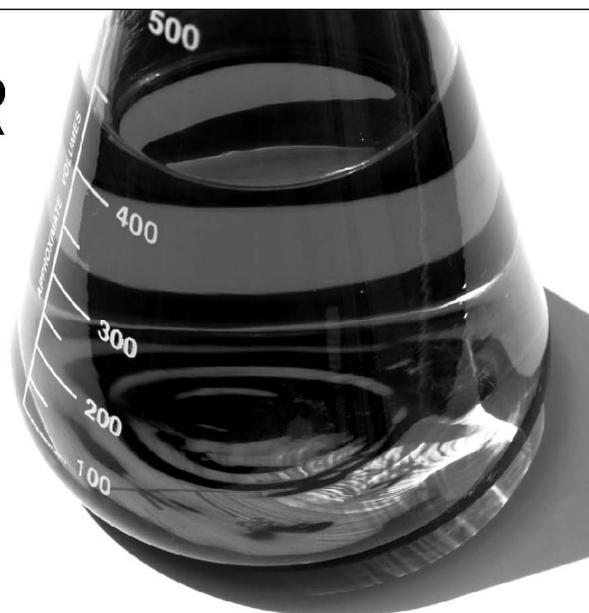


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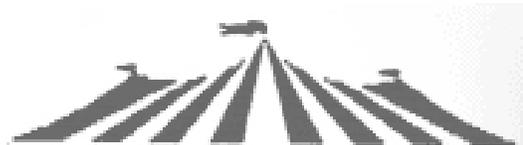
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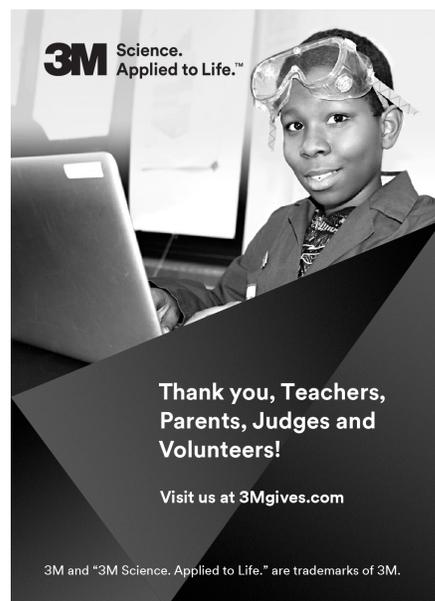
2016 TCRSF Students by Last Name

Abawari, Usrah	6017S	Brandt, Marin E	1013T	Draper, Allie M	1156T
Abdullahi, Omar A.	1056T	Branham, Alea B	1176T	Drees, Sydney S	6005W
Abdur-Raheem, Muhammad	8004S	Brenner, Jillian M	8064S	Drew, William J	1071W
Abegaz, Maedin	1083T	Brinkman, Kristine C	1014T	Drobnick, Nate A	1151T
Abrego, Lucia	6001S	Brouwer, Julia A	7075W	Drummer, Madeline C	1002T
Acers, Meade H	1113T	Brown, Carter H	8037S	Duncan, Emily	7005S
Agaba, Christian K	8126S	Brown, Corrine N	8065T	Duncan, Mackenzie L	1143T
Agarano, Travis K	1174T	Bui, Vivian	6056S	Dunsworth, Talori A	1018T
Ahmed Khalif, Sumaya	1001S	Burrows, Samantha	8031T	Duong, Harvey D	1157T
Ahrens, Olivia D	8005S	Buus, Austin A	1015T	Dwyer, Claire	8041S
Akah, Daniel K	1010T	Byrne, Julian	7063T	Ebner Pradas, Cristina M	1079S
Alexander, Jack S	7058W	Calatayud, Lucia M	1129S	Ehlert, Jennie	8032W
Almanza, Alena M	8106S	Callahan, Kiyomi	6009S	Elias, Nebeyou Wolde	8042S
Altman, Will	8001S	Callahan, Akira Z	1057S	Enderlein , Abigail R	8043T
Amadeo-Muñiz, Daniela	6046W	Campbell, Akin	1191T	Engebretson, Johanna L	1107T
Beatriz		Canick, Lucy	7012S	Engelmann, Maeli Bryn	7041S
Ambrose, Maria R	1101T	Carlson, James A	8103S	Engels, Jack D	8090T
Andersen, Ethan M	1154T	Carlson, Sarah	1138W	Eswarachari, Siddarth	1138W
Anderson, Kennedy	1011T	Carlson, Andrew J	1130T	Etzell, Alexander	7059W
Anderson, Areianna E	1052S	Carlson , Emily N	1149T	Etzwiler, Ryan T	1189W
Andrie, Taylor	1188T	Carroll, Bridget	1095W	Eubanks, Esme E	7018W
Antonio, Navor F	1175S	Casper, Penelope A	6033W	Fares, Malcolm	6034S
Antunez Miranda, Lizbeth	1001S	Chamnan, Chamnuan	1104T	Farmer, Nathaniel R	1133T
Apet, Maasia S	8076S	Chen, Mingyi	1139T	Farmer, Hannah E	8044T
Aschalew, Heaven	8077S	Chilton, Madelyn I	1016T	Fields, Kate	8104T
Ayana, Roberaa	8112W	Chow, Fiona W.	1137T	Finch Jr, Michael	8113T
Ball, Porter A	8006W	Chudecke, Jake T	1131T	Fitzgerald, Brennan B	6058W
Banat, Sami N-J	8029S	Clapp, Abigial J	1032S	Fitzgerald, Mya	1102S
Barnes, Lillian R	8088S	Clark, Brennan	1193W	Flemming, Piper	1059S
Barnes, Olivia Grace	7001S	Connors, Alexandra M	8040S	Foley, Cleo	7028S
Barros, Donzello	1102S	Connor, Sydney C	1113T	Fortier, Peter	8114S
Barton, Lilianna F	1112S	Cortes Vazquez, Nathalia	8066S	Fox, Max C	1158T
Bauer, Jeremiah	8096S	Maria		Fox, William	1179S
Bearson , Merrick G	6004W	Coval, Mackenzie	7027W	Fraser III, Charles R	8079S
Bedford, Cameron M	1012T	Crutchfield, Coral	6018S	Fredrickson, Ilse K	7042W
Bein, Matusola F	1103T	Cudahy, Margaret L	1084S	Fuentes, Alondra G	1108S
Belde, Alexandra A	8030T	Cunningham, Thomas R	8063S	Gackle, Aliyah J	1019T
Berg, Sunniva G	8039S	Dahl, Joseph D	1132T	Gadea, Maria	1055S
Berg, Nicholas W	1057S	Dahlke, William W	7076T	Gainor, Patrick C	6006T
Bergthold, Christopher M	8074T	Danielson, Alexis Lee	8008S	Gamada, Darartu M	1096W
Berman, Elizabeth	8032W	Dao, Julie	1105T	Gandhi, Shayaan H	6035T
Berman, Elena	1099W	Daud, Aishat	7070S	Ganley, Nell	7027W
Beveridge, Emma K	7012S	Day, Gabrielle E	1085T	Garcia, Cecero J	1027S
Bhaskar, Abhinav	1148W	Detor, Sam	8095W	Garibay, Dyanne S.	1003T
Biermaier, Josh M	7040T	Dharnipragada, Rajiv S	1177W	Gaudio, Anna M.	7064S
Binoy, Gauri C	1078W	Dinh, Thanhminh T	1150T	Gauthier, Danielle N	1058T
Bion, Alex B	8089W	Dirie, Samsam A	1086S	Gavilan, Ezequiel	1190S
Biswa, Lalisha	8026S	Doan, Brandon	7052T	Geegan, Devin J	1109T
Black, Lucille Elizabeth	8007S	Dodd, Alexander	1106T	Giel, Andrew William	8107T
Blanco-Abundez, Ingrid M	7017T	Doering, Nicole E	6019W	Giese, Zach C	8045T
Bluhm, Matt R	1155S	Dolan, Michelle F	1017T	Gillespie-Cuesta, Bella	1087S
Braga, Natalie	7004S	Dominguez, Evelyn	1117S	Marie	
Brandt, Morgan	8008S	Donnelly, Gavin C	1178T	Glaser, Zachary	8018S

Godishala, Prashant	1193W	Jara Molina, Jezel	7077T	Krzmarzick, Marla J	1029T
Gomez, Stephanie R	8009S	Guadalupe		Kukulka, Braxton	1106T
Gordon, Lily S	8002S	Jasper, Lauren M	8048W	Ladwig, Hayley S	1030T
Gray, William J	8115S	Jennings, Jessica L	8080T	Laird, Molly K	8013S
Gray, Kanyell S	1059S	Jennings, Isabella R	1097W	Lakson, Kaitlyn E	1063T
Gregg, Conor	8116S	Jennings, Colin M	6014W	Lamichhane, Rajani	8119W
Gross, Michael D	6020W	Jerue, Blake	1161S	Larmie, Kenny	8051T
Grundhoefer, Anna	8016S	Jillo, Naddi B.	1001S	Lee, GaoNou	1053S
Guantai, Asma M	7029S	Jing, Serena L	1074S	Lee, Shannon B	1031T
Guelich, Madison W	8046W	Johanns, Katarina S	7030W	Lee, Bridget E	7031S
Guerrero Abrego, Paola	7043S	Johannson Jr., John K	6022W	Lee, Noucheng	1052S
Guzman, Alexander L	1110W	Johnson, Gregory L	1114T	Lee, Danusorn	1163S
Haddorff, Luke M	1020T	Johnson, Ian M	1180T	Lee, Kabao	8014S
Halberg, Dylan	1088T	Johnson, D'Amari L	1124S	Lee, Phelameena	7061S
Hamilton, Will	6010S	Johnson, Derek	7054S	LeMieux, Savannah L	7020T
Handrahan, Payton C	1111T	Jones, Annabelle T	1013T	Lennington-Chaffee, Anna L	1032S
Hanhan, Anders	8010S	Jones, Elaina R	1009S		
Hanhan, Erik	6057S	Jones, Jevon A	7055S	Liang, Jiahao	1194W
Hanley, Sumar R	1027S	Jones, Erin	7044T	Lin, Kevin	1033T
Hanson-Best, Kami L	1181S	Jostes, Milan E	7084T	Linares, Liam G	7071T
Happe, Kate M	6007W	Jostes, Haley	1004T	Lipscomb, Lucy	8061S
Hartwich, Victoria M	1112S	Juarbe, Wesley	7078T	Liuzzi , Avery R	8120S
Haugen, Cleo G	1113T	Kallstrom, Makaela M	1025T	Loeffler, Lauren E	7032T
Hayes, Dani I	6044W	Kamboj, Abhi	1127W	Lor, Cindy Z	8015T
He, Jeffrey	1072T	Kassie, Emanuel	1125T	Love Jr, Curtis C	1123S
Heal, Ronan G	7053S	Kassie, Bruk F.	7019T	Lowe, Jack	8092T
Hearne, Chester	1044T	Katics, Maeve G	6026W	Loyva, Kirstyn R	1164T
Hedges, Dixon	7015S	Kawiecki, Rachel L	7079T	Lundin, Drew K	8081T
Heinen, Gabriel J	7065W	Keopple, Remington D	8067T	Luo, Christine	1098W
Hendren, Sophia E	6011T	Kereakos-Fairbanks, Kevin A	6027S	Ly, Isabella	6008S
Hennessy, Maggie J	1159T			Lyon, Katie M	1165T
Her, Skye Y	8022S	Kerr, Reagan M	1026S	Madson, Norah	7002W
Herrmann, Xander	6036S	Kethar, Arun	1144W	Maher, Madeleine S	7003S
Herro, Max J	6012W	Kethar, Harini	1060W	Maloney, Jack	1044T
Herzog, Abigail R	1180T	Kharel, Indira	1090S	Manor, Joey T	7007T
Heymans, Shannon E	7016T	Khu, Paw Sar	1168S	Mao, Michelle	1075T
Hinrichs, Noelle M	1021T	Khue, Areya	1053S	Marchetti, Spencer D	8093S
Hoepfner, Grace	7086T	King, Darnell J	1027S	Marin Torres, Maria I	7008T
Hokanson, Siri	6013S	Kipfmueller, Kaylee	8049S	Marshall, Katie R	7010T
Hommes, Peter J	8011S	Kleist, Abigail	7044T	Martin, Brenna	1139T
Horner, Taylor R	1022T	Klotz, Arianna Sia	1055S	Martynow, Kaylee M	1116T
Hotchkiss, Andy RW	1160S	Kmoch, Tristan	8116S	Marx, Spencer D	1166S
Hulteen, Alexander H	6037T	Knapp, Ann E	8050W	Matara, Megan P	8108T
Hunt, Eden	6056S	Knudsen, Larissa	1115T	Matthews, Zachary	1135T
Illgen, Luke E	8047T	Koch, Henry	8100W	Maxwell, Cole	1097W
Isett, Isabella	1023S	Kohler, Mitchell T	1061T	Mazhari, Mackenzie L	1181S
Iyer, Meghana	1073W	Kolar, Joseph P	6047W	McChesney, Evelyn G	1076W
Jackson, Dylan	1024T	Kolmer, Nicole H	1062T	McConville, Ellie L	8121S
Jackson, Anika E	6021T	Konezny, Chase	6028W	McCue, Madeline C	1076W
Jacobsen V, Nicholas J	8091S	Kortenhof, Megan L	1091T	Mckinney, Samantha A	1005S
Jahn, Nora	6056S	Kosiak, Ruby J	7006S	McPhee, Madeleine G	1026S
Jain, Arush	1126W	Kouay, Sophia H	1162S	McQueen, Aaliyah M	8023S
Jain, Avni	1089W	Kouznetsov, Roman	1028W	Meniboon, Rachel D	7009T
Jalloh, Amad	8012S	Kroll, Everett AJ	1134T	Meridith, Dareon M	1182S
		Kruse, Ethan	6048W	Merrigan, William	6049T

Mills, Ethan L	8033S	Patel, Sohil	8070W	Schatz, Nicholas M	1147T
Misok, Ruby	8082S	Patel, Kishori	6001S	Scheerz, Adaline Kay	7081T
Mohamed, Abdinajib	8024S	Pattee, Katie	7056T	Lorraine	
Moore, Molly M	7010T	Paulos, Paige	8054T	Schliemann, Hannah Jo	1041T
Morris, Celia	7005S	Paw, Tu Lor Eh	1081S	Schmidt, Anna	7036S
Moseman, Amelia J	7011S	Peacock, Sienna Lynn	8025W	Schmidt, Otto	7035S
Moua, Pa Kou	6038S	Percich, Audrey A	7046S	Schray, John N	8035S
Moua, Andy L	1140S	Peterson, Jack	8070W	Schroeder, Kenzie J	1067T
Moynihan, Sarah E	8122S	Phillips, De'shanti	8026S	Schroepfer, Guillemette	6030S
Muetzel, Nicole M	8123S	Pineda, Elizabeth	7021T	Schroepfer, Sophia M	8084T
Murali, Archana B	1099W	Post, Janey C	7047S	Schucker, Amelia A	8036S
Murphy, Emmanuel E	7033S	Powers, Emma	7088T	Schultz, Brock V	1042T
Musse, Chaltu A	1167S	Prunty, Levi C	1092T	Scott, Carolina C	7060W
Mwebi, Vincent M	1047T	Putz-Yang, Noah	8071S	Scotti, Jabbari N	7033S
Najera-Wolcott, Alejandro A	8124S	Quimby, Dawson D	1146T	Senta, Lucas M	1180T
Nakazono Luque, Julio I	1168S	Rajamani, Anindita	7022S	Seshadri, Rikhil L	6032T
Nealy, Max	6050T	Rajamani, Geeta	1082S	Seyller, Grant	7050W
Newman-Heggie, Tessa B	1006S	Ramirez, Vincent C	6042T	Sheekh, Mohamedamin	1007S
Nguyen, Thinh	1152T	Ramirez, Josephine L	8072T	Shuster, Sophie	6043S
Nguyen, John Ngoc	8052S	Rauenhorst, Daniel R	7023S	Silberhorn, Molly S	8109S
Nichols, Morgan	7026S	Ray, Matt J	8055S	Sillman, Caden R	1118T
Niznick, Connor L	7072T	Redday, Alana	1054T	Simon, Gabriel	6002S
Nkatia, Stephanie P	1064T	Reed, Isaac W	1038T	Simonsen, Samantha M	1043T
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Norman, Kate	6029W	Remick, Alex	6052W	Skroch, Lulu M	6026W
Norquist, Natalie	8016S	Rex, Samuel J	1077W	Smith, Jady A	1119T
Norton, Madison R	1034T	Reynaga, Ramon Angel	1093S	Snowbeck, Elsa	8057S
Nyakundi, Nivian M	1035T	Reynolds, Emily M	1039T	Solberg, Kelly A	1170T
Oberle, Brett J	8068T	Reynolds, Zachary M	1037T	Sommer, Raina E	8102S
O'Brien , Abbey C	7016T	Reynolds, Amanye	8056S	Sorenson Pearson, Elias L	8096S
O'Brien, Mallory L	1145T	Richter, Morgan	8100W	Southern, Moira	1189W
O'Gary, Caitlin	8017T	Riedesel, Garrett W	1136T	Stark, Gabriel C	8097W
Ogata, Samuel	8083T	Ries, Everett J	7066S	Stauffer, Max	1044T
O'Grady, Mary R	8034W	Riley, Emma F.	7087T	Steiner-Manning, Iris	6031S
Oh, Felix	1080T	Rivera, Jeremy J	7055S	Stone, Sydney R	8003T
Olson, Sophia A	1065T	Rmaile, Hussein H	7068T	Strom, Liza M	1184S
Olson, Claire M	7073S	Rocheford, Benjamin Robert	8094T	Stuart, Madeline M	1185T
Olson, Lillian E	1036T	Rodgers-Neely, Iyanna	1117S	Swanson, Molly K	8038S
Olson, Logan R	6015T	Rogers Jr., Charles H	8101S	Tambornino, Sophia	8020S
Omorodion, Uyiosa	6051S	Roh, Abigail	8095W	Tennis, Katherine A	1186S
Oo, Soe	8120S	Rojas, Liliana M	7048T	Thao, Gao Sheng	8110S
Opheim, Christian J	1037T	Rossow, Samuel W	1040T	Thao, Andy Teng	1045S
Osmond, Lily	7036S	Rouillard-Horne, Max	6053S	Thellin, Jackson F	1046T
Ososki, Tana Grace	7080S	Rueter, Dan D	7074S	Thibault, Cecilia A	8117T
Ostergren, Charlie	6041S	Salchow , Maura Salchow R	7024T	Thomas, Percy	1047T
Osterhaus, Megan R	1153T	Salverda, Mason Robert	8027S	Thomey, Nora A	7014S
Otto, Yohana J	7012S	Samba, Simren	7002W	Thompson, Michael J	8098W
Padilla, Eli Vincent	7034W	Sanchez, Carlos A	1194W	Thompson, Danielle L	1083T
Padiyath, Aadarsh S	1100T	Sanchez, Iren j	7049S	Thompson, Madeline Rose	7037S
Padiyath, Manashree S	8069T	Sanchez Villegas, Victor H	1141T	Thor, Kyra	8026S
Paleen, Oliver	8018S	Sand, Dylan J	8019S	Tonoyan, Ani	7062W
Palmer, Siobhan	7002W	Sandvig, Martin J	1142T	Toomire Jr., John S	1068T
Panos, Samantha J	1066T	Santiago Rivera, Ernesto J	1169T	Topp-Johnson, Emilia F	1187S
Park, Grant A	7045W	Say, Sha K Tray	1183S	Torstenson, Nick	8010S
		Say, Nay B	1183S	Tran, Dan-Thanh E.	1048T

Treacy, Christina T	8078S	Yang, Connor	8021S
Trembath, Tatiana M	6023W	Yang, Kerui	8087W
Tschida, Michael	8074T	Yang, SuVaknie H	8052S
Tucci, Abigail R	1008T	Yang, Cassidy Duachee	8066S
Tucci, Nick J	8085S	Yang, Malee	7082S
Turner III, Derek	8112W	Yang , Kaozong Xia	1055S
Tway, Yusanat	1171S	Ylitalo, Max	1128T
Tyrrell, Orion	6039T	Yueh, Cassidy N	1110W
Udupa, Sunag	1028W	Zapata-Leonard, Jahziah j	1124S
Ulrich, Grace	1049T	Zent, Kyleigh N.	7083T
Urbina, Santino D	1182S	Zerr, Chelsea R	1051T
Vang, Ong	8028S	Zhang, Tianhe	1173T
Vang, Sylvian M	1120S	Ziemer, Braedon John	7051W
Vang, Trinity	8009S	Zillig, Luke D	8075T
Vega, Kira	8111S	Zimbwa, Shungu	6045W
Vennemann, Tori	6054S	Zindren, Anna L	6003S
Vincent, Dylan	8112W	Zuniga-Mejia, Briana M	7069W
Vogel, Max J	8058T		
Voita, Cooper J	6040W		
Volner, Matthew A	1192T		
Voss, Jeneigha	6024S		
Walbran, John	7085S		
Wall, Sawyer E	8105S		
Warmka, Anna M	1050T		
Warmka, Katherine G	7038T		
Warzeka, Bianna Taylor	8125T		
Waslie, Mariah	8059S		
Waulters, Joshua P	7057T		
Weber, Elizabeth G	8060W		
Wedan, Robert S	1121T		
Weiler, Genevieve C	1077W		
Wells, Luke T	8099T		
Weng, Jessica	1069W		
Wentzlaff, Claire E	1122T		
Wessel, Robert Jon	7025T		
Westerberg, Audrey C	7067S		
Westermeyer VI, Joseph J	8118S		
White, Ramona	1172S		
White , Cullen P	6025W		
Wilde, Calvin L	8086T		
Williams, Desiree D	1009S		
Williams, Charvaye DM	1009S		
Williams, Hetta R	1094S		
Willmert, Nicholas C	1070T		
Withers, Amaya D	7049S		
Woefel, Victor W	1182S		
Wolfson, Andrew	6055W		
Woods, Sawyer	8061S		
Xiong, Alexander	8024S		
Xiong, Hleeja	7039S		
Xiong, Melissa	7039S		
Yang, Kao Nou	1123S		
Yang, Madelyne	6016S		
Yang, Alexis N	1052S		
Yang, Txuj Ci I	8062S		



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2016 Research Papers

Name	Grade	Title
Andrew M Brenengen	6	What are the pH levels of popular bottled water? Can you believe the claims?
Penelope A Casper	6	Golf Course Bunker Sand Comparison
Chaquon Cloud	6	Does chewing gum make you smarter?
Nicole E Doering	6	The Science of Making Perfume
Kate M Happe	6	Liar, Liar, Pants On Fire!
Samuel Nelson	6	The Importance of Wind Turbine Design
Kate Norman	6	Organic vs. Synthetic A Study of Fertilizers in Hydroponics
Milky Osman	6	Does color affect taste?
Cecilia Schroeffer	6	Does music affect blood pressure?
Amir Sedik	6	What substance melts ice the fastest?
Alastair Shen	6	Mask Clarity
Annika Stall	6	How Does Salt Affect The Temperature of Ice?
Sommer Vang	6	A rose life
Bridget Vang	6	Which fish produce the most nitrates to help plants grow?
Jack S Alexander	7	How Does Cold Affect Weight-Bearing Abilities in Steel?
Julia A Brouwer	7	Leafy Green Astronauts: How Space Radiation Affects Seed Germination and Plant Growth
Ilse K Fredrickson	7	Soil Erosion What Can Stop It Rock Grass or Notjng
Hailey J. Miedema	7	Take A Load Off: The Effects of Backpack Weight on Spinal Health
Grant A Park	7	Global Ozone and Black Carbon: The Seemingly Unstoppable Atmospheric Pollutants
Grant Seyller	7	Which microgreen produces the most energy factoring growth time, growth yield and energy yield?
Braedon John Ziemer	7	Is there a superior material that can be used in a large scale battery, like the tesla powerwall, to improve on the current technology?
Hannah E Farmer	8	Investigating Exotic Protein Sources
Faith I Geis	8	Chemicals, Germination, and Corn! Oh My!
Molly K Laird	8	Does Driving While Talking on the Phone Affect Reaction Time of the Driver?
Clarice M LeBow	8	Which is the Most effective detergent?
Jack Lowe	8	Novel Application of Cyclonic Separation
Manashree S Padiyath	8	Mining My Business: Biochar Remediation of Acid Mine Drainage Impacted Soil
Benjamin Robert Rocheford	8	"Which One Hovers The Best?"
Sophia M Schroeffer	8	Inductive Charging
Max J Vogel	8	Got Gas v2: A Follow-up Investigation into the Efficiency of Ethanol
Kerui Yang	8	How Icing on Wind Turbine Blades Affects Power Generation: Physical Equation and Quantitative Analysis
Andrew J Carlson	9	Correlation Between Mass & Distance Measured by a Trebuchet

2016 Research Papers (continued)

Name	Grade	Title
Avni Jain	9	An eco-friendly approach for removal of toxic pentavalent arsenic from oryza satvia (rice)
Levi C Prunty	9	At What Temperature Do Hand Warmers Thrive?
Omar A. Abdullahi	10	Artificial Pancreas Simulation: The use of electrical circuits to model the negative feedback loop mechanism used by the pancreas.
Travis K Agarano	10	Sugar Content in Ripening Bananas
Daniel K Akah	10	Cognitive Processing of Words and Colors Among Adults and Children Using the Stroop Effect
Maria R Ambrose	10	The Effects of Density on the Evaporation Rate of Liquids
Ethan M Andersen	10	Golf Ball Battle
Kennedy Anderson	10	Conditioning People to Perceive Music in the Absence of Music
Sam J Andrews	10	Can The Nocebo Effect Cause Thirst
Taylor Andrie	10	Effects of Radiation on an Organisms' growth
Elly C Armstrong	10	Who has a stronger heart?
Gabe Austin	10	Modeling Darcy's Law
Cameron M Bedford	10	The Effect of Mint Gum on Students Bodies and Test Scores
Matusola F Bein	10	Effects of salicylic acid (Aspirin) water in growing of household plants
Haley A Boekhoff	10	Applications of the Biefeld-Brown Effect in Transportation
Lauren C Borchart	10	The Effect of Disinfectants on the Development of E.coli Resistance
Alea B Branham	10	Physiological requirements of algae for maximum growth.
Kristine C Brinkman	10	Analyzing Human Recognition Through Vision and Voice
Emma C Buchanan	10	Effects of Microwave Irradiation In Phasseola Faba Growth
Austin A Buus	10	Vision
Chamnau Chamnan	10	Correlation between School Water and Sink Water From Home
Madelyn I Chilton	10	Effect Music Has On Heart Rate
Fiona W. Chow	10	All About Those Blades
Jake T Chudecke	10	Radar Invisablity
Julie Dao	10	Effects of Gasoline on Soil pH Levels
Gabrielle E Day	10	Effects of Different Temperatures of Hydrogen Peroxide on Human Hair
Thanhminh T Dinh	10	The Effects of Music on Microbial Growth
Katherine T. Do	10	Correlation Between Fruit Density and Vitamin C Quantity
Michelle F Dolan	10	Appearances Vs. Perception
Gavin C Donnelly	10	Wheatgrass Growth
Macauly G Donohue	10	Effectiveness Of E. coli Bacteria On Plastic Consumption Based On Temperature
Allie M Draper	10	Winglets and their effect on the lift of an airplane's wing
Nate A Drobnick	10	A Comparison of Bacteria Levels in Hockey and Football Protective Equipment
Madeline C Drummer	10	Canine Voice Recognition

2016 Research Papers (continued)

Name	Grade	Title
Mackenzie L Duncan	10	Ideal Bat Types of Major League Players According to Stats
Samantha L Duncan	10	How the Elements of Rock Music Have Changed Over Time
Talori A Dunsworth	10	Attention Span Effects on Memory Retention
Harvey D Duong	10	Analyzing the Difference of Natural and Harmonic Sound Waves Generated by String Instruments
Johanna L Engebretson	10	Quantity of Organisms in Various Bodies of Water
Paige A Erickson	10	The Effect of Music on The Mind
Matthew S Fischer	10	Effects of Pesticides on Lactuca sativa
Max C Fox	10	Measuring the Speed of Light with a Microwave and Egg Whites
Courtney L Funk	10	The Effect of Cleaning Techniques on Microbial Presence on Contact Lenses
Aliyah J Gackle	10	How Clothing Affects Others' Behaviors Around Us
Danielle N Gauthier	10	The effect of temperature on the function of lipase
Devin J Geegan	10	The Effects of Microwave Radiation on Phaseolus vulgaris
Lysandra Guzman	10	Difference Between Reaction Time and The Amount Of Caffeine Consumed
Luke M Haddorff	10	A Comparison of Relative Pitch Between Males and Females
Payton C Handrahan	10	Effects of environmental factors on air pressure in a tire
Maggie J Hennessy	10	Sound Transmission Through Various Materials
Nathaniel Hermann	10	Slime Mold
Duong Ho	10	Colors of different objects affects the absorption of radiant energy
Dylan Jackson	10	How Sleep Deprivation Affects Academic Performance
Jeffy Jeffy	10	The effect of dominant brain on math and analytical skills
Gregory L Johnson	10	Effectiveness of Limonene from Citrus Fruit as a Natural Alternative in Reducing Polystyrene
Makaela M Kallstrom	10	The Effects Talking and Texting Has on Reaction Time
Kelly M Koch	10	Left, Right Brain Biases in Dogs
Mitchell T Kohler	10	Electrolytes in Sports Drinks vs. Orange Juice
Nicole H Kolmer	10	Bacteria Resistance to the Frequent use of Antibiotics
Megan L Kortenhof	10	Flame Retardant Paint
Marla J Krzmarzick	10	Cell Phone Distraction
Jack W Kudrna	10	Golf Ball Price and Distance Relationship
Hayley S Ladwig	10	Location of Object to Dominant Hand Opposed to Association of a "Gendered" Color for the Selection of an Object
Kaitlyn E Lakson	10	Effect of handedness on lateralization
Shannon B Lee	10	Color Preference in Relation to Age
Kevin Lin	10	Investigating the Effect of Age in Identifying Emotions in Semantically Neutral Words
Kirstyn R Loyva	10	Correlation Between Number of Magnet Stages and Force
Katie M Lyon	10	Analysis of Effectivity of Wolf Tone Suppressors
Chrisostom N Maina	10	Burnsville Soil pH and Nutrient Testing
Kaylee M Martynow	10	Polycyclic Aromatic Hydrocarbons and Their Effects On Wetlands

2016 Research Papers (continued)

Name	Grade	Title
Zachary Matthews	10	Air Pressure at it's Finest
Ty D Miklowski	10	Photobioreactor
Morgan E Muelken	10	Correlation Between a Science Movie's and the Inaccuracies in the Science
Thinh Nguyen	10	Effect of UV Light Exposure on Bacteria
Jacob M Nistler	10	Microwave Radiation's Effects on Plants
Madison R Norton	10	Two x Two
Nivian M Nyakundi	10	The Effects of Hand/Eye Dominance on Basketball Shooting Percentage
Adwoa A Nyame	10	The Concept of Inattentive Blindness
Mallory L O'Brien	10	Gaussian probability and bell curve function test
Sophia A Olson	10	Effects of Ethyl Alcohol on Bacteria Growth
Madeline R Olson	10	The Effects of Noise on Heart Rate and Blood Pressure
Mary K Olson	10	Affiliation Between Color and Memorization
Lillian E Olson	10	The Effect Race Plays on Facial Recognition
Rachel M Ostendorf	10	Phone Cases and Bacteria Growth
Megan R Osterhaus	10	Correlation Between Different Methods of Mummification and Amount of Bacterial Growth/ Variation from Subject's Original Condition
Samantha J Panos	10	Its Just Your Hair
Jade A Phoenix	10	The effects of whitening toothpaste
Alena Phongsavath	10	Gender Stereotypes Between Different Age Groups
Dawson D Quimby	10	The Streaks and Slumps of Baseball
Megan K Rean	10	Age Impact on the Stroop Effect
Isaac W Reed	10	Highlighting Text While Studying with Correlation to Better Test Scores
Emily M Reynolds	10	Auditory Feedback versus Visual Feedback in Terms of Correcting a Motor Skill
Garrett W Riedesel	10	The Effect of Base Pitch and Length Alteration on the Height a Propeller Achieves
Samuel W Rossow	10	The Effect of Font Color and Type on Test Scores
Gladys B Ruiz	10	Effects of Excessive Heat and Electromagnetic Radiation
Thomas H Ryan	10	The effect of pollution on Planarian's ability to regenerate
Victor H Sanchez Villegas	10	Correlation between resistance of insulators and conductors and increases in temperature.
Martin J Sandvig	10	Measuring the Distance of Hockey Pucks with Different Temperatures
Ernesto J Santiago Rivera	10	Lift "in" Lift "out"
Nicholas M Schatz	10	A Novel Stylometric Solution to the Problem of Many Potential Authors
Hannah Jo Schliemann	10	Texting While Driving: Distracting?
Kenzie J Schroeder	10	Difference in Heart Rate with Different Style of Video Games
Brock V Schultz	10	What Is More Effective In Memory Recall; Auditory or Visual Input

2016 Research Papers (continued)

Name	Grade	Title
Nathan J Schumacher	10	Car Shapes and Air Resistance
Caden R Sillman	10	Salt Water Energy
Samantha M Simonsen	10	Remembering Things Visually Versus Auditorily
Jadyn A Smith	10	How Changes In Acidity Affect The Survival Rates In An Invertebrate Population
Chanmara Sokhon	10	Ocean Acidity and the Effects it has on Marine Life
Kelly A Solberg	10	Vitamin C Concentration in Oranges of Different Masses
James M Stadelman	10	Color vs. Black and White
Aaron B Steaderman	10	Effects of Essential Oils on Escherichia coli (E.coli)
Madeline M Stuart	10	The Effects of Vitamins on Plant Growth
Jackson F Thellin	10	Comparing the effects of different genres of music on problem solving.
John S Toomire Jr.	10	The Effect of Mindfulness Meditation on Heart Rate
Emilia F Topp-Johnson	10	Behind the Kernels III: An Evaluation of Fungal Endophytes of Maize and their Hypothesized Mitigation of Temperature Stress
Dan-Thanh E. Tran	10	The Accuracy of Spatial Recognition With Vision Impairment And Correlation To Age
Abigail R Tucci	10	Effects of Detergents on Worms
Grace Ulrich	10	Are People Drawn to Others with the Same Personality Traits
Jared J Valois	10	Bacteria Build Up
Matthew A Volner	10	Effects of Temperature Change on a Computer
Anna M Warmka	10	Dog Reaction to Different Visual Stimuli
Rachel N Waterman	10	The Effectiveness of Green Disinfectants
Robert S Wedan	10	Phantom Energy Consumption in Suburban Homes
Claire E Wentzlaff	10	How Does Supplemental Carbon Dioxide Affect The Growth of Algae?
Nicholas C Willmert	10	Changes in Blood Pressure When Given Caffeine and a Banana
Chelsea R Zerr	10	Reading Comprehension on Paper versus Screen
Nicholas W Berg, Akira Z Callahan	11,11	The Calorie Burn Difference between High Intensity and Low Intensity Workouts
Matt R Bluhm	11	The Effects of a Meteor Collision
Rajiv S Dharnipragada	11	Insect Immune Response to Fungal Pathogens
Alexander Dodd, Braxton Kukulka	11	The Effectiveness of Deicer and Antifreeze
Nathaniel R Farmer	11	Wearable Mask Fit Monitor
Abigail R Herzog, Ian M Johnson, Lucas M Senta	11,11,11	The Effects of Microwave Radiation on the Growth Patterns of Bean Plants
Taylor R Horner	11	The Effects of Timed Versus Untimed Testing on Students Performance in Elementary Years
Meghana Iyer	11	Bioengineering the Lung: Investigating the Effects of a Lung Extracellular Matrix on the Growth and Differentiation of Stem Cells into Definitive Endoderm
Isabella R Jennings, Cole Maxwell	11,10	Biomolecular modeling, simulation, and design of a bivalent CB2-CCR5 ligand for the potential treatment of HIV/AIDS in the brain
Serena L Jing	11	Inexpensive, portable glucose monitor for diabetics via a crosslinked sensing fluid

2016 Research Papers (continued)

Name	Grade	Title
Abhi Kamboj	11	Economic Viability of Hydrogen as a Fuel
Harini Kethar	11	Bioengineered RGS5 Induced Adenoviral Drug Delivery and Smooth Muscle Cell Differentiation to Suppress Cardiac Disease Vasoconstrictor Remodeling
Christine Luo	11	A Machine Learning Approach for Accurate Diagnosis of Heart Disease
Archana B Murali, Elena Berman	11,11	Window to the brain: Diagnosing Alzheimer's disease using retinal biomarkers
Tessa B Newman-Heggie	11	Factors Affecting the Classical Conditioning of <i>Dugesia tigrina</i>
Stephanie P Nkatia	11	Optogenetics: New light switch?
Felix Oh	11	Genetically Engineered Biological Drugs for Human Sarcoma
Geeta Rajamani	11	Controlling Noxa Protein Expression by a Novel Approach to Study its Function in Leukemic Cells
Samuel J Rex, Genevieve C Weiler	11,11	Printing an organ: Developing a protocol to 3-D bioprint a gastro-esophageal junction
Percy Thomas, Vincent M Mwebi	11	The Effect of Vision on Proprioception
Kevin T Tran	11	Analyzing the Affect of Thickness on Sound Dampening
Ramona White	11	A Look into Immortality
Maedin Abegaz, Danielle L Thompson	12,11	The Use of Electrolysis to Create a Reverse Hydrolysis Reaction
Abhinav Bhaskar	12	A Partial Knockout of the Chondroitin Sulfate Proteoglycan 4 Gene Slows Growth in Melanoma Tumor Cells
Emily N Carlson	12	Effects of short-term temperature abuse on the bacterial content of raw ground beef
Bridget Carroll	12	Plastics Bioremediation Model using Microorganisms Genomics
Kimberly Castell Victorio	12	Kinematics
Mingyi Chen, Brenna Martin	12	Clarity of Hologram
Joseph D Dahl	12	Golf Ball Bobber
Samsam A Dirie	12	The area of sunspots and their relationship to the luminosity of solar flares
Siddarth Eswarachari, Sarah Carlson	12	Cleaner Water: Investigating homogenisate chemotaxis receptors in <i>Pseudomonas putida</i> F1 for bioremediation of aromatic hydrocarbons, year two
Ryan T Etwiler, Moira Southern	12	Programming a socially assistive humanoid NAO robot to deliver Down syndrome physical therapy
Darartu M Gamada	12	Identifying gene function in antibody mediated kidney rejection
Dyanne S. Garibay	12	Neurological Effects of Nicotine, Caffeine, and MSG on Acheta Domestics
Prashant Godishala, Brennan Clark	12,12	Predicting a cancerous outcome: Creating a test for assessing risk of human papilloma virus-associated oropharyngeal cancer
Alexander L Guzman, Cassidy Yueh	12	Can fish poop power aquaponics systmes?
Andrew Haldeman	12	The Effect of Moisture on the Coefficient of Kinetic Friction Between Skin and a Baseball
Noelle M Hinrichs	12	Manipulating Memory Using Suggestion

2016 Research Papers (continued)

Name	Grade	Title
Mouachoua Lor	12	Physics IA
Michelle Mao	12	Utilizing Surface Interactions in the Investigation of Spontaneous Thrombosis in Whole Plasma and Fibrinogen Self-Assembly
Emely Martinez	12	Refraction of light through hair developer
Madeline C McCue, Evelyn G McChesney	12,12	Engineering a broad-spectrum antibacterial probiotic via inclusion of antimicrobial peptide-encoding DNA, year two
Sheng Moua	12	The Relationship between Specific Heat Capacity and Density
Amy Moua	12	How does the wavelength of a light beam affect the refractive index of a triangular glass prism?
Benjamin Z Moua	12	IB Physics Internal Assessment
Cindy N Nguyen	12	Verification of the Stefan Boltzmann Law: The Effect of Increasing Voltage and Current on Temperature and Luminosity
Christian J Opheim, Zachary M Reynolds	12	The Effects of Caffeine on Test Taking
Aadarsh S Padiyath	12	The Bitter Truth! Investigation of the Mechanism of Action of Common Sweeteners on Gut Microbiota
Carlos A Sanchez, Jiahao Liang	12,12	Real-time Human Breath Analysis: Designing an Ion Mobility-Mass Spectrometer for Detection of Volatile Organic Compounds
Gratias Y Sessou	12	The effect of temperature on the change in speed of sound
Ruweida Sheikh- Mohamed	12	Tensile test of fabric
Quentin A Smith Jr.	12	How does air pressure in a soccerball affect its rebound distance?
Katherine A Tennis	12	Unorganized Plants in the Unorganized Thunder Bay District
Christine N Thao	12	Exploration of Hole Spacing Correction factors in flute design
Pao Thao	12	Increasing temperature impact on magnetic strength
Juan Ruben Vallejo	12	The Effect of Volume of Balloon on Drag
Wameng Vang	12	Does temperature affect how you play tennis?
Christopher Vue	12	The Effect of Mass on Energy Lost Due to Rolling Friction
Jessica Weng	12	Can APOBEC3B gene be a therapeutic target for breast cancer?
Raymond L Williams III	12	Correlation of the Saturation of Colored Gels and their Burn Out Time
Lo X Xiong	12	The effect the counterweight has on the distance a projectile is fired
Max Ylitalo	12	Energy Production from Waste Reduction Phase III: Experimental Design Optimization of Surfactant Enhanced Waste Paper Hydrolysis
Tianhe Zhang	12	Watch Eternity



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TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

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

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

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

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

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

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

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

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

TWIN CITIES REGIONAL SCIENCE FAIR "ISEF" ALUMNI

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

2010	Prithwis Mukhopadhyay Woodbury Sr High School, Woodbury	2013	Andrew Ylitalo Stillwater High School, Stillwater
2010	Tiffanie Stone AFSA High School, Vadnais Heights	2013	Aditi Das Roseville Area High School, Roseville
2010	Martin Camacho Central Senior High School, St. Paul	2013	Connor Duffy Mounds View High School, Arden Hills
2010	Houa Xiong Johnson High School, St. Paul	2013	Graham Gabrielson Harding High School, St. Paul
2010	Gavin Ovsak Eden Prairie Senior High School	2013	Mai Moua Harding High School, St. Paul
2010	Charles Morris Breck School, Minneapolis	2013	Carolyn Jons Eden Prairie Senior High School, Eden Prairie
2010	Ava Mokhtari Breck School, Minneapolis - Team	2013	Jessica Ryvlin Breck School, Minneapolis
2010	Addison Weiler Breck School, Minneapolis - Team	2013	Apurv Hirsh Shekhar Blake High School - Northrop campus
2010	Ashley Santilli Burnsville High School, Burnsville - Team	2014	Carolyn Jons Eden Prairie Senior High School, Eden Prairie
2010	Emily Bostrom Burnsville High School, Burnsville - Team	2014	Jason Sylvestre Benilde-St. Margaret's, St. Louis Park
2011	Alysia Flores Johnson High School, St. Paul	2014	Jacob W Levy Breck School, Minneapolis - Team
2011	Andrew Ylitalo Stillwater High School, Stillwater	2014	Sofie M Kim Breck School, Minneapolis - Team
2011	Martin Anderson Burnsville High School, Burnsville	2014	Aditi Das Roseville Area Senior High, Roseville
2011	Redeat Abegaz Burnsville High School, Burnsville	2014	Heather J Stone Mounds View High School, Arden Hills
2011	Gavin Ovsak Eden Prairie Senior High School	2014	Amrita Mohanty Woodbury Sr High School, Woodbury
2011	(Ernst) Tom Erdmann Breck School, Minneapolis	2014	Nicolina Mao Harding High School, St. Paul
2012	Andrew Ylitalo Stillwater High School, Stillwater	2014	Rosemary O Olatunbosun Harding High School, St. Paul
2012	Keshav Mangalick Mounds View High School	2015	Amrita Mohanty Woodbury Sr High School, Woodbury
2012	Margaret Green Burnsville High School, Burnsville - Team	2015	Maxwell Ylitalo Stillwater High School, Stillwater
2012	Laura Landgraf Burnsville High School, Burnsville - Team	2015	Aadarsh Padiyath Woodbury Sr High School, Woodbury
2012	Caleb Kumar Breck School, Minneapolis	2015	Carolyn Jons Eden Prairie Senior High School, Eden Prairie
2012	Taylor McCanna Breck School, Minneapolis	2015	Arush Jain Eden Prairie Senior High School, Eden Prairie
2012	Alejandro Fenn Breck School, Minneapolis - Team	2015	Emilia Topp-Johnson St Paul Academy & Summit School, St. Paul
2012	William Engel Breck School, Minneapolis - Team	2015	Serena Jing Central Senior High School, St. Paul
2012	Thomas Vennemann Johnson High School, St. Paul		

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 Aerospace Award
3M Inventor Award
3M Renewable Energy Award
American Chemical Society
American Council of Engineering Companies
American Meteorological Society
American Psychological Association
ASM Materials Education International Foundation
ASM Materials Education Foundation
Association of Women Geoscientists
ASU Walton Sustainability Solutions Initiatives
Bright Future Award - Carolyn Jons
Broadcom MASTERS (Math, Applied Science, Technology, and Engineering for Rising Stars)
Caffeinated Student Award – Kyra Underbakke
East Side Science Club Alumni Excellence Award
Glen & Jacob Domeier Memorial Graduate Women in Science
Inspiring Excellence, Inc. Award
Integrated Approach to Science
Intel Excellence in Computer Science
International Science & Engineering Fair (ISEF)
ISEF Alumni Award – Mike Lohman, Jr. (1996, 1997, 1998, 1999)
ISEF Alumni Awards – Kyra Underbakke (2007, 2008)
ISEF Alumni Awards – Kyrstin Underbakke Ball (2005)
ISEF Alumni Awards – Timara Underbakke (1973)
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Joel Wagner Caring Bridge Award
Junior Science & Humanities Symposium
Killeen Memorial Award
Leeward Space Foundation Twin Cities Space Award
Minnesota Agriculture in the Classroom
Minnesota Astronomical Society
Minnesota Chapter of American Fisheries Society
Minnesota Horticulture Society
Minnesota Space Frontier Society
Minnesota State Science & Engineering Fair
Mu Alpha Theta Mathematics
NASA EARTH System Science Award
National Society of Professional Engineers
NOAA National Oceanic and Atmospheric Administration
North Central Tri-state Junior Science & Humanities Symposium Research Papers
Penny Lohman Memorial Award
Radio City
Research Paper trophies
Ricoh Sustainable Development Award
Schools trophies
Society for In Vitro Biology

Sponsor: 3M Foundation
Sponsor: ATK Alliant Techsystems
Sponsor: Dow Chemical
Sponsor: Ecolab
Sponsor: Isthmus Engineering & Manufacturing
Sponsor: Medtronic
Sponsor: Midway Party Rental
Sponsor: Mintáhoe Hospitality Services
Sponsor: Office Max
Sponsor: Slattery Sales
Sponsor: St. Paul Youth Fund
Sponsor: University of Minnesota
State Science Fair – Research Papers
State Science Fair - Projects
Stockholm Junior Water Prize
Teacher Excellence Award
University of Minnesota College of Science and Engineering Award
University of Minnesota School of Social Work
Research for the Common Good Award
US Air Force
US Army
US Department of Health and Human Services
US Metric Association
US Navy/Marine Office of Naval Research
USDA Forest Service
USDA Research Service
West Metro Medical Society Alliance
Yale Science and Engineering Association



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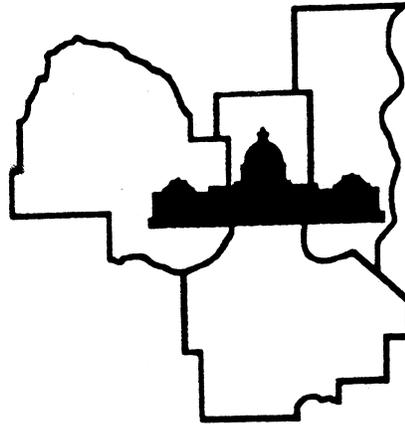
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Project presentation hosted by the University of Minnesota

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

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

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



2015-2016 Twin Cities Regional Science Fair Committee

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Public Relations:	Michael Lohman, Sr	Phill Goldmann	Kyrstin Ball
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	Nancy Day	Arthur C. Johnson	Tim Ford
	Amy Stone	Karilyn Jons	Dr. Jyothsna Rayadurg
		Dr. Steven Jons	
		Michael Lohman, Jr	We have additional
		Jacinda Lohman	volunteer openings for
		Anu Jain	those interested.