

**INTERNATIONAL SCIENCE AND ENGINEERING FAIR:** selected to go directly to international competition in Cleveland, OH, May 11-17, 2003:

**FINALISTS:**

**Twin Cities:**

1061T, **Jessica Swartz:** Differentiation of RN336 Cells into Cholinergic Neurons in Vitro

1063T, **Ning Zhou:** Development of Topographic Projection of Retinal Ganglion Axon to the Brain

**St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

**Western Suburbs:**

1024W, **Brendan Doms:** MT-3 & Metal in Mouse Brain Alzheimer's Tissue

1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator

**ALTERNATES:**

**Twin Cities:**

1030T, **Kyrstin Underbakke:** Effects of Fertilizer & Gibberellic Acid on Rapid Cycling Brassica rapa

1036T, **Adam Hahn:** Identifying Optimal Genetic Operators to Control a Neural Network

**St. Paul:**

1051S, **Liv Anderson:** Sport of Kings & Statisticians: Mathematical Modeling

**Western Suburbs:**

1068W, **Emily Stiever:** Antibiotic Resistance in Escherichia coli Isolates

1077W, **Trisha Dwivedi:** Effects of Pesticide Residue & Rainfall on Monarchs

**SPONSORS AWARDS:** Winners must be present at the Awards Ceremony. Awarded to the best projects that represent TCRSF to the sponsors.

**Bronze Level:** Ribbon

**General E. W. Rawlings Chapter, Air Force Association**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

**Silver Level:** Plaque

**Alliant Techsystems:**

1037T, **Timothy Underbakke:** Parallelism & Pipelining in X86 Architecture

**Ecolab:**

1047T, **Samantha Hanson:** Acid Rain

**Gold Level:** Plaque

**The Medtronic Foundation**

1033T, **William Mitchell:** Altering Electron Density of Ferrocene-Capped Thiophene

**St. Paul Youth Fund**

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

**Platinum Level:** Plaque:

**3M Foundation**

1024W, **Brendan Doms:** MT-3 & Metal in Mouse Brain Alzheimer's Tissue

**University of Minnesota**

1022T, **Cydney Wuerffel:** Teen Awareness on Title IX

**DISCOVERY JUNIOR SCIENCE COMPETITION:** Top students from 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades are nominated to the next level of competition, and will receive a pin and a certificate.

6010T, **Braden Eliason:** Determining Quality of Packaging Tape

6015T, **Teresa Yang:** Effect of Particle Size on Chemical Reaction Time

6019T, **Tim Wratkowski:** Does Grass Help Prevent Erosion?

6047S, **Maggie Rufener:** To Rust or Not to Rust

6047S, **Julia Stumpf:** To Rust or Not to Rust

6051T, **Angie Tsuei:** What Preserves Food the Best?

7020S, **Nathaniel Swanson:** Effects of Sugars & Sugar Compounds on Yeast

7030S, **Maddie Martin:** Plants & Water Quality

7033S, **Gretchen Nelson:** Photosynthesis

7040S, **Grady Christopherson:** What are the Conditions Under Which Oxidation Forms Most Rapidly?

7055S, **Remy Taghavi:** How Does Salt Concentration in Water Affect its Boiling Point?

7074T, **Jonathan Killiam:** How Do Airplanes Get Lift?

7079T, **Christopher Lutz:** Snow Making

7082T, **Frances Wehrwein:** Picture Perfect Paint? Lead Hazards in Older Houses

7087T, **Darrin Beekman:** Diabetes Dilemma

7089T, **Saarika Ellis:** Which Fruit Juice Contains the Most Vitamin C?

7091T, **Annie Georges:** Sight in Light or Night

7101T, **Nada Abou-Karam:** Do Plants Show Antibacterial Activity?

7119T, **Philip Hansen:** What Propeller on a Windmill Generates the Most Electricity?

7122T, **Griffin Koerner:** Pendulum Laws

7134W, **Lucas Bertram:** Red Fish, Blue Fish, or Maybe Yellow Fish?

7152T, **Sam Downes-Borowski:** Soil Erosion

7152T, **Rachel Gernes:** Soil Erosion

7169W, **Kyle Egerdal:** Bridges

8008W, **Allison Fullerton:** Cry 1Ab Protein Level Variations in Zea mays Tissue Samples

8032S, **Andres Waalen:** Phosphate Content & Algae Counts in Twin City Water

8033S, **John Olson:** Using Diffraction to Study Hair Diameter

8049S, **Katherine Keough:** Influence of Synthetic Particles on Certain Pig Virus

8062T, **Dominic Pitera:** Bridges

8081T, **Beth Braun:** Nutrition, Weight & Activity

8081T, **Meghan Stumpf:** Nutrition, Weight & Activity

8093W, **Adam Allen:** Help Terraform Amrs by Extracting the Oxygen in the Soil

8094W, **Yaicha Bookhout:** Does Biotin Affect the Regeneration Process of Planarian?

8094W, **Alison Liewen:** Does Biotin Affect the Regeneration Process of Planarian?

**MINNESOTA ACADEMY OF SCIENCE STATE FAIR:** Projects selected for competition in Duluth, Minnesota, April 11-13, 2003.

#### **High School**

1003T, **Elizabeth Boe:** Associations Between Phobias in High School Students

1006S, **Angelique Edgerton:** How Do Different Ages Look at Violence?

1008T, **Derek Horkey:** Criminal Law Jury Selection: Who Gets Cut?

1012T, **Meghan Kirby:** Work Habits & Production of Heterogeneous & Homogenous Gender Groups

1013T, **Rachael Kraemer:** Gender Discrimination in Consumer Service

1014T, **Laura Mortensen:** Do Violent Movies Determine Violent Behavior?

1024W, **Brendan Doms**: MT-3 & Metal in Mouse Brain Alzheimer's Tissue  
1029T, **John Shaeffer**: Crossbreeding & Analysis in *Dendrothema grandiflora* & *Gaura lindheimeri*  
1030T, **Kyrstin Underbakke**: Effects of Fertilizer & Gibberellic Acid on Rapid Cycling Brassica rapa  
1033T, **William Mitchell**: Altering Electron Density of Ferrocene-Capped Thiophene  
1036T, **Adam Hahn**: Identifying Optimal Genetic Operators to Control a Neural Network  
1037T, **Timothy Underbakke**: Parallelism & Pipelining in X86 Architecture  
1038W, **Megan Teckman**: Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization  
1040T, **Erin Bast**: Different Blade Dimensions at Varying Wind Speeds  
1041W, **Javier Cabrera-Perez**: Data Gathering Method for a Double-well Duffing Oscillator  
1045T, **Mike McCullough**: Medieval Artillery - The Trebuchet  
1046T, **Katherine Westby**: Zinc & Magnesium Sacrificial Anodes in Varied Environmental Conditions

1049S, **PsCha Yang**: Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

1051S, **Liv Anderson**: Sport of Kings & Statisticians: Mathematical Modeling  
1052S, **Benjamin Flath**: Bioinformatics: Constructing Polygenetic Trees  
1057W, **Brendan Hurd**: Peripheral Fatigue of Voluntary Muscle Contractions  
1061T, **Jessica Swatz**: Differentiation of RN336 Cells into Cholinergic Neurons in Vitro  
1063T, **Ning Zhou**: Development of Topographic Projection of Retinal Ganglion Axon to the Brain

1068W, **Emily Stiever**: Antibiotic Resistance in *Escherichia coli* Isolates  
1069S, **A. Noel Suri**: Optimizing Conditions for Environmental Cleanup  
1072T, **Jacob Fitzpatrick**: Pitch Frequencies of Five Bach Inventions  
1075T, **Laurel Rowse**: Effectiveness of Relative Humidity on Violin Sound Wave: Phase II  
1077W, **Trisha Dwivedi**: Effects of Pesticide Residue & Rainfall on Monarchs  
1078T, **Vikash Kanodia**: Food Preferences & Growth Rates of Mussels  
1079W, **Lavren Nazarian**: Effect of Melatonin on Mongolian Gerbils  
1083T, **Catherine McCarthy & Kelsey Van Ordstrand**: Conc. Dependent & Independent Antibiotics Against *Pseudomonas aeruginosa*  
1085W, **Chris Bassett & Brandon Fenn**: Preparation of Phospholamban for Fluorescence Experiments

### **Grade 8**

8007W, **Mahati Chintapalli**: Hybridization of Bravo Purple and Primetime White  
8009S, **Elizabeth Lee**: Purple Clover Growth: Music's Effect on Plants  
8039T, **Patrick Hangge**: Color & Taste  
8047T, **Elizabeth Yares**: Anorexia Nervosa  
8064T, **David Ricke**: Which Airfoil Design Creates the Most Lift  
8065T, **Andrew Schneider**: Which Angle of Fire Provides the Greatest Distance?  
8073T, **Nick Thompson**: Effect of Car Shape on Aerodynamic Drag  
8092W, **Elizabeth Kircher**: Does Phosphorus Impact *Daphnia*?  
8005T, **Nick Salmen**: Effects of Music on Heartbeats  
8008W, **Allison Fullerton**: Cry 1Ab Protein Level Variations in *Zea mays* Tissue Samples  
8017S, **Elizabeth Peterson**: Does Frequency Affect the Crystalline Structure of Water  
8023S, **Alex Hewett**: Airplanes & Propellers  
8025S, **Peter Labuza**: Evaluation of Moisture Transfer Through Packaging

8031S, **Tom Ryan:** Astonishing Toilet Paper Test  
8032S, **Andres Waalen:** Phosphate Content & Algae Counts in Twin City Water  
8033S, **John Olson:** Using Diffraction to Study Hair Diameter  
8048S, **Erik Halvorson:** Cyanobacteria Growth in Urban Water Sources  
8049S, **Katherine Keough:** Influence of Synthetic Particles on Certain Pig Virus  
8062T, **Dominic Pitera:** Bridges  
8081T, **Beth Braun & Meghan Stumpf:** Nutrition, Weight & Activity  
8082T, **Hannah Hohn & Erin McCabe:** Plants & Worms  
8089W, **Amanda Dorman:** Which Sugar will Metabolize Faster, Fructose or Sucrose?  
8093W, **Adam Allen:** Help Terraform Mars by Extracting the Oxygen in the Soil  
8094W, **Yaicha Bookhout & Alison Liewen:** Does Biotin Affect the Regeneration Process of Planarian?

### **Grade 7**

7002T, **Elizabeth Duffy:** Color's Affect on Memory  
7006T, **Calvin Pupkes:** Goal Setting  
7008S, **Ted Sorensen:** Left Brain, Right Brain, Who does better at math?  
7020S, **Nathaniel Swanson:** Effects of Sugars & Sugar Compounds on Yeast  
7025S, **Danny Docherty:** Soil Compaction  
7030S, **Maddie Martin:** Plants & Water Quality  
7031S, **Charles Moos:** How do Different Water Solutions Affect Grass Growth?  
7033S, **Gretchen Nelson:** Photosynthesis  
7040S, **Grady Christopherson:** What are Conditions Under Which Oxidation Forms Most Rapidly?  
  
7045T, **Matt Jonza:** Viscosity  
7055S, **Remy Taghavi:** How Does Salt Concentration in Water Affect its Boiling Point?  
7062T, **Kyra Underbakke:** Dynamically Adjusting Web Site  
7065S, **Ruth Heyer:** Water's Race through Soil  
7072T, **Catherine Cleary:** Paper Towels: Which Brand is Strongest?  
7073T, **Madelynn Kettner:** Which Insulation is Most Effective?  
7074T, **Jonathan Killiam:** How Do Airplanes Get Lift?  
7075T, **Katrina Krogh:** How Does Nigeria's Pot-in-Pot Cooler Compare to a U.S. Refrigerator  
7079T, **Christopher Lutz:** Snow Making  
7082T, **Frances Wehrwein:** Picture Perfect Paint? Lead Hazards in Older Houses  
7085S, **Nancy Dietman:** A Rule for Divisibility  
7087T, **Darrin Beekman:** Diabetes Dilemma  
7089T, **Saarika Ellis:** Which Fruit Juice Contains the Most Vitamin C?  
7091T, **Annie Georges:** Sight in Light or Night  
7095S, **Claire Laine:** Yoga on Hypertension  
7099T, **Michael Ward:** Effects of Amp  
7101T, **Nada Abou-Karam:** Do Plants Show Antibacterial Activity?  
7104S, **Susie Scanlan:** How Different Types of Food Affect the Rate of Tooth Decay  
7109T, **Paula Thelen:** Mold  
7112T, **Jane Bieniek:** What Factors Affect Ease in Vaulting?  
7119T, **Philip Hansen:** What Propeller on a Windmill Generates the Most Electricity?  
7122T, **Griffin Koerner:** Pendulum Laws  
7134W, **Lucas Bertram:** Red Fish, Blue Fish, or Maybe Yellow Fish?  
7135S, **Elisabeth Edgerton:** How Does a Differed Diet Affect a Mouse Population?  
7152T, **Sam Downes-Borowski & Rachel Gernes:** Soil Erosion

7157T, **Toby Abramson & Nick Ray Olson**: Colorblindness  
7165W, **Curt Schmidt**: The Cleaning Competition  
7169W, **Kyle Egerdal**: Bridges  
7170W, **Danica Harvey**: Air Pollution and its Effect on Plants

**RESEARCH PAPERS SELECTED FOR COMPETITION AT THE MINNESOTA ACADEMY OF SCIENCE STATE FAIR, DULUTH, MINNESOTA IN APRIL 11-13, 2003.**

**Senior Division:**

P02 **Brendan Hurd**: Peripheral Fatigue of Voluntary Muscle Contractions  
P04 **A. Noel Suri**: Optimizing Conditions for Environmental Cleanup  
P05 **Ning Zhou**: Development of Topographic Projection of Retinal Ganglion Axon to the Brain  
P08 **Trisha Dwivedi**: Effects of Pesticide Residue & Rainfall on Monarchs  
P09 **John Shaeffer**: Crossbreeding & Analysis in *Dendrothema grandiflora* & *Gaura lindheimeri*  
P10 **William Mitchell**: Altering Electron Density of Ferrocene-Capped Thiophene  
P13 **Megan Teckman**: Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization  
P14 **Brendan Doms**: MT-3 & Metal in Mouse Brain Alzheimer's Tissue  
P15 **Melanie Thomas**: Characteristics of Adult & Adolescent Smokers Seeking Cessation  
P16 **Lavren Nazarian**: Effect of Melatonin on Mongolian Gerbils  
P24 **Kathi Dioregono**: What is the Most Effective Technique off a Dive Start  
P31 **Michael Vallez**: Effects of PC CPU Speeds on Benefits of Lower Latency RAM  
P32 **Susan Copp**: Effect of Fertilizers on Growth of Corn & Soybeans  
P38 **Dorisa Tranby**: Music & the Mind: A Direct Correlation  
P39 **Erin Bast**: Different Blade Dimensions at Varying Wind Speeds

**Junior Division:**

P06 **Nathaniel Flath**: Searching a Quantum Database  
P53 **Nora McConnell-Johnson**: How Do Expectations Affect Performance?  
P54 **Nate Juergens**: Effect of Electromagnetic Fields on Radishes  
P56 **Anders Waalen**:  
P59 **Lauren Haefemeyer**: Are We Prepared for a Smallpox Attack?  
P61 **Emily Fate**: Do Drunk Buster Goggles Effectively Impair All People?  
P62 **Elizabeth Peterson**: Does frequency affect the crystalline structure of water  
P63 **Peter Labuza**: Evaluation of Moisture Transfer Through Packaging  
P64 **Frances Wehrwein**: Picture Perfect Paint? Lead Hazards in Older Houses

**TOP SENIOR HIGH PAPERS:** Trophy

**First:** P05 **Ning Zhou**: Development of Topographic Projection of Retinal Ganglion Axon to the Brain

**Second:** P09 **John Shaeffer**: Crossbreeding & Analysis in *Dendrothema grandiflora* & *Gaura lindheimeri*

**Third:** P16 **Lauren Nazarian**: Effect of Melatonin on Mongolian Gerbils

**TOP JUNIOR HIGH PAPERS:** Trophy

**First** P61 **Emily Fate**: Do Drunk Buster Goggles Effectively Impair All People?

**Second** P64 **Frances Wehrwein**: Picture Perfect Paint? Lead Hazards in Older Houses

**Third:** P06 **Nathaniel Flath**: Searching a Quantum Database

## **PROJECT MEDALISTS:**

### **Senior High**

- 1006S, **Angelique Edgerton:** How Do Different Ages Look at Violence?  
1008T, **Derek Horkey:** Criminal Law Jury Selection: Who Gets Cut?  
1013T, **Rachael Kraemer:** Gender Discrimination in Consumer Service  
1024W, **Brendan Doms:** MT-3 & Metal in Mouse Brain Alzheimer's Tissue  
1033T, **William Mitchell:** Altering Electron Density of Ferrocene-Capped Thiophene  
1036T, **Adam Hahn:** Identifying Optimal Genetic Operators to Control a Neural Network  
1037T, **Timothy Underbakke:** Parallelism & Pipelining in X86 Architecture  
1038W, **Megan Teckman:** Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization  
1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator  
1049S, **PsCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn
- 1057W, **Brendan Hurd:** Peripheral Fatigue of Voluntary Muscle Contractions  
1061T, **Jessica Swatz:** Differentiation of RN336 Cells into Cholinergic Neurons in Vitro  
1063T, **Ning Zhou:** Development of Topographic Projection of Retinal Ganglion Axon to the Brain

- 1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup  
1072T, **Jacob Fitzpatrick:** Pitch Frequencies of Five Bach Inventions  
1078T, **Vikash Kanodia:** Food Preferences & Growth Rates of Mussels

### **Grade 8**

- 8005T, **Nick Salmen:** Effects of Music on Heartbeats  
8008W, **Allison Fullerton:** Cry 1Ab Protein Level Variations in Zea mays Tissue Samples  
8017S, **Elizabeth Peterson:** Does Frequency Affect the Crystalline Structure of Water  
8023S, **Alex Hewett:** Airplanes & Propellers  
8025S, **Peter Labuza:** Evaluation of Moisture Transfer Through Packaging  
8031S, **Tom Ryan:** Astonishing Toilet Paper Test  
8032S, **Andres Waalen:** Phosphate Content & Algae Counts in Twin City Water  
8033S, **John Olson:** Using Diffraction to Study Hair Diameter  
8048S, **Erik Halvorson:** Cyanobacteria Growth in Urban Water Sources  
8049S, **Katherine Keough:** Influence of Synthetic Particles on Certain Pig Virus  
8062T, **Dominic Pitera:** Bridges  
8081T, **Beth Braun:** Nutrition, Weight & Activity  
8081T, **Meghan Stumpf:** Nutrition, Weight & Activity  
8082S, **Hannah Hohn:** Plants & Worms  
8082T, **Erin McCabe:** Plants & Worms  
8093W, **Adam Allen:** Help Terraform Mars by Extracting the Oxygen in the Soil  
8094W, **Yaicha Bookhout:** Does Biotin Affect the Regeneration Process of Planarian?  
8094W, **Alison Liewen:** Does Biotin Affect the Regeneration Process of Planarian?

### **Grade 7**

- 7006T, **Calvin Pupkes:** Goal Setting  
7008S, **Ted Sorensen:** Left Brain, Right Brain, Who does better at math?  
7020S, **Nathaniel Swanson:** Effects of Sugars & Sugar Compounds on Yeast  
7030S, **Maddie Martin:** Plants & Water Quality  
7033S, **Gretchen Nelson:** Photosynthesis  
7040S, **Grady Christopherson:** What are Conditions Under Which Oxidation Forms Most Rapidly?

7045T, **Matt Jonza:** Viscosity  
7055S, **Remy Taghavi:** How Does Salt Concentration in Water Affect its Boiling Point?  
7065S, **Ruth Heyer:** Water's Race through Soil  
7072T, **Catherine Cleary:** Paper Towels: Which Brand is Strongest?  
7073T, **Madelynn Kettner:** Which Insulation is Most Effective?  
7074T, **Jonathan Killiam:** How Do Airplanes Get Lift?  
7079T, **Christopher Lutz:** Snow Making  
7082T, **Frances Wehrwein:** Picture Perfect Paint? Lead Hazards in Older Houses  
7085S, **Nancy Dietman:** A Rule for Divisibility  
7087T, **Darrin Beekman:** Diabetes Dilemma  
7089T, **Saarika Ellis:** Which Fruit Juice Contains the Most Vitamin C?  
7091T, **Annie Georges:** Sight in Light or Night  
7095S, **Claire Laine:** Yoga on Hypertension  
7099T, **Michael Ward:** Effects of Amp  
7101T, **Nada Abou-Karam:** Do Plants Show Antibacterial Activity?  
7109T, **Paula Thelen:** Mold  
7119T, **Philip Hansen:** What Propeller on a Windmill Generates the Most Electricity?  
7122T, **Griffin Koerner:** Pendulum Laws  
7134W, **Lucas Bertram:** Red Fish, Blue Fish, or Maybe Yellow Fish?  
7152T, **Sam Downes-Borowski:** Soil Erosion  
7152T, **Rachel Gernes:** Soil Erosion  
7165W, **Curt Schmidt:** The Cleaning Competition  
7169W, **Kyle Egerdal:** Bridges

#### **Grade 6**

6002S, **Teddy Woodward:** Does Caffeine Affect the Mental Performance of Children  
6004T, **Brandi Ingberg:** Does Music Have an Effect on Plants?  
6005S, **Sarah L. Johnson:** Whats Best for Plants: Inside or Outside a Greenhouse?  
6010T, **Braden Eliason:** Determining Quality of Packaging Tape  
6015T, **Teresa Yang:** Effect of Particle Size on Chemical Reaction Time  
6019T, **Tim Wratkowski:** Does Grass Help Prevent Erosion?  
6022T, **Katie Corey:** What Brand of Paper Towels/Napkins Breaks Down the Fastest?  
6025T, **Kelly O'Grady:** Dragonflies of Tamarach Restoration Site  
6027T, **Patrick Fournier:** Germ Control  
6029T, **Tyler Martindale:** How Sleep Affects Behavior  
6032S, **Berit Goetz:** How Does Rotational Inertia Affect the Speed of Rolling Objects?  
6044S, **Bridget Casper:** Healthy Hearts  
6044S, **Ellie Hottinger:** Healthy Hearts  
6046T, **Briana Smith:** How We Relate to Our Computers  
6046T, **Erika Smith:** How We Relate to Our Computers  
6047S, **Maggie Rufener:** To Rust or Not to Rust  
6047S, **Julia Stumpf:** To Rust or Not to Rust  
6049T, **Brita Bliss:** What Brand of Paper Towel Works Best?  
6049T, **Kari Tjossem:** What Brand of Paper Towel Works Best?  
6050S, **Callie McDonald:** What's Your Load?  
6050S, **Marie Tierney:** What's Your Load?  
6051T, **Angie Tsuei:** What Preserves Food the Best?

**MINNESOTA CHAPTER OF THE AMERICAN FISHERIES SOCIETY:**

**Senior High**

1078T, **Vikash Kanodia:** Food Preferences & Growth Rates of Mussels

**Junior High**

7140T, **Ellen Thoennes Keller:** Somethin's Fishy: Relationship Between Food Quantity & Goldfish Health

**HENNEPIN MEDICAL SOCIETY ALLIANCE:** Certificate and \$50 savings bond

**Senior High:**

1062T, **Melanie Thomas:** Characteristics of Adult & Adolescent Smokers Seeking Cessation

**Junior High:**

7093T, **Reid Johnson:** The Beat Goes On

**ASSOCIATION OF WOMEN GEOSCIENTISTS:** Certificate to female whose project exemplifies high standards of innovativeness and scientific excellence in the geosciences.

**Twin Cities:**

1030T, **Kyrstin Underbakke:** Effects of Fertilizer & Gibberellic Acid on Rapid Cycling Brassica rapa

**St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

**Western Suburbs:**

1077W, **Trisha Dwivedi:** Effects of Pesticide Residue & Rainfall on Monarchs

**SOCIETY FOR IN VITRO BIOLOGY:** Certificate to the most outstanding 11<sup>th</sup> grade student exhibiting in the areas of plant or animal in vitro biology or tissue culture.

**Twin Cities:**

1061T, **Jessica Swatz:** Differentiation of RN336 Cells into Cholinergic Neurons in Vitro

**St. Paul:**

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

**Western Suburbs:**

1024W, **Brendan Doms:** MT-3 & Metal in Mouse Brain Alzheimer's Tissue

**U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES:** Certificate to the students who creatively illustrate and expand on healthy lifestyles, healthy diets and no tobacco use.

**Twin Cities:**

1062T, **Melanie Thomas:** Characteristics of Adult & Adolescent Smokers Seeking Cessation

**St. Paul:**

1006S, **Angelique Edgerton:** How Do Different Ages Look at Violence?

**Western Suburbs:**

1057W, **Brendan Hurd:** Peripheral Fatigue of Voluntary Muscle Contractions

**EAST-SIDE SCIENCE CLUB ALUMNI AWARDS:** Medals are presented to nine outstanding youths that demonstrate innovation and creativeness in project development.

6047S, **Maggie Rufener:** To Rust or Not to Rust

7068T, **Regina Quandt:** What Type of Water Will Evaporate Fastest?

7169W, **Kyle Egerdal:** Bridges

7008S, **Ted Sorensen:** Left Brain, Right Brain, Who does better at math?



7012T, **Sarah Wilde:** How Does Gender Affect Working Memory?

7164W, **Devin Kling:** Making Cookies with Baking Powder

8018S, **Monica Rupert:** Chlorine in the Murray Pool

8023S, **Alex Hewett:** Airplanes & Propellers

8027T, **Galen Smith:** "E" Fuel of the Future

**AMERICAN METEOROLOGICAL SOCIETY:** Certificates or outstanding achievement in Meteorological Science.

**First Place:**

8027T, **Galen Smith:** "E" Fuel of the Future

**Second Place:**

8083S, **Emma Bruggeman, Anna Nation & Emma Olmstead-Rumsey:** SOSOSO<sub>2</sub>: Effects of Acid Rain on Moss

**Third Place:**

7063T, **Emily Dillard:** Which Weather Forecast is More Accurate?

7077T, **James Hefferman:** Does Acid Rain Affect Plant Growth?

**EASTMAN KODAK COMPANY:** Camera kit to student and school.

**Twin Cities:**

1061T, **Jessica Swatz:** Differentiation of RN336 Cells into Cholinergic Neurons in Vitro, from Bloomington Jefferson High School

**St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn, from Johnson High School, St. Paul

**Western Suburbs:**

1038W, **Megan Teckman:** Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization, from Breck School

**U.S. METRIC ASSOCIATION:** Certificate to the student whose project involves a significant amount of quantitative measurement and which best uses the metric system.

**Twin Cities:**

1063T, **Ning Zhou:** Development of Topographic Projection of Retinal Ganglion Axon to the Brain

**St. Paul:**

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

**Western Suburbs:**

1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator

**INTEL EXCELLENCE IN COMPUTER SCIENCE AWARD:** Certificate and \$200 check (in the mail)

**Twin Cities:**

1036T, **Adam Hahn:** Identifying Optimal Genetic Operators to Control a Neural Network

**St. Paul:**

1051S, **Liv Anderson:** Sport of Kings & Statisticians: Mathematical Modeling

**Western Suburbs:**

1037T, **Timothy Underbakke:** Parallelism & Pipelining in X86 Architecture

**STOCKHOLM JUNIOR WATER PRIZE:** Certificate and entry in further competition to the student whose project is aimed at improving the quality of water, water resource management, water protection or water and wastewater treatment.

**Twin Cities:**

1084T, **Ian Hill & Stephanie Nitzschke:** Effects of Coal Burning Power Plant on Neighboring Waters

**St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

**THE ASM INTERNATIONAL FOUNDATION AWARD:** Certificate and medallion recognizing the winner of the best materials engineering project.

**Twin Cities:**

1043T, **Ksana Harrison:** What Wood do You Want for Your Deck?

**ACEC OF MINNESOTA:** Certificates and One Grand Award

**Grand Award:** Scientific calculator

1046T, **Katherine Westby:** Zinc & Magnesium Sacrificial Anodes in Varied Environmental Conditions

**Honor Awards:** Certificate

1043T, **Ksana Harrison:** What Wood do You Want for Your Deck?

1044T, **Garrison Hunter:** How Far Will a Pressurized Rocket Go?

8064T, **David Ricke:** Which Airfoil Design Creates the Most Lift

8062T, **Dominic Pitera:** Bridges

7071T, **Elliot Amsbaugh:** What Types of Light Produce More Energy?

7074T, **Jonathan Killiam:** How Do Airplanes Get Lift?

6020T, **Ruben D'sa:** Which Object is Most Streamlined

6033T, **Patrick Maloney:** Which Ramp Coating Offers the Least Resistance?

**INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING:** Certificate & entry in further competition

**Twin Cities:**

7092T, **Lisa Grundtner:** Optical Lenses

**St. Paul:**

8033S, **John Olson:** Using Diffraction to Study Hair Diameter

**Western Suburbs:**

1038W, **Megan Teckman:** Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization

**YALE SCIENCE AND ENGINEERING ASSOCIATION, INC:** Certificate and medallion to the most outstanding eleventh grade exhibit in Computer Science, Engineering, Physics or Chemistry.

**Twin Cities:**

1074T, **Joel Radaj:** Effect of Temperature on Golf Ball Distance

**St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

**Western Suburbs:**

1057W, **Brendan Hurd:** Peripheral Fatigue of Voluntary Muscle Contractions

**ISEF ALUMNI AWARD:**

**Sponsor: Timara Underbakke:** \$25 and a certificate

7122T, **Griffin Koerner:** Pendulum Laws

**Sponsor: Michael Lohman:** for excellence in aviation, Telescope/Binocular Set

7070S, **Sai Vang:** Air Pressure

**MINNESOTA AGRICULTURE IN THE CLASSROOM:**

Certificate and \$75 to the best project in agricultural sciences

**Senior High:**

1030T, **Kyrstin Underbakke:** Effects of Fertilizer & Gibberellic Acid on Rapid Cycling Brassica rapa

**Junior High:**

8008W, **Allison Fullerton:** Cry 1Ab Protein Level Variations in Zea mays Tissue Samples

Certificates and \$75 to the best research paper in agricultural science

**Senior High**

P09 **John Shaeffer:** Crossbreeding & Analysis in Dendratherma grandiflora & Gaura lindheimeri

**Junior High**

P54 **Nate Juergens:** Effect of Electromagnetic Fields on Radishes

**USDA-AGRICULTURE RESEARCH SERVICE:** Books related to the area of study

6005S, **Sarah L. Johnson:** Whats Best for Plants: Inside or Outside a Greenhouse?

6019T, **Tim Wratkowski:** Does Grass Help Prevent Erosion?

7025S, **Danny Docherty:** Soil Compaction

7026T, **Daniel Englund:** Grass Fertilizers

8007W, **Mahati Chintapalli:** Hybridization of Bravo Purple and Primetime White

8032S, **Andres Waalen:** Phosphate Content & Algae Counts in Twin City Water

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

**MINNESOTA ASTRONOMICAL SOCIETY:** Certificate & prize package

7091T, **Annie Georges:** Sight in Light or Night

1038W, **Megan Teckman:** Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization

**MINNESOTA SPACE FRONTIER SOCIETY:** Certificate & prize package

6016S, **Justin Cusick:** Hot Air Balloon

6035T, **Kyle Rosenberg:** Which Paper Plane Has the Longest Flight Time?

7051T, **Kelly Roach:** Does the Ratio of Vinegar & Baking Soda Effect the Distance of the Rocket

7063T, **Emily Dillard:** Which Weather Forecast is More Accurate?

7074T, **Jonathan Killiam:** How Do Airplanes Get Lift?

7111S, **Zach Arney:** Stealth Technology

7126T, **Rebekah Power:** How Does an Airplane Fly?

7129T, **Lee Swanson:** Which Surface Creates Less Drag?

7143S, **Jake Fremont & Mike Lemke:** Aerodynamics

8023S, **Alex Hewett:** Airplanes & Propellers

8057T, **Erik Jorgensen:** Which Airfoil Design Creates the Most Lift?  
8064T, **David Ricke:** Which Airfoil Design Creates the Most Lift  
8087S, **Nino Caliandro & John Pickard:** Wings of Flight  
8093W, **Adam Allen:** Help Terraform Amrs by Extracting the Oxygen in the Soil  
1044T, **Garrison Hunter:** How Far Will a Pressurized Rocket Go?

**TCRSF TEAM PROJECT AWARDS:** Trophies to the best teams in each level of competition.

6047S, **Maggie Rufener & Julia Stumpf:** To Rust or Not to Rust  
7152T, **Sam Downes-Borowski & Rachel Gernes:** Soil Erosion  
8094W, **Yaicha Bookhout & Alison Liewen:** Does Biotin Affect the Regeneration Process of Planarian?

1083T, **Catherine McCarthy & Kelsey Van Ordstrand:** Conc. Dependent & Independent Antibiotics Against *Pseudomonas aeruginosa*

**GLEN DOMEIER MEMORIAL AWARD:** Compass & use book, \$50 to the project that best demonstrates excellence in environmental sciences.

8032S, **Andres Waalen:** Phosphate Content & Algae Counts in Twin City Water

**HERBERT HOOVER YOUNG ENGINEER AWARD:** Certificate and medal to the project that best demonstrates outstanding engineering effort.

**Twin Cities:**

1046T, **Katherine Westby:** Zinc & Magnesium Sacrificial Anodes in Varied Environmental Conditions

**St. Paul:**

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

**Western Suburbs:**

1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator

**INTEL EXCELLENCE IN ENVIRONMENTAL HEALTH AND SAFETY AWARD:** Certificate and \$200 (in the mail) for the best project in Environmental Science:

**Twin Cities:**

1048T, **Daniel Senstad:** Effects of Automobile Emissions on Bean Seed Germination

**St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

**Western Suburbs:**

1024W, **Brendan Doms:** MT-3 & Metal in Mouse Brain Alzheimer's Tissue

**SCHOOL TROPHIES:** Trophy to all participating schools.

Ag & Food Science Academy

Annunciation School

Anthony Middle School

Anwatin Middle School

Bethany Academy School

Blessed Trinity School

Bloomington Jefferson High School

Breck School

Burnsville High School

Calvin Christian School

Capitol Hill School

Central Middle School

Chaos Science Club

Christ the King - St. Thomas School

Como Park High School

Cyber Village Academy

Friends School of MN

Harding High School

Holy Trinity School  
Hopkins West Junior High School  
IHM-St. Luke's School  
Johnson High School  
Maranatha Christian Academy  
Mound Westonka High School  
Murray Junior High School  
Nativity of Our Lord School  
Presentation of B.V.M. School  
Ramsey Junior High School

Robbinsdale Cooper High School  
Robbinsdale Armstrong High School  
St. Charles Boromeo School  
St. Helena School  
St. John the Baptist School  
St. Pascal School  
St. Peter School  
Trinity Catholic School  
Wayzata High School

#### **UNITED STATES ARMY SCIENCE & ENGINEERING AWARDS:**

##### **Certificate and \$50 U. S. Savings Bond**

###### **Twin Cities:**

1036T, **Adam Hahn:** Identifying Optimal Genetic Operators to Control a Neural Network  
1039T, **Nathaniel Zieglmeier:** How Well Can a Homemade Electroscope Sense Static Electricity

1042T, **William Chester:** Boomology: Next Level of Boom  
1033T, **William Mitchell:** Altering Electron Density of Ferrocene-Capped Thiophene

###### **St. Paul:**

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

1053S, **Nathaniel Flath:** Searching a Quantum Database

###### **Western Suburbs:**

1038W, **Megan Teckman:** Analysis of a Blowout in Galaxy NGC 3628 Using Infrared Polarization  
1057W, **Brendan Hurd:** Peripheral Fatigue of Voluntary Muscle Contractions  
1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator

##### **Bonze Medallion and \$50 U. S. Savings Bond:**

###### **Twin Cities:**

1061T, **Jessica Swatz:** Differentiation of RN336 Cells into Cholinergic Neurons in Vitro

###### **St. Paul:**

1069S, **A. Noel Suri:** Optimizing Conditions for Environmental Cleanup

###### **Western Suburbs:**

1024W, **Brendan Doms:** MT-3 & Metal in Mouse Brain Alzheimer's Tissue

**NACE INTERNATIONAL:** Certificate to the project that best exhibits awareness of the importance of controlling and preventing corrosion.

###### **Twin Cities:**

1046T, **Katherine Westby:** Zinc & Magnesium Sacrificial Anodes in Varied Environmental Conditions

###### **St. Paul:**

8013S, **Tomas Glowka:** How Do Different Liquids Rust Metal?

**O'HALLORAN & MURPHY – ROSEVILLE:** Best project that shows a high level of empathy – Gravity Glass

7009S, **Megan Stinchfield:** Smallpox Vaccine: Knowledge & Beliefs

**UNITED STATES AIR FORCE:** Certificate, Dayplanner and Medal

1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator

1044T, **Garrison Hunter:** How Far Will a Pressurized Rocket Go?

1053S, **Nathaniel Flath:** Searching a Quantum Database

**UNITED STATES AIR FORCE CENTURY OF FLIGHT:** Certificate, T-shirt, entry into national competition

**Twin Cities:**

1040T, **Erin Bast:** Different Blade Dimensions at Varying Wind Speeds

1074T, **Joel Radaj:** Effect of Temperature on Golf Ball Distance

**St. Paul:**

1053S, **Nathaniel Flath:** Searching a Quantum Database

1049S, **PaCha Yang:** Effect of Increased Rainfall on the Inhibiting Effect of Common Buckthorn

**Western Suburbs:**

1041W, **Javier Cabrera-Perez:** Data Gathering Method for a Double-well Duffing Oscillator

1057W, **Brendan Hurd:** Peripheral Fatigue of Voluntary Muscle Contractions

**ARNOLD AIR SOCIETY, AIR FORCE ROTC:** T-shirt

7074T, **Jonathan Killiam:** How Do Airplanes Get Lift?

8064T, **David Ricke:** Which Airfoil Design Creates the Most Lift

**USS NOKOMIS MCC1858 AWARD:** Certificate

6025T, **Kelly O'Grady:** Dragonflies of Tamarach Restoration Site

6038T, **Anna Sondag:** Bed of Nails: How Much Pressure Can a Balloon Take?

6046T, **Briana Smith & Erika Smith:** How We Relate to Our Computers

7063T, **Emily Dillard:** Which Weather Forecast is More Accurate?

7110T, **Jonathan Alstad:** Collecting and Recording: Using a Parabolic Dish

7129T, **Lee Swanson:** Which Surface Creates Less Drag?

8069S, **Signe Midelfort-Vognar:** My Horse Ears