



63rd Annual Twin Cities Regional Science Fair
9th Annual St. Paul Science Fair
7th Annual Western Suburbs Science Fair

February 23 – 24, 2001

University of Minnesota Field House,
1800 University Avenue SE, Minneapolis

Project presentation hosted by The University of Minnesota

Research Paper Program hosted by Murray Junior High School, St. Paul

**Planning facilities provided by Allina Home Infusion,
American Academy of Neurology, and Slattery Sales Group**

Fair volunteers provided by U.S.S. Nokomis

Financial Sponsors

Platinum Level	Bandana Square – Jeffrey G. Roberts City of Saint Paul Youth Fund 3M Foundation University of Minnesota Wells Fargo Foundation
Gold Level	Alliant Techsystems
Silver Level	Medtronic Best Buy
Bronze Level	Ecolab Gen. E. W. Rawlings Chapter, Air Force Association MTS Systems Western Bank

*The Twin Cities Regional Science Fair is affiliated with the Minnesota Academy of Science,
The Intel International Science and Engineering Fair and Science Service, Inc.*

**SELECTED TO GO DIRECTLY TO THE
INTERNATIONAL SCIENCE AND ENGINEERING FAIR
San Jose, California, May 6-12, 2001**

Finalists:

TWIN CITIES:

205t Megan Bailey, Isolation & Identification of Novel Genes Linked to Heart Failure
145t Kathryn Gieselman, Modifying Honey into an Effective Pressure Sensitive Adhesive

ST. PAUL:

134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance

WESTERN:

129w Li Mei, Comparative Microarray Analysis of Spinocerebellar Ataxia Type 1 Transgenic
204w Laura Egerdal, Cysteine Reactivity in Stored & Fresh Muscle Fiber

TEAM:

198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant E. Coli

Alternates:

TWIN CITIES:

153t Michael Belisle, Aerodynamic Efficiency of Circular Wing Forms in a Constant Subsonic Flow

ST. PAUL:

203t Michael Min, Neuropathogenesis of Herpes Simples Virus in the Murine Brain

WESTERN:

112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats

TEAM

199s Kaonhou Her & PaCha Yang, Factors Affecting Plant Diversity at a Selected Site on Lake Phalen

MINNESOTA ACADEMY OF SCIENCE JUNIOR SCIENCE & HUMANITIES

SYMPOSIUM: Selected to present at the Tri-state Symposium without going through further competition.

8045t Michael McCullough, What Makes the Strongest Concrete Block?

SPONSOR AWARDS: Winners must present at the Award Ceremony

BRONZE LEVEL: Ribbons

ECOLAB: 631w Allison Fullerton, Variations in Mammalian Heart Rates

GEN. E. W. RAWLINGS CHAPTER, AIR FORCE ASSOCIATION: 148t Rayna DeMaster, Analyzing the Probability Of Extinction for a Radiating Blackbody

MTS SYSTEMS: 7110t Aaron Clark, Scuba Diving

WESTERN BANK: 8099t Heather Lewis, Red or Yellow, The Stroop Effect?

SILVER LEVEL: Plaque

MEDTRONIC: 203t Michael Min, Neuropathogenesis of Herpes Simples Virus in the Murine Brain

BEST BUY: 625t Evan Eliason, Science of Sound

GOLD LEVEL: Plaque

ALLIANT TECHSYSTEMS: 155w Peter Hauck, Treatment of Cake Flour Using Ozone as an Alternative to Chlorine

PLATINUM LEVEL: Plaque

BANDANA SQUARE – JEFFREY G. ROBERTS: 7005s Kinsey Diment, Gender Differences in Mental Computation For 5th Graders

CITY OF SAINT PAUL YOUTH FUND: 198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant E. coli

3M FOUNDATION: 126t Laura Gingras, Site-directed Mutagenesis, Expression & Purification of Myosin Light Chains

UNIVERSITY OF MINNESOTA: 103t Caleb Bousu, Male vs. Female Success in Knowledge Retrieval

WELLS FARGO FOUNDATION: 618s John Olson, How good is Excel's Random Number Generator?

DISCOVERY JUNIOR SCIENCE COMPETITION: T-shirt, lapel pin, certificate, and nomination to the next level of competition.

- 8045t Michael McCullough, What Makes the Strongest Concrete Block?
- 8028t Mary Pat Johnson, Triboluminescence
- 8041t John Naglak, What's Up With G's?
- 8086s Josh Sternfels, Ravenous Blob Physorum polycepholum
- 8098s Lena Olson, Effects of Muting Strings on Classical Guitar Sound Waves
- 8004w Katie Coldwell, Bottled Water; Is It Worth It?
- 8009t Emily Theis, Memory
- 8031s Matthew Schuweiler, Epoxies
- 8065s A. Noel Suri, Isolation of a Pure Culture Capable of Melamine Degradation
- 8099t Heather Lewis, Red or Yellow, The Stroop Effect
- 8100t Ben Greenwald, Root Shoot in Boogie
- 8032s Liv Anderson, Computer Rocketry for Dummies
- 8046s Claire O'Leary, Effects of Structure Materials on Hang Glider Flight Performance
- 8074s Jaymes Schoenberg, Laser Distortion
- 8073s Tim Scallen, Do Titanium Golf Balls Really Go Farther?
- 8079s Maddy Mulligan, Communication between Ants
- 8042s Ross Berman, Bridging the Gap
- 7054w Jennifer Marshall, Planetary Engineering Will Plants Grow on Mars?
- 7094t Adam Quade, Effects of Sweetened Beverages on Your Teeth
- 7059w Dylan Bauer, AM Radio Antennas
- 7075t Joshua Novacheck, Which Water is Healthier to Drink?
- 7119t Margarete Hileman, Pipes at the Breaking Point
- 7082t Erin Rivard, Home Court Advantage: Myth or Reality
- 7005s Kinsey Diment, Gender Differences in Mental Computation for 5th Graders
- 7006s Bryan Fate, How Does Background Music Affect Memory?
- 7100s David Abbott, Effect of Antibacterials on Pseudomonas and Micrococcus
- 7110t Aaron Clark, Scuba Diving
- 7091s Caitlin McGowan, Fungiform Papillae & Taste Perception
- 618s John Olson, How good is Excel's Random Number Generator?
- 616s Diane Galatowitsch, Do Earthworms Affect the Growth of Spring Flowers?
- 622s Kalia Her, Which Substance Will Re-hydrate Dehydrated Cells?
- 605t Irfaan Abid, How to Copperplate Metals

PROJECTS SELECTED FOR COMPETITION AT THE MINNESOTA ACADEMY OF SCIENCE STATE FAIR, ROCHESTER, ARIL 20-22, 2001

Seventh Grade

- 7054w Jennifer Marshall, Planetary Engineering Will Plants Grow on Mars?
- 7094t Adam Quade, Effects of Sweetened Beverages on Your Teeth
- 7059w Dylan Bauer, AM Radio Antennas
- 7075t Joshua Novacheck, Which Water is Healthier to Drink?
- 7119t Margarete Hileman, Pipes at the Breaking Point
- 7082t Erin Rivard, Home Court Advantage: Myth or Reality
- 7005s Kinsey Diment, Gender Differences in Mental Computation for 5th Graders
- 7006s Bryan Fate, How Does Background Music Affect Memory?
- 7100s David Abbott, Effect of Antibacterials on Pseudomonas and Micrococcus
- 7110t Aaron Clark, Scuba Diving
- 7091s Caitlin McGowan, Fungiform Papillae & Taste Perception
- 7141s Kerry York, DeBrazza's Monkey Behavior
- 7003s Michelle Clemens, How Age Affects Memory
- 7099s Julia Vinzant, Bacterial Resistance
- 7161t Amanda Bentfield, Which Toothpastes Prevent Bacteria Growth the Best?
- 7008t Jeffrey Oakes, Brain Exercises & Memory
- 7020w Drew Carlson, Is \Miracle Gro\ Really a Miracle Fertilizer?
- 7160t Grace Craig & Kelsi Anderson, Which Household Cleaning Supplies Harm Plants Most?
- 7016w Matthew Schuld, Got C?
- 7028s Claire Luby, Do Trees Grow Differently in Different Hardiness Zones?

- 7150t Robin Groschel & Amie Fillmore, Which Bridge Structure is the Strongest?
7097t Corey Velgersdyk, How to Keep Bananas Fresh Longer
7107t Alexandra Schwach, Pickling Brine: How Cucumbers Become Pickles
7114t Barret Elward, Blast from the Past - Which Oil for A Homemade Lava Lamp

Eighth Grade

- 8045t Michael McCullough, What Makes the Strongest Concrete Block?
8028t Mary Pat Johnson, Triboluminescence
8041t John Naglak, What's Up With G's?
8086s Josh Sternfels, Ravenous Blob Physorum polycepholum
8097t Amanda Wojdyla, Does Bad Music Make You Crabby?
8098s Lena Olson, Effects of Muting Strings on Classical Guitar Sound Waves
8004w Katie Coldwell, Bottled Water; Is It Worth It?
8009t Emily Theis, Memory
8031s Matthew Schuweiler, Epoxies
8065s A. Noel Suri, Isolation of a Pure Culture Capable of Melamine Degradation
8099t Heather Lewis, Red or Yellow, The Stroop Effect
8100t Ben Greenwald, Root Shoot in Boogie
8032s Liv Anderson, Computer Rocketry for Dummies
8046s Claire O'Leary, Effects of Structure Materials on Hang Glider Flight Performance
8074s Jaymes Schoenberg, Laser Distortion
8073s Tim Scallen, Do Titanium Golf Balls Really Go Farther?
8079s Maddy Mulligan, Communication between Ants
8042s Ross Berman, Bridging the Gap
8088w Sam Gleason & Matt Low, What Recycled Material Absorbs Sound the Best?

Senior High

- 148t Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody
210t Cara Sandberg, Effect of Transgenic Corn Pollen on Monarchs at Different Larval Instars
131w Ashley Nazarian, Effect of Ionic Strength on Calcium Regulation in the Heart
129w Li Mei, Comparative Microarray Analysis of Spinocerebellar Ataxia Type 1 Transgenic
155w Peter Hauck, Treatment of Cake Flour Using Ozone as an Alternative to Chlorine
134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance
181t Catherine Cozad, Development of Natural Antibiotic to Inhibit Growth of Helicobacter pylori
112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats
126t Laura Gingras, Site-directed Mutagenesis, Expression & Purification of Myosin Light Chains
198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant E. coli
204w Laura Egerdal, Cysteine Reactivity in Stored & Fresh Muscle Fiber
103t Caleb Bousu, Male vs. Female Success in Knowledge Retrieval
101t Hope Aguglia, Effect of Inadequate Sleep on Test Performance
145t Kathryn Gieselman, Modifying Honey into an Effective Pressure Sensitive Adhesive
209t Kathryn Struthers, 27-Month Olds' Specific Verbalization of Memory Prior to Language
202w Marc Weinstein & Justin Holt, The Trouble with Carrots: The Roots of Motivation
165t Charles Cantrell, Algorithm for NP-Complete Minesweeper
199s Kaonhou Her & PaCha Yang, Factors Affecting Plant Diversity at a Selected Site on Lake Phalen
143t David Copp, Effect of Protective Coatings in Preventing Corrosion in Ferrous Metals
154t Carson Friend, Is Blue a Safer Choice for Brake Lights?
130w Malaak Moussa, Optimization of the Yield & Simplicity Factor of a HS DNA Extraction
169w Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development
182t Brian Farnes, Sun & Its Effect on Algae Growth in Pool Water
207t Nicolas Ward, Effect of Site-Directed Mutations & Cysteine Labeling on Yeast Actin Filament
118t Miia Rasinen, Is There a Correlation Between Nailbiting & Obsessive Compulsive Disorder?
190t Melissa Fuhrman, Wind Efficiency Regarding the Design & Materials of Sails

RESEARCH PAPERS SELECTED FOR COMPETITION AT THE MINNESOTA ACADEMY OF SCIENCE STATE FAIR, APRIL 20-22, ROCHESTER, MN

JUNIOR DIVISION (GRADES 7-9)

- David Abbott, The Effects of Antibacterial on Pseudomonas and Micrococcus
Liv Anderson, Computer Rocketry for Dummies
Robbie Colbert, Effect of Caffeine on the Growth & Survival of Mealworms
Angelique Edgerton, Effects of Rainwater Gardens on Polluted Runoff

Elizabeth Henely, Pros and Cons of Cloning
Mali Johnson, You're as warm as what you wear
Caitlin Madden, What's so important About Suds?
Erin Rivard, Home Court Advantage: Myth or Reality
Noel Suri, Isolation of a Pure Culture Capable of Melamine Degradation from Enrichment Cultures

SENIOR DIVISION (GRADES 10-12)

Megan Bailey, Isolation & Identification of Novel Genes Linked to Heart Failure
Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development
Catherine Cozad, Development of a Natural Antibiotic to Inhibit Helicobacter pylori
Laura Gingras, Site-directed Mutagenesis, Expression, & Purification of Myosin Light Chains
Shayla Hesse, Is Short-Term Memory Loss Influenced more by Decay or Interference?
Christian Kirby, Correlative Analysis of Social Pphysique Anxiety to Athleticism
Dmitri Malinir, Effect of Super Posphae (P2O5) on Ulva lactuca and Mitella
Michael Min, Neuropathogenesis of Herpes Simplex Virus in the Murine Brain
Ashley Nazarian, Effect of Ionic Strength on Calcium Regulation in the Heart
Juliet Nguyen, Effects of Cigarette Smoke on Lobularia maritima
Mahlia Nguyen, Effects of Various Lighting on Phaseolus vulgaris
Cara Sandberg, Effect of Transgenic Corn Pollen on the Development & Survival of Monarch Butterflies
A. Benjamin Suri, Determining Quantitative Trait Loci Associated with Resistance to Fusarium Head Blight
Zebulon Thomas, Molecular Dynamics of the Hammerhead Ribosome

TOP SENIOR HIGH SCHOOL PAPERS: Trophy

First Place: Zebulon Thomas, Molecular Dynamics of the Hammerhead Ribosome
Second Place: A. Benjamin Suri, Determining Quantitative Trait Loci Associated with Resistance to Fusarium Head Blight
Third Place: Ashley Nazarian, Effect of Ionic Strength on Calcium Regulation in the Heart

TOP JUNIOR HIGH SCHOOL PAPERS: Trophy

First Place: Noel Suri, Isolation of a Pure Culture Capable of Melamine Degradation from Enrichment Cultures
Second Place: Mali Johnson, You're as warm as what you wear
Third Place: Elizabeth Henely, Pros and Cons of Cloning

ASSOCIATION OF WOMEN GEOSCIENTISTS: Certificate

TWIN CITIES:

148t Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody

ST. PAUL:

8050s Angelique Edgerton, Effect of Rainwater Gardens on Polluted Runoff

WESTERN:

7054w Jennifer Marshall, Planetary Engineering Will Plants Grow on Mars?

SOCIETY FOR IN VITRO BIOLOGY: Certificate, check

TWIN CITIES:

183t Robert Memmen, Comparison of Oral Bacteria in Humans and Canines

ST. PAUL:

167t Katie Aguglia, How Does Ascorbic Acid Affect Viruses & Bacteria?

WESTERN:

130w Malaak Moussa, Optimization of the Yield & Simplicity Factor of a HS DNA Extraction

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES: Certificate

TWIN CITIES:

126t Laura Gingras, Site-directed Mutagenesis, Expression & Purification of Myosin Light Chains

ST. PAUL:

198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant E. Coli

WESTERN:

129w Li Mei, Comparative Microarray Analysis of Spinocerebellar Ataxia Type 1 Transgenic

EAST Side SCIENCE CLUB ALUMNI AWARD: Medals

- 613t Andrew Menke, Submarines
- 622s Kalia Her, Which Substance Will Re-hydrate Dehydrated Cells?
- 626t Michael Farrell, Which Foods Produce Electricity?
- 7020w Drew Carlson, Is \Miracle Gro\ Really a Miracle Fertilizer?
- 7066t Zachary O'Grady, Golf Clubs - How Slant Affects Distance
- 7069t Meredith Engelen, Effect of Mechanical Harvesting on Eurasian Watermilfoil
- 7112t Lucas Dunne, What Affects a Pendulum & it's Swing
- 8022t Sharon Durand, What Colored Dyes are Found in Powdered Drink Mix & Colored Markers
- 8090s Robert Larson & Nicholas Schwalbach, Telegraph
- 202w Marc Weinstein & Justin Holt, The Trouble with Carrots: The Roots of Motivation

AMERICAN METEOROLOGICAL SOCIETY: Certificate

TWIN CITIES:

- 151t Kimberly Nichols, How Weather Affects Human Emotions
- 7074t Michael Marz, Severe Thunderstorms & Tornadoes

ST. PAUL:

- 7077s Meredith Pain, Insulating Properties of Snow
- 7155s Ellie Hardy & Madeline Mooney-Harte, Acid Rain

WESTERN:

- 152w Emily Thomas, Is It Getting Hot in Here?
- 8057w Megan Wilder, Effect of Acidic Rain on Elodea

EASTMAN KODAK COMPANY: Camera Kit to Student and School

TWIN CITIES:

- 181t Catherine Cozad, Development of Natural Antibiotic to Inhibit Growth of *Helicobacter pylori*

ST. PAUL:

- 198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant *E. Coli*

WESTERN:

- 112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats

UNITED STATES METRIC ASSOCIATION: Certificate

TWIN CITIES:

- 205t Megan Bailey, Isolation & Identification of Novel Genes Linked to Heart Failure

ST. PAUL:

- 203t Michael Min, Neuropathogenesis of Herpes Simples Virus in the Murine Brain
- 134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance

WESTERN:

- 207t Nicolas Ward, Effect of Site-Directed Mutations& Cysteine Labeling on Yeast Actin Filament

INTEL COMPUTER AWARD: Certificate and \$200 (in the mail)

TWIN CITIES:

- 164w Kevin Barden, Looking for Patterns in the Mozart Effect

ST. PAUL:

- 8032s Liv Anderson, Computer Rocketry for Dummies

WESTERN:

- 147t Ryan DuBrall, Analysis of Random Number Distribution

BIODIVERSITY CONSERVATION SCIENCE AWARD: Certificate

TWIN CITIES:

- 205t Megan Bailey, Isolation & Identification of Novel Genes Linked to Heart Failure

ST. PAUL:

- 134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance

WESTERN:

210t Cara Sandberg, Effect of Transgenic Corn Pollen on Monarchs at Different Larval Instars

STOCKHOLM JUNIOR WATER PRIZE: Certificate & chance to advance in competition

TWIN CITIES:

140t Molly McGuire, Water Quality Tests on Fountain Water Treated with Commercial Algacides
200t Nalee Lor & Tiffany Lawson, Effect of Water Temperature on Daphnia's Heart Beat

ST. PAUL:

182t Brian Farnes, Sun & Its Effect on Algae Growth in Pool Water

ASM INTERNATIONAL FOUNDATION: Certificate

155w Peter Hauck, Treatment of Cake Flour Using Ozone as an Alternative to Chlorine
145t Kathryn Gieselman, Modifying Honey into an Effective Pressure Sensitive Adhesive

CONSULTING ENGINEERS COUNCIL OF MINNESOTA: Certificate

613t Andrew Menke, Submarines
627s Eric Hardy, Does Number of Pulleys Affect Force Needed?
7075t Joshua Novacheck, Which Water is Healthier to Drink?
7119t Margarete Hileman, Pipes at the Breaking Point
8042s Ross Berman, Bridging the Gap
8049t Laura VandenBerg, Bridges
143t David Copp, Effect of Protective Coatings in Preventing Corrosion in Ferrous Metals
157t Arun Saini, Effects of Moisture Content on the Deflection & Maximum Load Capacity

Grand Award: Calculator

8045t Michael McCullough, What Makes the Strongest Concrete Block?

YALE SCIENCE AND ENGINEERING ASSOCIATION, INC.: Certificate and Medallion sent directly to winners.

145t Kathryn Gieselman, Modifying Honey into an Effective Pressure Sensitive Adhesive

ISEF ALUMNI AWARDS: \$25 and a Certificate

8031s Matthew Schuweiler, Epoxies

MINNESOTA AGRICULTURE IN THE CLASSROOM: Certificates and \$75 (Project competition winners not eligible in paper competition)

Research Paper: Elizabeth Henely, The Pros and Cons of Cloning
Project Winner: 134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance

PAT HENDERSON AWARDS: \$50 each

8050s Angelique Edgerton, Effect of Rainwater Gardens on Polluted Runoff

USDA – AGRICULTURAL RESEARCH SERVICE:

616s Diane Galatowitsch, Do Earthworms Affect the Growth of Spring Flowers?
7028s Claire Luby, Do Trees Grow Differently in Different Hardiness Zones?
7080w Eric Shafer, Effect of Agricultural Chemicals on Aquatic Plant Life
199s Kaonhou Her & PaCha Yang, Factors Affecting Plant Diversity at a Selected Site on Lake Phalen

MINNESOTA ASTRONOMICAL SOCIETY: Certificate

8034s Micah Hensley, Cosmic Rays
610t Megan Wang, Lifecycle of a Star
611t Laura Bukowski, Meteorite Mystery 2000
8092t Ellen Oaks, What Age Group Knows the Most about Our Galaxy?
148t Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody

USS NOKOMIS NCC1858 AWARD: Plaque & bookmark

- Grade 6: 640t Jared Jensen, How Clouds Form
- Grade 7: 7059w Dylan Bauer, AM Radio Antennas
7054w Jennifer Marshall, Planetary Engineering: Will Plants Grow on Mars?
- Grade 8: 8034s Micah Hensley, Cosmic Rays
- Grade 9: 102w Mike Bann, Effect of Color Stimuli on Canines
- Grade 10: 155w Peter Hauck, Treatment of Cake Flour Using Ozone as an Alternative to Chlorine
- Grade 11: 145t Kathryn Gieselman, Modifying Honey into an Effective Pressure Sensitive Adhesive
- Grade 12: 148t Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody
- Team: 634t Wally Kaluza & Luke Kormanik, Help! I Can't Breathe! Get Me a Plant

MINNESOTA SPACE FRONTIER SOCIETY

- 610t Megan Wang, Lifecycle of a Star
- 611t Laura Bukowski, Meteorite Mystery 2000
- 628, 628w Timothy Shortreed, Rockets
- 7053w Travis Barke, Effect of a Plane's Wing Size
- 7061t Sarah Dobrick, What Kind of Wings Make Airplanes Fly Best?
- 7113t Samuel Ellison, Speed & Shape
- 8018s Francesca Marano, Enhanced Gravitational Effect on Germination
- 8032s Liv Anderson, Computer Rocketry for Dummies
- 8068t Christina Cotter, Effects of Weight on Model Airplane Stability
- 8069t Kevin Gillmor & Max Hoiland, Is Wind, Gravity or Both Better to Way to Propel Magnetic Objects
- 148t Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody
- 153t Michael Belisle, Aerodynamic Efficiency of Circular Wing Forms in a Constant Subsonic Flow
- 186t Brian Bergner, Effect of Fabric & Shapes on Parachute Descent Rate

TCRSF TEAM PROJECT AWARDS: Trophies

- Grade 6: 636w Morgan Miller & Natalie Ballin, Effects of Music Style on Human Physiology
- Grade 7: 7160t Grace Craig & Kelsi Anderson, Which Household Cleaning Supplies Harm Plants Most?
7150t Robin Groschel & Amie Fillmore, Which Bridge Structure is the Strongest?
- Grade 8: 8088w Sam Gleason & Matt Low, What Recycled Material Absorbs Sound the Best?
8083t Maya Labriola & Sasha Brown, Beneficial Effects of Pets on Health of Elderly People
- High School: 199s Kaonhou Her & PaCha Yang, Factors Affecting Plant Diversity at a Selected Site on Lake Phalen
198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant E. Coli

GLEN DOMEIER MEMORIAL AWARD: Compass, \$50 Savings Bond

- 7069t Meredith Engelen, Effect of Mechanical Harvesting on Eurasian Watermilfoil

HERBERT HOOVER YOUNG ENGINEER AWARD: Certificate and Medal

TWIN CITIES:

- 190t Melissa Fuhrman, Wind Efficiency Regarding the Design & Materials of Sails

ST. PAUL:

- 8046s Claire O'Leary, Effects of Structure Materials on Hang Glider Flight Performance

WESTERN:

- 8045t Michael McCullough, What Makes the Strongest Concrete Block?

INTEL EXCELLENCE IN ENVIRONMENTAL HEALTH AND SAFETY AWARD:

Certificate, Intel memento and \$200 check in the mail

TWIN CITIES:

- 163t Nate Widboom, Effect of Two-Cycle Engine Fuel on *Carassius auratus* & *Anachris*

ST. PAUL:

- 199s Kaonhou Her & PaCha Yang, Factors Affecting Plant Diversity at a Selected Site on Lake Phalen

WESTERN:

- 159w James Cook, Benotoxicity of Electromagnetic Field Radiation on Fast Radishes (Brassica)

U.S. NAVY -NAVAL SCIENCE AWARDS: Certificate & Calculator, Invitation to Open competition for Minnesota Academy of Science Junior Science & Humanities Symposium.

TWIN CITIES:

- 124t Leslie Brennan, How Do Different Plant Species Affect Carbon Dioxide Levels?
- 138t Derek Harmon, Effects of Blood Sugar Level
- 165t Charles Cantrell, Algorithm for NP-Complete Minesweeper
- 181t Catherine Cozad, Development of Natural Antibiotic to Inhibit Growth of *Helicobacter pylori*

ST. PAUL:

- 134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance
- 203t Michael Min, Neuropathogenesis of Herpes Simples Virus in the Murine Brain

WESTERN:

- 112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats
- 129w Li Mei, Comparative Microarray Analysis of Spinocerebellar Ataxia Type 1 Transgenic
- 155w Peter Hauck, Treatment of Cake Flour Using Ozone as an Alternative to Chlorine
- 169w Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development

SCHOOL TROPHIES: Trophy to all participating schools.

Annunciation School, Minneapolis	Hopkins West Junior High School
Anwatin Middle School, Minneapolis	IHM/St. Luke's School, St. Paul
Armstrong High School, Plymouth	International School of Minnesota, Eden Prairie
Bethany Academy, Bloomington	Johnson High School, St. Paul
Breck School, Minneapolis	Mahtomedi High School
Burnsville High School	Maranatha Christian Academy, Minneapolis
Calvin Christian School, Blaine	Minnetonka High School
Calvin Christian School, Edina	Minnetonka Middle School - East
Capitol Hill School, St. Paul	Minnetonka Middle School - West
Central High School, St. Paul	Murray Junior High School, St. Paul
Christ the King School, Minneapolis	Nativity School, St. Paul
Como Park Senior High School, St. Paul	Oak Point, Eden Prairie
Cyber Village Academy, Minneapolis	Patrick Henry High School, Minneapolis
Cyber Village Academy, St. Paul	Presentation of Mary School, Maplewood
Eden Prairie High School	St. Helena School, Minneapolis
Edison High School, Minneapolis	St. John the Baptist, New Brighton
Faith Baptist Christian School, St. Paul	St. John Vianney, So. St. Paul
Franklin Middle School, Minneapolis	St. Jude of the Lake, Mahtomedi
Friends School of Minnesota	St. Michael's School, West St. Paul
Frost Lake Elementary School	St. Pascal School, St. Paul
Harding High School, St. Paul	St. Paul Academy-Summit
Highland Catholic School, St. Paul	St. Raphael School, Crystal
Holy Trinity School, So. St. Paul	Wayzata Senior High School

UNITED STATES ARMY SCIENCE & ENGINEERING AWARDS: Certificate

TWIN CITIES:

- 125t Nicholas Cocchiarella, Impact of High-Barrier Resins on Shelf Life of Potato Chips
- 157t Arun Saini, Effects of Moisture Content on the Deflection & Maximum Load Capacity
- 158t Anthony Salmo, Analyzing Possibilities of Parachute Use on Modern Airplanes
- 151t Kimberly Nichols, How Weather Affects Human Emotions
- 167t Katie Aguglia, How Does Ascorbic Acid Affect Viruses & Bacteria?

ST. PAUL:

- 203t Michael Min, Neuropathogenesis of Herpes Simples Virus in the Murine Brain
- 198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant *E. Coli*

WESTERN:

- 155w Peter Hauck, Treatment of Cake Flour Using Ozone as an Alternative to Chlorine
- 127w Adam Jones, Preservation of Umbilical Cord Blood for Transplantation
- 112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats
- 169w Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development

159w James Cook, Benotoxicity of Electromagnetic Field Radiation on Fast Radishes (Brassica)

BRONZE MEDALLION WINNERS:

TWIN CITIES:

154t Carson Friend, Is Blue a Safer Choice for Brake Lights?

ST. PAUL:

134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance

WESTERN:

202w Marc Weinstein & Justin Holt, The Trouble with Carrots: The Roots of Motivation

NACE: Certificate

8038t Joseph Tickner, Granite vs. Marble: Which is more durable?

SCIENTIFIC AMERICAN AWARD: 1-year subscription to *Scientific American*

8059w Timothy Underbakke, Advanced Computational Techniques in Number Theory

8064w Emily Stiever, Antibiotic Resistance in *E. coli*

8072s David Patterson, Thermal Expansion

8031s Matthew Schuweiler, Epoxies

112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats

165t Charles Cantrell, Algorithm for NP-Complete Minesweeper

126t Laura Gingras, Site-directed Mutagenesis, Expression & Purification of Myosin Light Chains

131w Ashley Nazarian, Effect of Ionic Strength on Calcium Regulation in the Heart

207t Nicolas Ward, Effect of Site-Directed Mutations & Cysteine Labeling on Yeast Actin Filament

209t Kathryn Struthers, 27-Month Olds' Specific Verbalization of Memory Prior to Language

Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development

Amos Budde, Effect of Weather on Fall Broad-Winged Hawk Migration

Catherine Cozad, Development of a Natural Antibiotic to Inhibit *Helicobacter pylori*

Mei Li, Comparative Microarray Analysis of Spinocerebellar Ataxia Type I Transgenic Mice Genome

Kerry York, DeBrazza's Monkey Behavior

U. S. AIR FORCE:

Senior Division:

195w Cameron VanLangen, Sound Wave Absorption

153t Michael Belisle, Aerodynamic Efficiency of Circular Wing Forms in a Constant Subsonic Flow

Junior Division

7113t Samuel Ellison, Speed & Shape

8046s Claire O'Leary, Effects of Structure Materials on Hang Glider Flight Performance

Honorable Mention:

7053w Travis Barke, Effect of a Plane's Wing Size

143t David Copp, Effect of Protective Coatings in Preventing Corrosion in Ferrous Metals

7059w Dylan Bauer, AM Radio Antennas

8041t John Naglak, What's Up With G's?

RESEARCH PAPER MEDALLISTS:

Seventh Grade

David Abbott, The Effects of Antibacterial on *Pseudomonas* and *Micrococcus*

Robbie Colbert, Effect of Caffeine on the Growth & Survival of Mealworms

Mali Johnson, You're as warm as what you wear

Caitlin Madden, What's so important About Suds?

Erin Rivard, Home Court Advantage: Myth or Reality

Eighth Grade

Liv Anderson, Computer Rocketry for Dummies

Angelique Edgerton, Effects of Rainwater Gardens on Polluted Runoff

Elizabeth Henely, Pros and Cons of Cloning

Noel Suri, Isolation of a Pure Culture Capable of Melamine Degradation from Enrichment Cultures

Eleventh Grade

Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development

Catherine Cozad, Development of a Natural Antibiotic to Inhibit *Helicobacter pylori*

Shayla Hesse, Is Short-Term Memory Loss Influenced more by Decay or Interference?
Christian Kirby, Correlative Analysis of Social Pphysique Anxiety to Athleticism
Dmitri Malinir, Effect of Super Posphae (P2O5) on Ulva lactuca and Mitella
Juliet Nguyen, Effects of Cigarette Smoke on Lobularia maritima
Mahlia Nguyen, Effects of Various Lighting on Phaseolus vulgaris

Twelfth Grade

Megan Bailey, Isolation & Identification of Novel Genes Linked to Heart Failure
Laura Gingras, Site-directed Mutagenesis, Expression, & Purification of Myosin Light Chains
Michael Min, Neuropathogenesis of Herpes Simplex Virus in the Murine Brain
Ashley Nazarian, Effect of Ionic Strength on Calcium Regulation in the Heart
Cara Sandberg, Effect of Transgenic Corn Pollen on the Development & Survival of Monarch Butterflies
A. Benjamin Suri, Determining Quantitative Trait Loci Associated with Resistance to Fusarium Head Blight
Zebulon Thomas, Molecular Dynamics of the Hammerhead Ribosome

PROJECT MEDALISTS:

Sixth Grade

618s John Olson, How good is Excel's Random Number Generator?
616s Diane Galatowitsch, Do Earthworms Affect the Growth of Spring Flowers?
622s Kalia Her, Which Substance Will Re-hydrate Dehydrated Cells?
607w Alison Liewen, Which Fruit Juice Freezes Fastest?
625t Evan Eliason, Science of Sound
623s Leah McEllistrem, In Which Liquid is Alka-Seltzer Most Effective?
643s Michael Anderson, How an Internal Combustion Engine Works
640t Jared Jensen, How Clouds Form
617w Anne George-Hallgren, Effect of Temperature on Decomposition Rate of Apples
631w Allison Fullerton, Variations in Mammalian Heart Rates
634t Wally Kaluza & Luke Kormanik, Help! I Can't Breathe! Get Me a Plant
606t Jeff Jackson, Acids & Bases: Measuring & mixing
613t Andrew Menke, Submarines
624t Eleanor Hennon, Pasteurization: How Hot? How Long
615s Jennifer Barry, Which Kind of Water is the Cleanest?
644t Mike Schufman, How Water Affects Plants
626t Michael Farrell, Which Foods Produce Electricity?
628w Timothy Shortreed, Rockets
629t Ned Collins-Chase, Trebuchet Tournament

Seventh Grade

7054w Jennifer Marshall, Planetary Engineering Will Plants Grow on Mars?
7094t Adam Quade, Effects of Sweetened Beverages on Your Teeth
7059w Dylan Bauer, AM Radio Antennas
7075t Joshua Novacheck, Which Water is Healthier to Drink?
7119t Margarete Hileman, Pipes at the Breaking Point
7082t Erin Rivard, Home Court Advantage: Myth or Reality
7005s Kinsey Diment, Gender Differences in Mental Computation for 5th Graders
7006s Bryan Fate, How Does Background Music Affect Memory?
7100s David Abbott, Effect of Antibacterials on Pseudomonas and Micrococcus
7110t Aaron Clark, Scuba Diving
7091s Caitlin McGowan, Fungiform Papillae & Taste Perception
7141s Kerry York, DeBrazza's Monkey Behavior
7003s Michelle Clemens, How Age Affects Memory
7099s Julia Vinzant, Bacterial Resistance
7161t Amanda Bentfield, Which Toothpastes Prevent Bacteria Growth the Best?
7008t Jeffrey Oakes, Brain Exercises & Memory
7020w Drew Carlson, Is \Miracle Gro\ Really a Miracle Fertilizer?
7160t Grace Craig & Kelsi Anderson, Which Household Cleaning Supplies Harm Plants Most?
7016w Matthew Schuld, Got C?
7028s Claire Luby, Do Trees Grow Differently in Different Hardiness Zones?
7150t Robin Groschel & Amie Fillmore, Which Bridge Structure is the Strongest?

Eighth Grade

8045t Michael McCullough, What Makes the Strongest Concrete Block?

- 8028t Mary Pat Johnson, Triboluminescence
- 8041t John Naglak, What's Up With G's?
- 8098s Lena Olson, Effects of Muting Strings on Classical Guitar Sound Waves
- 8004w Katie Coldwell, Bottled Water; Is It Worth It?
- 8009t Emily Theis, Memory
- 8031s Matthew Schuweiler, Epoxies
- 8065s A. Noel Suri, Isolation of a Pure Culture Capable of Melamine Degradation
- 8099t Heather Lewis, Red or Yellow, The Stroop Effect
- 8100t Ben Greenwald, Root Shoot in Boogie
- 8032s Liv Anderson, Computer Rocketry for Dummies
- 8046s Claire O'Leary, Effects of Structure Materials on Hang Glider Flight Performance
- 8074s Jaymes Schoenberg, Laser Distortion
- 8073s Tim Scallen, Do Titanium Golf Balls Really Go Farther?
- 8079s Maddy Mulligan, Communication between Ants

Senior High

- 148t Rayna DeMaster, Analyzing the Probability of Extinction for a Radiating Blackbody
- 210t Cara Sandberg, Effect of Transgenic Corn Pollen on Monarchs at Different Larval Instars
- 131w Ashley Nazarian, Effect of Ionic Strength on Calcium Regulation in the Heart
- 129w Li Mei, Comparative Microarray Analysis of Spinocerebellar Ataxia Type 1 Transgenic
- 134s A. Benjamin Suri, Determining Quantitative Trait Loci for Fusarium Head Blight Resistance
- 181t Catherine Cozad, Development of Natural Antibiotic to Inhibit Growth of *Helicobacter pylori*
- 112w Virginia Larsen, Effect of Social Interaction on Growth Rate & Intelligence in Rats
- 126t Laura Gingras, Site-directed Mutagenesis, Expression & Purification of Myosin Light Chains
- 198s Anna Bishop & Emily Letourneau, Antimicrobial Therapy Implications of Bacteriophage-resistant *E. coli*
- 204w Laura Egerdal, Cysteine Reactivity in Stored & Fresh Muscle Fiber
- 103t Caleb Bousu, Male vs. Female Success in Knowledge Retrieval
- 101t Hope Aguglia, Effect of Inadequate Sleep on Test Performance
- 145t Kathryn Gieselman, Modifying Honey into an Effective Pressure Sensitive Adhesive
- 209t Kathryn Struthers, 27-Month Olds' Specific Verbalization of Memory Prior to Language
- 165t Charles Cantrell, Algorithm for NP-Complete Minesweeper
- 199s Kaonhou Her & PaCha Yang, Factors Affecting Plant Diversity at a Selected Site on Lake Phalen
- 143t David Copp, Effect of Protective Coatings in Preventing Corrosion in Ferrous Metals
- 154t Carson Friend, Is Blue a Safer Choice for Brake Lights?
- 130w Malaak Moussa, Optimization of the Yield & Simplicity Factor of a HS DNA Extraction
- 169w Maralyssa Bann, Role of Environmental Risk Factors in Alzheimer's Disease Development
- 182t Brian Farnes, Sun & Its Effect on Algae Growth in Pool Water
- 207t Nicolas Ward, Effect of Site-Directed Mutations & Cysteine Labeling on Yeast Actin Filament