85th Annual

Minnesota State Science & Engineering Fair

In Person Event | March 31st, 2022
Table of Contents

• 2022 Event Schedule...Page 3
• Student Safety Information...Page 4
• Directions and Map...Page 5
• Museum Map...Page 7
• Lunch Options/Where/How...Page 8
• About the Movies...Page 9
• High School Projects by Category...Page 20
• Middle School Projects by Category...Page 25
• Ways to Connect...Page 40
• Sponsors...Page 41
Schedule of Events

Middle School Schedule of Events
11AM-4PM Award Pickup and Photos, Giveaways | Xenon Room


3-4PM Under The Sea | Omni Theater

High School Schedule of Events
11AM-4PM Award Pickup and Photos, Giveaways | Xenon Room

1-2PM Dinosaurs of the Antarctic | Omni Theater

3-4:30PM Networking Event Featuring Now. Make. Art. | Discovery Hall
Student Safety Information

- Face Masks are required to be worn over the nose and mouth when not actively eating or drinking in designated area.

- Observe social distancing when possible.

- Sanitize or wash hands regularly.

- Stick with your chaperone or group and stay in designated areas.

- In case of emergency, speak to the nearest MAS or Science Museum staff.
Directions and Parking

Driving Directions

From the West on I-94
As you drive east on I-94 towards St. Paul, take the Kellogg Boulevard exit. Turn right and follow Kellogg Boulevard to West 7th Street (the Xcel Energy Center and Holiday Inn are located at this intersection). Take a right onto West Seventh Street and drive 1 block to Chestnut Street. Take a left onto Chestnut Street and drive two blocks into the Science Museum parking ramp.

From the South on I-35E
As you drive north on I-35E towards St. Paul, take the Kellogg Boulevard exit. Turn right and follow Kellogg Boulevard to West 7th Street (the Xcel Energy Center and Holiday Inn are located at this intersection). Take a right onto West 7th Street and drive 1 block to Chestnut Street. Take a left onto Chestnut Street and drive two blocks into the Science Museum parking ramp.
**From the North on I-35E**
As you drive south on I-35 E towards St Paul, take the 10th Street exit to Jackson Street, turn left and go south to Kellogg Blvd. Turn right onto Kellogg Blvd and drive to West 7th Street (the Xcel Energy Center and Holiday Inn are located at this intersection). Take a left onto West 7th Street and drive 1 block to Chestnut Street. Take a left onto Chestnut Street and drive two blocks into the Science Museum parking ramp.

**From the East on I-94**
If you are westbound on I-94, take the 6th Street exit (from the left lane). Follow 6th Street to West 7th Street. Turn left onto West 7th Street and go south to Chestnut Street. Turn left onto Chestnut and drive two blocks into the Science Museum parking ramp.

**Parking Fees:**
There is a fee for parking in the Science Museum's parking ramp. Normally, you will be charged as you exit the ramp, however, on occasion you will have to prepay upon entry into the ramp. You may pay parking with a check, credit card, or cash. The current daily parking rate is $5.
EXHIBITS
All exhibits are on Levels 5, 4, and 3.

LEVEL 5
Collectors’ Corner
Coffee Shop
Exhibits Entrance
Future Earth
Giant Astronaut
Musical Stairs
Omnitheater Entrance
The Mississippi River Gallery

LEVEL 4
Discovery Hall
Egyptian Mummy
Native American Exhibition
RACE: Are We So Different? Exhibit
Special Exhibits
The Human Body Gallery
Weighing the Evidence
Wellness Room

LEVEL 3
Dinosaurs & Fossils
Experiment Gallery
Math Moves!
Sportsology
Lunch

Lunch vouchers will be provided for participants and can be used at Erbert's and Gerbert's located at 334 Wabasha St N, St Paul, MN an eight minute walk from the Science Museum.

Vouchers will be distributed at Check-In. Lunch will be available from 11:30pm-3pm.
1PM Dinosaurs of Antarctica
Intrepid Antarctic scientists take you on a quest to understand the ice continent’s profound transformation over deep time while investigating the similarities and differences between prehistoric climate events and human-triggered warming today.

3PM Under the Sea
An underwater look at the diverse coastal regions of Southern Australia, New Guinea and the Indo-Pacific areas and the impact of global warming on the oceans.
High School Projects By Category

**Animal Sciences**

HS-ANIM-028
Caleb Smith
Harms and benefits of oral sucrose provided to reduce domestic rabbit's distress during needle prick procedures: Random Controlled Trial

HS-ANIM-039
Julia Carlson
Healthy Herefords: Study of Ideal Cow Age for Birth Weight

HS-ANIM-113
Harmony Tracy
Tough Turkeys Year 2: What habitat types do turkeys now associate with in Northeast Minnesota?

HS-ANIM-163
Nina Chafee
The Effect of Adolescent Temperature Variation on Development and Adult Performance in V. cardui

**Biochemistry**

HS-BCHM-009
Josiah Butler
Synthesizing Ethanol from Recycled Cardboard Sludge using a Cellulase Enzyme Blend and Yeast

HS-BCHM-042
Katelin Flack
The Importance of Disposing Yard Waste Properly

HS-BCHM-089
Hannah Johnshoy
A Study on Hide Preservation

HS-BCHM-120
Emily Sapyta
The use of different concentrations of tannic acid and Micrococcus luteus on the bioremediation of motor oil contaminated aquatic systems

HS-BCHM-220
Romy Peterson
Don't Forget About Caspase-2: Analyzing the Binding Site Specificity of a Protein Linked to Alzheimer's Disease
Behavioral and Social Sciences
HS-BEHA-007
Seungmin Han
Investigating the Psychological Determinants of Efficient Behavioral Changes by Community Members to Pursue a Common Interest Using the Drosophila Model
HS-BEHA-045
Nandini Iyer
Stressed Out! How does COVID news affect stress levels?
HS-BEHA-114
Stella Harbson
Does Awareness of Misleading Questions Reduce Memory Inaccuracy?
HS-BEHA-115
Keenan Sarvela
Is reaction time affected by outside distractions
HS-BEHA-116
John McEachran
How does music affect your solve times on a Rubik’s Cube
HS-BEHA-119
Lucia Nelson
Study Notes: How Music Affects Learning
HS-BEHA-164
Per Johnson
The Effects of Temperature on Learning Complex Tasks in Red Harvester Ants
HS-BEHA-165
Kishori Patel
The Effect of the Amount of Beef Food Source and Exposure Time on Calliphora vomitoria Pupation
HS-BEHA-166
Spencer Burris-Brown
Assessing the Influence of Personality on Active and Passive Procrastination among Adolescents
HS-BEHA-187
Emma Boys
Gender Differences and the Stroop Effect
HS-BEHA-222
Sarah Feng & Sydney McDaniel
Finding Functionality: A Rasch Analysis of a Body Functionality Appreciation Scale
Learning Lizards Assessing the Impact of Human Socialization on Behaviors of Varanus Acanthurus
Ziyi (Rick) Qian
Defeating Dyslexia: A robust meta-analysis of the relationship between hearing and Dyslexia to achieve early diagnosis and treatment
Ben Bjerke
Reading Between The Lines
Biomedical and Health Sciences
Megan Lawver
Does gender affect reaction time
Bobbie Krause
What Brand of Toothpaste Cleans Staining Best?
Christine Song
Cure of Breast Cancer - Year 5: A Novel Approach to Treating Hormonal Breast Cancer using Diabetes Medication through Clinical Database and 3D ex vivo Model
Albert Hu & Felix Lu
Investigating the Effect of Human Perspiration on the Deterioration of Single Use Masks
Jeffrey Wang
Automatic Classification of Peripheral Neutrophils on Digital Images Analyzed by Artificial Intelligence
Johanna Bernu
Disinfectant Properties of Nuphar advena: An Ethno-pharmaceutical Approach
Eithne Onsinyo & Abdi Ekal
Measuring Calories in Snack Foods

Nawal Warfa
Comparison of Fat Between Non-Organic and Organic Foods

Rahul Balaji
Breaking News: There is more than one way to break the back! Characterizing and quantifying the effects of two models of the intervertebral disc for the purpose of successfully treating lower back pain

Karen Nakamura
The Electromyographic Evaluation of the Bilateral Muscle Asymmetry of the Latissimus Dorsi in Martial Arts and the Effect of Real-Time Biofeedback on Technique Improvement

Coolsjes Singhvi
Modeling of Blood Glucose to Optimize Diet and Exercise for Type 2 Diabetes Management

Ayres Warren & Mina Adabag
Piecing the Heart Together: Optimizing Procedures to Identify Cell Types in Murine Cardiac Tissue

Isabelle Stroh
Using Artificial Intelligence to Detect and Localize Brain Tumors

Julia Terrell
Efficacy of bacteriophage therapy on E. coli caused urinary tract infections during the perinatal period

Ava Chen
A new potential antidepressant? The effects of L-tryptophan on serotonin levels, behavior, and alcohol aversion in Faxonius virilis model organisms
The Link Between Hearing Loss and Alzheimer's Disease in Elderly Patients
Muminah Mohammed & Noor Omar
Hidden Hunger
Aayush Goud & Ella Alexander
DBS Discovery: A multifaceted approach to Deep Brain Stimulation with new advances in neurosurgical testing equipment and synchronization of alpha and beta bands for postural instability in Parkinsonian patients
Adhvaith Sridhar
Immune System Innovation: Ushering in a new era of immunology research by characterizing cell populations most impacted by normal microbial exposure for preclinical research and healthcare treatment development success
Srijani Datta
Sepsis Survivor: Characterizing muscle stem cells using RNA sequencing from a murine surgical model of sepsis for the purpose of preventing sepsis-associated muscle wasting
Eric Yang
Does “The Fluoride Treatment” Prevent Sugar Decay
Audrey Tumberg
Study of Biofilm Prevention with Antibiotic and Organic Substances
Courtney Frohling
Study of Aerobic Bacteria Growth on Bed Sheets
Madilyn Johnson
Nice to MEAT you! A Study on Bacterial Survival Inside and Outside of Meat at Different Temperatures
Angelina Nicholas & Katrina Roberts
An Analysis on the Impacts of Antibiotics on Synbiotics
Computational Biology and Bioinformatics
HS-CBIO-052
Margaret Hu
Identifying Breast Cancer Cell Surfaceome Mutations as Potential B-cell Targets
HS-CBIO-194
Srinath Hariharan
Tumor targeting: Utilizing spatial data science techniques to decode the enigmatic immune response with the goal of informing further efforts to develop immunotherapies for tumor treatment
HS-CBIO-242
Aedin Yu & Mohit Agarwal
A two-part approach and implementation of early-stage skin cancer diagnosis using a novel dense convolutional neural network (CNN) architecture and affordable computing hardware
HS-CBIO-272
Scott Sorensen
Manipulating Dissolved Gas Content in Computer Simulations of Acoustic Cavitation

Cellular and Molecular Biology
HS-CELL-046
Isha Kapoor
Overcoming melphalan resistance in the treatment of multiple myeloma
HS-CELL-243
William Anderson
Using decellularized grapes to grow yeast
HS-CELL-244
Jack Wherry
Prediction of anterior/posterior polarity in planaria through bioelectrical signals
HS-CELL-245
Claire Huang
Creating induced pluripotent stem cells by reprogramming CD34+ cells through episomal gene insertion
HS-CELL-246
Sana Ikramuddin
Inhibition of Senescent Associated Phenotype Secretion using Lithocholic Acid in 3T3-L1 Preadipocyte cells
HS-CELL-247
Abby Hoekstra
Effects of sea cucumber glucocerebrosidase on amyloid-beta gene
HS-CELL-248
Alexandra Wagner
INS-1 Rattus norvegicus cells and gene expression in response to Cinnamomum zeylanicum

HS-CELL-352
Willa Krase
The Effect of Iron on Carbon Dioxide Consumption in Algae: Could Iron be the solution to global warming?

Chemistry
HS-CHEM-032
Katelynn Marquardt
It's Salty: A Comparison of Sodium Chloride and Potassium Chloride

HS-CHEM-041
Chloe Sargent
Effect of Baking Soda on Cookies

HS-CHEM-121
Morgan Houle
What chemicals burn different colors and how long do they burn

HS-CHEM-123
Daniel Dutcher
What Is The Most Effective Salt Mixture In A Salt Water Battery

HS-CHEM-195
Cady Pagel
Gluten-Free or Gluten Debris: Prolamin and Glutelin Levels in Oat Flours

HS-CHEM-351
Elizabeth Grace Smith
You Freeze, I Freeze, We all Freeze for Ice Cream

HS-CHEM-360
Ellie Rogness
Energy Burnout

HS-CHEM-365
Jaxon Bain
Sn2 vs. E2: The Effects of Temperature

Earth and Environmental Sciences
HS-EAEV-021
Jack Gootzeit
Organic Acids with Standard Road Salts: An Eco-friendly Solution

HS-EAEV-029
Grace Moeller
The Effects of Natural and Artificial Dyes on Water Quality
The effects of CuSO4 5H2O contamination on freshwater copepods
Reducing Freshwater Acidification
The More we work together, the GREENER our world will be!
Quantitative analysis of the effects of climate change on wildfire occurrence and severity in NEMN
The Use of Mealworm Microbes to Isolate and Identify Bacteria that can Biodegrade Polystyrene
Effects of the Line 3 Pipeline on Gray Wolves (Canis lupus) on the Fond du Lac Reservation
The Effect of Varying Concentrations of Miracle-gro fertilizer on Composting Earthworm Ecosystems
Effect of Ethanol and Octocrylene on the Cell Growth and Chlorophyll-a Levels of Cyclotella meneghiniana
The Detrimental Impacts of a Tilling Based Agricultural System.
Grace Kaung
Creating chitosan hydrogels to promote phytoplankton growth and accelerate carbon sequestration

Nicole Haraway
The impacts of chemicals found in plastics having Estrogenic Activity on the synthesization of vitellogenin protein in mussels

Roxy Neset
Agriculture in the Big City: Studying the effectiveness of soil treatments on weed growth

Evan Knoll
The Phytoremediation of Brine Contaminated Soil: Phase IV: An In-Depth Analysis of the Effects of Phytoremediation Using Hordeum vulgare and Secale cereale

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Isabella Wimmer
The Study of Coliform and Biological Oxygen Demand Levels in Rivers Comparing Urban and Agricultural Land Use

Mari Pulver
Study of the Affects of a Ring Billed Gull Colony on the Aquatic Ecosystem
Nicholas Swanson
An Investigation of the Effect of Crude Oil on Freshwater Organisms.

Onalee Shogren
Can't Handle the Heat

Embedded Systems
Nickolas Zander
Automated Sorting Device Using Sensors and Motor Control

Alia Peterson
Designing and building a technologically enhanced toy

Shreshth Shrivastava
Wi-C.A.R.E: Wifi Computer-Assisted Remote Eldercare (Year 3)

Energy: Sustainable Materials Design
Madison Anderson & Oliva Noble
Ice, Ice, Baby. A Study of Insulated Waterers

Max Magnus
Finding the Best V.A.W.T.

Maggie Banks
A Plant With Promise: Using Engineering Principles to Create an Eco-Friendly Manufacturing Process for a Biodegradable Piezoelectric Transducer

Environmental Engineering
Gabriel Cordova Gonzalez
Keeping Your Cool

Ellen Guo
Novel Cellulose Carbon Fiber Based Biofilm for Airborne VOC Filtration
Kyla Fung
Sustainable Bioplastics: Seaweed and Hemp-based Alternatives to Fossil Fuel-based Plastics

Ivars Emerson
A collapsible reusable cooler for eco-friendly shipping of cold medications

**Engineering Technology: Statics and Dynamics**

Tanmay Iyer
Improving the Efficiency of Home Hot Water Circulation

Will Sedo
Optimizing Waterflow in a Simulated River Environment

Amira Sinclair & Trisha Samba
Water You Risking? Developing a Novel Maze to Assess the Effects of Thirst on Risk-Taking Behavior in Mice

Nathan Walsh
Everything you 'Kneed': Development of an adjustable, above-knee prosthetic capable of performing multiple activities

Noah Anderson
Development of remotely operated underwater vehicle to aid in exploration and mapping of underwater cave systems

Billal Saidi
Engineering a Cost-Effective Ventilator

Valerie Nelson
Effects of Chamber Shape on Movement of Accordion Soft Actuators and Implementation in Artificial Hands

**Mathematics**

Leon Luo
Does ESG investing affect international capital flows? Evidence from statistical and machine learning methods

April Wang
Predicting COVID-19 cases through high-dimensional data analysis
Materials Science
HS-MATS-023
Tyler Kranz
Shaded Window Blinds: Do They Affect Room Temperature?
HS-MATS-030
Mitchel Masters
How does the design of wind turbine affect its power output
HS-MATS-171
Benjamin Chen
Recycled Plastic for Resilient Infrastructure
HS-MATS-264
Kendall White & Sarah Peterson
Knots or Not? Using electricity to study DNA entanglements in nanochannels
HS-MATS-265
Madison Andrews
Safe Food: Analyzing the function of a portable incubator for E. coli powered by electrothermal films
HS-MATS-266
Nick Carver
The potential application of Nitinol’s shape memory properties for use in internal muscle repair
HS-MATS-267
Jared Geppert
3D Printing Layer Angles

Microbiology
HS-MCRO-047
Danielle Wang
The Identification of Long-COVID Prognostic Biomarkers via Upper Respiratory Microbiome Genome
HS-MCRO-201
Sigrid Davidson
Effect of Salinity Instabilities on Halobacterium Versus Escherichia coli
HS-MCRO-202
Caroline Schlehuber
New Research, Old Medicine: Exploring Antibacterial Properties of Plants and Fungi Used in Indigenous Medicine
HS-MCRO-233
Elizabeth Levinshteyn
A Look Into the TINY Earth: Finding Antibiotic Producing Bacteria in Yellowstone Soil
HS-MCRO-268
Calais Michaelsson
Re-sensitization of E. Coli to tetracycline using plant-derived efflux pump inhibitors

HS-MCRO-269
Ethan Chen
Examination of various essential oils on Candida albicans model organism growth as an indicator of anti-dandruff properties on Malassezia

HS-MCRO-270
Jackson Jaffe
Effects of far-UVC radiation (wavelength 222nm) on pathogens and mammalian cells

HS-MCRO-271
Quinn Goergen
Finding Growth of Mycelia and Decomposition of Pesticides in Soil

HS-MCRO-273
Yousef Eldahshoury
Cyanobacteria Aid In Plant Growth In Martian Soil

Physics and Astronomy

HS-PHYS-038
Destiny Alberty
How is Sound Intensity Affected by Distance

HS-PHYS-129
Ethan Perrotti
Do Sweet Potatoes Fly Farther Than Russet Potatoes

HS-PHYS-378
Jonha Bieger
Testing the effect of Various Mixture Ratios on Rocket Impulse

Plant Sciences

HS-PLNT-022
Nathan Klitzke
Scott’s fertilizer vs. Miracle grow

HS-PLNT-091
Emily Ericson & Keira Trest
The Dirt-y Truth

HS-PLNT-093
Isaac Mauch
Studying The Practicality of Biofilms Use in Agriculture
Katriana Trinh
Effects of silica Nanoparticles to mitigate abiotic stress

Maxwell Maveus
Sporophytic abortion rates under desiccation stress and the potential of sporophytic autonomy in the mosses Leucobryum glaucum and Bryum caespiticium

Quinn Hughes & Tyler Clair
Using Monte Carlo Simulation to Optimize Vitamin C Production in Brassica oleracea using Abiotic Plant Stress

Abirami Rajasekaran & Harini Senthilkumar
Secure the Manure: Utilizing sequential fiber methods to assess the effect of manure on forage nutritive value of Medicago Sativa plants

Grace Finnerty
A Chemical-Free Apple Tree Cultivation Technique

Benjamin Brand
Impact of Yeast (Saccharomyces cerevisiae) on the Biomass of Wisconsin Fast Plants

Jordyn Ellis
Respiration and Photosynthesis

Sophia LeMire
The Capacity of Pea Plants for Associative Learning

Marc Zoghby
Assessing the Impact of Hyperparameter Tuning on the Performance of a Brain Hemorrhage Object Detection Model

Ruth Mellin & Alexander Moore
Project SERSI: Smartphone Enabled Robotic Sign-Language Interpreter
The use of machine learning to identify leukemia cells in patients
Merlin Morton
Using Machine Learning to Improve the Accuracy of GPS by Reducing the Impact of Multipath and Other Sources of Error
Ross Volkov
Diagnosing Parkinson’s disease with machine learning voice analysis
Krish Inba Rajashankar
Medical device recall prediction using MAUDE reports
Stavya Arora
Overcoming Opioids: Analyzing, characterizing, and quantifying the sentiment of Reddit posts’ tone and language prior to a relapse to allow for early intervention
Daniel Wang & Peter Xu
Nimble Navigation: Designing and developing an interactive chatbot with natural language processing to assist visually-impaired users to maneuver in outdoor settings with assurance

Systems Software
Tanner Risley
How easily can your password be hacked
Amrita Pal
Pollution and Prejudice: Building a computer-based algorithm to assess pollution exposure levels by Asian American subgroup
Mahmoud Said
Controlling a computer cursor with basic webcam input
Saloni Somia
Increasing Access to Epinephrine Injectors during Allergic Reactions through a Location Tracking Mobile Application.
Kiefer Miskiw
Realtime 3D Collaboration
Translational Medical Science
HS-TMED-227
Ava Jaffe & Amrit Menon
Essential Protection: Using UV-sensitive yeast to evaluate essential oils as an alternative to sunscreen

Middle School Projects by Category

Animal Sciences
MS-ANIM-040
Aidan Moeller
The amount of Calcium in Poultry Eggs
MS-ANIM-058
Mary Watson and Kate Anderson
Sunscreen vs. aquatic life
MS-ANIM-094
Aubrie Bothma
Taste Test for Fido
MS-ANIM-130
Henry Lenz
Dogs-Does Color Matter
MS-ANIM-131
Aiden Korby
Busy Beaver: What effect does a homemade beaver poplar tree repellent have on if there is beaver evidence on the side of the tree?
MS-ANIM-132
Kayla Covington
Dogs home alone behavior
MS-ANIM-203
Shreya Sekar
Turtle Tracks: Characterizing and quantifying the relationship between habitat, environmental, temporal, and climate data with turtle sightings
MS-ANIM-204
Isabella Blanco-Abundez
A Reply From Your Dog
MS-ANIM-205
Gabriel Zhina
What Are Cat’s Favorite Food?
MS-ANIM-291
Ronny Hustvedt
How Long a leech will survive with different water additives
MS-ANIM-292
Ainsley Mick
Saddle Pad Science
Biochemistry
MS-BCHM-096
Clara Sherwood & Hannah Quinn
The Eggcellent Experiment
MS-BCHM-206
Rebecca Cronin
Candy Chromatography: Skittles vs MMs
MS-BCHM-207
Mery Gomez
What Would the Bacteria Rhizobium Leguminosarum do to a Plant?
MS-BCHM-293
MaKenzie Hochhalter
Drug solubility
Behavioral and Social Sciences
MS-BEHA-059
Karthik Anand
COVID-Apathy: How has lifestyle affected mental health during the pandemic?
MS-BEHA-062
Izzy Fohrman, Maysen Pettengill & Hannah Benetti
BEHA: sight vs taste
MS-BEHA-063
Tej Bhagra
Money Matters: Knowledge, Attitudes Practices among middle and high school students
MS-BEHA-064
Sarah Dingli
Happiness in middle school students in the time of the COVID-19 pandemic
How does color and color intensity affect the way we interpret taste in our drinks

Prospect Theory and Its Application to Students

Effects of the Pandemic/Food Supply Chain, City Populations, and time on Minnesota Urban Chicken Keeping

Mental Health: What effect has Covid 19 had on middle school students mental health

What effect does age have on a person's sexual orientation decisions?

Covid Effect: What effect does the pandemic and a person's ethnicity have on their Mental Health

How Does Music With Different Tempos Affect Our Ability To Recall Information?

Can people tell the difference between gluten-free and non-gluten-free foods?

How Accurate are Eyewitnesses at Identifying a Suspect?

Placebo Effect: Does It Work In Food

Follow the Leader!
Can You Guess Handedness Based on Handwriting?
How Does Art Effect/Lower Levels of Stress in People Ages 10-16?
Malleable Memory: Studying the role of false memory, demographics, and suggestion in witness testimony
The Nonexistent Word
Positive or Negative Reinforcement
How Does Color Affect Memory?

Biomedical and Health Sciences
Sports Drinks and electrolytes
The brain and motion aftereffect
Lung Capacity and Aging
Lung Capacity

What effect does sugar intake have on adolescent mental health?
Development of Artificial Pancreas Model to Optimize Insulin Dosage
Which Beverage Causes The Most Tooth Decay To Tooth Enamel?
Computational Biology and Bioinformatics
MS-CBIO-075
Rathan Duggirala
Determining the Precision and Accuracy of Various Colony Counting Apps
Cellular and Molecular Biology
MS-CELL-067
Srinidhi Babu
Hand Sanitizer Everywhere, Do They Work The Same?; How Much Hand Sanitizer You Need To Kill The Germs
MS-CELL-069
Samuel Razildo & Carson Herr
Alcohol’s Effect on Cells
MS-CELL-070
Namik Babayev
DNA extracted from orange juice sold in stores as compared to at-home freshly squeezed juice
MS-CELL-071
Zoe Zhang
The Effect of Activated Sirt-1 in Zebrafish Embryos Using Resveratrol
Chemistry
MS-CHEM-025
Asher O’Brien
Which common deicer melts snow the fastest?
MS-CHEM-099
Dawson Colden
Jello-tastic
MS-CHEM-140
Josephine Nephew &
Emma Morton
How Fast Do Lion Mints Dissolve In Different Liquids
MS-CHEM-141
William Watson
Colorful Candy Chromatography
MS-CHEM-142
Peyton Werner
Baking powder vs. baking soda
Which Vegetable Has the Highest Level of Chlorophyll

How Clean is Clean?

Water Temperature vs Dirty Wool

Frozen In Time!

Brownie Bonanza

Corrosion Explosion

Bubble Trouble: How potassium iodide affects the height, strength, and speed it takes foam to rise

Dessert Density

Rose's are Red different colors too, but how do you find the Rf value? (Color of roses vs Rf value)

Sneaky Solutes: Can we trap them?

Flaming Hot Fuels

Balloons Go Kaboom; How Vinegar Impacts a Ballons Inflation Time
MS-CHEM-307  
Mardhav Shriram  
Radical Rockets

MS-CHEM-308  
Emilyn Bosch  
Fat Swap; The Effects Of Different Fats On The Temperature And Spread Of A Cookie

MS-CHEM-309  
Cristian Andres Olson  
The Secret to Creamy, Tasty Ice Cream: Stabilizers

MS-CHEM-310  
Mya Nelson  
Ice, Ice, Baby

MS-CHEM-311  
Julia Klein  
Baking to a new height

MS-CHEM-312  
Sema Asan  
A CHANGE In Water

MS-CHEM-313  
Hailey Flynn  
Skittles VS H.2.O

MS-CHEM-314  
Ava Kallunki  
The Sweet Reward of Baking: How Flour Type Impacts the Density of a Cupcake

MS-CHEM-315  
Kaitlyn  
The Impact of Gluten Free Flours on Vanilla Cupcakes

MS-CHEM-316  
Cohen Emmick  
Picking the Pepper: The Effects of Ripeness on Vitamin C in Bell Peppers

MS-CHEM-317  
Carsten Bruin  
When Will It Melt

MS-CHEM-366  
Erica Beckman  
Super Suds!
Payten Aehlert
Safe Solutions for Cleaning Coins
Annabelle Simoneau
Which Soap Cuts Grease the Best
Abby Fisher
Flour Power

Earth and Environmental Sciences
Liam Beyer
Hydroponic V.S. Soil Growth
Rohan Sharma
Magnifying Ultra Violet Radiation- The invisible frontier
Lauren Arnold
Measuring humidity with a hair hygrometer
Gavin Buhrow
How do the conditions of an environment effect how many fish you catch?
Izabel Isaacson
How Do Oil Spills affect birds?
Makenzie Little & Emilia Swenson
How Does Soil Change the pH of H2O?
Emilia Nephew
What Materials Best Filter Dirty Water?
Justine Anderson & Kieriahna Goodin
Let It Snow
Ellen Kovats
How Does the Building Material Affect Urban Heating
Maggie Hughes
How does Ocean Acidification Affect Coral Bleaching?
How safe is your drinking water?
AMelia Leither
What's Poppin'? How Temperature Affects Popping Mass

Avery Lucille Mros
Fertilizer Frenzy: How Fertilizer Amounts Effects Water Quality

Sadie Hoekstra
Tenebrio Moliter’s Metamorphosis: The Effect of Temperature on Mealworms

Adeenah Fahim
Effect of different water types on plant growth at different stages

Jake Pellowski
Saving The Ocean

Jaxson Greshik
Energy: Sustainable Materials Design

Adam Jacobson
HYDROGEN is #1 Periodically Leaves no Carbon Behind

Jacob Brunn
& Drew Skorczowski
Which Saves More Money? LED, Fluorescent, or Incandescent

Matthew Mangan
Geodesic Domes

Kayden Greeley
What Beverage Will Conduct The Most Amount of Electricity?

Ayeza Moheet
Manufacturing and Testing Environmentally Friendly Packaging Materials
Logan Ballard
Battle of the Batteries
Biomedical Engineering
MS-ENBM-324
Alex Ebert
Getting a Grip! How Weight and Shape Affect the Time a D.I.Y. Prosthetic Hand can Hold it
Environmental Engineering
MS-ENEV-215
John Liu
The Use of Controlled-releasing Technology in Winter Deicing to Reduce Salt Contamination in Minnesota Water
MS-ENEV-325
Shagun Shrivastava
100% Biodegradable Plastics!!! Is it true? (Year 2)
MS-ENEV-326
Liiban Abdi
Solar-Powered Water Desalination
MS-ENEV-327
Sadie Vietzen
MS-ETSD-012
Coby Guenther, Carson Mensink, & Noah Pieper
Self Stirring Mug
MS-ETSD-017
Brianna Foley & Peyton Demuth
Skate sharpener
MS-ETSD-078
Ivianna Duquaine
Is it Ripe Yet? Designing a Smart Circuit to Sort Produce
MS-ETSD-080
Benjamin Espy & Dylan Rudzik
What wing produces the most lift and least drag
MS-ETSD-104
Clarabelle Haddix
Lighten Your Load
What effect does the design of a robot have on how long it takes to travel 100 centimeters?

Magnetic Levitation Train Science Project (Alex Swenson)

What Type of Winglet Creates the Most Lift?

Which Formula 1 Rear Wing Has the Lowest Level of Downforce.

What Effect Does Anti-Slip Material Have On Preventing Tools From Falling?

Pennies on a boat: Boat Wreck- Different Structured Tinfoil Boats and Maximum Pennies Supported

I Can’t Hold It!

Pennies on a boat: Boat Wreck- Different Structured Tinfoil Boats and Maximum Pennies Supported

Stock Price Movement Prediction Based on Multi-stage Financial Models and Cross-period Comparison

Racquet Ball Air Cannon

Glass Melting 101
Handy Hand Warmers

Kathleen Dobie
How Hand Warmer Fillings Affect How Long They Retain Heat

Humpty Dumpty had a Great Fall: The Effects of Packing Material on Shipping Products

Alexander Batham
How Does Temperature Affect Quality?

Plane Paper: The Effects of Paper Weight on Paper Airplane Flight Distance

Kellen Groth
What Insulation Retains Heat The Best

Microbiology

Science Behind Bacteria in our Cleaning Products

Elsa Schiller & Maryn Bergstrand
Fruit Decomposition

McKenna Gandhi
How does using scented/colored soap or hand sanitizer effect hygiene?

Bryn McSherry
What Time are the Desks and Chairs at School at their Dirtiest
Physics and Astronomy
MS-PHYS-008
Sara Reza
Energy of Emissions From Celestial Objects
MS-PHYS-081
Reva Patel
The Effect of Temperature on Tennis Ball Bounce Height
MS-PHYS-082
Bergen Jacob
Tennis at Temperature: but this time, there’s tension so adjust your altitude
MS-PHYS-154
Emmi Seafolk
Across the sea of space the stars are other suns: What effect does age and gender have on knowledge about space?
MS-PHYS-155
Isaiah Langer
"A bad day skiing beats a good day at work” What effect does the type of ski wax have on how fast a ski goes down a hill?
MS-PHYS-156
Trevor Zaitz
How Much Height to Loop the Loop?
MS-PHYS-157
Avery Buschman
Does spinning with your arms extended out or pulled in affect the number of revolutions in your spin?
MS-PHYS-218
Logan Kretz
How does temperature affect the strength of a magnet and its magnetic field
MS-PHYS-333
Shayan Rahman
Cleats Beats: How Different Shoes Impact the Distance of a Ball
MS-PHYS-334
Amina Zahid
Hyperloop 2.0
MS-PHYS-335
Colton Hoffman
Grinding Gears
MS-PHYS-337
Scarlett Hough & Kiaya Mirkut
Tea Bag Rockets
Plant Sciences
MS-PLNT-083
Quinn M. Williams
Which Type of Pesticide Affects Vegetation the Most
MS-PLNT-084
Elise Weingarten
Tapping into Sweet Sap Success
MS-PLNT-086
Ava Hart & Sylvia Thompson-Jewell
How music affects the growth of plants?
MS-PLNT-158
Tuuli Koivisto
How Does Java Moss Effect Water Quality
MS-PLNT-159
Parker Sickmann
More sustainable than soil? Comparing deep water hydroponics to traditional soil for food production
MS-PLNT-219
Ethan Finch
How Do Daily Temperatures Affect Sap Production in Maple Trees?
MS-PLNT-338
Sophie Ertel
Food For Fertilizer: You Can Use Composted Fertilizer To Enhance Plant Growth
MS-PLNT-340
Aidan Kavanaugh & Bradan Kavanaugh
Phosphorescence of the Sea
MS-PLNT-341
Veda Rao
Organic or Not?
MS-PLNT-342
Josie Lee Dederichs
Its Grow Time: The effect ribosomal bacteria has on plant growth rates
MS-PLNT-343
Daniel Beekman
The Relationship Between Beans and Gas: The Effects of CO2 on Plant Growth
MS-PLNT-359
Alexis Scheid
Rock n’ Grow
Enlighten Me (The Effects of Different LED Colors on the Growth Rate of Lettuce)

Which Color of Corn Germinates the Best?

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