

2014 North Museum Science & Engineering Fair Champions and Category Award Winners:

Entries include: Student's name, Title of project, grade, school

Grand Champion: Matthew Campagna, 11, Lancaster Catholic HS, The Engineering and Programming of a Robotic Exoskeletal Joint Enhancement Apparatus

Senior Champion: Jenny Eurich, 12, Elizabethtown HS, Are Sialic Acid Levels Altered in GM3 Synthase Deficiency: Comparison to Ganglioside GM3 Levels in Amish Infantile Epilepsy Syndrome?

Senior Reserve Champion: Maya Rao, 11, Hempfield HS, Rapid Testing for Coliform Bacteria Using Nanotechnology

Jr. High Champion: Sophia Buckwalter, 8, Centerville MS, How Does the "Statistic Measurement of Young's Modulus Parallel to Grain" Method Compare to Spectrogram Analysis to Predict Wood's ability to Produce Tone?

Jr. High Reserve Champion: Stephanie Hall, 8, Reynolds MS, Does the Color of a Rosin Affect the Sound of a Violin?

[Jr. High] Consumer Science

1st Place Hannah Citsay, 8, St. Anne, PJs on Fire! A study of sleepwear flammability

2nd Place NictelLexi' Machado Aco, 7, St. Anne, Microscopic Warfare

HM Lindsey Bennett, 7, Centerville MS, Battle of the Cheesecakes

HM Lauren Nissly, 8, Centerville MS, What Has More Vitamin C - Freshly Squeezed or Frozen Concentrate Orange Juice? An Investigation by Titration

HM Sophia Ramsey, 8, Centerville MS, How effective is cinnamon oil as a natural insect repellent?

HM Anne Morrison, 7, Landisville MS, Which Light Bulb Saves You the Most Money and Energy?

HM Daniel Ouilikon, 7, Lancaster Country Day School, Which Medications Dissolve Fastest

HM Mitchell Rochester, 8, St. Leo, Golf ball distance

HM Sophie Plechner, 8, Smith MS, Are biodegradable wipes really biodegradable?

HM Lauren MacKinnon, 8, Lanaster Country Day School, Sunscreen or Smoke Screen?

[Jr. High] Earth Science

1st Place Autumn Cybulski, 7, St. Anne, Cleaning Up Oil One Spill At A Time

2nd Place Charlotte Molitoris, 7, Manor MS, Nitrates, Phosphates and Dead Zones, Oh My! How does the type of soil affect the amount of fertilizer in runoff water?

3rd Place Ceren Konak, 7, Lancaster Country Day School, Salty Ice Cream

HM Caroline Ulrich, 8, Centerville MS, Arsenic and Old Playgrounds: Are there dangerous levels of arsenic in Lancaster's playgrounds?

[Jr. High] Life Science

1st Place Grace Buckwalter, 7, Centerville MS, In a humidity and temperature controlled environment, will the time to mold be different for a fast food hamburger than a homemade hamburger?

2nd Place Julia Campbell, 8, Centerville MS, Making Healthy Smiles: Which remineralizing product most effectively remineralizes eggshell enamel?

3rd Place Amy Winger, 7, Ephrata MS, Yeast vs. Sugar

HM Nicholas Allen, Lancaster Country Day School, 8, Rethink Your Drink: What Kind of Liquid Most Damages Human Teeth?

HM Hannah Biles, 7, Lancaster Country Day School, Best Food for Your Birds

HM George Markley, 7, Lancaster Country Day School, Repelling Ants: Comparing pesticides and non-toxic methods

[Jr. High] Plant Science

1st Place Madeline Claus, 8, Home School, Sprouting after Fire: Measuring the Impact of Fire Retardants after Burning

2nd Place Sinclair Schuetze, 7, Centerville MS, Is the Tree Mightier than the Bee?

3rd Place Dory Bittle, 8, Lancaster Country Day School, Detergents, Gray water and Plants, oh my!

HM Hannah Graybill, 7, Centerville MS, How different substances affect carnation lifespan

HM Kayley Eshleman, 7, Ephrata MS, Less water, a blessing or a curse?

HM Tyler Wassell, 8, Lancaster Country Day School, The Effects of Different Fertilizers on Grass Seeds

HM Elizabeth Forrester, 8, Centerville MS, How do You Water your Grass

[Jr. High] Physical Science

1st Place Joel Pletcher, 8, Centerville MS, How do different substances/coatings affect or reduce the amount of oxidation or rust on steel?

2nd Place Austin Glass, 8, Landisville MS, Does the mass of contents in a microwave have an effect on the electromagnetic output of the microwave?

3rd Place Garrett Fuhrman, 8, Centerville MS, Defying Gravity: Which Parachute Design Works Best?

HM Johann Imperial, 7, OMPH, Energy from Biomass

HM Suchita Ramachandra, 7, Manheim Township MS, Corrosion study of screws

HM Kara Benedict, 8, Centerville MS, Effect of Friction on Objects in Motion

HM Max Gotlieb, 8, Lancaster Country Day School, What Makes The Best Biofuel

HM Madison Bechtel, 7, St. Anne, Plastic Milk

[Jr. High] Engineering

1st Place David Winner, 7, Lancaster Country Day School, Propellers and their Water Disturbance

2nd Place Robert Perot, 7, Lancaster Country Day School, Finding the most Accurate Method to Measure Rocket Altitude

3rd Place Matt Gerace, 7, Lancaster Country Day School, The Effect of Different Rocket Shapes on Distance

HM Hunter Bentley, 8, Lancaster Country Day School, How many strands of duct tape does it take to hold 100 pounds?

HM Gene Otto, 8, St. Leo, Measuring the Sugar Content of a Liquid Using a Laser-pointer

Animal Science

1st Place Makenzie Evans, 11, Warwick HS, The Effect of Oysters on Nitrogen,

Phosphorus, and Turbidity levels in Simulated Chesapeake Bay water.

2nd Place Olivia Mauro, 11, Warwick HS, The Effect of Lanthanum on the Calcium Intake of Crayfish

3rd Place Lauren Sammet, 10, Warwick HS, The Effect of Silver Ions and Silver Nanoparticles on Snails.

HM Anna Hess, 9, Conestoga Valley HS, How does magnetism affect regeneration in planaria?

Behavioral Science

1st Place Megan Henderson, 11, Conestoga Valley HS, Intervallic Implication in Dementia Patients

2nd Place Benjamin Cutler, 10, Conestoga Valley HS, Memoriz...Cell phone distractions and memory

3rd Place Abigail Stump, 12, Elizabethtown HS, Seeing the World in Pink and Blue

HM Emily Wilczek, 9, Conestoga Valley HS, Can Dogs Remember Where Treats Are By Color Association?

HM Alexis Ruhl, 12, Elizabethtown HS, Thinking Outside the Box: Education and Creative Problem Solving Abilities

HM Savannah Appel, 12, Pequea Valley HS, Delayed Gratification and Social Classes

Biochemistry

1st Place Kiernan McNelis, 10, Warwick HS, The Effect of Histidine and Methionine on the Acquisition of Copper

2nd Place Adam Kensinger, 10, Warwick HS, The Effect of NAD⁺-Dependent Dehydrogenase as a Catalyst in a Methanol/Dioxygen Microbial Fuel Cell

3rd Place Alexa Mohler, 11, Warwick HS, The Effect of the Environmental Conditions on B-galactosidase in Lactaid Tablets

HM Samantha Springer, 10, Warwick HS, The Effect of Manganese on the degradation of Benzopyrene by *Cyanthus stercoreus*

Cellular and Molecular Biology

1st Place Naina Balepur, 10, Hempfield HS, A Comparative In Vitro Study of Natural and Synthetic Skin Protectants by Detection of Photo-Dimers as a Marker for Ultraviolet

Light Induced Damage in Human Skin Melanocytes

Chemistry

1st Place Trey Cowher, 10, Warwick HS, The Effectiveness of Solid Xerogel in the Dehydration Reaction of Catalysts on Cyclohexanol to Cyclohexene

2nd Place Grace Benitez, 12, Elizabethtown HS, Temperature Sensitive Lipid Liquid Crystals

3rd Place Rachel Pfennig, 9, Conestoga Valley HS, Making Ironman Out of Vegetarians: The Determination of Iron in Vegetables

HM Kallie Cardenas, 11, Warwick HS, The Effect of Histidine Chelating Copper, Iron and Zinc Ions

HM Christopher Haines, 11, Conestoga Valley HS, Does the amount of force applied to triboluminescent crystals affect the amount of lumens produced?

HM Laurel Schappell, 11, Warwick HS, Toxicity of Au and Ag Nanoparticles on Brine Shrimp

HM Jenny Woolley, 10, Warwick HS, The effectiveness of synthesized zeolites on water absorptions and cation exchange capacity

HM Joseph Weidman, 12, Elizabethtown HS, [Ru(bpy)₃]²⁺ as a Luminescent Sensor

HM Samantha Shields, 10, Warwick HS, The Effect of Copper on Lichen

HM Sneha Mittal, 9, Manheim Township HS, What's on the menu? Fried Food and Biodiesel!

Computer Science

1st Place Mengyun (Olivia) Xu, 11, Lancaster Country Day School, A Smart Tracker of the Food in Your Refrigerator

2nd Place Joel Hoover, 12, Garden Spot HS, A Hash-Based Stream Cipher for Symmetric-Key Encryption

3rd Place John Kinsey, 10, Conestoga Valley HS, Haters Gonna Hate: An analysis of YouTube Commentary

Earth and Planetary Science

1st Place Eric Frey, 11, Warwick HS, Can Life Survive on Mars?

2nd Place Makena Zimmerman, 10, Warwick HS, The Infiltration of Zinc and Sodium Chloride Through Soils

Engineering: E&M

1st Place Brian Rupp, 12, Elizabethtown HS, Improving Control Technologies for Virtual Reality Systems

2nd Place Eric Graff, 9, Conestoga Valley HS, Got Bars? - A Study on Improving Wi-Fi Signals

3rd Place Evan Templin, 10, Conestoga Valley HS, Modifications of salt bridges in photovoltaic cells

Engineering: Materials & Bioengineering

1st Place Divya Sirdeshpande, 12, Hempfield HS, A novel colorless multifunctional coating from biobased polyphenols.

2nd Place Tristan Chaudhry, 11, Conestoga Valley HS, Aerogel: Oil and Marine Miracle Maker

3rd Place Mitchell Daneker, 9, Conestoga Valley HS, Additives that impede fire

HM Brenna Williams, 10, Conestoga Valley HS, Recycled aggregates in concrete

HM Muzahidul Islam, 11, Elizabethtown HS, Polyurethane: Protecting passengers in a car crash

Energy and Transportation

1st Place Madison Cassel, 10, Warwick HS, The effect of different amounts of additives added to biofuel on nitrogen oxygen emissions

2nd Place Cooper Hess, 10, Warwick HS, Activated Carbon Microbial Fuel Cell

3rd Place Alex Grigas, 12, Conestoga Valley HS, Optimization of Plant Microbial Fuel Cells in Lancaster County

HM Kaleb Swift, 10, Warwick HS, Growth of chlorella vulgaris in a LED based photobioreactor

Environmental Management

1st Place Jackie Pixley, 11, Warwick HS, The Effects of Using a Biofilm to Prevent Carbon Dioxide Leakage

2nd Place Gabrielle Claus, 10, Lancaster Catholic HS, Our Over-Fertilized Bay

Environmental Science

1st Place Lily Delle-Levine, 9, Lancaster Country Day School, Measuring Diurnal Variation in Carbon Monoxide and Nitrogen Dioxide in Enclosed Ice Rinks

2nd Place Natalie Rhoads, 10, Warwick HS, The Effect of Chitosan Nanoparticles on Snails and *Chlorella Vulgaris*

3rd Place Kate Suchanec, 11, Elizabethtown HS, Effect of Hydraulic Fracturing Fluid on Macroinvertebrates

HM David Mosemann, 11, Conestoga Valley HS, How much copper is leaching into your water?

HM Kat Lakehart, 10, Warwick HS, The Effect of the New Street Ecological Park Restoration Site on Water Quality of the Santo Domingo Stream

Mathematics

1st Place Lauren Moyer, 10, Ephrata HS, Penrose Tilings and Decapods

HM Eric Rathsam, 12, Elizabethtown HS, Uses of Photogrammetry

Medicine and Health Science - CORRECTED

1st Place Joan Miller, 11, Conestoga Valley HS, The Chemical Effects of ADHD Medications

2nd Place Tatiana Stauffer, 11, Warwick HS, Barefoot: Baleful or Benign?

3rd Place Mariana Riehl, 12, Pequea Valley HS, The Efficacy Essential Oils to Control Bacteria that Cause Foodborne Illnesses

HM Abbie Weit, 10, Warwick HS, The Effect of Glycol Chitosan Nanoparticles and Chitosan Nanoparticles on the Release Rate of Methotrexate

HM Abby Steinour, 10, Warwick HS, The Foot Strikes Back

Microbiology

1st Place Emily Klonicki, 12, Elizabethtown HS, Phone Home Using Microbial Fuel Cells

2nd Place Joelle Hickey, 10, Warwick HS, The Effect of Thiolated Chitosan Nanoparticles on *E. coli* Bacteria

3rd Place Lauren Snader, 10, Warwick HS, The effect of acidic and alkaline electrolyzed water on the decontamination of the surface of strawberries and cucumbers.

HM Christina Cappiello, 11, Warwick HS, The Effect of Beta Glucans on Ampicillin

HM Samantha Schaeffer, 10, Warwick HS, The Survival of *Staphylococcus epidermidis* on Artificial Turf

Physics and Astronomy

1st Place Jenna Lile, 10, Conestoga Valley HS, The effects of a pinhole camera's aperture and shutter speed on picture quality

2nd Place Samantha Borry, 9, Ephrata HS, Flame Retardants: The Optimum Treatment

3rd Place David Lucas, 11, Warwick HS, The Effect of Turf Infill on the Performance of Rubber-filled Synthetic Turf Surfaces

HM Charles Packard, 11, Manheim Township HS, Optimizing One Dimensional Ballistic Conduction

HM Patrick Curtin, 12, Elizabethtown HS, Can a Star Be Seen In Two Places at the Same Time? A Closer Look

Plant Science

1st Place Nicholas Bologna, 12, Pequea Valley HS, Effects of North/South Magnetism on *Scenedesmus* (Algae)

2nd Place Olivia Pieklo, 10, Warwick HS, Diosgenin Production in *Trigonella foenum-graecum*

3rd Place Nate Beard, 10, Warwick HS, The Effect of Arbuscular Mycorrhizal Fungi on the Nitrogen Uptake of Lolium

HM Jessica Fry, 10, Ephrata HS, The Response of Plants to the Cohabitation of Common Viruses

HM Emma Munyan, 12, Elizabethtown HS, Study of the Effects and Infection of Apple Tree Cells by Fireblight

