

Western Reserve District 5 Science Day – University of Akron -- 2022



Prof. Ali Dhinojwala, Director

Department of Polymer Science  
The University of Akron

John Fellenstein &  
Laurel Lohrey, Coordinators  
Akron Global Polymer Academy  
The University of Akron

Dan H. Jones, Sponsored Awards

Akron Council of Engineering &  
Scientific Societies

Sheila King, Co-Director

School Representative  
Hudson Schools

Abigail Tanner & Diane Minich,  
Judge Coordinators  
& Advisors

# Welcome to the Western Reserve District 5 Science Day

Prof. Ali Dhinojwala, Director  
H.A. Morton Professor  
Department of Polymer Science  
The University of Akron

Western Reserve District 5 Science Day – University of Akron -- 2022

# Category Awards

Western Reserve District 5 Science Day – University of Akron -- 2022

*Category Awards*  
*Animal Science & Plant Sciences*

Category Award Animal Science & Plant Sciences \$ 50

Third Place

Isabella Doss

Plant Sciences

The Effects of Soil Based Probiotics on Soybean  
Growth

Holy Family - Stow

Grade 6

Category Award Animal Science & Plant Sciences \$ 75

Second Place

Margaret Brady

Animal Sciences

How Different Pollutants Affect the Heart Rate of  
Daphnia Magna

Beaumont School - Cleveland Heights

Grade 10

Category Award Animal Science & Plant Sciences \$ 100

First Place

William Miller

Plant Sciences

Plants in a Future World

The University School - Shaker Heights

Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Awards  
Behavioral & Social Sciences



Category Award Behavioral and Social Sciences \$ 50

Third Place

Haniyah Imran

Behavioral and Social Sciences  
Nurse Habit Changes due to COVID-19  
Pandemic

Mentor High School - Mentor  
Grade 11

Category Award Behavioral and Social Sciences \$ 75

Second Place

Vishwum Kapadia

Behavioral and Social Sciences

Correlation of Biofeedback Parameters with the  
Perception of Relaxation

The University School - College Prep - Chagrin Falls

Grade 9

Category Award Behavioral and Social Sciences \$ 100

First Place

Lucy Furjanic

Behavioral and Social Sciences

How the Smell of Peppermint Oil Affects  
Memorization

Beaumont School - Cleveland Heights

Grade 9

Western Reserve District 5 Science Day – University of Akron -- 2022

## Category Awards

Biomedical Engineering & Biomedical and Health  
Sciences & Translational Medical Science

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Biomedical and Health Sciences &  
Biomedical Engineering & Translational Medical Science  
\$ 50

Third Place

Julia Zhu

Biomedical and Health Sciences  
C19orf12 Ablation Caused Mitochondrial  
Dysfunction and Susceptibility to Ferroptosis in  
Neuronal Cell Model of MPAN  
Hathaway Brown - Shaker Heights  
Grade 10

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Biomedical and Health Sciences &  
Biomedical Engineering & Translational Medical Science  
\$ 75

Second Place

Kaitlyn Ernst

Biomedical and Health Sciences  
BG34-200 Engagement with Integrin CD11b for  
Modulating Tumor-Associated Myeloid Cells in  
Pancreatic Cancer

Laurel School - Shaker Heights

Grade 10

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Biomedical and Health Sciences &  
Biomedical Engineering & Translational Medical Science  
\$ 100

First Place

Hans Swain

Biomedical and Health Sciences

Effect of Excess Dietary Iron on Intestinal  
Tumorigenesis

The University School - College Prep - Chagrin Falls

Grade 10

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Awards  
Microbiology &  
Cellular and Molecular Biology &  
Biochemistry



Category Award Microbiology & Cellular and Molecular  
Biology & Biochemistry \$ 75

Second Place

Ryan Haas

Biochemistry

Will Different Liquids Affect the Weight of  
Gummy Bears?

Incarnate Word Academy - Parma Heights  
Grade 7

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Microbiology & Cellular and Molecular  
Biology & Biochemistry \$ 100

First Place

Julia Rea

Biochemistry

Vitamin C: Keeping it Cool

St Sebastian - Akron

Grade 7

Western Reserve District 5 Science Day – University of Akron -- 2022

# Category Awards

## Chemistry

## Category Award Chemistry \$ 50

Third Place

Abigail Alberta

Chemistry

The Price is Right... Or is It? A Study on the  
Correlation of Price and Effectiveness of Stain  
Removers by Abigail Alberta

Holy Family - Stow

Grade 7

Category Award Chemistry \$ 75

Second Place

Elena Kagel

Chemistry

Gee Whizz...How Much Fizz?

St Raphael - Bay Village

Grade 6

Category Award Chemistry \$ 100

First Place

Caroline Lu

Chemistry

Determination of Vitamin C Concentration in  
Different Types of Orange Juice Using Titration

Birchwood School of Hawken - Cleveland

Grade 7

Western Reserve District 5 Science Day – University of Akron -- 2022

**Category Awards**  
**Earth and Environmental Science &**  
**Environmental Engineering**

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Earth and Environmental Science &  
Environmental Engineering \$ 50

Third Place

Ava Lewandowski

Earth and Environmental Science

Plastics Into Food

St Helen - Newbury

Grade 8



Category Award Earth and Environmental Science &  
Environmental Engineering \$ 75

Second Place

Elizabeth McAndrew

Earth and Environmental Science

Does the type of fabric affect the amount of  
ultraviolet rays that pass through?

St Paschal Baylon - Cleveland

Grade 8

Category Award Earth and Environmental Science &  
Environmental Engineering \$ 100

First Place

Grace Chen

Environmental Engineering

The Effects of Pyrolysis on Upcycling Polyvinyl  
Chloride (PVC) in Gloves Through Reattaining  
Hydrochloric Acid (HCl) For Higher-Value  
Applications

Mentor High School - Mentor

Grade 11

## Category Awards

Computational Biology and Bioinformatics &

Embedded Systems &

Engineering Technology: Statics and Dynamics &  
Mathematics &

Robotics and Intelligent Machines &  
Systems Software

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Computational Biology and Bioinformatics & Embedded  
Systems & Engineering Technology: Statics and Dynamics & Mathematics  
& Robotics and Intelligent Machines & Systems Software

\$ 50

Third Place

John Shin

Computational Biology and Bioinformatics  
Utilizing Intelligent Data Partitioning to Improve  
Machine Learning Models

Hawken School - Chesterland

Grade 11

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Computational Biology and Bioinformatics & Embedded  
Systems & Engineering Technology: Statics and Dynamics & Mathematics  
& Robotics and Intelligent Machines & Systems Software

\$ 75

Second Place

Carlton Cort

Engineering Technology: Statics and Dynamics

Designing and Testing a Prototype Automatic  
Electronic Control System for Active Magnetic  
Levitation of a Ferromagnet Toward Magnetically  
Deflected Ballistic Mass Technology

The University School - College Prep - Chagrin Falls

Grade 12

Western Reserve District 5 Science Day – University of Akron -- 2022

Category Award Computational Biology and Bioinformatics & Embedded  
Systems & Engineering Technology: Statics and Dynamics & Mathematics  
& Robotics and Intelligent Machines & Systems Software

\$ 100

First Place

Emily Berdis

Mathematics

The Discovery of Exoplanets

West Geauga High School - Chesterland

Grade 11

Western Reserve District 5 Science Day – University of Akron -- 2022

## Category Awards

Energy: Sustainable Materials and Design &  
Materials Science

Category Award Energy: Sustainable Materials and Design &  
Materials Science \$ 50

Third Place

Matthew Devine

Materials Science

Ultraviolet: A Clean Way to Clean Up Invasive  
Species; Using Ultraviolet Light to Degrade  
Adhesives Similar to Byssal Thread Adhesives

The University School - College Prep - Chagrin Falls  
Grade 10



Category Award Energy: Sustainable Materials and Design &  
Materials Science \$ 75

Second Place

Evan Dan

Energy: Sustainable Materials and Design  
What are the Effects of Phase Change Materials  
on the Temperature of an Enclosed Area  
Solon Middle School – Solon  
Grade 8

Category Award Energy: Sustainable Materials and Design &  
Materials Science \$ 100

First Place

Destynn Keuchel

Materials Science

Deployment of Thermoplastic and Thermosetting  
Technologies to Improve the Durability of Solar Sails

Hawken School – Chesterland

Grade 12

Western Reserve District 5 Science Day – University of Akron -- 2022

*Category Awards*  
*Physics and Astronomy*

Category Award Physics and Astronomy \$ 50

Third Place

Bryn Morgan

Physics and Astronomy

A Modern, Software-Based Approach to Celestial  
Navigation

West Geauga High School – Chesterland

Grade 11

Category Award Physics and Astronomy \$ 75

Second Place

Mariska Jeske

Physics and Astronomy

Magnet Fever

St Raphael - Bay Village

Grade 8

Category Award Physics and Astronomy \$ 100

First Place

Adonis Wazni

Physics and Astronomy

The Ways a Room Influences Safety Against  
SARS-CoV-2

The University School - Shaker Heights  
Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

# Polymer Science Awards

Category Award Polymer Science Award \$ 100

First Place

Ryan McGinnis

Chemistry

Electrolysis of Polylactic Acid (PLA) for Custom  
Fabrication of Sustainable Electromagnets

West Geauga High School - Chesterland

Grade 12



Western Reserve District 5 Science Day – University of Akron -- 2022

Sponsored Awards

Daniel H. Jones

Akron Council of Engineering & Scientific  
Societies

Western Reserve District 5 Science Day – University of Akron -- 2022

ACCESS - Akron Council of Engineering & Scientific Societies  
Best High School Project \$ 100

Bryn Morgan

Physics and Astronomy

A Modern, Software-Based Approach to Celestial  
Navigation

West Geauga High School - Chesterland

Grade 11

ACCESS - Akron Council of Engineering & Scientific Societies  
Best Middle School Project \$ 100

Omar Elbadawy

Environmental Engineering

Eco-friendly Concrete –The Effects of Plant-  
based and Plastic Admixtures on Its Mechanical  
Properties

Birchwood School of Hawken - Cleveland  
Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

ACS - Akron Section of American Chemical Society High  
School Award Akron Section - American Chemical Society  
High School Award \$ 100

Destynn Keuchel

Materials Science

Deployment of Thermoplastic and Thermosetting  
Technologies to Improve the Durability of Solar  
Sails

Hawken School - Chesterland

Grade 12

Western Reserve District 5 Science Day – University of Akron -- 2022

ACS - Akron Section of American Chemical Society Middle  
School Award Akron Section - American Chemical Society  
Middle School Award \$ 100

Nicolas Shang

Chemistry

What are the optimal variations in the different  
factors in the dyeing process of fabrics so that  
optimal efficiency can be achieved?

Birchwood School of Hawken - Cleveland

Grade 8

IEEE - Institute of Electrical & Electronics Engineers (Akron-Canton section) Exceptional Electrical-related project \$ 50

Best High School Project

Kareem Fareed

Computational Biology and Bioinformatics

Using a Convolutional NN to Diagnose Parkinson's Disease

The University School - College Prep - Chagrin Falls

Grade 10

IEEE - Institute of Electrical & Electronics Engineers (Akron-Canton section) Exceptional Electrical-related project \$ 50

## Best High School Project

Carlton Cort

Engineering Technology: Statics and Dynamics

Designing and Testing a Prototype Automatic Electronic Control System for Active Magnetic Levitation of a Ferromagnet Toward Magnetically Deflected Ballistic Mass Technology

The University School - College Prep - Chagrin Falls  
Grade 12

Western Reserve District 5 Science Day – University of Akron -- 2022

IEEE - Institute of Electrical & Electronics Engineers (Akron-Canton section) Exceptional Electrical-related project \$ 50

Best Middle School Project

Ian Broihier

Robotics and Intelligent Machines

Quantifiable Humanity and Artificial Intelligence  
in Chess

The University School - Shaker Heights

Grade 8



IEEE - Institute of Electrical & Electronics Engineers (Akron-Canton section) Exceptional Electrical-related project \$ 50

## Best Middle School Project

Bryan Morton

Systems Software

Password Security: How Easily Can Your Password Be Hacked?

St Paschal Baylon - Cleveland

Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

NESOWEA - Ohio Water Environment Association (Northeast section) \$100 First Prize

Nandita Srikumar

Environmental Engineering

Effect of Activated Carbon on Water Filtration

Solon Middle School - Solon

Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

ONR - Office of Naval Research \$50, Certificate, & Medallion  
- High School

Aaron Velez

Earth and Environmental Science

The Effects of Ocean Acidification on  
Bioluminescent Sea Creatures

The University School - College Prep - Chagrin  
Falls

Grade 9

ONR - Office of Naval Research \$50, Certificate, & Medallion  
- High School

Ryan McGinnis

Chemistry

Electrolysis of Polylactic Acid (PLA) for Custom  
Fabrication of Sustainable Electromagnets

West Geauga High School - Chesterland

Grade 12

ONR - Office of Naval Research \$50, Certificate, & Medallion  
- High School

Carlton Cort

Engineering Technology: Statics and Dynamics  
Designing and Testing a Prototype Automatic  
Electronic Control System for Active Magnetic  
Levitation of a Ferromagnet Toward Magnetically  
Deflected Ballistic Mass Technology

The University School - College Prep - Chagrin Falls  
Grade 12

Western Reserve District 5 Science Day – University of Akron -- 2022

ONR - Office of Naval Research Certificate & Medallion -  
Middle School

Jasmine Chen

Energy: Sustainable Materials and Design

Making Bioplastic Bags

Birchwood School of Hawken - Cleveland

Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

ONR - Office of Naval Research Certificate & Medallion -  
Middle School

Jacob Khaykin

Chemistry

Testing Radiation

Solon Middle School - Solon  
Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

ONR - Office of Naval Research Certificate & Medallion -  
Middle School

Owen Pry

Chemistry

Which Liquids Are Most Corrosive?

St Brendan - North Olmsted

Grade 7



Ohio Soybean Council Ohio Soybean Bioscience Award \$ 100

Isabella Doss

Plant Sciences

The Effects of Soil Based Probiotics on Soybean  
Growth

Holy Family - Stow

Grade 6

Ohio Soybean Council Ohio Soybean Bioscience Award \$ 100

Aanya Lakireddy

Plant Sciences

How Do Rising Carbon Dioxide Levels Affect  
Plant Germination?

Birchwood School of Hawken - Cleveland

Grade 8

Ohio Soybean Council Ohio Soybean Bioscience Award \$ 100

Aashvi Jagetia

Earth and Environmental Science

The Effect of Forest Fires on Seed Germination

Hathaway Brown - Shaker Heights

Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

SPE-Akron Chapter, Society of Plastics Engineers SPE-Akron  
Chapter, Society of Plastics Engineers - Best Plastics-related  
Project MS \$ 50

Omar Elbadawy

Environmental Engineering

Eco-friendly Concrete –The Effects of Plant-  
based and Plastic Admixtures on Its Mechanical  
Properties

Birchwood School of Hawken - Cleveland

Grade 8

Western Reserve District 5 Science Day – University of Akron -- 2022

SPE-Akron Chapter, Society of Plastics Engineers SPE-Akron  
Chapter, Society of Plastics Engineers - Best Plastics-related  
Projects HS \$ 50

Destynn Keuchel

Materials Science

Deployment of Thermoplastic and Thermosetting  
Technologies to Improve the Durability of Solar  
Sails

Hawken School - Chesterland

Grade 12

Western Reserve District 5 Science Day – University of Akron -- 2022

SPE-Akron Chapter, Society of Plastics Engineers SPE-Akron  
Chapter, Society of Plastics Engineers - Best Plastics-related  
Projects HS \$ 50

Grace Chen

Environmental Engineering

The Effects of Pyrolysis on Upcycling Polyvinyl  
Chloride (PVC) in Gloves Through Reattaining  
Hydrochloric Acid (HCl) For Higher-Value  
Applications

Mentor High School - Mentor  
Grade 11

Western Reserve District 5 Science Day – University of Akron -- 2022

SPE-Akron Chapter, Society of Plastics Engineers SPE-Akron  
Chapter, Society of Plastics Engineers - Best Plastics-related  
Projects HS \$ 50

Regan Houser

Materials Science

Before It Was Cool

St Vincent St Mary - Akron

Grade 10

Ohio Tuition Trust Authority Grades 5,6,7 or 8 \$ 250

Primary Award

Omar Elbadawy

Environmental Engineering

Eco-friendly Concrete –The Effects of Plant-based  
and Plastic Admixtures on Its Mechanical Properties

Birchwood School of Hawken - Cleveland

Grade 8



Ohio Tuition Trust Authority Grades 5,6,7 or 8 \$ 250

Primary Award

Nandita Srikumar

Environmental Engineering

Effect of Activated Carbon on Water Filtration

Solon Middle School - Solon

Grade 8

# Ohio Tuition Trust Authority Alternates Grade 5,6,7.8

Alternate - \$25 and up to \$250

William Miller

Plant Sciences

Plants in a Future World

The University School - Shaker Heights

Grade 8

# Ohio Tuition Trust Authority Alternates Grade 5,6,7.8

Alternate - \$25 and up to \$250

Christopher Wang

Chemistry

How Bubbles Form

Solon Middle School - Solon

Grade 8