

2022 High School State Results

Kirkpatrick Senior Eagle Recipients (top two purple ribbon finalists)

Shrihari Nagarajan

The Utilization of Biochar and Bacillus subtilis to Remove Regionally Prevalent Heavy Metals from Wastewater

Thomas Jefferson Independent School, Joplin, MO

Sponsoring Teacher: Christopher Rupar

Layla Strickland

Study and Application of Polarization-Based Traps for Use Against Blood-Sucking Tabanidae

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

I Rank (Purple Ribbon Finalists)

Andrew Bufalo

Inhibition of p38 Kinase Reduces DUX4-Induced Apoptosis in Human FSHD Patient Myotubes

Wentzville Holt High School, Wentzville, MO

Sponsoring Teacher: Jennifer Hess

Zackary Cline

Food Wars: Investigating the Perception of Meat-Based Food vs. Their Plant-Based Alternatives

Tuscumbia High School, Tuscumbia, MO

Sponsoring Teacher: Constance Wyrick

George Jia

Cow Milk Derived Exosomes and Their Potential Application as Drug Carriers

Rock Bridge High School, Columbia, MO

Sponsoring Teacher: Sarah Laster

Ayden Meckley

Surveying Feminine Hygiene Products for Per- and Polufluoroalkyl Compounds Utilizing Particle Induced Gamma Ray Emissions Spectroscopy (PIGE) coupled with Supplementary Analytical Testing Methods

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

Clare Tyson

Comparing the Relative Seismic Resistance of Different Structural Aspects of the Pantheon

Wentzville Holt High School, Wentzville, MO

Sponsoring Teacher: Jennifer Hess

II Rank

Dakota Agee

The Effect of Cannabidiol Oil on Cortisol Levels in Lab Mice

Joplin High School, Joplin, MO

Sponsoring Teacher: Karisa Boyer

Jacob Arnold

The Efficacy of Antimicrobial Cleaning Products and Their Impact on the Respiratory System

Eldon High School, Eldon, MO

Sponsoring Teacher: Peggy Veatch

Keith Bass

Utilization of Artificial Intelligence (AI) Software for Development of an Optimal Use Model for Reduction of Commercial Pesticide Application Rates

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

Sophie Chang

The Effect of Antisense Oligonucleotides on the Expression Level of Human Progranulin Associated with Frontotemporal Dementia

Marquette High School, Chesterfield, MO

Sponsoring Teacher: Cathy Farrar

Ellan Hinson

The Effects of Different Conditions on Ozark Chinquapin Trees

St. Clair High School, St. Clair, MO

Sponsoring Teacher: Ben Martin

Nathan Hoenig

The Effects of Geographic Location on Formation of Truffle Microbiome

Wentzville Holt High School, Wentzville, MO

Sponsoring Teacher: Jennifer Hess

Ritika Jagarlamudi

*CRISPR Cas9 Mediation of the *rtn4b* Genome Demonstrates a Nogo-B Dependent Neuronal Tissue Regeneration Mechanism in Zebrafish*

Marquette High School, Chesterfield, MO

Sponsoring Teacher: Cathy Farrar

Josie Kunkel

*Determining the Potential to Utilize Artificial Light as a Method of Control for the Agricultural Pest *Spodoptera frugiperda*: A Study of Insect Immunology with Applications in Integrated Pest Management*

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

Alice Liu

Identifying Relationships Between Weather Factors and Landslide Attributes in the United States Midwest

Marquette High School, Chesterfield, MO

Sponsoring Teacher: Cathy Farrar

Noah Lynch

Testing the Effects of Cold Plasma on the Germination Rate of Seeds

Immaculate Conception High School, Jackson, MO

Sponsoring Teacher: Leanne Thele

Zoe Martonfi

The Effect of Organic Oil on the Residual Action and Efficacy of Insecticidal Soap

Eldon High School, Eldon, MO

Sponsoring Teacher: Peggy Veatch

Reagan Newell

Using Invasive Species Typha Cattail Plant as a Safe and Effective Plant Fertilizer

Jackson Senior High School, Jackson, MO

Sponsoring Teacher: Leane Thele

Kim Nguyen

The Effect of Medicinal Mushrooms on Saccharomyces cerevisiae: Using Saccharomyces cerevisiae as Model Organism for Cancer Research

Joplin High School, Joplin, MO

Sponsoring Teacher: Karisa Boyer

Bailey O'Neal

Effects of Heat Damage on DNA Collection from Teeth

Jackson Senior High School, Jackson, MO

Sponsoring Teacher: Leane Thele

Emma Shields

The Effect of Replacing Surfactants with Fossil Fuel Free Alternatives on the Toxicity of Ceriodaphnia dubia

Jackson Senior High School, Jackson, MO

Sponsoring Teacher: Leanne Thele

Lucas Skidmore

The Effects of Heat and Pressure on Staphylococcus Epidermis Bacteria

Jackson Senior High School, Jackson, MO

Sponsoring Teacher: Leanne Thele

Hanna Spoon

Bacterial Growth in Running Shoes

St. Clair High School, St. Clair, MO

Sponsoring Teacher: Ben Martin

Cassie Sun

Ability to Overcome Initial Impulses to Motivational Stimuli Evidenced by PreFrontal Cortex Activity

Marquette High School, Chesterfield, MO

Sponsoring Teacher: Cathy Farrar

Jonah Visser

Now You See It, Now You Don't! Investigating the Effectiveness of Various Agri-Waste Biochars as Adsorbents for Methylene Blue in Aqueous Solutions

Tuscumbia High School, Tuscumbia, MO

Sponsoring Teacher: Constance Wyrick

Johnathon Westhusing

Testing the Implementation of Morphing Winglet Designs with the Use of Computational Fluid Dynamics in Order to Determine its Efficiency

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

III Rank

Keegan Dowdy

Otitis Externa (Swimmers Ear): The Development of a Bioactive Glass Based Laminated Ear Plug for Applications in Diving and Swimming

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

Jacob Hogue

Futuristic Uses of Recycled Plastics

Montgomery County R-II High School, Montgomery City, MO

Sponsoring Teacher: Kiristie Hogue

Owen Howser

Quieting the Rumble: Engineering a Noise Reduction Rumble Strip Design Utilizing Destructive Interference

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

Kaden Luker

Using Micrococcus Luteus, Lactococcus Lactis and Bacillus Cereus Bacteria and the Breaking Down of Microplastics

Jackson Senior High School, Jackson, MO

Aidan Reed

The Viability of Hydrogen and Oxygen as a Replacement Fuel for Gasoline-based IC Engines

Wentzville Holt High School, Wentzville, MO

Sponsoring Teacher: Jennifer Hess

Cheyannah Rincon-Campos

Decomposition of Hair in Septic Tank

St. Clair High School, St. Clair, MO

Sponsoring Teacher: Ben Martin

Connor Starkey

Discovering the Potential of LiDAR Field Detection to Improve Space Debris Recognition and Evasion

Camdenton High School, Camdenton, MO

Sponsoring Teacher: Christopher Reeves

Special Award Recipients

Paula Macy Memorial Award

Jacob Arnold

The Efficacy of Antimicrobial Cleaning Products and Their Impact on the Respiratory System

Eldon High School, Eldon, MO

Sponsoring Teacher: Peggy Veatch

Amy and Beth Lawson Award: Best Bacteriological Project

Nathan Hoenig

The Effects of Geographic Location on Formation of Truffle Microbiome

Wentzville Holt High School, Wentzville, MO

Sponsoring Teacher: Jennifer Hess

Good Life Grass Farms Award

Zoe Martonfi

The Effect of Organic Oil on the Residual Action and Efficacy of Insecticidal Soap

Eldon High School, Eldon, MO

Sponsoring Teacher: Peggy Veatch

Outstanding High School Teacher

Leanne Thele, Jackson Senior High School-Jackson