

**33rd BLUE RIDGE HIGHLANDS REGIONAL SCIENCE FAIR
MARCH 1 – 2 , 2024
RADFORD UNIVERSITY**

STUDENT WINNERS

- 101 Ethan Easter
Determining the Effects of Four Natural Items on Oranges to Repel Drosophila melanogaster
Southwest Virginia Governor's School
Sponsor: Rebecca Phillips
Animal Sciences – Senior Division – Third Place
- 102 Xavier Gitre
Organic Mercury and Avian Foraging: The Impact of Methylmercury Exposure on the Feeding Efficiency of Invertivorous Passerines
Blacksburg High School
Sponsor: Katharine Davis
Grand Award Winner
Virginia State Science and Engineering Delegate
Animal Sciences – Senior Division – First Place
National Oceanic and Atmospheric Administration Award
Virginia Lakes and Watersheds Award – Senior Division
- 103 Kailin Phillips
The Effects of Age on Milk Fat Percentage in Holstein Cows
Southwest Virginia Governor's School
Sponsor: Rebecca Phillips
American Society of Mammalogists Award
New River Community College Scholarship
- 104 Alexandria Swenson
Mean Frequencies of Microplastics in Commercially Processed Equine Foods
Southwest Virginia Governor's School
Sponsor: Jared Brown
Animal Sciences – Senior Division – Second Place
American Society of Mammalogists Award
United States Agency for International Development Award
Yale Science and Engineering Association Award

- 201 Naomi Black
Perception of Time When Exposed to an Analog vs. Digital Clock While Completing a Task
Southwest Virginia Governor's School
Sponsor: Greg Riffe
Behavioral and Social Sciences - Senior Division – Honorable Mention
- 204 Molly Morris
The Correlation Between Color Cues and Human Perception of Flavors
Southwest Virginia Governor's School
Sponsor: Greg Riffe
Virginia State Science and Engineering Delegate
Behavioral and Social Sciences - Senior Division – First Place
- 205 Sophie Perdue
Comfort Level Discussing Medical Topics Based on Parental Education Level
Southwest Virginia Governor's School
Sponsor: Megan Arnold
Virginia State Science and Engineering Delegate
Behavioral and Social Sciences - Senior Division – Second Place
American Psychological Association Award
American Red Cross Award – New River Valley; Science in Service to Our Communities
- 206 Bisan Rai
Online “Group” Effect on Addiction Recovery
Southwest Virginia Governor's School
Sponsor: Sam Muriello
Behavioral and Social Sciences - Senior Division – Third Place
Radford University Sigma Xi Chapter Distinguished Awards in Science – Senior Division
- 301 Quinlan Beegle
Effects of Temperature and Humidity on Running Performances
Southwest Virginia Governor's School
Sponsor: Greg Riffe
National Weather Service Award
- 302 Ashley Layne
The Effects of a Specific Rest Interval on Different Levels of Physical Exertion, and How the Interval Affects Bat Speed
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Virginia State Science and Engineering Delegate
Biomedical and Health Sciences; Biomedical Engineering; Cellular and Molecular Biology – Senior Division – Second Place

- 303 Minhyung Lee
The Causes of Spontaneous Firing of Cardiac Muscle and Effects of Ion Concentration
Blacksburg High School
Sponsor: Katharine Davis
VCOM-Virginia Public Health and Healthcare Award – Senior Division – Third Place
- 304 Jordan Lucas
Comparing Different Breathing Techniques in Their Effectiveness of Lowering Elevated Heart Rate
Southwest Virginia Governor's School
Sponsor: Sherry Pugh
VCOM-Virginia Public Health and Healthcare Award – Senior Division – Honorable Mention
- 305 Harjot Rai
Motivation, Productivity, Energy Levels, and Mood When Nutrient-Dense Foods are Consumed versus When Nutrient-Void Foods are Consumed
Southwest Virginia Governor's School
Sponsor: Sherry Pugh
VCOM-Virginia Public Health and Healthcare Award – Senior Division – Second Place
Emory and Henry Scholarship
Radford University Scholarship
- 306 Ethan Ririe
Investigating the Impact of Parasitic Worm Secretions on Anaphylaxis as Novel Treatment for Food Allergies
Blacksburg High School
Sponsor: Katharine Davis
Grand Award Winner
Virginia State Science and Engineering Delegate
Biomedical and Health Sciences; Biomedical Engineering; Cellular and Molecular Biology – Senior Division – First Place
American Society of Biochemistry and Molecular Biology Award
Regeneron Biomedical Science Award
- 307 Kyler Williams
Effects of Supportive Insoles on Foot Pressure and Performance During Soccer Movements
Blacksburg High School
Sponsor: Katharine Davis
Biomedical and Health Sciences; Biomedical Engineering; Cellular and Molecular Biology – Senior Division – Third Place
VCOM-Virginia Public Health and Healthcare Award – Senior Division – First Place

- 401 Laken Barnette
A Nutritional Assessment of Plant-Based Milk Alternatives: Comparing Common Plant-Based Milk Alternatives to Cow's Milk Using Chemical Analyses
Southwest Virginia Governor's School
Sponsor: Jared Brown
Virginia State Science and Engineering Delegate
Chemistry – Senior Division – First Place
American Chemical Society – Northeastern Tennessee Section – First Place
American Chemical Society, Virginia Blue Ridge Section Award – Senior Division
Radford University Scholarship
- 402 Nyjah Da'Mes
Water Quality Difference in Stagnant Versus Moving Water
Southwest Virginia Governor's School
Sponsor: Jared Brown
United States Environmental Protection Agency Letter
- 403 Emma Ebel
Testing Phosphoric Acid Content in Soft Drinks Using UV Visible Spectroscopy
Southwest Virginia Governor's School
Sponsor: Jared Brown
Chemistry – Senior Division – Second Place
American Association for University Women
American Chemical Society – Northeastern Tennessee Section – Second Place
Wytheville Community College Scholarship
- 404 Ruby Hoerter
The Concentration of Vitamin C in Non-Organic and Organic Fruits and Vegetables
Southwest Virginia Governor's School
Sponsor: Jared Brown
American Association for University Women
- 405 Nicholas Nista
Caloric Difference of Chicken Strips from Dairy Queen: Bomb Calorimetry, Atwood Method, and Stated Content
Southwest Virginia Governor's School
Sponsor: Jared Brown
Chemistry – Senior Division – Third Place
- 406 Disha Talajia
Nutritional Content of Bananas Over Periods of Time
Southwest Virginia Governor's School
Sponsor: Jared Brown
American Chemical Society – Northeastern Tennessee Section – Third Place

- 501 Swati Aggarwall
Evaluating Homemade and Industrial Rust Removers on Steel Metal
Southwest Virginia Governor's School
Sponsor: Jared Brown
United States Environmental Protection Agency Letter
- 502 Connor Beasley
Metagenomic Analysis of the Microbial Biodiversity in Soil of Mountain Balds in Appalachia
Southwest Virginia Governor's School
Sponsor: Rebecca Phillips
Virginia State Science and Engineering Delegate
Computational Biology and Bioinformatics; Earth and Environmental Sciences – Senior Division – First Place
Office of Naval Research Awards Distinguished Achievement Award – Senior Division
United States Environmental Protection Agency Letter
- 503 Grace Crowe
Study of Virginia conservation using Bobwhite quail as an indicator species
Blacksburg High School
Sponsor: Katharine Davis
United States Environmental Protection Agency Letter
- 504 Jacey Hendrix
*Testing the Effects of the Sunscreen Ultraviolet Filter Oxybenzone on the Freshwater Plant *Lilaeopsis brasiliensis**
Southwest Virginia Governor's School
Sponsor: Jared Brown
Computational Biology and Bioinformatics; Earth and Environmental Sciences – Senior Division – Third Place
United States Environmental Protection Agency Letter
- 505 James Paine
*Quantifying Microplastics in *Corbicular fluminea* from a Limnic Ecosystem*
Southwest Virginia Governor's School
Sponsor: Jared Brown
Computational Biology and Bioinformatics; Earth and Environmental Sciences – Senior Division – Second Place
Mount Tabor Ruritan Club Award – Senior Division
United States Environmental Protection Agency Letter
United States Stockholm Junior Water Prize – Second Place

- 506 Kyle Stephens
Effect of Different Gravestone Cleaners on Color of Gravestones
Southwest Virginia Governor's School
Sponsor: Jared Brown
United States Environmental Protection Agency Letter
- 601 Alexander Li
Enhancing Driving Safety via Real-Time Suppression of Vehicle Radar Interference
Blacksburg High School
Sponsor: Katharine Davis
Virginia State Science and Engineering Delegate
Embedded Systems; Systems Software – Senior Division – First Place
Biomedical Engineering Award - Virginia Tech
Office of Naval Research Awards Distinguished Achievement Award – Senior Division
United States Air Force Award
- 602 Asher Porter
Comparing Blacksburg Transit Recorded Versus Posted Stop Times
Southwest Virginia Governor's School
Sponsor: Greg Riffe
Embedded Systems; Systems Software – Senior Division – Second Place
- 701 Phoebe Fant
Analysis of the Heat of Combustion Using Bomb Calorimetry of Three Different Diesel Types
Southwest Virginia Governor's School
Sponsor: Jared Brown
Energy: Sustainable Materials and Design – Senior Division – Second Place
Association of Women Geoscientists Award
- 702 Hank Schroeder
The Effects of Consumer Products with Low Refractive Indexes on the Efficiency of Solar Panels
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Energy: Sustainable Materials and Design – Senior Division – First Place
- 801 Jesse Dulaney
Braking Affecting Unicycling
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Engineering Technology: Statics and Dynamics – Senior Division – First Place

- 803 Juli Ramos
Fiberglass Insulation Alternatives
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Engineering Technology: Statics and Dynamics – Senior Division – Second Place
- 804 Garreth Rudd
Making Flywheel Energy Storage Systems Affordable and Compact
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Engineering Technology: Statics and Dynamics – Senior Division – Third Place
Genius Olympiad
- 901 Casey Felts
Testing Accuracy of a Gravity-Powered Seed Planter
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Environmental Engineering – Senior Division – Second Place
Genius Olympiad
United States Air Force Award
- 902 Oscar Montgomery
Aerating Water by Modifying a Free Water Vortex Turbine
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Environmental Engineering – Senior Division – Third Place
Ricoh Corporation Sustainable Development Award
United States Metric Association Award
- 903 Sriya Sridhar
Enzymatic Engineering for Enhanced Plastic Degradation in a Novel Plasmid System
Blacksburg High School
Sponsor: Katharine Davis
Virginia State Science and Engineering Delegate
Environmental Engineering – Senior Division – First Place
Office of Naval Research Awards Distinguished Achievement Award – Senior Division
Society for In Vitro Biology Award

- 1001 Charlotte Phillips
Investigating Degradation of Polyhydroxyalkanoate Straws in Saltwater Environments with Varying Temperature, and in the Presence of Turbo mamoratus and Lysmata wurdemanni
Southwest Virginia Governor's School
Sponsor: Rebecca Phillips
Grand Award Alternate
Virginia State Science and Engineering Delegate
Materials Science – Senior Division – First Place
Iota Sigma Pi Award – Senior Division
United States Stockholm Junior Water Prize – First Place
- 1002 Braedon Rafferty
How Shape and Material Affect Aerodynamics and Affect Turbulence in the Form of Sound
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Materials Science – Senior Division – Second Place
- 1102 Derek Dunford
Anticipating Bridge Refurbishment Cost Using Bridge Characteristics
Southwest Virginia Governor's School
Sponsor: Greg Riffe
Virginia State Science and Engineering Delegate
Mathematics – Senior Division – First Place
- 1105 Austin Quesenberry
Factors That Have a Major Impact on Running Ability
Southwest Virginia Governor's School
Sponsor: Greg Riffe
Mathematics – Senior Division – Third Place
- 1106 Lishu Wang
The Economic Impact of California's Recent Out-Migration on its Neighboring States
Blacksburg High School
Sponsor: Katharine Davis
Virginia State Science and Engineering Delegate
Mathematics – Senior Division – Second Place
- 1201 Cole Abbott
Effects of Temperature and Humidity on the Timbre of Stringed Instruments
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Virginia State Science and Engineering Delegate
Physics and Astronomy – Senior Division – First Place

- 1202 Sid Jakoubeck
Investigating the Factors Which Allow for the Stability of Planetary Orbits in Binary Star Systems Using Numerical Simulations Based on Initial Planetary Positions
Blacksburg High School
Sponsor: Katharine Davis
Physics and Astronomy – Senior Division – Second Place
- 1203 Enzo Nunez
Creating a Predictive Model of Limiting Magnitude Using Environmental Factors with Respect to Economic Efficiency
Southwest Virginia Governor's School
Sponsor: Matt Frazier
Physics and Astronomy – Senior Division – Third Place
- 1301 Sage Lahmers
Relationship between below ground biomass and soil organic matter: case study in Mt Tabor Blacksburg
Blacksburg High School
Sponsor: Katharine Davis
Virginia State Science and Engineering Delegate
Plant Sciences – Senior Division – First Place
Mount Tabor Ruritan Club Award – Senior Division
National Oceanic and Atmospheric Administration Award
United States Air Force Award
- 1302 Katelyn Melton
Administering Helium to Dandelions, White Clover, Kentucky Bluegrass, and Broadleaf Plantains to Observe Possible Herbicidal Effects
Southwest Virginia Governor's School
Sponsor: Rebecca Phillips
Plant Sciences – Senior Division – Second Place
- 1303 Natalie Tessar
Plant Health in Hard Water Concentrations Within a Hydroponics System
Southwest Virginia Governor's School
Sponsor: Jared Brown
Plant Sciences – Senior Division – Third Place
- 1401 Lily Anderson
Can People Accurately Identify AI Written Text?
Southwest Virginia Governor's School
Sponsor: Sherry Pugh
Robotics and Intelligent Machines; Translational Medical Science – Senior Division – Second Place

- 1402 George Black
A Comparison of a Student Response-Based Rubric and an AI Detector on Identification of AI-Written Essays
Southwest Virginia Governor's School
Sponsor: Sam Muriello
Robotics and Intelligent Machines; Translational Medical Science – Senior Division – Third Place
- 1403 Radia Lu
Systematic Assessment of Large Language Model's Correctness and Biases for Minority Health
Blacksburg High School
Sponsor: Katharine Davis
Virginia State Science and Engineering Delegate
Robotics and Intelligent Machines; Translational Medical Science – Senior Division – First Place
United States Air Force Award
- 2101 Arabella Barton and Leah Wilson
Freezing Distraction
Council Elementary and Middle School
Sponsor: Rita Breeding
Animal Science; Biomedical and Health Science – Junior Division – Second Place
- 2102 Hunter Smith and Marley Kimbrough
Move to the Beat
Twin Valley Elementary and Middle School
Sponsor: Maddie Witt
Animal Science; Biomedical and Health Science – Junior Division – Third Place
- 2103 Virginia Vandyke
Fat or Fluffy
Riverview Elementary and Middle School
Sponsor: Rita Breeding
Animal Science; Biomedical and Health Science – Junior Division – First Place
American Society of Mammalogists Award
Office of Naval Research Awards Distinguished Achievement Award – Junior Division
- 2201 Kaley Barton
Different Types of Coke Versus Mentos
Council Elementary and Middle School
Sponsor: Rita Breeding
Biochemistry; Chemistry – Junior Division – Second Place
- 2203 Jacelyn Peak

- Seaweed Style? From Ocean to Outfit!*
 Twin Valley Elementary and Middle School
 Sponsor: Nikki Peak
Biochemistry; Chemistry – Junior Division – First Place
American Chemical Society, Virginia Blue Ridge Section Award – Junior Division
Iota Sigma Pi Award – Junior Division
Lemelson Early Inventor Prize
Thermo Fisher Scientific Junior Innovators Challenge
VCOM-Virginia Public Health and Healthcare Award – Junior Division – First Place
- 2204 Mia Sanders
Yummy
 Twin Valley Elementary and Middle School
 Sponsor: Pamela Deel
Biochemistry; Chemistry – Junior Division – Third Place
VCOM-Virginia Public Health and Healthcare Award – Junior Division – Third Place
- 2301 Jacob Ohanian
Play Harmonics Like a Rockstar
 Dawning Light Homeschool
 Sponsor: John Ohanian
Engineering Technology: Statics and Dynamics; Physics and Astronomy - Junior Division – Second Place
- 2302 Silas Alexander Phillips
Determination of Microwave Frequency Through Antinode Analysis
 Scott Memorial Middle School
 Sponsor: Lucas Phillips
Engineering Technology: Statics and Dynamics; Physics and Astronomy - Junior Division – First Place
Office of Naval Research Awards Distinguished Achievement Award – Junior Division
Radford University Sigma Xi Chapter Distinguished Awards in Science – Junior Division
Thermo Fisher Scientific Junior Innovators Challenge
VCOM-Virginia Public Health and Healthcare Award – Junior Division – Second Place
- 2401 Kendall Brown and Knightleigh Bell
Should You Flush It?
 Twin Valley Elementary and Middle School
 Sponsor: Madison Witt
Environmental Engineering; Materials Science - Junior Division – First Place
Mount Tabor Ruritan Club Award – Junior Division
Thermo Fisher Scientific Junior Innovators Challenge

2402 Jim Caleb Christian
LIGHTS OUT
Hurley Elementary and Middle School
Sponsor: Scott Embrey
Environmental Engineering; Materials Science - Junior Division – Second Place

2403 Noah Hurley
Soak It Up
Hurley Elementary & Middle School
Sponsor: Scott Embrey
Environmental Engineering; Materials Science - Junior Division – Third Place
VCOM-Virginia Public Health and Healthcare Award – Junior Division – Honorable Mention