

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

**WINNERS OF SPECIAL AWARDS**

**AMERICAN ASSOCIATION FOR UNIVERSITY WOMEN**

- 403 Emma Ebel  
*Testing Phosphoric Acid Content in Soft Drinks Using UV Visible Spectroscopy*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown
- 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 CHEMICAL SOCIETY  
NORTHEASTERN TENNESSEE SECTION**

*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

*Second Place*

- 403 Emma Ebel  
*Testing Phosphoric Acid Content in Soft Drinks Using UV Visible Spectroscopy*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

*Third Place*

- 406 Disha Talajia  
*Nutritional Content of Bananas Over Periods of Time*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

**AMERICAN CHEMICAL SOCIETY  
VIRGINIA BLUE RIDGE SECTION**

*Junior Division*

2203 Jacelyn Peak  
*Seaweed Style? From Ocean to Outfit!*  
Twin Valley Elementary and Middle School  
Sponsor: Nikki Peak

*Senior Division*

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

**AMERICAN PSYCHOLOGICAL ASSOCIATION**

205 Sophie Perdue  
*Comfort Level Discussing Medical Topics Based on Parental Education Level*  
Southwest Virginia Governor's School  
Sponsor: Megan Arnold

**AMERICAN RED CROSS -- NEW RIVER VALLEY  
SCIENCE IN SERVICE TO OUR COMMUNITIES**

205 Sophie Perdue  
*Comfort Level Discussing Medical Topics Based on Parental Education Level*  
Southwest Virginia Governor's School  
Sponsor: Megan Arnold

**AMERICAN SOCIETY OF BIOCHEMISTRY  
AND MOLECULAR BIOLOGY AWARD**

306 Ethan Ririe  
*Investigating the Impact of Parasitic Worm Secretions on Anaphylaxis as Novel Treatment for Food Allergies*  
Blacksburg High School  
Sponsor: Katharine Davis

## **AMERICAN SOCIETY OF MAMMALOGISTS**

- 103 Kailin Phillips  
*The Effects of Age on Milk Fat Percentage in Holstein Cows*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips
- 104 Alexandria Swenson  
*Mean Frequencies of Microplastics in Commercially Processed Equine Foods*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown
- 2103 Virginia Vandyke  
*Fat or Fluffy*  
Riverview Elementary and Middle School  
Sponsor: Rita Breeding

## **ASSOCIATION FOR WOMEN GEOSCIENTISTS**

- 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

## **BIOMEDICAL ENGINEERING AWARD VIRGINIA TECH**

- 601 Alexander Li  
*Enhancing Driving Safety via Real-Time Suppression of Vehicle Radar Interference*  
Blacksburg High School  
Sponsor: Katharine Davis

## **GENIUS OLYMPIAD**

- 804 Garreth Rudd  
*Making Flywheel Energy Storage Systems Affordable and Compact*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier

901 Casey Felts  
*Testing Accuracy of a Gravity-Powered Seed Planter*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier

## **IOTA SIGMA PI AWARDS**

### *Junior Division*

2203 Jacelyn Peak  
*Seaweed Style? From Ocean to Outfit!*  
Twin Valley Elementary and Middle School  
Sponsor: Nikki Peak

### *Senior Division*

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

## **LEMELSON EARLY INVENTOR PRIZE**

2203 Jacelyn Peak  
*Seaweed Style? From Ocean to Outfit!*  
Twin Valley Elementary and Middle School  
Sponsor: Nikki Peak

## **MOUNT TABOR RURITAN CLUB AWARDS**

### *Junior Division*

2401 Kendall Brown and Knightleigh Bell  
*Should You Flush It?*  
Twin Valley Elementary and Middle School  
Sponsor: Madison Witt

### *Senior Division*

505 James Paine  
*Quantifying Microplastics in Corbicular fluminea from a Limnic Ecosystem*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

- 1301 Sage Lahmers  
*Relationship between below ground biomass and soil organic matter: case study in Mt Tabor Blacksburg*  
Blacksburg High School  
Sponsor: Katharine Davis

### **NATIONAL AERONAUTICS AND SPACE ADMINISTRATION EARTH SYSTEM SCIENCE AWARD**

- 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

### **NATIONAL OCEANIC AND ATMOSPHERIC ASSOCIATION**

- 1301 Sage Lahmers  
*Relationship between below ground biomass and soil organic matter: case study in Mt Tabor Blacksburg*  
Blacksburg High School  
Sponsor: Katharine Davis

### **NATIONAL WEATHER SERVICE AWARD**

- 301 Quinlan Beegle  
*Effects of Temperature and Humidity on Running Performances*  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe

### **OFFICE OF NAVAL RESEARCH DISTINGUISHED ACHIEVEMENT AWARDS**

#### *Junior Division*

- 2103 Virginia Vandyke  
*Fat or Fluffy*  
Riverview Elementary and Middle School  
Sponsor: Rita Breeding

2302 Silas Alexander Phillips  
*Determination of Microwave Frequency Through Antinode Analysis*  
Scott Memorial Middle School  
Sponsor: Lucas Phillips

*Senior Division*

502 Connor Beasley  
*Metagenomic Analysis of the Microbial Biodiversity in Soil of Mountain Balds in Appalachia*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

601 Alexander Li  
*Enhancing Driving Safety via Real-Time Suppression of Vehicle Radar Interference*  
Blacksburg High School  
Sponsor: Katharine Davis

903 Sriya Sridhar  
*Enzymatic Engineering for Enhanced Plastic Degradation in a Novel Plasmid System*  
Blacksburg High School  
Sponsor: Katharine Davis

**RADFORD UNIVERSITY SIGMA XI CHAPTER  
DISTINGUISHED AWARD IN SCIENCE**

*Junior Division*

2302 Silas Alexander Phillips  
*Determination of Microwave Frequency Through Antinode Analysis*  
Scott Memorial Middle School  
Sponsor: Lucas Phillips

*Senior Division*

206 Bisan Rai  
*Online "Group" Effect on Addiction Recovery*  
Southwest Virginia Governor's School  
Sponsor: Sam Muriello

## **REGENERON BIOMEDICAL SCIENCE AWARD**

- 306 Ethan Ririe  
*Investigating the Impact of Parasitic Worm Secretions on Anaphylaxis as Novel Treatment for Food Allergies*  
Blacksburg High School  
Sponsor: Katharine Davis

## **RICOH CORPORATION SUSTAINABLE DEVELOPMENT AWARD**

- 902 Oscar Montgomery  
*Aerating Water by Modifying a Free Water Vortex Turbine*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier

## **SOCIETY FOR IN VITRO BIOLOGY AWARD**

- 903 Sriya Sridhar  
*Enzymatic Engineering for Enhanced Plastic Degradation in a Novel Plasmid System*  
Blacksburg High School  
Sponsor: Katharine Davis

## **THERMO FISHER SCIENTIFIC JUNIOR INNOVATORS AWARD**

- 2203 Jacelyn Peak  
*Seaweed Style? From Ocean to Outfit!*  
Twin Valley Elementary and Middle School  
Sponsor: Nikki Peak
- 2302 Silas Alexander Phillips  
*Determination of Microwave Frequency Through Antinode Analysis*  
Scott Memorial Middle School  
Sponsor: Lucas Phillips
- 2401 Kendall Brown and Knightleigh Bell  
*Should You Flush It?*  
Twin Valley Elementary and Middle School  
Sponsor: Madison Witt

## UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT AWARD

- 104 Alexandria Swenson  
*Mean Frequencies of Microplastics in Commercially Processed Equine Foods*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

## UNITED STATES AIR FORCE AWARD

- 601 Alexander Li  
*Enhancing Driving Safety via Real-Time Suppression of Vehicle Radar Interference*  
Blacksburg High School  
Sponsor: Katharine Davis
- 901 Casey Felts  
*Testing Accuracy of a Gravity-Powered Seed Planter*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier
- 1301 Sage Lahmers  
*Relationship between below ground biomass and soil organic matter: case study in Mt Tabor Blacksburg*  
Blacksburg High School  
Sponsor: Katharine Davis
- 1403 Radia Lu  
*Systematic Assessment of Large Language Model's Correctness and Biases for Minority Health*  
Blacksburg High School  
Sponsor: Katharine Davis

## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY LETTER

- 402 Nyjah Da'Mes  
*Water Quality Difference in Stagnant Versus Moving Water*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown



- 501 Swati Aggarwall  
*Evaluating Homemade and Industrial Rust Removers on Steel Metal*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown
- 502 Connor Beasley  
*Metagenomic Analysis of the Microbial Biodiversity in Soil of Mountain Balds in Appalachia*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips
- 503 Grace Crowe  
*Study of Virginia conservation using Bobwhite quail as an indicator species*  
Blacksburg High School  
Sponsor: Katharine Davis
- 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
- 505 James Paine  
*Quantifying Microplastics in *Corbicular fluminea* from a Limnic Ecosystem*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown
- 506 Kyle Stephens  
*Effect of Different Gravestone Cleaners on Color of Gravestones*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

## **UNITED STATES METRIC ASSOCIATION**

- 902 Oscar Montgomery  
*Aerating Water by Modifying a Free Water Vortex Turbine*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier

## UNITED STATES STOCKHOLM JUNIOR WATER PRIZE

### *First Place*

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

### *Second Place*

505 James Paine  
*Quantifying Microplastics in Corbicular fluminea from a Limnic Ecosystem*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

## VCOM-VIRGINIA PUBLIC HEALTH AND HEALTHCARE AWARD

### *Junior Division*

#### *First Place*

2203 Jacelyn Peak  
*Seaweed Style? From Ocean to Outfit!*  
Twin Valley Elementary and Middle School  
Sponsor: Nikki Peak

#### *Second Place*

2302 Silas Alexander Phillips  
*Determination of Microwave Frequency Through Antinode Analysis*  
Scott Memorial Middle School  
Sponsor: Lucas Phillips

#### *Third Place*

2204 Mia Sanders  
*Yummy*  
Twin Valley Elementary and Middle School  
Sponsor: Pamela Deel

#### *Honorable Mention*

2403 Noah Hurley  
*Soak It Up*  
Hurley Elementary & Middle School  
Sponsor: Scott Embrey

*Senior Division*

*First Place*

307 Kyler Williams  
*Effects of Supportive Insoles on Foot Pressure and Performance During Soccer Movements*  
Blacksburg High School  
Sponsor: Katharine Davis

*Second Place*

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

*Third Place*

303 Minhyung Lee  
*The Causes of Spontaneous Firing of Cardiac Muscle and Effects of Ion Concentration*  
Blacksburg High School  
Sponsor: Katharine Davis

*Honorable Mention*

304 Jordan Lucas  
*Comparing Different Breathing Techniques in Their Effectiveness of Lowering Elevated Heart Rate*  
Southwest Virginia Governor's School  
Sponsor: Sherry Pugh

## **VIRGINIA LAKES AND WATERSHEDS**

*Senior Division*

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

## **YALE SCIENCE AND ENGINEERING ASSOCIATION AWARD**

- 104 Alexandria Swenson  
*Mean Frequencies of Microplastics in Commercially Processed Equine Foods*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

## **EMORY AND HENRY SCHOLARSHIP**

- 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

## **NEW RIVER COMMUNITY COLLEGE SCHOLARSHIP**

- 103 Kailin Phillips  
*The Effects of Age on Milk Fat Percentage in Holstein Cows*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

## **RADFORD UNIVERSITY SCHOLARSHIP**

- 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
- 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

## WYTHEVILLE COMMUNITY COLLEGE SCHOLARSHIP

403 Emma Ebel  
*Testing Phosphoric Acid Content in Soft Drinks Using UV Visible Spectroscopy*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown