

**28<sup>th</sup> Annual Blue Ridge Highlands Regional Science Fair  
March 8 - 9, 2019 – Radford University**

**AWARDS BY CATEGORY**

**Grand Award Winners**

- 604 Ainsley LaPlante  
***Effects of Gasoline on RGB Values of Montipora capricornis and Pavona frondifera Corals***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown
- 1302 Brandon Fan  
***An AI-based System for Discovering Potential Adverse Drug Events Using Open Data***  
Blacksburg High School  
Sponsor: Katharine Davis

**Grand Award Alternate**

- 702 Ross Brown  
***Different Projectile Materials Affecting Propulsion in a Prototype Electromagnetic Projectile Launcher***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

**SENIOR DIVISION**

**ANIMAL SCIENCES**

*First Place*

- 103 Morgan Ralph  
***The Effect of Humidity on the Madagascar Hissing Cockroach Reproduction Cycle***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

*Second Place*

- 101 Isabelle Hollars  
***Comparing Levels of Clostridiaceae Abundance in Equines at High-Risk vs. Low-Risk for Laminitis***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

*Third Place*

- 102 Andrew Rhys Lewis  
***Using Activin A Protein to Grow Planaria Worms***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

*Honorable Mention*

- 104 Bradley Turner  
***Acheta domesticus Attraction to Different LED Lights***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

## **BEHAVIORAL & SOCIAL SCIENCES**

*First Place*

- 210 Asha Thomas  
***The Association of Oxytocin Receptor Gene Variant rs53576 with Optimism and Pessimism***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

*Second Place*

- 209 Savannah Spencer  
***The Association of 5-HTTLPR Gene Variants with Humor Styles of Teenagers***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

*Third Place*

- 208 Nadine Shannon  
***Memory Retention of Details in Adolescents***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe

*Honorable Mention*

- 205 Breanna Lytton  
***The Effects of the Sans Forgetica Font on Memory***  
Southwest Virginia Governor's School  
Sponsor: Sherry Pugh

## BIOMEDICAL & HEALTH SCIENCES CELL AND MOLECULAR BIOLOGY

### *First Place*

301 Michael Chen  
***Role of EphA4 Gene in Vascular Gene Expression During Inflammation***  
Blacksburg High School  
Sponsor: Katharine Davis

### *Second Place*

303 Julia Moschella  
***The Relationship Between the FTO SNP rs9939609 and Food Satisfaction in Men and Women***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

### *Third Place*

302 Hunter Hall  
***The Frequency of PTPN22 and IL-17F Gene Variants in Populations Reporting Worse Influenza Symptoms and Vaccine Effectiveness***  
Southwest Virginia Governor's School

## BIOMEDICAL ENGINEERING TRANSLATIONAL MEDICAL SCIENCES

### *First Place*

401 Alexandra Barrett  
***Velocity Limiting Exoskeleton for Children with Cerebral Palsy***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

### *Second Place*

403 Alice Xu  
***SimpleChip: A Microfluidic Device for Accessible ChIP-seq***  
Blacksburg High School  
Sponsor: Katharine Davis

### *Third Place*

402 Caleb Clemons  
***The Effectiveness of Using a Graphite Pencil Electrode to Determine Serotonin Concentration***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

## CHEMISTRY

### *First Place*

509 Rose Tomiak  
***Analyzing the Difference in the Sorption Concentrations of Copper, Lead, Iron, and Zinc in Polylactic Acid and High Density Polyethylene Plastic Bags***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

### *Second Place*

501 Makayla Goines  
***Electrochemical Detection of Salicylates in Pepto-Bismol and Bug Guard SPF 30 Sunscreen***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

### *Third Place*

508 Holden Robinson  
***A Comparison of Electrodes in the Determination of Riboflavin in Milk***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

## EARTH & ENVIRONMENTAL SCIENCE

### *First Place*

604 Ainsley LaPlante  
***Effects of Gasoline on RGB Values of Montipora capricornis and Pavona frondifera Corals***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

### *Second Place*

603 Haley Freeborn  
***Assessment of Campsite Sustainability Along the Pacific Crest Corridor in Desolation Wilderness, California***  
Blacksburg High School  
Sponsor: Katharine Davis

### *Third Place*

601 Camden Brewer  
***Proposed Linings for Coffins to Prevent Formaldehyde Leakage***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

*Honorable Mention*

605 Virginia Worrell  
***Investigating Coral's Appetite for Plastic***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

## ENGINEERING MECHANICS

*First Place*

702 Ross Brown  
***Different Projectile Materials Affecting Propulsion in a Prototype Electromagnetic Projectile Launcher***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

*Second Place*

701 Emerson Dove & Neema Ahmadian  
***Triaxial Attitude Control of a Picosatellite Using Stimulated Emission***  
Blacksburg High School  
Sponsor: Katharine Davis

*Third Place*

704 Noah Willis  
***Stabilizer for Baseball Bat Bags***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe

*Honorable Mention*

703 Adam Downs  
***Parallel Parking Device***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

## ENVIRONMENTAL ENGINEERING MATERIALS SCIENCE

*First Place*

801 Isabella Burgoyne  
***Testing Oil Absorption of a Cellulose Barrier on Cardboard***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

*Second Place*

805 Kathleen Reuwer  
***Reduction of Hydrogen Porosity in Aluminum Welding with Vibratory Methods***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown

*Third Place*

804 Tyler Kwak  
***Testing the Shear Strength of Concrete When Cornstarch is Added***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

*Honorable Mention*

802 Sarah Elmasry  
***Using Casein Along with Other Natural Food Products to Make Teeth Appear More Visibly White***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe

## MATHEMATICS

*First Place*

902 Camden Mariotti  
***Comparing Powerlifting Competitors Across Different Divisions***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe

*Second Place*

901 Joshua Devine  
***Simulating Small-Scale Evacuation Scenarios Through Iteration***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe

## MICROBIOLOGY

*First Place*

1002 Claire Morton  
***The Relationship Between Codon Usage Bias, mRNA Half-Life, and the Ste13 Protein***  
Blacksburg High School  
Sponsor: Katharine Davis

*Second Place*

1003 Raaga Vullikanti  
***Peptide Nucleic Acids as Potential Designer Antimicrobials***  
Blacksburg High School  
Sponsor: Katharine Davis

*Third Place*

1001 Solace Church  
***Sweetener Effects on Fermentation Rate in Kombucha***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips

## PHYSICS & ASTRONOMY

*First Place*

1106 Noah Whitlow  
***Anti-Rollover Countermeasures for Dangerous Civilian Vehicles***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

*Second Place*

1105 Jake Mitchell  
***The Difference Between Two Different Types of Grasses in the Rough and Fairway with the Six Most Popular Golf Balls***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

*Third Place*

1101 Gage Amesquita  
***Light Pollution in Giles County***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

*Honorable Mention*

1102 Talon Booth  
***Relations Between the Velocity and Angle of Disc Golf Discs and Optimal Flip Technique***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier

## PLANT SCIENCES

### *First Place*

1203 Sophia Link

***The Role of the IPK1 and ITPK1 Genes in Plant Sucrose Sensing***

Blacksburg High School

Sponsor: Katharine Davis

### *Second Place*

1201 Emma Freeborn

***Evaluation of Fertilizer Application Method in an Herbaceous Perennial Plant***

Southwest Virginia Governor's School

Sponsor: Heather Lowe

### *Third Place*

1202 Melany Fuentes

***The Effects of Propolis Based Pesticides for Use in Agricultural Settings***

Southwest Virginia Governor's School

Sponsor: Greg Riffe

## SYSTEMS SOFTWARE

### *First Place*

1302 Brandon Fan

***An AI-based System for Discovering Potential Adverse Drug Events Using Open Data***

Blacksburg High School

Sponsor: Katharine Davis

### *Second Place*

1303 Josh Tomiak

***Testing the Effectiveness of the Josephus Problem as a Pseudorandom Number Generator***

George Wythe High School

Sponsor: Lisa Vaught

### *Third Place*

1301 Nicholas Cooney

***The Effects of Elliptic Curve Cryptography on the Efficiency of Consumer Grade Backup Encryption***

Southwest Virginia Governor's School

Sponsor: Greg Riffe



## **JUNIOR DIVISION**

### **CHEMISTRY MATERIALS SCIENCE**

#### *First Place*

2010 Janalyn Vance  
***Suck it Up!***  
Wallace Middle School  
Sponsor: Albert Vance II

#### *Second Place*

2011 Caedmon Williams  
***The Ultimate Stain Remover***  
Classical Conversations  
Sponsor: Nichole Williams

#### *Third Place*

2012 Zack Wingate  
***Which Type of Laundry Detergent Removes Stains the Best?***  
Independence Middle School  
Sponsor: Jamey Wingate

#### *Honorable Mention*

2006 Janesa Harris  
***Growing Gummy Bears***  
Tazewell Middle School  
Sponsor: Loretta Hypes

2013 Hailey Sheppard  
***Kiss Away***  
Graham Middle School  
Sponsor: Deborah Mason

## **EARTH & ENVIRONMENTAL SCIENCES**

#### *First Place*

2103 Aiden Stout  
***Defeat the Graffiti – Testing Different Solvents to Remove Graffiti***  
Graham Middle School  
Sponsor: Catherine Evans

*Second Place*

2102 Bryce Havens

***The PHacts of Life: Cleaning Water with Flocculation and Filtration***

Graham Middle School

Sponsor: Catherine Evans

## ENERGY: PHYSICAL

*First Place*

2201 Caroline Keene

***May the Magnetic Force Be With You***

Richlands Middle School

Sponsor: Kim Lawson

*Second Place*

2203 Griffin Tilley

***Disjointed (Testing the Strength of Glue)***

Classical Conversations

Sponsor: Jennifer Tilley

*Third Place*

2202 Zeke Phipps

***Death of an Orange***

Independence Middle School

Sponsor: Stacy Phipps

*Honorable Mention*

2204 Molly Jones

***What Wood You Use***

Graham Middle School

Sponsor: Deborah Mason

## ENGINEERING MECHANICS

*First Place*

2301 Caleb Ohanian

***Best By A Long Shot***

Classical Conversations

Sponsor: John Ohanian

*Second Place*

2302 Charlotte Phillips

***Investigating Different Styles of Non-g geared Tuning Pegs for Use in Violin Scrolls***

Scott Memorial Middle School

Sponsor: Lucas Phillips

*Third Place*

2303 Trevyr Schutz

**Heavy Load**

Shawsville Middle School

Sponsor: Emily Metzgar

## PHYSICS & ASTRONOMY

*First Place*

2402 Teaghan Wilson

**Static Electricity and the Levitating Orb**

Shawsville Middle School

Sponsor: Emily Metzgar

## PLANT SCIENCES

*First Place*

2501 Luke Coburn

**Oily Killer**

Classical Conversations

Sponsor: Peggy Coburn

*Second Place*

2503 Natalie Gates

**Strawberry DNA: See It to Believe It**

Graham Middle School

Sponsor: Deborah Mason

## ROBOTICS & INTELLIGENT MACHINES

*First Place*

2601 Zack Craighead

**Infrared vs. Color**

Shawsville Middle School

Sponsor: Emily Metzgar

*Second Place*

2602 Dawson Richards

**The Efficiency of Non-Biological Nanorobots vs. CRISPR in Gene Editing for Plants**

Auburn Middle School

Sponsor: Larissa Richards