

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

***AWARDS BY PROJECT NUMBER***

***SENIOR DIVISION***

***ANIMAL SCIENCES***

- 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  
*Animal Science, Second Place*  
*American Society of Mammalogists*
- 102 Andrew Rhys Lewis  
***Using Activin A Protein to Grow Planaria Worms***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Animal Science, Third Place*
- 103 Morgan Ralph  
***The Effect of Humidity on the Madagascar Hissing Cockroach Reproduction Cycle***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Virginia State Science and Engineering Fair Delegate*  
*Animal Science, First Place*  
*National Oceanic and Atmospheric Administration Award*  
*Virginia Dental Award*
- 104 Bradley Turner  
***Acheta domesticus Attraction to Different LED Lights***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Animal Science, Honorable Mention*

## BEHAVIORAL & SOCIAL SCIENCES

- 205 Breanna Lytton  
***The Effects of the Sans Forgetica Font on Memory***  
Southwest Virginia Governor's School  
Sponsor: Sherry Pugh  
*Behavioral and Social Sciences, Honorable Mention*
- 208 Nadine Shannon  
***Memory Retention of Details in Adolescents***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*Behavioral and Social Sciences, Third Place*
- 209 Savannah Spencer  
***The Association of 5-HTTLPR Gene Variants with Humor Styles of Teenagers***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Virginia State Science and Engineering Fair Delegate*  
*Behavioral and Social Sciences, Second Place*
- 210 Asha Thomas  
***The Association of Oxytocin Receptor Gene Variant rs53576 with Optimism and Pessimism***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Virginia State Science and Engineering Fair Delegate*  
*Behavioral and Social Sciences, First Place*  
*American Psychological Association Award*

## BIOMEDICAL & HEALTH SCIENCES CELL AND MOLECULAR BIOLOGY

- 301 Michael Chen  
***Role of EphA4 Gene in Vascular Gene Expression During Inflammation***  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*Biomedical & Health Sciences, Cell and Molecular Biology, First Place*  
*American Red Cross Award*  
*United States Air Force Distinguished Achievement Award*  
*Virginia Dental Award*  
*Emory and Henry Scholarship*

- 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  
Sponsor: Rebecca Phillips  
*Biomedical & Health Sciences, Cell and Molecular Biology, Third 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  
*Biomedical & Health Sciences, Cell and Molecular Biology, Second Place*

## **BIOMEDICAL ENGINEERING TRANSLATIONAL MEDICAL SCIENCES**

- 401 Alexandra Barrett  
***Velocity Limiting Exoskeleton for Children with Cerebral Palsy***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*Virginia State Science and Engineering Fair Delegate  
Biomedical Engineering; Translational Medical Sciences, First Place  
Biomedical Engineering Award - Virginia Tech*
- 402 Caleb Clemons  
***The Effectiveness of Using a Graphite Pencil Electrode to Determine Serotonin Concentration***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Biomedical Engineering; Translational Medical Sciences, Third Place*
- 403 Alice Xu  
***SimpleChip: A Microfluidic Device for Accessible ChIP-seq***  
Blacksburg High School  
Sponsor: Katharine Davis  
*Biomedical Engineering; Translational Medical Sciences, Second Place  
Regeneron Science Talent Search  
Yale Science and Engineering Association Award  
Radford University Scholarship*

## CHEMISTRY

- 501 Makayla Goines  
***Electrochemical Detection of Salicylates in Pepto-Bismol and Bug Guard SPF 30 Sunscreen***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*Chemistry, Second Place*  
*American Chemical Society, Northeastern Tennessee Section, Second Place*
- 502 Grace Greenwood  
***Titration versus Photometric Measurements Determining Chlorine Concentrations***  
Southwest Virginia Governor's School  
Sponsor: Heather Lowe  
*Office of Naval Research Awards Distinguished Achievement Award*
- 504 Isabel Hendrix  
***The Fate and Transport of Triclosan in Rural Receiving Streams***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*American Chemical Society, Virginia Blue Ridge Section Award*  
*Stockholm Junior Water Prize*  
*Virginia Lakes and Watersheds Award*
- 506 Kelsey Morrell  
***Comparing Phosphorus Concentration in Applesauce Packaged in Glass and Plastic Packaging to Find the Presence of Plasticizers***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*American Chemical Society, Northeastern Tennessee Section, Third Place*
- 507 Anya Robbins  
***Testing for Triclosan in Water Bottles with Plasticizers Using LC-MS/Ms***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Radford University Sigma Xi Chapter Distinguished Award in Science*
- 508 Holden Robinson  
***A Comparison of Electrodes in the Determination of Riboflavin in Milk***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Chemistry, Third 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  
*Chemistry, First Place*  
*American Chemical Society, Northeastern Tennessee Section, First Place*  
*Virginia Dental Award*

## **EARTH & ENVIRONMENTAL SCIENCES**

- 601 Camden Brewer  
**Proposed Linings for Coffins to Prevent Formaldehyde Leakage**  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Earth and Environmental Sciences, Third Place*
- 603 Haley Freeborn  
**Assessment of Campsite Sustainability Along the Pacific Crest Corridor in Desolation Wilderness, California**  
Blacksburg High School  
Sponsor: Katharine Davis  
*Earth and Environmental Sciences, Second Place*  
*Genius Olympiad Award*  
*Mount Tabor Ruritan Club Award*  
*Regeneron Science Talent Search*
- 604 Ainsley LaPlante  
**Effects of Gasoline on RGB Values of *Montipora capricornis* and *Pavona frondifera* Corals**  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Grand Award Winner*  
*Virginia State Science and Engineering Fair Delegate*  
*Earth and Environmental Sciences, First Place*  
*Association of Women Geoscientists Award*  
*Genius Olympiad Award*  
*NASA Earth System Science Award*  
*Stockholm Junior Water Prize*

605 Virginia Worrell  
***Investigating Coral's Appetite for Plastic***  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Earth and Environmental Sciences, Honorable Mention*  
*American Meteorological Society Award*  
*Mount Tabor Ruritan Club Award*  
*Stockholm Junior Water Prize*

## ENGINEERING MECHANICS

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

702 Ross Brown  
***Different Projectile Materials Affecting Propulsion in a Prototype Electromagnetic Projectile Launcher***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*Grand Award Winner Alternate*  
*Virginia State Science and Engineering Fair Delegate*  
*Engineering Mechanics, First Place*  
*Office of Naval Research Awards Distinguished Achievement Award*  
*United States Air Force Distinguished Achievement Award*  
*Virginia Dental Grand Award*

703 Adam Downs  
***Parallel Parking Device***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*Engineering Mechanics, Honorable Mention*  
*Regeneron Science Talent Search*

704 Noah Willis  
***Stabilizer for Baseball Bat Bags***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*Engineering Mechanics, Third Place*

## ENVIRONMENTAL ENGINEERING MATERIALS SCIENCE

- 801 Isabella Burgoyne  
***Testing Oil Absorption of a Cellulose Barrier on Cardboard***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*Environmental Engineering, Materials Science – First Place*  
*Ricoh Corporation Sustainable Development Award*
- 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  
*Environmental Engineering, Materials Science – Honorable Mention*  
*Wytheville Community College Scholarship*
- 804 Tyler Kwak  
***Testing the Shear Strength of Concrete When Cornstarch is Added***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*Environmental Engineering, Materials Science – Third Place*  
*ASM Education Foundation*  
*United States Metric Association Award*
- 805 Kathleen Reuwer  
***Reduction of Hydrogen Porosity in Aluminum Welding with Vibratory Methods***  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Environmental Engineering, Materials Science – Second Place*  
*Manufacturing Technology Center Award*  
*United States Air Force Distinguished Achievement Award*

## MATHEMATICS

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

902 Camden Mariotti  
**Comparing Powerlifting Competitors Across Different Divisions**  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*Virginia State Science and Engineering Fair Delegate*  
*Mathematics, First Place*

## MICROBIOLOGY

1001 Solace Church  
**Sweetener Effects on Fermentation Rate in Kombucha**  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Microbiology, Third Place*  
*Regeneron Science Talent Search*

1002 Claire Morton  
**The Relationship Between Codon Usage Bias, mRNA Half-Life, and the Ste13 Protein**  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*Microbiology, First Place*  
*American Association for University Women*  
*Society for In Vitro Biology*  
*Virginia Dental Award*  
*Radford University Scholarship*

1003 Raaga Vullikanti  
**Peptide Nucleic Acids as Potential Designer Antimicrobials**  
Blacksburg High School  
Sponsor: Katharine Davis  
*Microbiology, Second Place*  
*American Association for University Women*

## PHYSICS & ASTRONOMY

1101 Gage Amesquita  
**Light Pollution in Giles County**  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*Physics and Astronomy, Third Place*



- 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  
*Physics and Astronomy, Honorable Mention*
- 1103 Curtis Case  
***Assessing and Predicting Levels of Ambient Light Pollution in Wythe County***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*American Meteorological Society Award  
National Weather Service Award*
- 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  
*Physics and Astronomy, Second Place*
- 1106 Noah Whitlow  
***Anti-Rollover Countermeasures for Dangerous Civilian Vehicles***  
Southwest Virginia Governor's School  
Sponsor: Matthew Frazier  
*Virginia State Science and Engineering Fair Delegate  
Physics and Astronomy, First Place*

## PLANT SCIENCES

- 1201 Emma Freeborn  
***Evaluation of Fertilizer Application Method in an Herbaceous Perennial Plant***  
Southwest Virginia Governor's School  
Sponsor: Heather Lowe  
*Plant Sciences, Second Place*
- 1202 Melany Fuentes  
***The Effects of Propolis Based Pesticides for Use in Agricultural Settings***  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*Plant Sciences, Third Place*

1203 Sophia Link  
***The Role of the IPK1 and ITPK1 Genes in Plant Sucrose Sensing***  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*Plant Sciences, First Place*  
*Virginia Lakes and Watersheds Award*

## SYSTEMS SOFTWARE

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  
*Systems Software, Third Place*  
*New River Community College Scholarship*

1302 Brandon Fan  
***An AI-based System for Discovering Potential Adverse Drug Events Using Open Data***  
Blacksburg High School  
Sponsor: Katharine Davis  
*Grand Award Winner*  
*Virginia State Science and Engineering Fair Delegate*  
*Systems Software, First Place*  
*Intel Excellence in Computer Science Award*  
*Regeneron Science Talent Search*

1303 Josh Tomiak  
***Testing the Effectiveness of the Josephus Problem as a Pseudorandom Number Generator***  
George Wythe High School  
Sponsor: Lisa Vaught  
*Systems Software, Second Place*  
*Mu Alpha Theta Award*  
*United States Air Force Distinguished Achievement Award*

## **JUNIOR DIVISION**

### **CHEMISTRY MATERIALS SCIENCE**

- 2006 Janesa Harris  
***Growing Gummy Bears***  
Tazewell Middle School  
Sponsor: Loretta Hypes  
*Chemistry; Materials Science, Honorable Mention*
- 2010 Janalyn Vance  
***Suck it Up!***  
Wallace Middle School  
Sponsor: Albert Vance II  
*Broadcom Masters Award*  
*Chemistry; Materials Science, First Place*
- 2011 Caedmon Williams  
***The Ultimate Stain Remover***  
Classical Conversations  
Sponsor: Nichole Williams  
*Broadcom Masters Award*  
*Chemistry; Materials Science, Second Place*
- 2012 Zack Wingate  
***Which Type of Laundry Detergent Removes Stains the Best?***  
Independence Middle School  
Sponsor: Jamey Wingate  
*Chemistry; Materials Science, Third Place*
- 2013 Hailey Sheppard  
***Kiss Away***  
Graham Middle School  
Sponsor: Deborah Mason  
*Chemistry; Materials Science, Honorable Mention*

### **EARTH & ENVIRONMENTAL SCIENCES**

- 2102 Bryce Havens  
***The PHacts of Life: Cleaning Water with Flocculation and Filtration***  
Graham Middle School  
Sponsor: Catherine Evans  
*Virginia Lakes and Watersheds Award*  
*Earth & Environmental Sciences, Second Place*

2103 Aiden Stout  
***Defeat the Graffiti – Testing Different Solvents to Remove Graffiti***  
Graham Middle School  
Sponsor: Catherine Evans  
*Broadcom Masters Award*  
*Mount Tabor Ruritan Club Award*  
*Earth & Environmental Sciences, First Place*

## ENERGY: PHYSICAL

2201 Caroline Keene  
***May the Magnetic Force Be With You***  
Richlands Middle School  
Sponsor: Kim Lawson  
*Broadcom Masters Award*  
*Energy: Physical, First Place*

2202 Zeke Phipps  
***Death of an Orange***  
Independence Middle School  
Sponsor: Stacy Phipps  
*Energy: Physical, Third Place*

2203 Griffin Tilley  
***Disjointed (Testing the Strength of Glue)***  
Classical Conversations  
Sponsor: Jennifer Tilley  
*Energy: Physical, Second Place*

2204 Molly Jones  
***What Wood You Use***  
Graham Middle School  
Sponsor: Deborah Mason  
*Mount Tabor Ruritan Club Award*  
*Energy: Physical, Honorable Mention*

## ENGINEERING MECHANICS

2301 Caleb Ohanian  
***Best By A Long Shot***  
Classical Conversations  
Sponsor: John Ohanian  
*Broadcom Masters Award*  
*Office of Naval Research Awards Distinguished Achievement Award*  
*Engineering Mechanics, First 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  
*Office of Naval Research Awards Distinguished Achievement Award*  
*Radford University Sigma Xi Chapter Distinguished Award in Science*  
*Engineering Mechanics, Second Place*

2303 Trevyr Schutz  
***Heavy Load***  
Shawsville Middle School  
Sponsor: Emily Metzgar  
*Engineering Mechanics, Third Place*

## PHYSICS & ASTRONOMY

2402 Teaghan Wilson  
***Static Electricity and the Levitating Orb***  
Shawsville Middle School  
Sponsor: Emily Metzgar  
*Physics and Astronomy, First Place*

## PLANT SCIENCES

2501 Luke Coburn  
***Oily Killer***  
Classical Conversations  
Sponsor: Peggy Coburn  
*Broadcom Masters Award*  
*Plant Sciences, First Place*

2503 Natalie Gates  
***Strawberry DNA: See It to Believe It***  
Graham Middle School  
Sponsor: Deborah Mason  
*Plant Sciences, Second Place*

## ROBOTICS & INTELLIGENT MACHINES

2601 Zack Craighead  
***Infrared vs. Color***  
Shawsville Middle School  
Sponsor: Emily Metzgar  
*Robotics and Intelligent Machines, First Place*

2602 Dawson Richards  
***The Efficiency of Non-Biological Nanorobots vs. CRISPR in Gene Editing  
for Plants***  
Auburn Middle School  
Sponsor: Larissa Richards  
*Robotics and Intelligent Machines, Second Place*