

**34<sup>th</sup> BLUE RIDGE HIGHLANDS REGIONAL SCIENCE FAIR  
MARCH 7 – 8, 2025  
RADFORD UNIVERSITY**

**STUDENT WINNERS**

- 101 Xavier Gitre**  
*Interspecific Social Networks of Parulidae Warblers in Active Migratory Passage*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Grand Award Winner*  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Animal Sciences – Senior Division*  
*Genius Olympiad*  
*Office of Naval Research Distinguished Achievement Award – Senior Division*
- 102 Becca Lowe**  
*Stand Still! A Comparison of Positive and Negative Reinforcement in Equine Training*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Honorable Mention – Animal Sciences – Senior Division*  
*American Society of Mammalogists Award*
- 103 Emily Paul**  
*The Effects of Heavy Metal Contaminants on Negative Phototropism Behaviors in Ephemeroptera Species*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Second Place – Animal Sciences – Senior Division*
- 104 Garrison Wheatley**  
*The Effect of Water Temperature on the Time that Peltodytes duodecimpunctatus Spends Under Water*  
Southwest Virginia Governor's School  
Sponsor: Sherry Pugh  
*Third Place – Animal Sciences – Senior Division*
- 201 Sydney Deane**  
*Impact of Alternative Marketing Strategies on the Perception of Shelter Animals*  
Blacksburg High School  
Sponsor: Katharine Davis  
*American Society of Mammalogists Award*

- 202 Casey Felts**  
*The Impact of Local Resource Awareness on Selection of Local Sources*  
Southwest Virginia Governor's School  
Sponsor: Megan Arnold  
*Third Place – Behavioral and Social Sciences – Senior Division*  
*First Place – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Senior Division*
- 203 Ashley Layne**  
*Exploring the Relationships Between Household Income and Type of Pet Owned*  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*American Society of Mammalogists Award*
- 206 Molly Morris**  
*The Correlation Between Milk Packaging Types and Human Perception of Quality and Price*  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*Honorable Mention – Behavioral and Social Sciences – Senior Division*
- 208 Enzo Nunez**  
*Does the Percentage of Industry Jargon in Meta Description Tags Have an Impact on Website Engagement Rate?*  
Southwest Virginia Governor's School  
Sponsor: Sam Muriello  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Behavioral and Social Sciences – Senior Division*
- 211 Ida Polys**  
*Gauging the Cultural Relevance of Bluegrass Lyrics to Central Appalachia via Linguistic Analysis*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Second Place – Behavioral and Social Sciences – Senior Division*
- 212 Bisan Rai**  
*The Correlation Between Nicotine Patch Usage to Episodic Future Thinking and Contingency Management within a Research Environment*  
Southwest Virginia Governor's School  
Sponsor: Megan Arnold  
*American Psychological Association Award*  
*United States Air Force Award*

- 301 Jackson Pollyea**  
*The Effect of Sleep Quality on the Power Output of Youth Cyclists*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Second Place – Biomedical and Health Sciences – Senior Division*
- 302 Nicholas Thompson**  
*The Impact of Arm Position on Blood Pressure Measurements*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Third Place – Biomedical and Health Sciences – Senior Division*
- 303 Elizabeth Zhang**  
*Morphological Changes to the Pelvic Floor Muscle Complex Before, During, and After Pregnancy in a Murine Model*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Biomedical and Health Sciences – Senior Division*  
*Biomedical Engineering Award – Virginia Tech*
- 401 Athithi Prakash**  
*Novel Engineered Anticancer Biomaterial for Non-Invasive Melanoma Treatment*  
Blacksburg High School  
Sponsor: Katharine Davis  
*First Place – Biomedical Engineering + Translational Medical Science – Senior Division*  
*American Red Cross – New River Valley, Science in Service to our Community Award*  
*American Society of Biochemistry and Molecular Biology Award*  
*Regeneron Biomedical Award*
- 402 Weston Smith**  
*StepSense: Advancing Neuroprosthetic Solutions for Diabetic Peripheral Neuropathy*  
Southwest Virginia Governor's School  
Sponsor: Megan Arnold  
*Second Place – Biomedical Engineering + Translational Medical Science – Senior Division*  
*United States Air Force Award*

- 502 Ruby Hoerter**  
*Concentrations of B-carotene in Fresh, Canned, and Frozen Carrots*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Third Place – Chemistry – Senior Division*  
*American Association for University Women Award*  
*Second Place – American Chemical Society Tennessee Virginia Highlands Section*
- 503 Kasch Morrell**  
*How Do New River Facilities Relate to Total Nitrogen Content in the New River?*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Honorable Mention – Chemistry – Senior Division*
- 504 Addison Sheets**  
*Determining the Accuracy of Chlorinity in Public Pools*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*Second Place – Chemistry – Senior Division*  
*American Association for University Women Award*
- 505 Natalie Tessar**  
*Exploring the Relationship Between Metalloids and Tampon Absorbency Sizes*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Chemistry – Senior Division*  
*First Place – American Chemical Society Tennessee Virginia Highlands Section*  
*American Chemical Society Virginia Blue Ridge Section Award*  
*Iota Sigma Pi Award – Senior Division*
- 601 Connor Beasley**  
*Identification and Analysis of Fungal Ice Nucleic Candidate Proteins with Computational Biochemistry*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Second Place – Computational Biology and Bioinformatics – Senior Division*  
*Third Place – American Chemical Society Tennessee Virginia Highlands Section*

- 602 Rishi Nair**  
*AI-Augmented Computational Modeling of Bispecific Antibody Targeting B7H4+ Cancer Cells and CD3e+ CAR T-Cells for Targetd Therapy in Solid Tumors*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Grand Award Winner*  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Computational Biology and Bioinformatics – Senior Division*  
*Radford University Sigma Xi Chapter Distinguished Award in Science – Senior Division*
- 603 Thomas Payne**  
*Exploring Beta-Diversity Differences Between Natural and Artificial Lakes Using Metagenomic Analysis*  
Southwest Virginia Governor’s School  
Sponsor: Rebecca Phillips  
*Third Place – Computational Biology and Bioinformatics – Senior Division*
- 701 Jarib Cruz**  
*The Effect of Varying Magnetic Field Intensities on the Solubility of Minerals*  
Southwest Virginia Governor’s School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Earth and Environmental Sciences – Senior Division*  
*Stockholm Junior Water Prize – Second Place*  
*United States Environmental Protection Agency Letter*  
*Virginia Lakes and Watersheds Award – Junior Division*
- 702 Vivian Fant**  
*Assessing Microplastic Contamination in Agricultural and Mountainous Streams of Grayson County*  
Southwest Virginia Governor’s School  
Sponsor: Sherry Pugh  
*Third Place – Earth and Environmental Sciences – Senior Division*  
*United States Environmental Protection Agency Letter*  
*Second Place – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Senior Division*
- 703 Lucas Holland**  
*The Relationship Between Heat and Income in Virginia: A Correlational Study*  
Southwest Virginia Governor’s School  
Sponsor: Sherry Pugh  
*Mount Tabor Ruritan Club Award*  
*National Oceanic and Atmospheric Association Award*  
*National Weather Service Award*  
*United States Environmental Protection Agency Letter*

- 704 Finn Lucas**  
*Effectiveness of Water Treatment Processes*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*Second Place – Earth and Environmental Sciences – Senior Division*  
*Mount Tabor Ruritan Club Award*  
*United States Environmental Protection Agency Letter*
- 705 Braeden Musser**  
*Levels of Dissolved O<sub>2</sub>, pH, and Nitrate in Water*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Honorable Mention – Earth and Environmental Sciences – Senior Division*  
*United States Environmental Protection Agency Letter*
- 706 Alexandra Ni**  
*Temperature and Distance from Landfills on Methane and Carbon Dioxide Levels in Soil*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Association for Women Geoscientists Award*  
*United States Environmental Protection Agency Letter*
- 801 Austin Quesenberry**  
*Examining the Major Influences on Running Performance with a Focus on Fatigue*  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*First Place – Embedded Systems + Mathematics – Senior Division*  
*United States Air Force Award*
- 802 Kyle Stephens**  
*Change in Throwing Performance Throughout the History of the Olympics*  
Southwest Virginia Governor's School  
Sponsor: Greg Riffe  
*Second Place – Embedded Systems + Mathematics – Senior Division*
- 803 Matthias Wright**  
*Creating a Template for P=NP*  
Southwest Virginia Governor's School  
Sponsor: Sam Muriello  
*Third Place – Embedded Systems + Mathematics – Senior Division*

- 901 Emma Biesterveld**  
*How Does Spin Rate Affect the Velocity of a Pitch and What is the Main Correlation Between Them?*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier  
*Third Place - Energy: Sustainable Materials and Design + Physics and Astronomy - Senior Division*
- 902 Larah Clemons**  
*The Effect of Mass Distribution in a Rotating Mass Wave Energy Converter*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier  
*Honorable Mention - Energy: Sustainable Materials and Design + Physics and Astronomy - Senior Division*  
*Office of Naval Research Distinguished Achievement Award – Senior Division*  
*Emory and Henry Scholarship*  
*Radford University Scholarship*
- 904 Minh Nguyen**  
*Optimizing Meta-Atoms for Large Scale Metalenses*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*Second Place - Energy: Sustainable Materials and Design + Physics and Astronomy - Senior Division*  
*Office of Naval Research Distinguished Achievement Award – Senior Division*
- 906 Ian Yu**  
*A Novel Approach to Martian Obstacle Detection Through Ultrasonic Transducers*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*First Place - Energy: Sustainable Materials and Design + Physics and Astronomy - Senior Division*  
*Genius Olympiad*  
*United States Air Force Award*  
*Yale Science and Engineering Association Award*
- 1001 Quinlan Beegle**  
*Developing High Friction Insoles to Reduce the Size and Frequency of Microslips in Sockless Track Athletes' Running Economy*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier  
*Grand Award Alternate*  
*Virginia State Science and Engineering Fair Delegate*  
*Second Place – Engineering Technology: Statics and Dynamics – Senior Division*

- 1003 Ian Jora Macrea**  
*Repeated Impacts on Cycleing Helmet Efficacy*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Honorable Mention – Engineering Technology: Statics and Dynamics – Senior Division*
- 1004 Spencer Sisson**  
*Sensor to Measure Tilt While Running*  
Southwest Virginia Governor’s School  
Sponsor: Matt Frazier  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Engineering Technology: Statics and Dynamics – Senior Division*
- 1005 Amelia Sprano**  
*Passive Solar Heater*  
Southwest Virginia Governor’s School  
Sponsor: Matt Frazier  
*Third Place – Engineering Technology: Statics and Dynamics – Senior Division*
- 1101 Sophia Chavez**  
*Effect of High-Density Polyethylene Microplastics on Growth of Chlorella*  
Southwest Virginia Governor’s School  
Sponsor: Rebecca Phillips  
*Third Place – Environmental Engineering + Microbiology – Senior Division*
- 1102 Joshua Osemobor**  
*Environmental Limiting Factors of the Plankton Paradox*  
Southwest Virginia Governor’s School  
Sponsor: Rebecca Phillips  
*Second Place – Environmental Engineering + Microbiology – Senior Division*  
*National Aeronautics and Space Administration Earth System Science Award*
- 1103 Charlotte Phillips**  
*Investigating Microplastic Trapping Efficiency of Coral Reef Regrowth Structures in Simulated Ocean Currents in the Presence of Modeled Acropora cervicomis*  
Southwest Virginia Governor’s School  
Sponsor: Rebecca Phillips  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Environmental Engineering + Microbiology – Senior Division*  
*Ricoh Corporation Sustainable Development Award*  
*Stockholm Junior Water Prize – First Place*  
*Wytheville Community College Scholarship*



- 1202 Alix Bartos**  
*Evaluating the Durability of Writing Under Laboratory Conditions: A Comparative Study on Spills and Sunlight*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Third Place – Materials Science – Senior Division*
- 1204 Lydia Pratt**  
*Effects of Coatings on the Ultrasonic Testing of Welds on Structural Steel*  
Southwest Virginia Governor's School  
Sponsor: Sherry Pugh  
*Virginia State Science and Engineering Fair Delegate*  
*Second Place – Materials Science – Senior Division*
- 1205 Alexandria Swenson**  
*Aesthetic Properties of Alginate-Based Yarn and Its Commercial Counterparts*  
Southwest Virginia Governor's School  
Sponsor: Jared Brown  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Materials Science – Senior Division*  
*United States Metric Association*
- 1301 Saige Carico**  
*Flavobacterium capsulatum on Drought Tolerance in Pea Plants*  
Southwest Virginia Governor's School  
Sponsor: Sherry Pugh  
*Second Place – Plant Sciences – Senior Division*
- 1303 Sage Lahmers**  
*Symbiotic Strength: Evaluating Mycorrhizal & Nitrogen-Fixing Influences on Plant Fitness*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Third Place – Plant Sciences – Senior Division*  
*New River Community College Scholarship*  
*Radford University Scholarship*
- 1304 Lauren Linford**  
*The Effect of Permethrin Compared to a Hot Pepper Solution as a Pesticide Against Crickets*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Honorable Mention – Plant Sciences – Senior Division*  
*Honorable Mention – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Senior Division*

- 1305 Eleanor Steele**  
*Effects of Biochar Soil Amendment of Pisum sativum Under Flood Conditions*  
Southwest Virginia Governor's School  
Sponsor: Rebecca Phillips  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Plant Sciences – Senior Division*  
*Society for In Vitro Biology Award*  
*Third Place – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Senior Division*
- 1401 William Ballard**  
*Drones and Golf Simulator Accuracy*  
Southwest Virginia Governor's School  
Sponsor: Matt Frazier  
*Second Place – Robotics and Intelligent Machines – Senior Division*
- 1402 Ingrid Jora Macrea**  
*The Accuracy of an American Sign Language Recognition Deep Neural Network Under Healthcare Conditions*  
Blacksburg High School  
Sponsor: Katharine Davis  
*Virginia State Science and Engineering Fair Delegate*  
*First Place – Robotics and Intelligent Machines – Senior Division*
- 2101 Silas Phillips**  
*Exploring Indicators of Cellular Respiration in Saccharomyces cerevisiae with Levulose, Dextrose, and Sucrose*  
Scott Memorial Middle School  
Sponsor: Lucas Phillips  
*First Place – Animal Sciences + Biochemistry – Junior Division*  
*American Chemical Society Virginia Blue Ridge Section Award*  
*Office of Naval Research Distinguished Achievement Award – Junior Division*  
*Thermo Fisher Scientific Junior Innovator Award*  
*Third Place – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Junior Division*
- 2102 Virginia Vandyke**  
*Fat or Fluffy 2.0*  
Riverview Elementary/Middle School  
Sponsor: Whitney Vandyke  
*Second Place – Animal Sciences + Biochemistry – Junior Division*  
*American Society of Mammalogists Award*

- 2201 Arabella Barton and Leah Wilson**  
*Memory Check*  
Council High School  
Sponsor: Rita Breeding  
*First Place – Behavioral and Social Sciences – Junior Division*
- 2202 Katelynn Owens**  
*Heartbeat*  
Council High School  
Sponsor: Rita Breeding  
*Second Place – Behavioral and Social Sciences – Junior Division*  
*First Place – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Junior Division*
- 2301 Allie Compton**  
*Oxidation*  
Council High School  
Sponsor: Rita Breeding  
*Honorable Mention – Chemistry – Junior Division*  
*Second Place – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Junior Division*
- 2305 Xander Matney**  
*What Melts Ice the Fastest?*  
Twin Valley Elementary/Middle School  
Sponsor: Rebekah Romang  
*Second Place – Chemistry – Junior Division*  
*Lemelson Early Inventor Prize*
- 2306 Jacelyn Peak**  
*Starlite Defense! The Fireproof Wonder!*  
Twin Valley High School  
Sponsor: Nikki Peak  
*First Place – Chemistry – Junior Division*  
*Iota Sigma Pi Award – Junior Division*  
*Thermo Fisher Scientific Junior Innovator Award*
- 2307 Mia Sanders**  
*Nuttin But Power*  
Twin Valley High School  
Sponsor: Pamela Deel  
*Third Place – Chemistry – Junior Division*

- 2401 Leela Bradbury-Swarup and Letian Zhou**  
*An Assessment of Flash Drought Variability and Index Concordance*  
Blacksburg Middle School  
Sponsor: Samarth Swarup  
*Second Place – Earth and Environmental Science + Physics and Astronomy – Junior Division*  
*Virginia Lakes and Watersheds Award – Junior Division*
- 2402 Cooper Justice and Wyatt Street**  
*Explaining Physics Through Balloon Car Experiment*  
Riverview Elementary/Middle School  
Sponsor: Amanda Shelton  
*First Place – Earth and Environmental Science + Physics and Astronomy – Junior Division*
- 2403 Angela Lin**  
*Will It Sink or Will It Float*  
Riverview Elementary/Middle School  
Sponsor: Amanda Shelton  
*Honorable Mention – Earth and Environmental Science + Physics and Astronomy – Junior Division*
- 2405 Lindsay Owens and Zoey McGlothlin**  
*Liquid Density*  
Council High School  
Sponsor: Rita Breeding  
*Third Place – Earth and Environmental Science + Physics and Astronomy – Junior Division*
- 2501 Mattie Christian**  
*Lights Out*  
Hurley Elementary/Middle School  
Sponsor: Nathan Stacy  
*Second Place – Materials Science – Junior Division*
- 2502 Aaron Hess**  
*Pitch Perfect*  
Homeschool  
Sponsor: Danielle Hess  
*First Place – Materials Science – Junior Division*  
*Office of Naval Research Distinguished Achievement Award – Junior Division*  
*Radford University Sigma Xi Chapter Distinguished Award in Science – Junior Division*  
*Honorable Mention – Edward Via College of Osteopathic Medicine – Virginia Public Health and Healthcare Award – Junior Division*