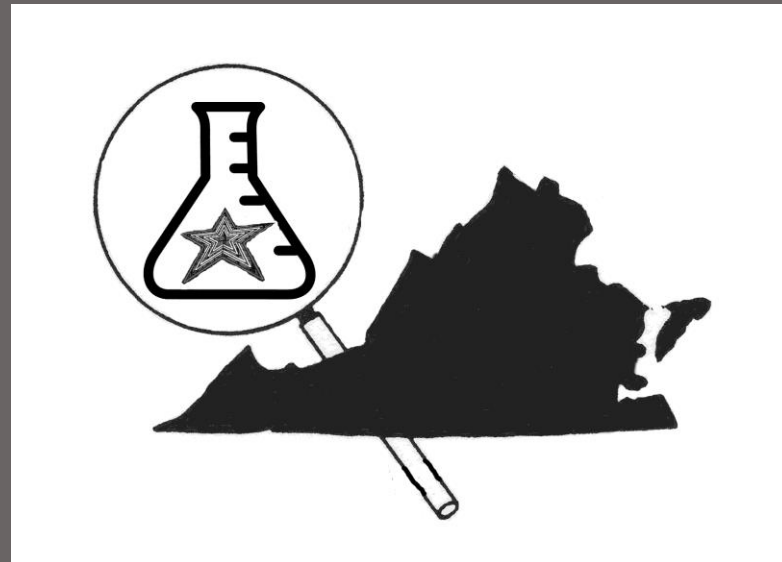


Western Virginia Regional Science Fair Awards



2021

Acknowledgements and Thanks

Participating School Districts and Schools

Roanoke City Public Schools

Roanoke County Public Schools

Roanoke Valley Governor's School

Western Virginia Regional Science and Engineering Fair Hosts

Hollins University; Virginia Western Community College; Roanoke College

Regional Fair Planning Committee

Erin Barnett

Roanoke County Public Schools

Tom Fitzpatrick

Roanoke City Public Schools

Mark Levy

Roanoke Valley Governor's School

Acknowledgements and Thanks

Special Thanks

The judges for sharing their time and expertise

The organizations that provided special awards

The students and teachers for working through such difficult conditions this year!

Sponsorships

Fair Sponsor:

AEP Foundation

Additional Sponsors:

RVGS Foundation

Leidos Inc.

Affiliated Fairs

Virginia State Science and Engineering Fair

Hosted by Virginia Tech Carilion School of Medicine - April 10

VSSEF will be hosted virtually this year

Category Award 1st place projects advance to VSSEF

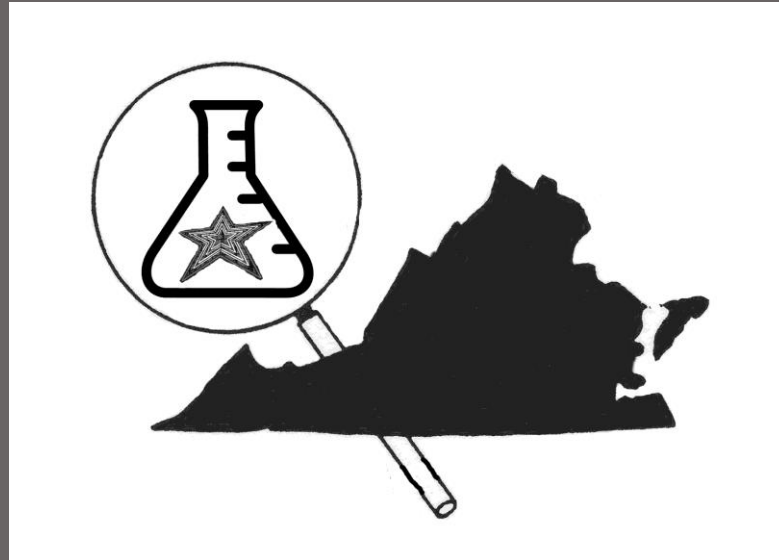
Regeneron International Science and Engineering Fair

ISEF will be held virtually this year

The three Grand Award projects are selected to advance to ISEF

Students advancing to other fairs will receive further information from Mr. Levy and should participating in a virtual meeting at 4:00 pm on Monday.

Special Awards



American Meteorological Society Award

EE1 The Effect of Fertilizers on the Hydrocarbon Degradation Ability of *Acinetobacter sp. NF22*

Cecilia Fraticelli, RVGS/Glenvar High School

Nicholas Louvet, RVGS/Glenvar High School

ES1 Assessing the Presence of Microplastics and Nanoplastics in Local Freshwater

Walker Wright, RVGS/Cave Spring High School

Leah Germain, RVGS/Lord Botetourt High School

ASM Materials Education Foundation

MS3 The Effect of Various Temperatures on the Growth and Piezoelectricity of Rochelle Salt Crystal

Emiliano Gonzalez, William Byrd High School

Association for Woman Geoscientists

EE2 Photocatalytic Degredation of Methylene Blue Using Titanium Dioixde Coated Glass Beads

Cathryn (Rynn) Little, RVGS/Patrick Henry High School

NASA Earth System Science Award

ES2 Analysis of Microbial Diversity in PCB-Contaminated Soils
Eleanor Little, RVGS/Patrick Henry High School

National Oceanic and Atmospheric Administration (NOAA) Award

ES3 Assessment of Glyphosate in Blue Ridge Honey
Shannon Filer, RVGS/James River High School

Yale Science and Engineering Award

BH5 Assessing the Efficacy of Current Vaccines Against Emerging SARS-Cov-2 Variants
Abhinav (Abhi) Karri, RVGS/Hidden Valley High School

Ricoh Sustainable Development Award

PS4 The Effect of an Invasive Species-Derived Herbicide on Other Inhibitory, Non-Native Flora

Ryan Mollin, RVGS/Franklin County High School

Society for In Vitro Biology

AS6 Using the Embryonic *Danio rerio* Stress Response System to Investigate the Toxicity of Metal Oxide Nanoparticles

Uyen Tran, RVGS/William Fleming High School

US Agency for International Development (USAID)

BH3 A Review of the Sensitivity and Specificity of Lung Ultrasound Compared with Chest X-Rays in Diagnosing Pneumonia

Meitra Kazemi, RVGS/Hidden Valley High School

Alfred D. Blease Award, Sponsored by VWCC

BH5 Assessing the Efficacy of Current Vaccines Against Emerging SARS-Cov-2 Variants

Abhinav (Abhi) Karri, RVGS/Hidden Valley High School

Virginia Dental Association Award

ES2 Analysis of Microbial Diversity in PCB-Contaminated Soils
Eleanor Little, RVGS/Patrick Henry High School

Virginia Lakes and Watershed Association Awards

2nd AS4 Investigation of Bioprinted Hydrogels for Purification of *Danio rerio* Habitats During Embryonic Development
Alicia Carvalho, RVGS/Cave Spring High School
Liala Sofi, RVGS/Hidden Valley High School

1st ES2 Analysis of Microbial Diversity in PCB-Contaminated Soils
Eleanor Little, RVGS/Patrick Henry High School

Western Virginia Water Authority Awards

The Western Virginia Water Authority recognizes outstanding science fair projects that pertain to water quality, water conservation, water treatment or water distribution. Congratulations to the following projects for being co-winners of the Western Virginia Water Authority Award and its \$100 prize.

ES1 Assessing the Presence of Microplastics and Nanoplastics in Local
Freshwater

Walker Wright, RVGS/Cave Spring High School

Leah Germain, RVGS/Lord Botetourt High School

MS6 The Application of a Chitosan Cross-linked Poly(acrylic acid) Hydrogel in
the Removal of a Model Pollutant from an Aqueous Solution

Ainsley Robertson, RVGS/Cave Spring High School

Rebecca Qiu, RVGS/William Byrd High School

American Water Works Association Awards

2nd AS6 Using the Embryonic *Danio rerio* Stress Response System to Investigate the Toxicity of Metal Oxide Nanoparticles
Uyen Tran, RVGS/William Fleming High School

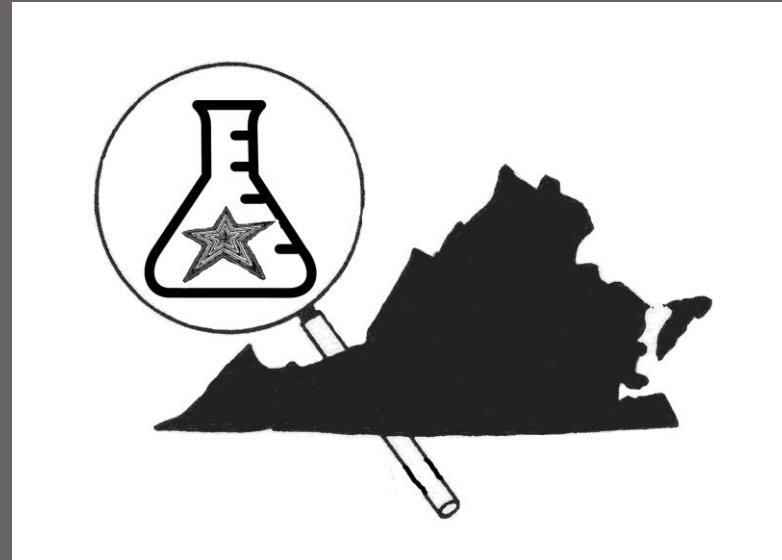
1st ES2 Analysis of Microbial Diversity in PCB-Contaminated Soils
Eleanor Little, RVGS/Patrick Henry High School

Virginia Water Environment Association/ Junior Stockholm Water Prize

2nd MS6 The Application of a Chitosan Cross-linked Poly(acrylic acid) Hydrogel in the Removal of a Model Pollutant from an Aqueous Solution
Ainsley Robertson, RVGS/Cave Spring High School
Rebecca Qiu, RVGS/William Byrd High School

1st AS4 Investigation of Bioprinted Hydrogels for Purification of *Danio rerio* Habitats During Embryonic Development
Alicia Carvalho, RVGS/Cave Spring High School
Liala Sofi, RVGS/Hidden Valley High School

Category Awards



Animal Sciences

- 3rd Place AS3 The Effect of Propolis on the Regeneration Rate of *Dugesia tigrina*
Courtney Monard, RVGS/Hidden Valley High School
Griffin Yakob, RVGS/William Byrd High School
- 2nd Place AS5 The Effect of *Catharanthus roseus* on the Regeneration Rate of *Dugesia tigrina*
Seth Huard, RVGS/Lord Botetourt High School
Keaton Lucas, RVGS/Lord Botetourt High School
- 1st Place AS4 Investigation of Bioprinted Hydrogels for Purification of *Danio rerio* Habitats During Embryonic Development
Alicia Carvalho, RVGS/Cave Spring High School
Liala Sofi, RVGS/Hidden Valley High School
- AS6 Using the Embryonic *Danio rerio* Stress Response System to Investigate the Toxicity of Metal Oxide Nanoparticles
Uyen Tran, RVGS/William Fleming High School

Biomedical and Health Sciences

- 3rd Place BH1 Comparing the Efficacy of Different Face Masks Using T4 Bacteriophage Droplets
Alexandra (Lexie) Rhodes, RVGS/Hidden Valley High School
Camly Tran, RVGS/Northside High School
- 2nd Place BH3 A Review of the Sensitivity and Specificity of Lung Ultrasound Compared with Chest X-Rays in Diagnosing Pneumonia
Meitra Kazemi, RVGS/Hidden Valley High School
- 1st Place BH5 Assessing the Efficacy of Current Vaccines Against Emerging SARS-Cov-2 Variants
Abhinav (Abhi) Karri, RVGS/Hidden Valley High School

Cellular and Molecular Biology

- 3rd Place CM4 The Effect of Kaempferol and Myricetin on Breast Cancer Cell Proliferation and the Expression of the Bcl-2 Gene
Lynn Park, RVGS/Lord Botetourt High School
Annelise Wolfe, RVGS/Lord Botetourt High School
- 2nd Place CM2 Viral Hijacking of Intercellular Junctions Facilitates Spread
David Whitacre, RVGS/Hidden Valley High School
- 1st Place CM3 Using CRISPR-Cas9 to Edit Human Breast Cancer Fibroblasts in Cell Culture
Madison Brown, RVGS/Franklin County High School
Dhruvi Patel, RVGS/Glenvar High School

Computational Biology

- 3rd Place CB5 An Investigation of the Accumulation of Mutations in the COVID19 Genome
Tracy (Harrison) Callis, RVGS/Patrick Henry High School
Elizabeth Fedor, RVGS/William Byrd High School
- 2nd Place CB1 The Genetic Correlation Between Multiple Sclerosis and Various Autoimmune and Neurodegenerative Diseases
Holly Hinchy, RVGS/Cave Spring High School
Ella Bryant, RVGS/Northside High School
- 1st Place CB3 Investigating Alternatives to Conventional Chronic Kidney Disease Treatment Through Analysis of Differential Gene Expression
London Paige, RVGS/William Fleming High School

Environmental Engineering

- 3rd Place EE2 Photocatalytic Degredation of Methylene Blue Using Titanium Dioxide Coated Glass Beads
Cathryn (Rynn) Little, RVGS/Patrick Henry High School
- 2nd Place EE5 The Effect of Natural Dyes on the Efficiency of Dye-Sensitized Solar Cells
Josephine (Josie) Fraticelli, RVGS/Glenvar High School
Cole Price, RVGS/Staunton River High School
- 1st Place EE3 The Effect of a Whale Fin Shaped Blade on the Energy Output of a Wind Turbine
Charles (Bass) Beasley, Jr., RVGS/Patrick Henry High School
Maximillian Roberson, RVGS/Patrick Henry High School
- EE4 Alternatives for Corn Based Biofuel
Paulo Carey, RVGS/Franklin County High School
Parker Chapman, RVGS/Franklin County High School

Engineering Mechanics A

3rd Place

EM-A1 Room Occupancy Tracker

Matthew Scarlatescu, RVGS/Hidden Valley High School

2nd Place

EM-A2 WiFi-Enabled Webcam for Educators

Maxwell Stevens, RVGS/Patrick Henry High School

Tobias (Toby) Tate, RVGS/Patrick Henry High School

1st Place

EM-A3

Rotating Weekly Pill Dispenser

Kierstyn Stanley, RVGS/Lord Botetourt High School

Sydney Vokus, RVGS/Lord Botetourt High School

Engineering Mechanics B

3rd Place

EM-B6

Plant Watering Robotic Arm

Nathan Sprouse, RVGS/Cave Spring High School

Ethan Su, RVGS/Hidden Valley High School

2nd Place

EM-B1

UV Light Sanitation Hood

Sydnee Durham, RVGS/Patrick Henry High School

Ruby Isbell, RVGS/Patrick Henry High School

1st Place

EM-B5

Mini Wind Turbine

Griffin Kauffman, RVGS/Patrick Henry High School

Riley VanAken, RVGS/Patrick Henry High School

EM-B3

The COVID Bot

Ethan Fouch, RVGS/Lord Botetourt High School

Fady Abdelmalak, RVGS/Salem High School

Earth and Environmental Sciences

- 3rd Place ES4 Use of Titanium Dioxide Nanoparticle Enhanced Paint to Reduce Nitrogen Dioxide Pollution
Lillian Holt, RVGS/Patrick Henry High School
Megan McGinnis, RVGS/Patrick Henry High School
Sarah Riddle, RVGS/Patrick Henry High School
- 2nd Place ES3 Assessment of Glyphosate in Blue Ridge Honey
Shannon Filer, RVGS/James River High School
- 1st Place ES2 Analysis of Microbial Diversity in PCB-Contaminated Soils
Eleanor Little, RVGS/Patrick Henry High School

Materials Science

2nd Place

MS4 The Effect of Various Amounts of Water Added During Polymerization on the Sound Absorption of Polyurethane Foam

Anna Halsdorf, RVGS/Patrick Henry High School

Penelope Smith, RVGS/Patrick Henry High School

MS1 The Effect of Natural Polymers on the Sustainability of Adhesive Hydrogels for Tissue Repair

Katherine Cross, RVGS/Lord Botetourt High School

Haley Day, RVGS/William Byrd High School

1st Place

MS3 The Effect of Various Temperatures on the Growth and Piezoelectricity of Rochelle Salt Crystal

Emiliano Gonzalez, William Byrd High School

MS6 The Application of a Chitosan Cross-linked Poly(acrylic acid) Hydrogel in the Removal of a Model Pollutant from an Aqueous Solution

Ainsley Robertson, RVGS/Cave Spring High School

Rebecca Qiu, RVGS/William Byrd High School

Microbiology

3rd Place

MI3 The Synergistic Effect of Pomegranate Rind Extract and Ciprofloxacin on the Growth of *E. coli*

Reese Redford, RVGS/Salem High School

MI4 The Use of a Fluorescent pH-Biosensor to Image Yeast Organelles

Grace Kahoun, RVGS/Patrick Henry High School

Emma Thielecke, RVGS/Patrick Henry High School

2nd Place

MI1 The Effect of *Melaleuca alternifolia* EO on the Growth of *E. coli*

Faith Kuehl, RVGS/Patrick Henry High School

Annika Plunkett, RVGS/Patrick Henry High School

1st Place

MI7 The Effect of *Trametes veriscolor* Infused Bandages on *Staphylococcus epidermidis*

Cynthia Lin, RVGS/Franklin County High School

Emma Kate Greer, RVGS/Patrick Henry High School

Jennie Pham, RVGS/William Fleming High School

MI5 The Effect of Clove Oil on the Growth of *E. coli*

Thomas (TJ) Hinson, RVGS/Salem High School

Zane Ellis, RVGS/Staunton River High School

Plant Sciences

- 3rd Place PS1 The Effect of Silver Nanoparticles on the Tobacco Mosaic Virus
Sara Drewry, RVGS/Patrick Henry High School
- 2nd Place PS3 The Allelopathic Effect of *A. millefolium* on the Germination and Growth of *T. aestivum*
Chloe DeKorsey, RVGS/Patrick Henry High School
Mieko DeKorsey, RVGS/Patrick Henry High School
- PS4 The Effect of an Invasive Species-Derived Herbicide on Other Inhibitory, Non-Native Flora
Ryan Mollin, RVGS/Franklin County High School
- 1st Place PS5 The Synergistic Allelopathic Effect of Extracts from Two Invasive Species on Germination and Growth of *E. hystrix*
Daniel Han, RVGS/Cave Spring High School
Carson Ray, RVGS/Cave Spring High School

Systems Software

3rd Place

SS1

Utilizing Python and Machine Learning to Analyze the Validity of News Articles

Brayden Whitlow, RVGS/Franklin County High School

Timothy Wilson, RVGS/James River High School

2nd Place

SS7

Transferring Text to Auditory Language for the Visually Impaired

Alex Kurtz, RVGS/Franklin County High School

Eliza Quesenberry, RVGS/Franklin County High School

1st Place

SS4

Programming a Game in Python

William (Alexander) Branscom, RVGS/Patrick Henry High School

Anna West, RVGS/Patrick Henry High School

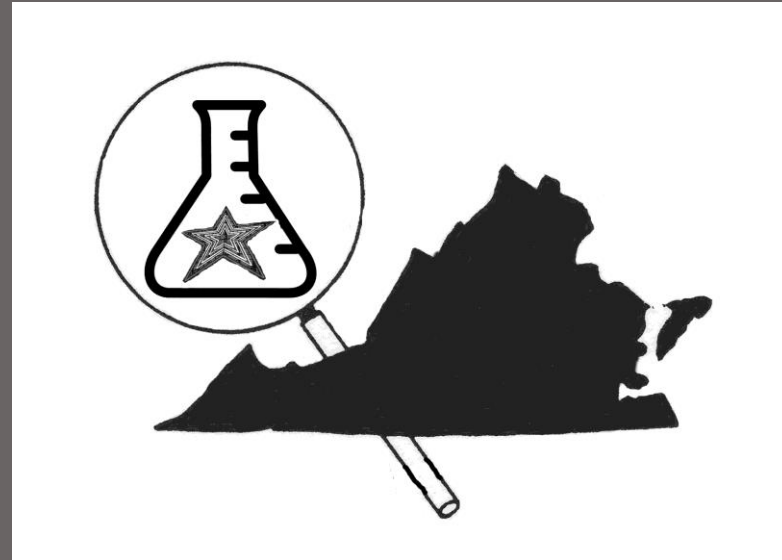
SS5

Time Management Assistance Program

Shane Cockram, RVGS/Franklin County High School

Liam May, RVGS/Franklin County High School

Grand Awards



Alternate Grand Award Winners

Investigation of Bioprinted Hydrogels for Purification of *Danio rerio* Habitats During Embryonic Development

Alicia Carvalho, RVGS/Cave Spring High School

Liala Sofi, RVGS/Hidden Valley High School

Investigating Alternatives to Conventional Chronic Kidney Disease Treatment Through Analysis of Differential Gene Expression

London Paige, RVGS/William Fleming High School

Mini Wind Turbine

Griffin Kauffman, RVGS/Patrick Henry High School

Riley VanAken, RVGS/Patrick Henry High School

Grand Award Winners

These projects qualify for the International Science and Engineering Fair

Rotating Weekly Pill Dispenser

Kierstyn Stanley, RVGS/Lord Botetourt High School

Sydney Vokus, RVGS/Lord Botetourt High School

Analysis of Microbial Diversity in PCB-Contaminated Soils

Eleanor Little, RVGS/Patrick Henry High School

The Effect of *Trametes vericolor* Infused Bandages on *Staphylococcus epidermidis*

Cynthia Lin, RVGS/Franklin County High School

Emma Kate Greer, RVGS/Patrick Henry High School

Jennie Pham, RVGS/William Fleming High School

Congratulations to the Award Winners

Category Award 1st place winning students advance to the Virginia State Science and Engineering Fair.

The Grand Award Winners advance to the International Science and Engineering Fair and the state science fair.

These students should contact Mr. Levy by emailing mlevy@rvgs.k12.va.us to confirm they can attend and will attend a meeting on Monday at 4:00 PM for more information.