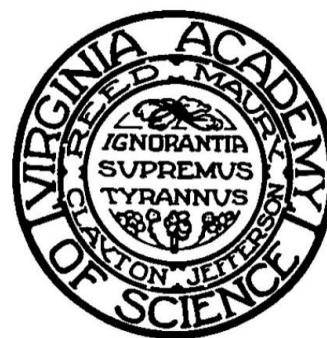
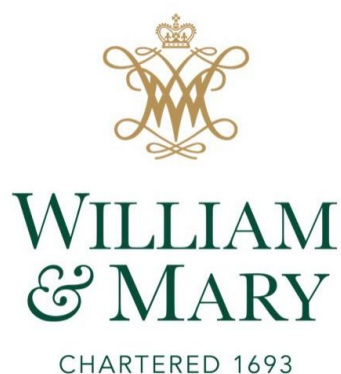


Virginia Junior Academy of Science Research Symposium and 81st Annual Meeting

**May 13, 2022 - General Session
May 14, 2022 - Student Presentations
May 27, 2022 - Awards Ceremony**



A Program of The Virginia Academy of Science

Virtual Research Symposium, hosted by
The College of William & Mary
Williamsburg, Virginia
Program is available on the VJAS website www.vjas.org

The Virginia Academy of Science

The Virginia Academy of Science (VAS) is the fifth largest state, region, or city academy of science in the U.S.; it was founded in 1923 to promote the civic, academic, agricultural, industrial, and commercial welfare of the people of Virginia. Exemplary programs have included Flora of Richmond and Vicinity, Published, 1930, the first comprehensive multidisciplinary studies of the James River Basin and the Great Dismal Swamp, volunteer research assistance to Virginia in the instance of the kepone pollution disaster, and leadership in establishing the Science Museum of Virginia.

Fall Undergraduate Research Meeting:

The focus of this meeting is support of undergraduate student research. Specific details about the 2021 Fall Undergraduate Research Meeting, including the location and date will be made available on the VAS website (www.vacadsci.org) during the summer.

The Virginia Junior Academy of Science

VJAS is a national model for the new and renewing state junior academies and has been ranked among the top three in the nation for over two decades. Through VJAS and other programs, VAS annually reaches over 40,000 Virginia middle and high school students. Hundreds of volunteers make it possible for Virginia secondary students to experience these activities.

The College of William & Mary

The Virginia Academy of Science and the Virginia Junior Academy of Science express their sincere appreciation to The College of William & Mary for the generous support in providing web conferencing meeting rooms and services.

A Tradition of Excellence, A Commitment to Action

Join the Virginia Academy of Science

Support the Virginia Academy of Science

Contributors and Supporters

The Virginia Academy of Science and The Virginia Junior Academy of Science notes with appreciation the contribution and support of hundreds of individuals and dozens of organizations to the success of this year's Research Symposium and Annual Meeting.

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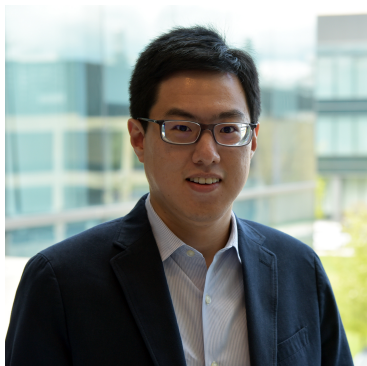
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The College of William & Mary Local Arrangements Chair

Local Arrangements Chair.....Joshua Erlich

VJAS Committee Chair's Welcome



May 13, 2022

Dear Virginia Junior Academy of Science participants,

On behalf of the Virginia Junior Academy of Science Team and Committee, I would like to extend the warmest welcome to each and every one to the 81st Virginia Junior Academy of Science (VJAS) Annual Meeting and Research Symposium. Although we are not able to meet in person, The College of William & Mary in Williamsburg, Virginia, is hosting our Research Symposium virtually this year.

First, I would like to congratulate our student finalists. Despite the challenges, each one of you strived to conduct the best possible scientific research experiments in a variety of different settings and circumstances. Your valiant and resilient efforts shine through brightly – as a VJAS student finalist, your research papers have been read

thoroughly and were selected by a rigorous panel of evaluators from across the state. This is a great accomplishment and you should be proud of your research and academic success!

As we commence our virtual Annual Meeting and Research Symposium, I would like to share some thoughts with you. This past year, more so than any others, we have seen a rise in the stake – the importance – of the role science and research plays in our society. Scientists from all corners of the Earth joined together and responded to meet a daunting challenge. We have acted as one to address a global crisis that discriminates against none.

This atmosphere of cooperation and working together as collaborators, and not necessarily viewing each other as competitors all the time, is something we scientists need to continue promoting. Yes, there is a balance – but our society will greatly benefit and the frontiers of knowledge further breached into new territories faster if we work together more often. Therefore, I would encourage you to view each other during this virtual Research Symposium as future collaborators and colleagues, partners of the future, rather than as competitors.

As you move onward into your collegiate and professional careers, I understand that some of you will continue the path of a scientist, but just as many will choose different routes in medicine, teaching, politics, and so on. What we hope to convey at this year's Annual Meeting is that no matter which career route you choose, your fundamental understanding of science and how research is conducted to bring progress, will be invaluable and become a lifelong foundation. And remember, you can always be an advocate in promoting science and research, wherever you are.

In closing, I hope the 81st VJAS virtual Annual Meeting and Research Symposium is an enriching and engaging experience for everyone. Once again, welcome and congratulations on your accomplishments.

Sincerely,

Se W. Jeong

Chairman, VJAS Committee

SCHEDULE OF EVENTS

Virginia Junior Academy of Science 2022 Research Symposium

Friday, May 13, 2022		
7 PM - 9 PM	VJAS General Session and Jeffers Memorial Lecture	Live Zoom Webinar: https://cwm.zoom.us/j/95595300084 (overflow YouTube Live link will be provided on the website at 6:45 PM)

Saturday, May 14, 2022		
8 AM - 8:45 AM	Judge's Meeting	https://cwm.zoom.us/j/91902633588?pwd=d2NDMVVodlIEOTFKNmRQTDAxTHp4QT09
9 AM - 4 PM	VJAS Student Paper Presentations	30 Concurrent Zoom BreakOut Rooms Presentation Sessions - https://cwm.zoom.us/j/91902633588?pwd=d2NDMVVodlIEOTFKNmRQTDAxTHp4QT09
Specific Student Paper Presentation schedule starts on Page 8		

Friday, May 27, 2022		
7 pm - 9 pm	VJAS Awards Ceremony	Live Zoom Webinar: https://cwm.zoom.us/j/99807369438 (overflow YouTube Live link will be provided on the website at 6:45 PM)

George W. Jeffers Memorial Lecture

Friday Evening VJAS General Session

Science at the Smithsonian: From Planets to Pandas!



Ellen R. Stofan, PhD

Under Secretary for Science and Research
Smithsonian Institution

Dr. Ellen Stofan oversees the science museums and science research centers as well as the Smithsonian Libraries and Archives, Office of International Relations, Smithsonian Scholarly Press and Scientific Diving Program. Dr. Stofan previously was the John and Adrienne Mars Director of the Smithsonian's National Air and Space Museum.

As the former Chief Scientist of NASA, Dr. Stofan served as the principal advisor to the Administrator on science programs and strategic planning. Dr. Stofan held senior scientist positions at NASA's Jet Propulsion Laboratory. Currently, she is on the science team of the NASA Dragonfly mission to Titan. Dr. Stofan holds master's and doctorate degrees in geological sciences from Brown University, and a bachelor's degree from the College of William & Mary.

Animal & Human Sciences (MS AH)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	Which Shampoo Makes Your Hair Stronger	Akilesh Jonnavarapu	GH Moody
9:20-9:40 AM	Finding the most cost-effective alkaline water that irreversibly inactivates pepsin and aids in the treatment of laryngopharyngeal reflux (LPR)	Ishan Shah	GH Moody
9:40-10 AM	The Effect Of Crowding On A Cricket's Behavior	Jeev Dalawari	GH Moody
10-10:20 AM	Do People that are Closely Biologically Related Have the Same Fingerprint Pattern?	Jessica Lkhagvasuren & Mallory Burton	HB Woodlawn
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Different Soil Mediums on Earthworms	John Kamireddy	GH Moody
11-11:20 AM	An Evaluation of Underlying Medical Conditions as Predictors of COVID-19 Morbidity and Mortality	Kasimir Rastogi	Cooper MS
11:20-11:40 AM	The Effect of different concentrations of CBD oil on the heart rate of the Daphnia magna	Priya Kumar	GH Moody
11:40-12 PM	The Effect of Different Biomes on the Behavior of Ants.	Vansh Goel	GH Moody

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Chemical Science A (MS-CS A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The effect of Time a fruit is left out on Vitamin C Concentration	Aarya Mishra	GH Moody
9:20-9:40 AM	The Effect of Different Types of Flour on the Size of Bread	Alex Bryner	GH Moody
9:40-10 AM	Effect of Aloe Vera on Protein Digestion	Anaya Kaul	GH Moody
10-10:20 AM	The Effect of Different Ingredients in the Time it Takes to Make Jello	Anish Aruru	GH Moody
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Different Oils on the Strength of Hair	Anoushka Anand	GH Moody
11-11:20 AM	The Effect of the Opacity of Paper on the Effectiveness of UV Light	Arinan Johri	GH Moody
11:20-11:40 AM	The Effect of Over-the-Counter Medicine Coating on the Release Time in a Low pH Environment	Caroline South	Dorothy Hamm
11:40-12 PM	The Effect of Different Sizes of Salt Grains on the Melting Speed of Ice	David Dong	GH Moody
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	The Effect of Different Drinks On Teeth	Diyaa Kirubaharan	GH Moody
1-1:20 PM	The Effect of Ice Melt Substances on Time to Melt Ice	Duchmaa Ariunbold	Kenmore
1:20-1:40 PM	The effect of the Amount of concentration of salt crystals on the melting rate of ice	Henry Marshall	GH Moody
1:40-2 PM	How Different Types of Commonly Thrown Away Substances Affect the Surface Tension of Water.	Ishaan Atturu	GH Moody
2-2:20 PM	The Effect of Pyrethroid Pesticides on the Progression of Growth in Lepidium Sativum (Common Garden Cress).	Jordan Haught	GH Moody
2:20-2:40 PM	The Effects of Varying Acids and Baking Soda on Tarnishing Silver	Katharine Burke	Kenmore

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Chemical Science B (MS CS-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The effect of different types of Tea on teeth enamel	Manudeep Chevuru	GH Moody
9:20-9:40 AM	The Effect of Different Types of Soap and How Well They Clean Your Hands	Meredith Lloyd	GH Moody
9:40-10 AM	The Effect of Types of Flour on the Hight of the Rise of Bread Dough	Myla McNair	Williamsburg MS
10-10:20 AM	Effect of Different Types of Hand Sanitizer on Hardwood Flooring	Naman Kaushik	GH Moody
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Different Temperatures of Water on Magnetic Strength	Neel Joshi	GH Moody
11-11:20 AM	The Effect of Different Smoothies on the Glucose Level	Nikki Alemzadeh	Louise Benton
11:20-11:40 AM	The Effect of Different Electrolytes on the Voltage	Rishab Kambham	GH Moody
11:40-12 PM	The Effects of Sand and Salt on Ice Melting Time	Sarah Coppenbarger	Kenmore
12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Different pH on the Corrosion Rate of Nails	Shaan Patel	GH Moody

1-1:20 PM	The Effect of Different Liquids on Tooth Decay	Shrihari Kalagi	GH Moody
1:20-1:40 PM	Elephant Toothpaste and Exothermic Reactions: The effect of changing the amount of catalyst	Spencer Massie	Sabot at Stony Point
1:40-2 PM	The Effect of different liquid pH levels on the Corrosion of Pennies	Tanvi Nareddy	GH Moody
2-2:20 PM	The Effect of the Time an Apple is Soaked in Saltwater on the Time it Takes to Brown	Sahana Muthukumar	GH Moody

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Ecology & Earth Sciences (MS EE)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of GMO on Soil Quality and Communities of Microorganisms	Aanya Singh	GH Moody
9:20-9:40 AM	The Effect of Water's Salinity on the Effectiveness of a Solar-Powered Desalinator	Aarush Rudraraju	GH Moody
9:40-10 AM	The Effect of the <i>Drosera rotundifolia</i> on <i>Musca domestica</i> , <i>Armadillidium vulgare</i> , <i>Coccinellidae</i> , and <i>Pogonomyrmex barbatus</i> .	Akhil Dhawan	GH Moody
10-10:20 AM	Which Fruit Peel Helps Retain the Most Soil Moisture	Anika Parashar	Hidden Valley
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of the Location Along the Potomac River on the Amount of Dissolved Oxygen	Arhan Menta	Williamsburg
11-11:20 AM	The Effect of Different Layers Above the Soil on the Prevention of Erosion	Geunyoung Chung	GH Moody
11:20-11:40 AM	The Effect Of Different Kinds Of Sprouts On Soil Erosion	Kristine Edassery	GH Moody
11:40-12 PM	The Effect of the Amount of Microplastics on the Survival Rate of <i>Daphnia magna</i>	Nadia Lach-Hab	Dorothy Hamm

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Natural Filtration Materials on the Amount of Total Dissolved Solids of Contaminated Pond Water	Rashmi Adhikari	GH Moody
1-1:20 PM	The Effect of Meal Acquisition on Carbon Footprint	Rosalind Van Reken	Dorothy Hamm
1:20-1:40 PM	Which Natural Water Filter Will Work Best on James River Water	Sahasra Kancherla	GH Moody
1:40-2 PM	The Effect of the Brightness of the Sun on Solar Panel Efficiency.	Saket Sambaraju	GH Moody
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Different Types of Wood on a Fire's Growth	Sujay Suribhotla	GH Moody
2:40-3 PM	Testing Ventilation in a Middle School During the Era of COVID-19: The Impact of Natural Ventilation	Zella Mantler	Swanson
3-3:20 PM	The Effect the Color of Paint Has on Insulation	Zoe Schroeder	Kenmore

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Engineering & Technology (MS ET)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Different Machine Learning Algorithms and Artificial Intelligence on the Accuracy of Facial Recognition Software	Abhinav Gitta	GH Moody
9:20-9:40 AM	The Effect of Tire Surface Temperature on Tire Performance	Aditya Sunilkumar	GH Moody
9:40-10 AM	The Effect of Different Kinds of Insulation on Temperature Inside of boxes	Antonio Tripodi	GH Moody
10-10:20 AM	The Effect on Voltage from a Motor's Shaft Connected to a Generator's Shaft	Aryaman Rane	GH Moody
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of the Size and Strength of a Magnet on its Magnetic Pull	Daniel Gabdullin	GH Moody
11-11:20 AM	The Effect of the location of weights on the speed of a pinewood derby car	Jackson George	GH Moody
11:20-11:40 AM	The Effect of Photo Size of the Accuracy of a Facial Detection Program	Kedar Kambhampaty	Williamsburg
11:40-12 PM	Herbal Clay Based Water Filters	Krish Gupta	Swanson Middle School

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Water Filters on the Amount of Dirt Filtered	Logan Krohl	Kenmore
1-1:20 PM	The Effect of the Height of the Bilge Keel on Time Required for a Sea Vessel to Stabilize	Richard John	GH Moody
1:20-1:40 PM	The Effect of Different Weight Placements on the Speed of a Pinewood Derby Car	Saicharan Valipireddy	GH Moody
1:40-2 PM	Effect of External Stacked Magnet on the Pitch that a DC Motor Makes	Shivank Murthy	GH Moody
2-2:20 PM	The Effect of Different Condenser Materials on the Production of Water with a Solar Still	Tess Vithoulkas	GH Moody
2:20-2:40 PM	The Effect of Different Types of Metallic Fabrics on the Reduction of EMF Radiation	Yuvanth Mulpuru	GH Moody

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Human Behavior (MS HB)

Shared Room/Judges with [High School Psychology Section A - see HS PSY-A Schedule](#)

Mathematics: Patterns & Relationships (MS MP)

Shared Room/Judges with [High School Mathematics Section - see HS MTM Schedule](#)

Physical Science & Astronomy A (MS PA-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	What fruits hold the most voltage?	Aelwen Seaver	Swanson
9:20-9:40 AM	The Effect of Varied Insulators on Water Temperature	Alisha Kapila	GH Moody
9:40-10 AM	The Effect of Heating Methods on the Temperature of an Isolated Area	Anushri Ramesh	GH Moody
10-10:20 AM	The effect of distance on the level of electromagnetic radiation	Anya Mathew	GH Moody
10:20-10:40 AM	Effect of Different Materials on the Number of decibels that are received	Dwani Suresh	GH Moody
10:40-11 AM	BREAK		
11-11:20 AM	The Effect of the type of fabric wrapped around a Mason jar on the temperature of the water in the Mason jar after 20 minutes	Emma Cai	Swanson
11:20-11:40 AM	The Effect of Different Forms of Insulation on Internal Heat Conservation	Essam Shah	GH Moody
11:40-12 PM	The Effect of String Length on the “Sleeping” Time of a Yo-Yo	Jaimin Ujaria	GH Moody

12-12:20 PM	The Effect of Paper Type on Loss of Mass Experimented in the Drying Process of Wet Gloves	Kate Pietruszkiewicz	GH Moody
12:20-12:40 PM	Baseball Physics: The relationship between arm speed and bat mass	Nathan Yellin	Sabot at Stony Point

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Physical Science & Astronomy B (MS PA-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Different SPF Levels of Sunscreen on Harmful UV Radiation From Sunlight	Neha Kurup	GH Moody
9:20-9:40 AM	The Effect of the Type of Vegetable on the Amount of Electricity Produced	Pranav Sundarrajan	GH Moody
9:40-10 AM	The Effect of Temperature on Cosmological Inflation	Prithvi Chakraborty	GH Moody
10-10:20 AM	The Effect of a Car Design on Impact Forces on a Passenger	Riyaan Gopalakrishnan	GH Moody
10:20-10:40 AM	The Effect of Nerf Gun Angle on Dart Distance	Sebastian Monroy	Dorothy Hamm
10:40-11 AM	BREAK		
11-11:20 AM	The Effect of Launch Angle on the Distance Traveled by a Projectile	Shravan Madurantakam	GH Moody
11:20-11:40 AM	The Effect of Changing the Shape of a Chladni Plate on Chladni Patterns	Soham Mishra	GH Moody
11:40-12 PM	The Heat Absorption Abilities of Oak vs Polished Cedar	Thomas Gupton	Sabot at Stony Point
12-12:20 PM	The Effect of the PSI of a Soccer Ball On the Distance Traveled When Rolled Down a Slope	Weston Montpetit	Sabot at Stony Point

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Plant Science & Microbiology (MS PM)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Temperature on Fruit Decomposition	Aahana Sikka	GH Moody
9:20-9:40 AM	The effect of the drying time of hand sanitizer in a school setting	Alice Torrico	GH Moody
9:40-10 AM	The Effect of Carbohydrate Structure on the Rate of Respiration in <i>S. cerevisiae</i>	Ameen Rahman	Elizabeth Davis MS
10-10:20 AM	The Effect of Layering Versus Mixing on Composting Banana Peels	Anshi Chowdhory	GH Moody
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Various Sound Waves on the Growth and Development of Plants	Bhama Unnithan	GH Moody
11-11:20 AM	The Effect of Ginger (<i>Zingiber officinale</i>) as Fertilizer on Bean (<i>Phaseolus vulgaris</i>) Plant Height Growth	Deepanshi Kumar	GH Moody
11:20-11:40 AM	The Effect of Water on Seed Germination	Eshwar Bejugam	GH Moody
11:40-12 PM	The Effect of Coffee Concentration on Lima Bean Plant Growth	Esperanza Piechowski	Dorothy Hamm
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	The Effect of Distance From a Wi-Fi Router on Pea Seed Weight and Germination Percentage	Madeleine Sicat	GH Moody
1-1:20 PM	The Effect of Different types of water on the speed of growth of Cucumbers	Nikolai Bukin	GH Moody
1:20-1:40 PM	The Effect of Electromagnetic Fields on Bean Plant Growth	Nilay Ravula	GH Moody
1:40-2 PM	The Effect Of Different Rising Agents On Non-Risen Dough	Sanika Kumar	GH Moody
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Mask-wearing Duration on Bacterial Growth	Sara Moussavi	Louise Benton
2:40-3 PM	The Effect of the Amount of Nutrients on Plant Growth in a Hydroponic Environment	Vedica Chudiwale	Dorothy Hamm
3-3:20 PM	What is the Effect of Sugar on Active Dry Yeast?	Yan Angela Yu	GH Moody

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Botany A (HS BOT-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Different Inorganic Nanoparticles on the Chlorophyll Content of <i>Spinacia oleracea</i>	Aayush Kulkarni	Mills Godwin
9:20-9:40 AM	The Effect of pH Level of Simulated Acid Rainwater on the Shoot Length of Soybeans	Alba Edsall	Washington-Liberty
9:40-10 AM	The Effect of Watering and Chemicals on Mint Health	Alexandra Nguyen	Mills Godwin
10-10:20 AM	The Effect of Tactile Stimulation on the Chlorophyll Concentration of Morning Glories	Ayush Pal	Mills Godwin
10:20-10:40 AM	BREAK		
10:40-11 AM	Comparing Effects of Auditory Environment on <i>Helianthus annuus</i>	Ciara Nauful	Central Virginia GS
11-11:20 AM	The Effect of Sunscreen on <i>Elodea canadensis</i>	Daisy Maxwell	Washington-Liberty
11:20-11:40 AM	The Effect of Natural Insecticides on Army Worm infested Grass	Daniella Jeyasingh	Mills Godwin
11:40-12 PM	The Effect of Water Stress on the Rate of Transpiration of <i>Pisum sativum</i>	Emma Hemsch	Washington-Liberty
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	The Effect of Differing Intensities of Acid Rain Neutralizer on Plant Growth	Emma Matos	Mills Godwin
1-1:20 PM	The Effect of pH on Bean Germination	Gabriella Venezia	Washington-Liberty
1:20-1:40 PM	The Effect of Aquaponic Farming, in Comparison to Irrigation and Hydroponic Farming, on the Height of Lettuce Seeds	Isla Wearmouth	Washington-Liberty
1:40-2 PM	The Effect of Acid Rain on the Germination of Different Types of Bean Seeds	Jacob Coleman	Washington-Liberty
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Added NPK Nutrients on Radish Root Mass	Jerin Jose	Mills Godwin
2:40-3 PM	Transient Genetic Transformation of Cuscuta Campestris Using Arginine functionalized Nano Hydroxyapatite as a Plasmid Delivery Vector	Katherine Cross & Sophia Schumaecker	Roanoke Valley GS
3-3:20 PM	Does Using the Side Dressing Method Increase the Growth and Yield of Corn?	Mackenzie Cauthorn	Chesapeake Bay GS
3:20-3:40 PM	Effect of Homemade Fertilizers on Lobularia Maritima Growth	Madison Mussatt	Mills Godwin

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Botany B (HS BOT-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Allelopathic Effect of Butternut Squash on Germination and Growth of Morning Glory and Sweet Corn	Meribel Pan & Sharmila Balaji	Roanoke Valley GS
9:20-9:40 AM	The Effect of Different Watering Levels on the Germination Rate and Root Length of Lettuce Seedlings	Mia Pisacane	Washington-Liberty
9:40-10 AM	The Effect of Soaking Cabbage Seeds in Various Chemicals on Germination	Nihita Korrapati	Mills Godwin
10-10:20 AM	The Effect of Bacillus subtilis CU1 on Root Growth in Mung Beans under Drought Stress	Quynh Nguyen	Mills Godwin
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Temperature Abuse on Vitamin C Content in Spinach	Radhika Bharambe	Mills Godwin
11-11:20 AM	The Effect of Varying Numbers of Orbeez, Added to Soil, on Plant Growth (cm)	Roseanna Saunders	Clover Hill HS
11:20-11:40 AM	The Effect of Different Water Types on the Growth of Tagetes erecta	Samuel Laneve	Central Virginia GS
11:40-12 PM	The Effect of the AtUNC-93 Gene on Abiotic Stress Response in Arabidopsis thaliana	Seth Richards	Roanoke Valley GS

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Synthesis of Effects of Agricultural Pesticides on Filamentous Algae	Shreel Golwala	Mills Godwin
1-1:20 PM	The Effect of Pruning Length on Branch Growth (cm)	Siddarth Siddabattula	Mills Godwin
1:20-1:40 PM	The Effect of Trimming Various Lengths Below a Terminal Bud on the Resultant Lengths and Number of Lateral Branches	Steven Appiah-Yeboah	Clover Hill HS
1:40-2 PM	The Effect of Trace Elements on the Growth of Excessively Nitrogen Fertilized <i>Antirrhinum majus</i> Sprouts	Tanvi Ganti	Mills Godwin
2-2:20 PM	BREAK		
2:20-2:40 PM	Neutralization of Acid Rain Effects on Radish Crop	Varun Yeri	Mills Godwin
2:40-3 PM	The Effect of Varying Ratios of Nitrogen, Phosphorus, Potassium, and Calcium, in Homemade Fertilizer, on Plant Growth of <i>Poa Pratensis</i> in centimeters.	Vi Chau	Clover Hill HS
3-3:20 PM	The Effects of Broadcast Seeding on <i>Secale cereal</i> Growth and Abundance	William McGee	Chesapeake Bay GS
3:20-3:40 PM	The Effect of Different Preservatives on the Lifespan of Roses	Zahra Akbar	Mills Godwin

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Chemistry A (HS CHM-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	What is the Effect of Various Leavening agents on the density (gms) of baked bread?	Addison Rosen	Washington-Liberty
9:20-9:40 AM	The Effect of the Amount of Heavy Cream on the Density of Caramels	Anna Freeman	Washington-Liberty
9:40-10 AM	The effect of types of stain removal substances on cotton fabric treated with soy sauce	Anna Pritchard	Washington-Liberty
10-10:20 AM	The Effect of the Type of Sugar or Sugar Substitute on the Height of a Cupcake	Arianna Hellman	Washington-Liberty
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Starches on Digestion Time Utilizing Salivary Amylase	Arjun Modi	Mills Godwin
11-11:20 AM	The Most Accurate Method of Maintaining Fingerprint Integrity	Autumn Will	Central Virginia GS
11:20-11:40 AM	Comparing Disintegration Rates of Maltodextrin and Hypromellose	Carson Gilmore	Blacksburg HS
11:40-12 PM	The Effect of Biowaste Type on Biogas Production	Carter Neuman	Mills Godwin

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	Average Mass(g) of Beef Liver Dissolved in Different pH Levels	Evelyn Ortuno	Washington-Liberty
1-1:20 PM	The Effect of Detergent Products Containing Sodium Percarbonate on Luminol Efficacy	Gabrielle Cordero	Washington-Liberty
1:20-1:40 PM	The Effect of Different Solvents on the Retention Factor of Photosynthetic Plant Pigments	Haley Baasansukh	Washington-Liberty
1:40-2 PM	Influence of Fiber Reactive Dyes on the Ultraviolet Protection Factor of Cotton and Linen Fabrics	Jodilee Irby	Central Virginia GS
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Different Materials of Cathodes on the Voltage Output of a Salt Battery	John Jurgens	Clover Hill
2:40-3 PM	Effectiveness of Rust Removers	Kaitlin Ervine	Southwest Virginia GS
3-3:20 PM	The Degradation of Epinephrine Concentration When Exposed to Extreme Temperatures	Lauren Kwak	Southwest Virginia GS
3:20-3:40 PM	Effect of Air Pollution on Hair	Meyyammai Subramanian Periyakaruppan	Mills Godwin

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Chemistry B (HS CHM-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The effect of aerosol propellants on gas pressure	Mohnish Gopalan	Mills Godwin
9:20-9:40 AM	The Effect of Heat from Hair Straightening on Hair Porosity	Nachaal Chidambaram	Mills Godwin
9:40-10 AM	Cross-Species Conservation of Embryonic Transcription Genes in <i>Drosophila melanogaster</i> and Species of Mosquito	Natalie Bowen	Alexandria City
10-10:20 AM	The Effect of the Location of the Soil on its pH Level	Noor Long	Washington-Liberty
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effects of Salt Water on the Rate of Corrosion of Metal	Parvathi Tadi	Mills Godwin
11-11:20 AM	The Effect of the Amount of Sunlight Exposure on Aging in Wood, Measured by Change in Color	River DeFrancesco	Clover Hill
11:20-11:40 AM	The effect of different salts on corrosion of iron	Saaleh Khan	Mills Godwin
11:40-12 PM	The Effect of Paper Type in Acidic or Neutral Solution on the Degradation of Paper Strength	Sarah Eichorn	Washington-Liberty
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	The Effect of Temperature on Blue Light Luminous Intensity	Simran Kulkarni	Washington-Liberty
1-1:20 PM	The Effect of Dietary Components on the Absorption of Acetaminophen	Sriyutha Morishetty	Maggie Walker GS
1:20-1:40 PM	How simulated aquatic acidification dissolves freshwater Viviparus georgianus snail shells	Stanley Craig	Collegiate
1:40-2 PM	The Effect of Type of Drink on the Amount of Electrolytes	Tess Davies	Washington-Liberty
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Sunscreen Types on Planarian Regeneration Following UV Ray Exposure	Thanvi Parupati	Mills Godwin
2:40-3 PM	The Effect of Cooking Method on Folate Content of Spinach	Tuong Vo	Mills Godwin
3-3:20 PM	The Effect of Various Hydrophobic Substances on a Water Droplet's Contact Angle on a Cloth Mask	Yana Shah	Mills Godwin

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Engineering A (HS EGR-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	An Optimized Whitewater Helmet Prototype Designed Using a Newly Developed Helmet STAR Evaluation System and 3D Printing	Brock Duma	Blacksburg HS
9:20-9:40 AM	Demonstration and Accuracy of Machine Learning for Sorting Recyclables	Anish Aradhey	Harrisonburg
9:40-10 AM	A Novel Application of Different-Sized Deep Residual Networks (ResNet) to Breast Cancer Identification	Anooshka Pendyal	Deep Run HS
10-10:20 AM	The Effect of Altering Input Water Pressure on the Power Production of Hydroelectric Turbines	Bailey Morris	Central Virginia GS
10:20-10:40 AM	BREAK		
10:40-11 AM	Automated Mask Detection Using Raspberry Pi and Tensorflow	Bethany Hinshaw	Harrisonburg
11-11:20 AM	Crack The Cipher	Anfal Hosen	Alexandria City
11:20-11:40 AM	The Effect of Material and Density on 3D Printed Structures for Hand Protections	Caleb Greene	Chesapeake Bay GS

11:40-12 PM	OmniNet: Brain-Based General AI Solutions for Robust Multi-Task Learning	Carson Ray	Roanoke Valley GS
12-12:40 PM	LUNCH BREAK		
12:40-1 PM	Evaluating the Use of Biomimetic Serration in FDM Drone Propellers for Low-Noise Applications	Dawson Richards	Southwest Virginia GS
1-1:20 PM	The Effect of Hull Design on Drag	Eyuel Berhanu	Washington-Liberty
1:20-1:40 PM	The Difference in Run-Times Between Solar and Gas-Powered Lawnmowers	Gabrielle Carter	Chesapeake Bay GS
1:40-2 PM	Novel Model of an Adaptive Wave Energy Converter with Spectral Analysis-based Sea State Classification	Gwyneth Liu	Mills Godwin
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Temperature on Lithium Ion Batteries	Harris Ilyas	Central Virginia GS
2:40-3 PM	The Effect of Simulated Wingspan on the Distance a Softball is Thrown	Jayla Adkins	Clover Hill
3-3:20 PM	Analyzing COVID-19 Data: First-Hand Experience of Becoming a Data Scientist	JinSun Lee	Douglas Freeman
3:20-3:40 PM	The Effect of Using Varying Numbers of Mirrors, in Conjunction with Solar Panels, on the Amount of Electricity Produced	Joseph Lipanovich	Clover Hill

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Engineering B (HS EGR-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of 3D Geometric Shapes on Light Scatter	Karin Anderson	Washington-Liberty
9:20-9:40 AM	Automated ROI Detection for Glioma Severity Prediction	Laasya Konidala	Mills Godwin
9:40-10 AM	The Effect of Different 3-Dimensional Shapes on the Accuracy and Precision of an Ultrasonic Sensor	Leonardo Fall	Washington-Liberty
10-10:20 AM	Effectiveness of Material Thickness on Blocking Gamma Radiation	Madeline Powell	Central Virginia GS
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Tensile Strength on Sustainable Textiles	Malanie Myaing	Central Virginia GS
11-11:20 AM	The Effect of Temperature on the Tensile Strength of 6061 Aluminum	Marcus Obligacion	Central Virginia GS
11:20-11:40 AM	A Low-Cost Deep Learning Solution for Early Detection of Lettuce Stress in Indoor Farms	Naman Agarwal	Governor's School @ Innovation Park
11:40-12 PM	The Effect of Method on Microplastic Collection Efficiency	Namit Chandra Nallapaneni	Mills Godwin
12-12:40 PM	LUNCH BREAK		
12:40-1 PM	Adapted Board Game for the Visually Impaired	Noah Gabriele	Harrisonburg

1-1:20 PM	Comparison of Cardiac Segmentation Methods for Use in Congenital Heart Disease Corrective Surgeries	Oakley Massey	Laurel Springs
1:20-1:40 PM	The Effect of Tuned Mass Dampers on Super-Slender Buildings affected by Vortex Shedding	Raphael Sanchez	Washington-Liberty
1:40-2 PM	The Effect of Electricity on Imitation Blood Flow in Gel	Raymond Wen	Mills Godwin
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Wind Speed and Blade Amount on the Efficiency of a Wind Turbine	Richard Houchens	Central Virginia GS
2:40-3 PM	Science Fair The Effect of Blade Angle and Fan Speed on Energy Produced by a Wind Turbine Kit	Solomon Galpern	Washington-Liberty
3-3:20 PM	Design of Magnetic Heat Exchanger regenerators for Active Magnetic Refrigeration	Sriharsha Sambangi	Mills Godwin
3:20-3:40 PM	The Effect of Spidron Design on Preventing Breakage, When Used in Packaging.	Weslie Rosenberg	Clover Hill

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Environmental & Earth Science A (HS ENV-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	Can Silica Save The Glaciers?	Abbey Lennox	Washington-Liberty
9:20-9:40 AM	The Effect of Climate Change on Rated Storms	Abigail Proffitt	Central Virginia GS
9:40-10 AM	The Effect of Water flow, In Naturally Occurring Bodies of Water, on the pH Level	Abigail Taylor	Clover Hill
10-10:20 AM	Measuring the Effect of Bacopa Caroliniana, Ceratophyllum Demersum, and Vallisneria Americana on Phosphorus Levels in Water	Abraham Wisner	Washington-Liberty
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Water Flow Rate (L/h) on Reproductive Rate of Duckweed (fronds/week)	Aden Kim	Clover Hill
11-11:20 AM	The Decomposition Rates of Wooden vs. Plastic vs. Biodegradable Plastic" Coffee Stirrers in Different Sediment Conditions"	Aleksandra Witkowski	Chesapeake Bay GS
11:20-11:40 AM	The Effect of Infrastructure on Dissolved Oxygen in Nearby Streams	Alena Topchy	Washington-Liberty
11:40-12 PM	The Effect of Aeration on Blue-Green Algae Growth	Alice Zhang	Mills Godwin
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	in Tornado Strength, Frequency and Location in Virginia with Changing Climate	Allison Blake	Chesapeake Bay GS
1-1:20 PM	The Effect of Fishing and Shipping Activity on Blue Shark Distribution	Amaya Thacker	Chesapeake Bay GS
1:20-1:40 PM	The Correlation Between the Intensity/Quantity of Solar Flares and Natural Disasters on Earth	Amna Zakriya	Mountain View
1:40-2 PM	Differences in Water Quality in the Washington DC Area	Ana Sanchez-Armass	Washington-Liberty
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Different Kinds of Roadside Salts on Fescues Grass Plant Growth	Anastasia Kotakis	Washington-Liberty
2:40-3 PM	The Effect of Earthworms on the Erosion of Soil	Anish Viswanath	Mills Godwin
3-3:20 PM	Assessing Structural Differences Between Gall and Non-gall Solidago altissima	Anju Natarajan	Collegiate
3:20-3:40 PM	The Effect of Ocean Acidification on Changes in Shell Mass	Anna Dang	Mills Godwin
3:40-4 PM	Comparing Polystyrene Adhesive to Commercial Glues	Anna Grohs	Central Virginia GS

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Environmental & Earth Science B (HS ENV-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	Does Corporate Pollution Pay: Evaluating the Relationship Between Profits and Greenhouse Gas Emissions Among Top Petroleum Companies	Anne Sullivan	Alexandria City
9:20-9:40 AM	The Effect of Iron-Oxide-Induced Electromagnetic Filtration on Agglomerated Microplastic Extraction	Aquib Syed	Mills Godwin
9:40-10 AM	Edge Effects of Forests	Arianna Fortune	Chesapeake Bay GS
10-10:20 AM	Examining relationships between microplastic size and Lumbricus terrestris transport	Ariel Wang	Central Virginia GS
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Various Quantities of Silver Nanoparticles on the Regenerative Capabilities in Dugesia Tigrina	Arvind Rajesh	Mills Godwin
11-11:20 AM	Pseudomonas protegens' Effect on Crop Yield in High Salinity Environments	Audrey Johnson	Central Virginia GS
11:20-11:40 AM	The Effect of Varying Amounts of Juglone Solution on the Growth Rate of Trifolium repens	Austin Phan	Clover Hill
11:40-12 PM	The Effect of Electromagnetic Fields on Spirogyra Algae Cells	Bansi Bhimjiani	Mills Godwin

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	Effect of Biochar on Bioavailable Nitrogen and Phosphorus in Food Waste Compost	Béla Williams	Blacksburg HS
1-1:20 PM	Living shorelines, what do they really provide?	Bladen Williams	Chesapeake Bay GS
1:20-1:40 PM	The Effect of Oyster Reef Restoration on New Recruitment to Nearby Shoreline Habitat	Brenna Hendrix	Chesapeake Bay GS
1:40-2 PM	The Effect of Hydrophobic Coatings on the Efficiency of Solar Panels	Burke Bankston	Central Virginia GS
2-2:20 PM	BREAK		
2:20-2:40 PM	The use of natural plant based products for insulation on model homes compared to standard artificial insulation.	Camille Marraccini	Central Virginia GS
2:40-3 PM	Comparison of Benthic Index of Biotic Integrity in Popes and Buckner Creek During the Late Fall	Conner Benson	Chesapeake Bay GS
3-3:20 PM	Breaking the Climate Change Communication Barrier: The Sonification of Speleothems	Corrina Peachey	Massanutten Regional GS
3:20-3:40 PM	The Development of an Interactive Green-Space Planning Tool for Mitigating Heat Islands in Lynchburg, VA	Cynthia Lin	Roanoke Valley GS
3:40-4 PM	The Effects of Location and Weather Conditions on Water Quality Indicators	Devan Funke	Central Virginia GS

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Environmental & Earth Science C (HS ENV-C)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of California Wildfires on Bird Populations	Elina Coutlakis & Elizabeth Adams	Washington-Liberty
9:20-9:40 AM	The Effect of Sources of Water on Bacteria Growth	Henry Guo	Mills Godwin
9:40-10 AM	Environmental Fate and Impact of Commonly Used Disinfection Wipes	Erika Miyazaki	Blacksburg HS
10-10:20 AM	Effect of Humidity (in %) on Sugar Content of the Musa Acuminata After 6 Days (in Brix)	Ella Cohen	Washington-Liberty
10:20-10:40 AM	BREAK		
10:40-11 AM	Bioremediation of Fish Polluted Water by the Macroalgae Chaetomorpha linum	Ella Indseth	Chesapeake Bay GS
11-11:20 AM	The Effect of Different Purification Methods on Amount of Bacteria in Water	Elle Pickard	Washington-Liberty
11:20-11:40 AM	The Effect of Organic Vs. Inorganic Fertilizers on the Nitrogen Concentration in Runoff	Emaad Zakriya	Mountain View
11:40-12 PM	The Effect of Pistia stratiotes and Ceratophyllum demersum on Efficiency at Removing Copper Ions From Water	Emma McDaniel	Clover Hill

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effects of Environmentally Friendly Cleaning Products on Lumbricina Deaths	Diya Johar	Mills Godwin
1-1:20 PM	The Effect of Soil Particle Size on Water Runoff	Frances Shapiro	Washington-Liberty
1:20-1:40 PM	The Effect of Agricultural Runoff on Water Quality	Grace Abbott	Washington-Liberty
1:40-2 PM	The Average Species Richness of Living Shorelines Versus Man-Made Shorelines	Hallie Shackleford	Chesapeake Bay GS
2-2:20 PM	BREAK		
2:20-2:40 PM	How Does the Amount of Crumb Rubber on Soil Affect Plant Growth?	Hannah Mikolop	Alexandria City
2:40-3 PM	The Effect of Urban Heat Island Mitigation Strategy on Surface and Atmospheric Temperature	Harriet Shapiro	Washington-Liberty
3-3:20 PM	The Effect of Purification Method Used on Water Quality	Hemanth Nimmagadda	Mills Godwin
3:20-3:40 PM	Characterization and Comparison of Two Macroalgal Communities in the Lower Chesapeake Bay	Dylan White	Chesapeake Bay GS

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Environmental & Earth Science D (HS ENV-D)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Real-World Oxybenzone Concentration on <i>Lepidium sativum</i> Growth	Jackson Haught	Mills Godwin
9:20-9:40 AM	The Effect of Different Bio Wastes on Their Potential as Biofuels	Jacob Clevenger	Central Virginia GS
9:40-10 AM	Direct Air Capturer: The Effect of a Direct Air Capturer on the Reduction of Carbon Dioxide	Jennine Faruque, Nawah Ahmad & Sejal Sharma	Governor's School @ Innovation Park
10-10:20 AM	Examining Epiphytic Growth on Submerged Aquatic Vegetation	Joice Small	Chesapeake Bay GS
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Carbon Sinks on CO ₂ Levels in The Air.	Joshua Althaus	Mills Godwin
11-11:20 AM	The Effect of Acetaminophen Concentration (mg/mL) on the Reproductive Rate of the <i>Philodina</i> Rotifer	Joshua Eaton	Clover Hill
11:20-11:40 AM	The Effect of Fibers on Absorption of a Hydrocarbon Mixture	Joyce Xu	Mills Godwin
11:40-12 PM	What is the correlation between the temperature anomaly in Virginia and the occurrence of Brown-headed Nuthatches (<i>Sitta pusilla</i>) in Virginia?	Kara Felker	Washington-Liberty

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of <i>Aspergillus niger</i> and <i>Aspergillus brasiliensis</i> on the Decomposition Rate of Low-Density Polyethylene Plastic	Kathryn Feldmann & Penelope Roberts	Roanoke Valley GS
1-1:20 PM	The Effects of Bycatch Reduction Devices on Crab Catch Rate	Kiersten Hannah	Chesapeake Bay GS
1:20-1:40 PM	The Performance of a Gas Turbine Engine Using Fossil Diesel vs Two Different Biodiesels	Kyle Reviello	Chesapeake Bay GS
1:40-2 PM	The Effect of Simulated Rain and Wind on Weathering of a Clay Sculpture	Lauren Ferrell	Clover Hill
2-2:20 PM	BREAK		
2:20-2:40 PM	How differing soil temperatures and Rhizobia introduction affect symbiotic nodule formation and growth in peas (<i>Pisum sativum</i>)	Lauren Handley	Collegiate
2:40-3 PM	The Effect of Different Colored Light on the Growth of Plants	Madison Le	Washington-Liberty
3-3:20 PM	The Effects of Mycorrhizal Fungi on <i>Glycine max</i> Grown in Nutrient Deficient Soil	Micah Johnson	Central Virginia GS
3:20-3:40 PM	The Effect of Potomac River's Water Quality on Water Purification	Natalie Walker	Washington-Liberty

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Environmental & Earth Science E (HS ENV-E)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effects of Sucralose on Lemna minor	Nathan Neblett	Central Virginia GS
9:20-9:40 AM	Using CO2 as a Proxy to Track Ventilation Rates	Payton Jones	Chesapeake Bay GS
9:40-10 AM	How do Combinations of Warm Water and Ammonia Affect Brine Shrimp Hatch	Pete Wilcox	Washington-Liberty
10-10:20 AM	The Effect of Pond Location and Use on Diversity and Number of Organisms Present in each Pond per Milliliter Sample	Ray Roberts	Clover Hill
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Tree Species on Leaf Burn Rate	Samantha Lionberger	Mills Godwin
11-11:20 AM	The Effect of Aluminum Sulfate on the Bacterial Colony Count	Samyukta Iyer	Mills Godwin
11:20-11:40 AM	The Effects of Urban Development and Riparian Buffers on Water Quality in an Urban Stream	Sean Kenny	Chesapeake Bay GS
11:40-12 PM	Examining the Relationship between Demographic Factors and a Southwestern Virginian Household's Carbon Footprint	Seonbin Song	Southwest Virginia GS
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	Cathodic Corrosion Protection Capabilities of Sacrificial Anodes in Different Types of Soil	Shane Dunford	Southwest Virginia GS
1-1:20 PM	The Effect of Hygiene Products on Daphnia Magna Heart Rate	Shriya Deshpande	Mills Godwin
1:20-1:40 PM	Effluent's Effect on the Environment	Steven Lilly, Jr.	Chesapeake Bay GS
1:40-2 PM	Effect of Diammonium Phosphate Fertilizer on the Growth and Development of Lemna minor	Treasure Brown & Walker Smith	Collegiate
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Pollutants on Trigonella foenum-graecum Growth	Vimridh Vasudev	Mills Godwin
2:40-3 PM	The Effect of Richmond Water Chemicals on Fabric Bleaching	Violet Janes	Mills Godwin
3-3:20 PM	The Comparison of Freshwater Pond Ecosystems with Various Levels of Human Influence	Wyatt Evans	Chesapeake Bay GS
3:20-3:40 PM	The Effect of Different Machine Learning Algorithms on Water Detection	Yash Saxena	Maggie L Walker GS

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Mathematics: Theoretical & Modeling (HS MTM)

SHARED ROOM / JUDGES with Middle School Mathematics MS MP Section (First 6 papers are Middle School Math)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Different Water Impurities on Surface Tension	Aishwarya Kapila	GH Moody
9:20-9:40 AM	The Effect of Food Insecurity on High School Graduation Rates Before and During the Pandemic	Devesh Stansbury	Dorothy Hamm
9:40-10 AM	The Game of Science	Emma Ackleson	Swanson
10-10:20 AM	The Effect of Air Pollution on COVID-19 Spread	Henry Stievater	Swanson
10:20-10:40 AM	The Effect of the Coronavirus Pandemic on the Financial Success of major Companies and Corporations in the U.S.	Patrick Jiminez	Gunston
10:40-11 AM	Simulating a Vaccinated Population Against COVID-19 Using Javascript	William Lin	GH Moody
11-11:20 AM	BREAK		
11:20-11:40 AM	Changes in pK and ionization state of SARS-CoV-2 spike receptor binding domain upon human ACE2 receptor binding	Samuel Xiang	Blacksburg HS
11:40-12 PM	The Effect of Training Data, Methods, and Neural Network Model on Signature Verification Accuracy	Brooke Li	Central VA GS
12-12:20 PM	The Effect of Machine Learning Algorithms on Identifying Skin Cancer	Camellia Sharma	Mills Godwin

12:20-12:40 PM	Online Machine Learning for SMS Spam Detection	Josh Tomiak	Southwest Virginia GS
12:40-1:20 PM	LUNCH BREAK		
1:20-1:40 PM	De Novo Prediction of RNA-Protein Interactions for Discovery of Tissue-Specific Binding Sites and Study of RNA Gain-of-Function Diseases	Lillian Sun	Thomas Jefferson HS S&T
1:40-2 PM	Analyzing the Relationship Between Serving and Scoring in Table Tennis	Micah Eberz	Central VA GS
2-2:20 PM	Phish - A Novel Hyper Optimizable Activation Function	Philip Naveen	Mills Godwin
2:20-2:40 PM	The Effect of the Distance of a Liquid Projectile From a Receiver on the Percentage Coverage of Projectile Droplets	Ariq Amin	Clover Hill
2:40-3 PM	A New Approach to Image Stitching: Minimizing Distortion and Computational Costs	Shoshana Elgart	Blacksburg HS

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Medicine & Health A (HS MDH-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	Analysis of T cell Recovery in the Early Post-Bone Marrow Transplantation Period	Aashka Shah	Maggie L. Walker Governor's School
9:20-9:40 AM	An Analysis of Clinical Gastrointestinal Side Effects from Analgesics by Measuring Relative Inhibition of Enzymes	Abdullah Khurram & Raj Joshi	Governor's School @ Innovation Park
9:40-10 AM	The Correlation Between Surface Temperature and Dengue Fever Incidence in Countries in the Americas	Abigail Whiting	Washington-Liberty High School
10-10:20 AM	The Effect of Different Types of Whitening-Toothpaste on Enamel Hardness	Akul Miriyala	Mills Godwin High School
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Correspondence Between Strains of Prevalent Influenza and Strains Included in the Vaccine on the Effectiveness of the Flu Vaccine in 10 Flu Seasons from 2010-2020	Allison Grove & Kathryn Boerckel	Washington-Liberty High School
11-11:20 AM	The Effect of Dimethicone on Transepidermal Water Loss	Anne Eubanks	Mills Godwin High School
11:20-11:40 AM	The Effect of Manzamine A on the Growth of Lung Carcinoma	Ayla Lampros & Reese Redford	Roanoke Valley Governor's School
11:40-12 PM	Effects of Collagen on the Heart Rates of Daphnia magna	Bailey Carver	Central Virginia Governor's School

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Fast Food Consumption on Pain with Menstruation	Beall Roberts	Central Virginia Governor's School
1-1:20 PM	The Effects of Niacinamide, Ascorbic Acid, and Coenzyme Q10 on the Vitality and Mobility of <i>Caenorhabditis elegans</i>	Bethelle Languaye, Maanini Lakshmanan & Chloe Musman	Governor's School @ Innovation Park
1:20-1:40 PM	Surgical Sutures and the Effect of pH Levels on Their Tensile Strength	Cassie Kincaid	Chesapeake Bay Governor's School
1:40-2 PM	The Effect of RNA Interference on the Apoptosis of Small Cell Lung Carcinoma	Christina Okenquist & Ella Bryant	Roanoke Valley Governor's School
2-2:20 PM	The Effect of Natural Plant Extracts on <i>C. elegans</i> as a Means of Limiting UV Radiation Damage	Divya Ramakrisnan, Hermela Tadesse & Soneha Datta	Governor's School @ Innovation Park
2:20-2:40 PM	The Effect of Disrupted Circadian Rhythm on <i>Drosophila melanogaster</i> Lifespan	Eden Hunter	Central Virginia Governor's School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Medicine & Health B (HS MDH-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of High-Glucose Diets on <i>Caenorhabditis elegans</i> Lifespan	Emily Yang	Mills Godwin High School
9:20-9:40 AM	Concussion Recovery in Youth Optimized using a Comprehensive App-based Program (CRYO CAP)	Gabriel Ralston & Hamza Lateef	Governor's School @ Innovation Park
9:40-10 AM	Compound Screening for Molecular Regulators of ZFP189 Using Luciferase Assay and qPCR	Hadessah Johnson	Chesapeake Bay Governor's School
10-10:20 AM	The Effects of Footwear on Running Form for Short Distance Runs	Michael Foulkes	Chesapeake Bay Governor's School
10:20-10:40 AM	BREAK		
10:40-11 AM	Evaluating the Effects of Different Insulin Dosing Calculation Methods on Potential Insulin Adherence in Type 1 Diabetes	Jade Riddle	Southwest Virginia Governor's School
11-11:20 AM	The Effect of Glucose Sensor on the Functioning of an Artificial Pancreas Model	Jaya Shah	Washington-Liberty High School
11:20-11:40 AM	The Effect of <i>Bacillus cereus</i> on the Central Nervous System of <i>Dugesia tigrina</i>	Justin Kim	Central Virginia Governor's School

11:40-12 PM	Assessing and Monitoring Liver Viability Using Raman Spectroscopy and Chemometric Analysis	Lacey Ngo	Roanoke Valley Governor's School
12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Educational Intervention on Knowledge of Tissue Donation in High School Students	Lauren Rylander	Washington-Liberty High School
1-1:20 PM	The Effect of Length of Time (min) a Mask is Worn" on Distance a Simulated Breath Travels (cm) Through the Mask"	Lilly Batthany	Clover Hill High School
1:20-1:40 PM	Early Breast Cancer Risk Detection: A Novel Framework Leveraging Polygenic Risk Scores and Machine Learning	Lynn Tao	Thomas Jefferson High School for Science and Technology
1:40-2 PM	The Effect of Laundry Products with Strong Fragrances on the Development of Larval Drosophila melanogaster	Madysen Davis	Chesapeake Bay Governor's School
2-2:20 PM	Analysis of Differential Gene Expression in Blood Samples to Predict Alzheimer's Disease	Maggie Parkhurst	Roanoke Valley Governor's School
2:20-2:40 PM	The Effects of Inflammatory Neutrophils on Endothelial Cell Integrity	Jacqueline Hou	Blacksburg High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Medicine & Health C (HS MDH-C)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Aquatic Therapy on Stroke Patients Recovery	Natalie Hudson	Central Virginia Governor's School
9:20-9:40 AM	The Effect of Fenugreek (Trigonella foenum-graecum) Extract on HCC Cell Proliferation	Nishorgo Sarkar	Mills Godwin High School
9:40-10 AM	The Effect of Chelated Mineral Supplements on Absorption	Nivriti Vanga	Mills Godwin High School
10-10:20 AM		Pranav Chintkuntlawar	Mills Godwin High School
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Similarity in Glycoproteins Between the Strains of Influenza Virus and Strains in the Vaccine on the Overall Effectiveness of Flu Vaccines	Qiaojing Huang	Washington-Liberty High School
11-11:20 AM	The Effect of Antacids on the pH of Stomach Acid	Aarushi Nayak	Mills Godwin High School
11:20-11:40 AM	The Effect of Amount of Sleep on Memorization Ability	Saniya Sangle	Mills Godwin High School
11:40-12 PM	The Effect of Ripening of Citrus sinensis on the Decay of Tooth Enamel	Sherlin George	Mills Godwin High School
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	The Effect of LED Lights on Blood Pressure	Shriyaa Anand	Mills Godwin High School
1-1:20 PM	The Effect of Syringe Design on Medicine Injection Effectiveness	Snehitha Ravilla	Mills Godwin High School
1:20-1:40 PM	The Effect of Plant-Based Sunscreen Ingredients on Ultraviolet Index Reduction	Sophia Jagels	Mills Godwin High School
1:40-2 PM	The Effect of Prolonged Exposure of UVR on Murine Erythrocytes in Vitro	Sriman Achanta	Mills Godwin High School
2-2:20 PM	The Effect of Vitamin Type on Cellular Regeneration	Zachary Schwehr	Mills Godwin High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Microbiology & Cell Biology A (HS MCB-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	EFFECTIVE DIFFERENT FOOD PRESERVATION METHODS ON ASCORBIC ACID CONTENT OF FRUIT USING A REDOX TITRATION.	Aanandi Parashar	Hidden Valley High School
9:20-9:40 AM	Creating Novel Bacteriophage Solutions as a Preventative Measure for Escherichia coli Biofilm Formation on Elastomer Biomaterials in Medically Relevant Settings in Vitro	Alahna Moreno, Anisha Ramakrishnan & Gabriella La Cour	Governor's School @ Innovation Park
9:40-10 AM	The Effect of Various Hand Sanitizers, With Varying Percentages of Alcohol (%), on the Percentage of Bacterial Colonies (%).	Amy Asubonteng	Clover Hill High School
10-10:20 AM	Effect of Probiotic Type on Survivability in Yogurt Making Process	Anika Kashyap	Mills Godwin High School
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of a Staphylococcus epidermidis Infection on the pH of its Medium	Anna Mohanty	Washington-Liberty High School
11-11:20 AM	The Effect of Mutations in T-cell Epitopes of Nucleocapsid Protein between SARS-COV-2 Variants	Anusree Ponnarasi Marikkannan	Mills Godwin High School

11:20-11:40 AM	Dirty Tables: Determining the best antimicrobial metal/material for a table in classrooms or hospitals	Bilguun Zolzaya	Yorktown High School
11:40-12 PM	The Effect of Different UV Wavelengths on E. coli. K12	Cameron Myers	Mills Godwin High School
12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Green Tea Concentration on the Amount of Oral Bacteria	Caroline Fern	Washington-Liberty High School
1-1:20 PM	Deleting FGF15 disrupts mouse cerebellum structure and excitatory synapse formation	Christina Su	Cave Spring High School
1:20-1:40 PM	The Effect of the Coronavirus Pandemic on the Cleanliness of Common Surfaces	Darya Wilson	Washington-Liberty High School
1:40-2 PM	Circadian Rhythmicity of Cellular Healing	Eleanor Little	Roanoke Valley Governor's School
2-2:20 PM	The Effect of Hand Soaps on the Growth of Staphylococcus Epidermidis Bacteria	Emma Abramson	Washington-Liberty High School
2:20-2:40 PM	Comparing the Effectiveness of Different Sun Protection Products on the Growth of Saccharomyces Cerevisiae	Emma Meehan	Central Virginia Governor's School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Microbiology & Cell Biology B (HS MCB-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Various Dietary Conditions on the Growth of Streptococcus Mutans	Esther Ellis	Central Virginia Governor's School
9:20-9:40 AM	Elucidating the Subcellular Localization of NLRX1 in Pancreatic Cancer Cells	Katerina Leedy	Blacksburg High School
9:40-10 AM	Comparing the Antimicrobial Efficacy of Biosynthesized Silver Nanoparticles on S. mutans	Faith Peerman	Central Virginia Governor's School
10-10:20 AM	The Effect of Environmental Factors on Beta-Carotene Production in Genetically Engineered Yeast	Haley Day	Roanoke Valley Governor's School
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Antifungals on Saccharomyces cerevisiae Survival	Hannah Loos	Mills Godwin High School
11-11:20 AM	The Effect of Body Wash on the Zone of Inhibition of Staphylococcus epidermidis	Helen Hanke	Washington-Liberty High School
11:20-11:40 AM	The Effect of Temperature and Day Length on the Initiation of Anthocyanin on Fall Leaves	Isabella Bushey	Clover Hill High School
11:40-12 PM	The Effect of Liquid Chlorine and Liquid Iodine on Turbatrix aceti survivability	Jacob Tiller	Central Virginia Governor's School

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	Effect of Antibacterial Hand Soaps and Sanitizers on the Growth of Staphylococcus epidermidis	James Anderson	Washington-Liberty High School
1-1:20 PM	Various Handwashing Techniques and Their Efficiency in Eliminating Micro-bacteria Prevalent in the Human Microbiota	Lane Eubank	Chesapeake Bay Governor's School
1:20-1:40 PM	The Effect of Different Neurotransmitter Solutions on The Growth and Optimization of Physarum polycephalum	Kate Bentov	Central Virginia Governor's School
1:40-2 PM	The Use of a Fluorescent pH-Biosensor	Emma Thielecke & Grace Kahoun	Roanoke Valley Governor's School
2-2:20 PM	The Effect of Ground Beef Variety on Bacterial Content	Laken Evans	Mills Godwin High School
2:20-2:40 PM	Anti-biofilm activity of isolated bacteriophages for the treatment of multidrug-resistant pulmonary infections	Julia Brodsky	H-B Woodlawn Secondary Program

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Microbiology & Cell Biology C (HS MCB-C)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effects of Usage on Vending Machine Cleanliness	Madison Nelson	Chesapeake Bay Governor's School
9:20-9:40 AM	The Effects of Sugar Mass on Alcohol Concentration Through Fermentation	Mary Willis	Clover Hill High School
9:40-10 AM	Testing the Antimicrobial Properties of Copper	Matthew Gavin	Mills Godwin High School
10-10:20 AM	Phenolic Acid vs. Flavonoid on the Inhibition of Escherichia coli K-12	Mihir Pokhriyal	Mills Godwin High School
10:20-10:40 AM	BREAK		
10:40-11 AM	Live Cell Imaging of the Interactions between an Acetylase and Binding Domain	Monona Zhou	Mills Godwin High School
11-11:20 AM	The Effect of the Type of Natural Preservative on the Size of the Zone of Inhibition of Escherichia Coli	Myra Clark	Yorktown High School
11:20-11:40 AM	The Effect of Hydrogen Peroxide Concentration on Teeth Deterioration	Nisarg Shah	Mills Godwin High School
11:40-12 PM	The Effect of the Concentration of Copper Nanoparticles on the Growth of Escherichia Coli	Pari Wadnerkar	Mills Godwin High School
12-12:40 PM	LUNCH BREAK		

12:40-1 PM	he Effect of Antimicrobial Solutions on the Inhibition of the Bacterial Growth of E.Coli	Rithvik Rayala	Mills Godwin High School
1-1:20 PM	The Effect of Different Methods of Water Treatment on the Growth of Microorganism Colonies	Ryan Ermovick	Yorktown High School
1:20-1:40 PM	The Effect of Natural Treatments on the Inhibition of Escherichia coli	Smita Vijay Arumugam	Mills Godwin High School
1:40-2 PM	The Effect of Different Carbohydrates on the Growth of Escherichia Coli	Timothy Patterson	Central Virginia Governor's School
2-2:20 PM	The Effect of Time on the Number of Bacteria Colonies	Tristan Fields	Mills Godwin High School
2:20-2:40 PM	The Effect of Additives on the Efficiency of Compost in Terms of Temperature, Bacterial Composition, and Nitrogen/Ammonia Levels	Zain Abed	Clover Hill High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Physics & Astronomy A (HS PHY-A)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Roof Surface Characteristics On Albedo and Temperature	Aaron Sweeney	Chesapeake Bay Governor's School
9:20-9:40 AM	Safety of Transcranial Magnetic Stimulation for Parkinson's Patients with Deep Brain Stimulators	Aryan Mhaskar	Mills Godwin High School
9:40-10 AM	How do Differing Sensor Systems Respond to Natural Environmental Conditions?	Erik Midkiff	Blacksburg High School
10-10:20 AM	Most Efficient Knee Angle of a Basketball Shot	Evan Cline	Southwest Virginia Governor's School
10:20-10:40 AM	The Effect of Price on the Accuracy of Chromatic Tuners	Julie Bainter	Clover Hill High School
10:40-11 AM	BREAK		
11-11:20 AM	The Effect of Temperature on the Resistance of Different Metallic Conductors	Kai Styrsky	Central Virginia Governor's School
11:20-11:40 AM	The Kadomstev-Rosenbluth Initiative	Kalea Wen	Governor's School @ Innovation Park
11:40-12 PM	The Variance in Static and Kinetic Coefficients of Friction of Leathers Used in Work Gloves at Different Levels of Water	Killian Woods	Southwest Virginia Governor's School

12-12:20 PM	The Effect of Cement Alternatives on Deformations Occurred by Force	Laura Wang	Mills Godwin High School
12:20-12:40 PM	An Analysis of Water Maser Observations Using Next-Generation VLA	Madison Brown	Roanoke Valley Governor's School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Physics & Astronomy B (HS PHY-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Relationship Between Types of Galaxies and Central Light Intensity of Young Stars	Maria Ziegler	Central Virginia Governor's School
9:20-9:40 AM	Analyzing the Efficacy of Inorganic UV Filters on Their Ability to Block UV-A Light	Olivia Bartrum	Wakefield High School
9:40-10 AM	Classifying Stars in the GAIA Catalog Using Machine Learning	Rishav Sen	Mills Godwin High School
10-10:20 AM	The Effect of Different Mixtures of Nitrogen and Air, Used in a Bicycle Tire, on Rate of Pressure Over Time	Ryan Fang	Clover Hill High School
10:20-10:40 AM	Mapping the Milky Way: Observations of Galactic Structure from the 21cm Hydrogen Line	Sam Watchman	Arlington Tech
10:40-11 AM	BREAK		
11-11:20 AM	Lunisolar Seismology Analysis - Do Tides Affect Earthquake Frequency?	You Gao	Chesapeake Bay Governor's School
11:20-11:40 AM	The Effect of Hand Speed on Stroke Force in Freestyle Swimming	Sara Lynn Loucks	Central Virginia Governor's School
11:40-12 PM	The Effect of the Proximity of Celestial Planets on the Number of Sunspots, Solar Flares, and Coronal Mass Ejections (CMEs) Within 11 Years (December 08 - 19).	Sarah Chretien	Clover Hill High School

12-12:40 PM	Comparison of Star Formation Rate in Spiral versus Elliptical Galaxies	Sebastian Amador	Central Virginia Governor's School
12:40-1 PM	The Effect of Rotational Direction on the Power of Relativistic Jets Emitted from Active Galactic Nuclei	Simran Patibanda	Governor's School @ Innovation Park

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Psychology A (HS PSY-A)

SHARED ROOM / JUDGES with Middle School Human Behavior MS HB Section (First 2 papers are Middle School Presentations)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effects of the Regularity of Playing Video Games on Reaction Times and Solving Simple Arithmetic Problems	Sajeela Ahmad	Louise Benton Middle School
9:20-9:40 AM	The Effect of Social Isolation on the Popularity of Home-based Hobbies and The Effect of Those Hobbies on Depression Levels During the COVID-19 Pandemic	Sesh Sudarshan	Swanson Middle School
9:40-10 AM	Decision-making and Breathing Patterns Affected by Methods of Animal Presentation	Aaleya Fowler	Collegiate School
10-10:20 AM	The Effect of Different Locations on Face Covering Compliance	Andrew Klinger	Washington-Liberty High School
10:20-10:40 AM	BREAK		
10:40-11 AM	The Effect of Social Media During Isolation on Mental Health	Ankita Mandal	Mills Godwin High School
11-11:20 AM	The Correlation Between Social Media Usage and Adolescent's General Happiness, Social Satisfaction, and Social Connectedness	Arika Gray	Chesapeake Bay Governor's School

11:20-11:40 AM	Fast Fashion Epidemic: Relationships Between Impulse Purchasing and Environmental Impact Considerations	Charlotte Maxwell	Central Virginia Governor's School
11:40-12 PM	The Relationship Between Blood Type and Personality	Chloe Ro	Central Virginia Governor's School
12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Reliability of Digital Divergent Thinking Tests	Claire Chang	New Horizons Governor's School for Science and Technology
1-1:20 PM	The Effect of Photographic Presentation on the Visual Appeal of Dog Adoption Candidates	Colin Mayhew	Mills Godwin High School
1:20-1:40 PM	Autonomous Sensory Meridian Response: The Use of Auditory and Visual Stimuli	Eden Mitchell	Southwest Virginia Governor's School
1:40-2 PM	Effects of Playing Video Games on Reaction Time in Adolescents	Elijah Tegenkamp	Southwest Virginia Governor's School
2-2:20 PM	Reading vs Video vs Interaction: What is the Most Effective Way to Learn	Emaline Basye	Chesapeake Bay Governor's School
2:20-2:40 PM	BREAK		
2:40-3 PM	The Effect of Bilingualism on the Stroop Task	Eric Zhou	Mills Godwin High School
3-3:20 PM	Secondary Traumatic Stress in Different Fields of Healthcare Workers	Faith Jacob	Central Virginia Governor's School
3:20-3:40 PM	Connecting the Dots: A look at the working short-term memory of elementary schoolers	Gabrielle Brown	Chesapeake Bay Governor's School

3:40-4 PM	STEM Interest Inequality by Gender and Secondary Education	Hannah Marrone	Southwest Virginia Governor's School
4-4:20 PM	Testing Health Literacy in Females in Southwest Virginia	Harbalbeen Rai	Southwest Virginia Governor's School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Psychology B (HS PSY-B)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Relationship Between Color and Long-Term Memory	Jack Pitts	Central Virginia Governor's School
9:20-9:40 AM	The Effect of Distractions On a Golfer's Putting Ability	Jackson Laughon	Central Virginia Governor's School
9:40-10 AM	Music and How it Affects Cognitive-Motor Skills and Relaxation	Jessica Long	Southwest Virginia Governor's School
10-10:20 AM	The Effect of Personality Type on Music Preference	John Hoegerl	Central Virginia Governor's School
10:20-10:40 AM	BREAK		
10:40-11 AM	Determining the Most Effective Method for Word Acquisition	Kaleigh Temple	Southwest Virginia Governor's School
11-11:20 AM	The Correlation Between Academic Performance / Grade Satisfaction and Student Stress Levels	Kendra Kraisser	Chesapeake Bay Governor's School
11:20-11:40 AM	Students Before And After Receiving Information On Portion Sizes Assessment	Landon Shepherd	Southwest Virginia Governor's School
11:40-12 PM	Testing the Difference in Mental Stimulation Between Playing and Listening to Music	Madelyn Snow	Southwest Virginia Governor's School

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of Birth Order on Intelligence Quotient (IQ).	Madison Hamlin	Central Virginia Governor's School
1-1:20 PM	The Effect of Feedback on Students' Pattern Memorization Scores	Mary Myers	Collegiate School
1:20-1:40 PM	The Effect of Generation on Peer Pressure Induced Vices	Matthew Magtoto	Mills Godwin High School
1:40-2 PM	The Mental Health Effects of The Coronavirus Pandemic on High School Students	McKenna Condrey	Chesapeake Bay Governor's School
2-2:20 PM	BREAK		
2:20-2:40 PM	The Effect of Brain Systems on Perceived Effort of Multitasking	Misthi Choksi	Mills Godwin High School
2:40-3 PM	Examining Relationships Between the Stress of Daily Activities and Dreams/Sleep Quality	Reese Kennedy	Central Virginia Governor's School
3-3:20 PM	Relationships Between Participation in High School Extracurriculars and Future Lifestyles	Sarah Miller	Central Virginia Governor's School
3:20-3:40 PM	The Effect of Light on Stress	Yousif Shakroo	Mills Godwin High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Statistical Analysis & Inferences (HS SAI)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	Impact of the COVID-19 on Travel Patterns of Neighborhoods in Henrico County, VA	Aiden Jun	Deep Run High School
9:20-9:40 AM	The Effect of a New Technology Release on the Stock Market	Cane Hornberger	Central Virginia Governor's School
9:40-10 AM	Bringing Truth into Fake News: The Diffusion of Fact-Checked Fake Stories on Twitter	Colin Berry	Yorktown High School
10-10:20 AM	The Effects of Heavy Workloads and Other Factors Upon the Mental Health of Student Athletes	Emily Giles	Central Virginia Governor's School
10:20-10:40 AM	The Effect of Spin Rate on Pitcher and Batter Performance	Evan Martin	Central Virginia Governor's School
10:40-11 AM	BREAK		
11-11:20 AM	Minority Involvement in Advanced Placement and Dual Enrollment Courses in Virginia High Schools Over Time	George White	Central Virginia Governor's School
11:20-11:40 AM	Analysis of EU-15 Greenhouse Gas Emissions Under the Kyoto Protocol from 1990-2019	Nate Stevenson	Mills Godwin High School
11:40-12 PM	The Effect of Conditioning on Leg Cramps in Tennis Players	Nicholas Hoelting	Mills Godwin High School

12-12:20 PM	The Effect of Machine Learning Algorithms on Detecting Apple Freshness	Sattwik Nath	Mills Godwin High School
12:20-12:40 PM	Statistics Behind Identity Fraud	Sidhartha Basu	Deep Run High School
12:40-1 PM	The Effect of COVID-19 on the USA House Market	William Xiao	Mills Godwin High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Zoology (HS ZOO)

Please convene by 8:55 AM for Announcements

	Paper Title	Student Name(s)	School
9-9:20 AM	The Effect of Antioxidants on Ultraviolet Radiated Stem Cells in <i>Girardia Tigrina</i>	Aarushi Rao	Mills Godwin High School
9:20-9:40 AM	The Effect of Various Lights on the Regeneration of Brown Planaria	Abhinav Tadinada	Mills Godwin High School
9:40-10 AM	How Exposure of Planaria to Choice Chamber Stimuli Affect Behavioral Responses of Resulting Planaria Fragments	Amanda Tan	Collegiate School
10-10:20 AM	The Effect of Various Electrical Light Sources on Positive Phototaxis in <i>Drosophila melanogaster</i>	Ananya Nanduru	Mills Godwin High School
10:20-10:40 AM	BREAK		
10:40-11 AM	A Look Inside Planarian Radiation Resistance Across Different Regenerative Stages	Annie Yuan	Mills Godwin High School
11-11:20 AM	The Effect of Granular Stabilized Chlorine on the Presence of Regeneration in <i>Dugesia tigrina</i>	Bridget Blaszk	Mills Godwin High School
11:20-11:40 AM	The Effect of Magnetism on Planaria Regeneration	Bridget Falgui	Mills Godwin High School
11:40-12 PM	The Effect of Water pH on Hydra Growth and Feeding Rate	Kavin Bhurtel	Mills Godwin High School

12-12:40 PM	LUNCH BREAK		
12:40-1 PM	The Effect of pH Level on Artemia salina Reproduction Rate	Likitha Appalapuram	Mills Godwin High School
1-1:20 PM	The Effect of an Appetite Suppressant on Daphnia Magna's Feeding Rate	Melody Ngo	Mills Godwin High School
1:20-1:40 PM	The Effect of Increasing CO2 Levels on Brine Shrimp Hatching Rate	Nadine Greer	Clover Hill High School
1:40-2 PM	Dozing off with Drosophila: The Effect of Disrupted Circadian Rhythms and Sleep Deprivation on Mortality, Mood, and Addiction	Rania Lateef	Charles Colgan High School
2-2:20 PM	The Effect of the Electromagnetic Spectrum on Planaria Regeneration	Srinidhi Subramanian	Mills Godwin High School
2:20-2:40 PM	The Effect of Regenexx Stem Cell Formula on Cellular Regeneration	Tanish Singh	Mills Godwin High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.

Selected Programs of the Virginia Academy of Science

The Virginia Journal of Science is America's fourth largest state academy journal in circulation (after New York, Chicago, and Ohio) and goes to 47 states and 12 countries overseas. A professionally refereed quarterly, The Journal publishes original research articles and research notes in the various disciplines of science, mathematics, and engineering: cross-disciplinary papers on advances in science and technology and their impact on society are invited. Minutes of The Academy and notices are also published. Many significant contributions were first published in The Journal and its articles have a high rate of citation. Authors are allowed the first 15 pages, including figures, without charge (\$50 per page for the 16th subsequent pages). Subscription rates are \$40.00 per year. Selected back issues available.

For additional information, contact Christopher Osgood at cosgood@odu.edu or 757-683-6778.

Virginia Scientists, the Academy's newsletter is published three times yearly and serves to communicate information about the Academy; regional conferences; various state science institutions; organizations, agencies, and corporations; and Virginia's researchers, science educators, and their students. Articles and notices are cordially invited. In addition to members, it is sent to Virginia legislators, selected agencies, and college and university presidents.

For information, contact Sujana Henkanaththegedara at henkanaththegedaras@longwood.edu or 434-395-2731.

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For additional information, contact Susan P. Booth at director@vjas.org.

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To obtain additional information about the Fall Undergraduate Research Meeting, contact Carolyn M. Conway, Associate Executive Officer, Virginia Academy of Science at vasoffice@vacadsci.org or 804-864- 1450.

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