Virginia Junior Academy of Science
Research Symposium and 80th Annual Meeting

May 14, 2021 - General Session
May 15, 2021 - Student Presentations
May 22, 2021 - 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
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Virginia Junior Academy of Science

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VJAS Editor-in-Chief…………………………………………………………………………………Arman Lateef
Charles J. Colgan High School

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Central Virginia Governor’s School

Officer Alumni……………………………………………………………………………………………Kayla Holston

The College of William & Mary Local Arrangements Chair

Local Arrangements Chair………………………………………………………………………Joshua Erlich
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 80th 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 raise 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.

I would also like to highlight a critical point for you to remember – a consistent and sustained investment in science, research, technology, and infrastructure will always be the better solution than a more reactionary response to different short- and long-term crises. We must not stay complacent and stagnate progress when in reality, we should be re-doubling our efforts. Scientific advancement does not happen overnight and we need to have systemic investments to continue the pipeline of innovation and new ideas.

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 80th VJAS virtual Annual Meeting and Research Symposium is an enriching and engaging experience for everyone. I was one of you, a VJAS participant, not too long ago. So trust me when I say this: If I can make a difference, so can you. I look forward to meeting you virtually and learning about your work at the 2021 VJAS Research Symposium. Once again, welcome and congratulations on your accomplishments.

Sincerely,

Se W. Jeong
Chairman, VJAS Committee
# SCHEDULE OF EVENTS

Virginia Junior Academy of Science  
2021 Research Symposium

<table>
<thead>
<tr>
<th>Friday, May 14</th>
</tr>
</thead>
</table>
| **6 PM - 8 PM** | VJAS General Session and Jeffers Memorial Lecture | Live Zoom Webinar: [https://cwm.zoom.us/j/95391150859](https://cwm.zoom.us/j/95391150859)  
(overflow YouTube Live link will be provided on the website at 5:45 PM) |

<table>
<thead>
<tr>
<th>Saturday, May 15</th>
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<tbody>
<tr>
<td><strong>9 AM - 4 PM</strong></td>
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Specific Student Paper Presentation schedule starts on Page 9

<table>
<thead>
<tr>
<th>Saturday, May 22</th>
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| **10 AM - Noon** | VJAS Awards Ceremony | Live Zoom Webinar: [https://cwm.zoom.us/j/94637985316](https://cwm.zoom.us/j/94637985316)  
(overflow YouTube Live link will be provided on the website at 5:45 PM) |
Earlier this year, on February 18, the world watched in awe as the NASA Mars Rover 2020 Perseverance made a flawless landing on the surface of Mars. Perseverance is a step to the ultimate mission to Mars—a human mission to the Red Planet, tentatively scheduled for the mid to late 2030’s. To gain additional experience about living on and exploring another world, NASA will send humans back to the Moon under the Artemis Program, with the first human landing on the Moon as early as 2024, more than 50 years after the first human landing on the Moon by the Apollo 11 astronauts Neil Armstrong and Buzz Aldrin on July 20, 1969. Humans will explore Mars to address some important scientific questions that cannot be addressed unambiguously by robotic missions, e.g., a search for past and/or present life on Mars and why Mars evolved from an Earth-like planet in its early history with abundant surface liquid water in the forms of a planetary-scale ocean several miles deep, rivers and lakes with a relatively thick atmosphere to present-day Mars, an inhospitable planet devoid of surface liquid water with a very thin atmosphere.

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>Do dogs 10-15 lbs. prefer a certain type of bed?</td>
<td>Patrick Jiminez</td>
<td>Gunston Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Color on Attraction to Food on Vanessa cardui</td>
<td>Addison Kofron</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>Opening Up a Can Of Worms</td>
<td>Rania Lateef</td>
<td>Louise A. Benton Middle School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>Effect of Liquid Fertilizer on Lumbricus terrestris Growth</td>
<td>Samantha Lionberger</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>10:20-10:40 AM</td>
<td>The Effect of Therapeutic Hypothermia and Whole-Body Vibration on the Behavioral Response of Drosophila Following Traumatic Brain Injury (TBI)</td>
<td>Aahana Puri</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effect of Sugar Substitute and Glucose Concentrations on HepG2 Human Liver Cancer Cells</td>
<td>Nishorgo Sarkar</td>
<td>George Moody Middle School</td>
</tr>
</tbody>
</table>

**Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.**
<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>The Effect of Material of Container on The pH of Water</td>
<td>Shriya Bandla</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Different Cleaning Agents on the Removal of Purple Acrylic Paint</td>
<td>Sonvi Chawla</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of the Temperature on the pH of Orange Juice</td>
<td>Myra Clark</td>
<td>Williamsburg Middle School</td>
</tr>
<tr>
<td>10:00-10:20 AM</td>
<td>The Effects of Different Solvents on Permanent Marker Ink</td>
<td>Adam Islam</td>
<td>Kenmore Middle School</td>
</tr>
<tr>
<td>10:20-10:40 AM</td>
<td>BREAK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>The effect of types of metals on corrosion rate</td>
<td>Richard John</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>11:00-11:20 AM</td>
<td>The Effect of Temperature on an Enzyme Catalyzed Reaction</td>
<td>Neel Joshi</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Heat on the Time it Takes Grease to Solidify</td>
<td>Logan Krohl</td>
<td>Kenmore Middle School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The effect of the type of browning prevention method on the brownness of Red Delicious apples after 24 hours</td>
<td>Julie Daisy &amp; Marco Maxwell</td>
<td>Swanson Middle School</td>
</tr>
<tr>
<td>12:00-12:40 PM</td>
<td>BREAK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:40-1 PM</td>
<td>The effect of various forms of analgesic medications on its solubility in simulated gastric acid</td>
<td>Ira Prakash</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>Time</td>
<td>Project Title</td>
<td>Presenter</td>
<td>School</td>
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</tr>
<tr>
<td>1-1:20 PM</td>
<td>The effect of bases on Staurolite</td>
<td>Daniel Simon</td>
<td>Louise A. Benton Middle School</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>The Effect of SPF on Ultraviolet Exposure</td>
<td>Alexander Thomas</td>
<td>Swanson Middle School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>The Effect of the Type of Salt on the Amount of Corrosion of Steel Wires</td>
<td>Ophelia Tulchinsky</td>
<td>Dorothy Hamm Middle School</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>The effect of different concentrations of Sucralose on the heart rate of a Daphnia Magna</td>
<td>Aditya Badhrayan</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Oxybenzone and Zinc-oxide based Sunscreen on Juncus Inflexus in a Simulated Marsh Environment</td>
<td>Renn Clark</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Public Transportation Use on Carbon Footprint per Capita</td>
<td>Emma Hemsch</td>
<td>Dorothy Hamm Middle School</td>
</tr>
<tr>
<td>10:00-10:20 AM</td>
<td>The Effect of Water Filter Design on Water Clarity</td>
<td>Nadia Lach-Hab</td>
<td>Dorothy Hamm Middle School</td>
</tr>
<tr>
<td>10:20-10:40 AM</td>
<td>What is the Effect of the Type of Soil and Contamination of Soil (Styrofoam) on the Survival of Eisenia fetida?</td>
<td>Eloise Minnigh</td>
<td>Williamsburg Middle School</td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td><strong>BREAK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00-11:20 AM</td>
<td>What is the Effect of Green Roofs on Building Temperature?</td>
<td>Charlotte Minnigh</td>
<td>Williamsburg Middle School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Electromagnetic Field Density on the Biomass of Chlorella vulgaris</td>
<td>Anna Mohanty</td>
<td>Williamsburg Middle School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of Salinity on Soybean Growth</td>
<td>Dylan Tallis</td>
<td>Thomas Jefferson Middle School</td>
</tr>
<tr>
<td>12:00-12:20 PM</td>
<td>The Effect Of Silver Nanoparticles On The Death Rate Of Adult Daphnia Magna</td>
<td>Annabelle Van Saun</td>
<td>George Moody Middle School</td>
</tr>
</tbody>
</table>

**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

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<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>Effect of paper boat design on time and mass recorded</td>
<td>Shangwen Cheng</td>
<td>Kenmore Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>How a Do-It-Yourself Mindset Became the Impetus for a Homemade Smart Mirror</td>
<td>Jarin Earle</td>
<td>Thomas Jefferson Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>Herbal Low-cost Water Filters</td>
<td>Krish Gupta</td>
<td>Swanson Middle School</td>
</tr>
<tr>
<td>10:00-10:20 AM</td>
<td>The Effect of Different Sport Helmets on Melon Splatter</td>
<td>London Hart</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>10:30-10:50 AM</td>
<td><strong>BREAK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:50-11 AM</td>
<td>The Effect of Rotational Speed on the Light Reflected by Parabolic Reflectors</td>
<td>Soumya Khadye</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>11:10-11:30 AM</td>
<td>How to optimize parameters that would affect the speed of an electromagnetic train</td>
<td>Lucy Lu</td>
<td>Ronald Reagan Middle School</td>
</tr>
<tr>
<td>11:30-11:50 AM</td>
<td>The Effect of Various Types of Cancers on the Severity of Covid-19 Infection</td>
<td>Arjun Majety</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>11:50-12:10 PM</td>
<td>The Effect of Different Bicycle Gear Ratio on Speed</td>
<td>Tanvi Nareddy</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>12:10-12:40 PM</td>
<td><strong>LUNCH BREAK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:40-1:00 PM</td>
<td>The Effect of the Launch Angle on Flight Time and Flight Distance</td>
<td>Amogh Saunshimath</td>
<td>Short Pump Middle School</td>
</tr>
</tbody>
</table>
1:120 PM  The Effect of Machine Learning Algorithms on Counting the Fish Population  Camellia Sharma  George Moody Middle School

1:20-1:40 PM  The Effect of the Type of Stormwater Filtration Method on Collecting Litter  Isla Wearmouth  Kenmore Middle School

1:40-2 PM  The Effect of Different Back-To-School Plans on the Spread of SARS-CoV-2  Annie Yuan  George Moody Middle School

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 Math Section - see HS MTM Schedule
**Physical Science & Astronomy (MS PA)**

[Zoom link](https://cwm.zoom.us/j/92089160402?pwd=WUQyMW84dGRqb0tIREMwLy9wenFXQT09)

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<tr>
<td>9-9:20 AM</td>
<td>The Effect of Different Materials on the Absorption of Sound</td>
<td>Sanaya Bothra</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Resistance of Different Types of Metals on Electrical Conductivity</td>
<td>Abhinav Gitta</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Different Types of Masks on Airborne Particles</td>
<td>Alina Hashimee</td>
<td>Ronald Reagan Middle School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>How Does the Type of Current at Different Voltages Affect Electromagnetic Force?</td>
<td>Theodore Hwang &amp; Dorothy Hwang</td>
<td>Gunston Middle School</td>
</tr>
<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
<td></td>
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</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effect of Different Materials on the Volume of Sound</td>
<td>Livia Kouts</td>
<td>Ronald Reagan Middle School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>Multiphonics on Euphonium: Solving the Mystery of the Third Note</td>
<td>Aleksander Kurgan</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Surface Shape on Wakes</td>
<td>Colton Moore</td>
<td>Swanson Middle School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of Different Materials on Reduction of EMF Radiation</td>
<td>Tess Vithoulkas</td>
<td>George Moody Middle School</td>
</tr>
</tbody>
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<tr>
<td>9-9:20 AM</td>
<td>The Effect of Different Disinfectants on the Growth of E. coli</td>
<td>Nikki Alemzadeh</td>
<td>Louise A. Benton Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect Of Houseplants On Indoor Air Quality</td>
<td>Aditya Banerjee</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Different Types of Sugars on The Growth Rate of Yeast</td>
<td>Sriram Darsi</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td></td>
<td>The Effect of Radiofrequency Radiation During Phaseolus vulgaris Seed Germination on Subsequent Plant Growth</td>
<td>Cameron Joyce</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>The Effect of Tea Leaves (Camellia Sinensis) on Pea Plant (Pisum Sativum) Germination Time.</td>
<td>Deepanshi Kumar</td>
<td>George Moody Middle School</td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td><strong>BREAK</strong></td>
<td></td>
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</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect Of Pollutants on a Native Plant</td>
<td>Mia Moret</td>
<td>Kenmore Middle School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Legumes on the Germination of Lactuca Sativa</td>
<td>Jaya Shah</td>
<td>Williamsburg Middle School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The effect of different instruments on the amount of bacterial growth and how fast it grows</td>
<td>Dalia Singer</td>
<td>Swanson Middle School</td>
</tr>
<tr>
<td>12-12:20 PM</td>
<td>The Effect of the different types of water on the different types of bean plants</td>
<td>Michelle Telmuun</td>
<td>Swanson Middle School</td>
</tr>
</tbody>
</table>
12:20-12:40 PM  The Effect of Continuous Light on Helianthus Annuus  Lucy Yoder  Sabot at Stony Point

12:40-1 PM  The inhibitive effect of Palmolive dish soap concentration on bacteria growth  Alice Zhang  George Moody Middle School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
### Botany A (HS BOT-A)

**Zoom link**  
[https://cwm.zoom.us/j/94532348485?pwd=MG1uV0VtSVh2TFJFVv9jakZiaXpQdz09](https://cwm.zoom.us/j/94532348485?pwd=MG1uV0VtSVh2TFJFVv9jakZiaXpQdz09)

**Please convene by 8:55 AM for Announcements**

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<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Various Allelopathic Plants on the Suppression of Taraxacum officinale</td>
<td>Bhavana Adhikari</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Smoke Exposure on the Transpiration Rate of Ocimum basilicum</td>
<td>Veda Akula</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The effect of lipid second messenger Phosphatidic Acid (PA) on Spinach (Spinacia oleracea) under salt stress.</td>
<td>Maria Angel Zamora</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>The Effect of Natural Fertilizers on Nutrition of Beta vulgaris.</td>
<td>Riya Chawla</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effect of Dextrose Solutions on Raphanus sativus</td>
<td>Joey Chen</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Different Worms on the Growth of Tagetes Patula</td>
<td>Nachaal Chidambaram</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Various NPK fertilizers on Spinach Plant Growth</td>
<td>Pranav Chintkuntlawar</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of Vitamin C on Raphanus sativus Plants</td>
<td>Julia Hudgins</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td><strong>12-12:40 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>12:40-1 PM</td>
<td>The Effect of Added Polyamines on Glycine max Responses to Drought</td>
<td>Beverly Eborn</td>
<td>Central Virginia Governor's School.</td>
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<tr>
<td>Time</td>
<td>Title</td>
<td>Presenter</td>
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<tr>
<td>1-1:20 PM</td>
<td>The effect of different brands of sunscreen on elodea canadensis</td>
<td>Sydney Fairchild</td>
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<td>1:20-1:40 PM</td>
<td>The Effect of Different Amounts of Greywater Filtration on the Sassan Fiske &amp; Growth Rate of Radishes</td>
<td>Estee Ruiz</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Mangroves and Limestone Powder on the pH of Water</td>
<td>Estelle He</td>
<td>Mills E. Godwin High School</td>
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<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>Effects of plastic micro-particles on Helianthus annuus growth</td>
<td>Lily Doebler</td>
<td>Central Virginia Governor's School.</td>
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<tr>
<td></td>
<td>The Allelopathic Effect of Allelochemicals such as Juglone in Juglans Nigra On Zea Mays and Glyphosate Resistant Weed Matthew Huson Amaranthus Retroflexus</td>
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<td>Washington-Liberty High School</td>
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<tr>
<td>2:40-3 PM</td>
<td>The Impact of Invasive species English ivy (Hedera helix) on the Nitrogen, Phosphorous, Potassium level and pH Balance of Native Soil</td>
<td>Maya Lennon &amp; Elyse Lanquaye</td>
<td>Governor's School@Innovation Park</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of the Contaminant on the Growth of the Radish Plant</td>
<td>Noor Long</td>
<td>Washington-Liberty High School</td>
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Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
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<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>Lichen Abundance and Diversity in Cemetery Environments</td>
<td>Abby Madson</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>9:40-10:00 AM</td>
<td>The Effectiveness of Natural Medicinal Essential Oils as Cleaning Products</td>
<td>Ankita Mandal</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>10:00-10:20 AM</td>
<td>The Effect of Different Pesticides Containing Heavy Metals on the Transpiration Rate of Vigna unguiculata</td>
<td>Nishaanth Mulpuru</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>10:20-10:40 AM</td>
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<tr>
<td>10:40-11:00 AM</td>
<td>The effect of different antioxidants on the protection of free radicals in Vigna radiata seed germination</td>
<td>Angela Nguyen</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:00-11:20 AM</td>
<td>The Effect of Temperature of Water on Capillarity</td>
<td>Hemanth Nimmagadda</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:20-11:40 AM</td>
<td>The Synergistic Allelopathic Effects of Extracts from Two Invasive Species on Germination and Growth of R. sativus</td>
<td>Carson Ray &amp; Daniel Roanoke Valley Governor's School Han</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:40-12:00 PM</td>
<td>The Effect of Different Soil and Bean Combinations on Electricity Production</td>
<td>Sriharsha Sambangi</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td><strong>12:00-12:20 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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<td>School</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Effect of Using Black Soldier Fly Larvae in Composting on Resulting Plant Height</td>
<td>Benjamin Schneider</td>
<td>Clover Hill High School</td>
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<tr>
<td>1-1:20 PM</td>
<td>The Effect of Climate Change on Seed Germination</td>
<td>Meyyammai Subramaniam Periyakaruppan</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>The effects of electricity at different voltages on growth of Ambrosia Hybrid corn plant (Zea mays var. rugosa)</td>
<td>Imaan Syed</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>The Effect of Various Hygroscopic Humectants on Seed Germination Day</td>
<td>Aquib Syed</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Aqueous Calcium Concentrations on the Germination of Pisum sativum</td>
<td>Ryan Taylor</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>The Effect of Magnetism on Crop Survival During a Simulated Drought</td>
<td>Diana Trutia</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>The Effect of Magnesium Sulfate on Epipremnum Aureum's Radicle Growth</td>
<td>Nivriti Vanga</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of UV-B Intensity on the Floral Pigmentation of Brassica rapa</td>
<td>Arleigh Wagoner</td>
<td>Central Virginia Governor's School.</td>
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<th>Time</th>
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<tr>
<td>9-9:20 AM</td>
<td>The Effect of Mordant on the Weight of Yarn</td>
<td>Haley Baasansukh</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of pH on the Solubility of Acetaminophen</td>
<td>Olivia Bartrum</td>
<td>Wakefield High School</td>
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<tr>
<td>9:40-10 AM</td>
<td>The Effect of Different Types of Wood on Maximum Temperature Yield</td>
<td>Raneem Basir</td>
<td>Clover Hill High School</td>
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<tr>
<td>10-10:20 AM</td>
<td>The Effect of Different Levels of Ammonia on Absorption of Hair Color During the Dyeing Process</td>
<td>Cherish Bland</td>
<td>Clover Hill High School</td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effect of Active Ingredient on Ultraviolet Radiation Protection</td>
<td>Victoria Bui</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effects of Antifungal Agents on the CO2 Production of Baker's Yeast</td>
<td>Richard Chen</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of Cleaning Solution on Rust on Nails</td>
<td>Misthi Choksi</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>12-12:40 PM</td>
<td>The Effect of Genetic Pool Testing on Result Reliability</td>
<td>Sydney Coffman</td>
<td>Mills E. Godwin High School</td>
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</table>

1:20-1:40 PM  The effect of Fruit on the Alcohol level of Kombucha  Ramon Dayan  Washington-Liberty High School

1:40-2 PM  THE ILLUMINATION OF DIFFERENT CHEMICAL ADDITIVES ON ROAD MARKINGS  Logan Dwyer, Jack Pierce & Rajitha Anbu  Governor's School@Innovation Park

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
## Chemistry B (HS CHM-B)

**Zoom link**
https://cwm.zoom.us/j/96730373654?pwd=RlNPMFBFN3VITEFXVVIZYnAxd1FyQT09

Please convene by 8:55 AM for Announcements

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<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
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<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Ripening on Ascorbic Acid in Capsicum annuum</td>
<td>Laken Evans</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Color on Levels of Vitamin C in Bell Peppers</td>
<td>Heera Rajiv</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Making Ice Cream with Dairy Products of Various Butterfat Percentages on the Melting Time of Ice Cream</td>
<td>Macy Kin</td>
<td>Clover Hill High School</td>
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<tr>
<td>10-10:20 AM</td>
<td>The Effect of Different Types of Sugar on the Vitamin C Concentration of Fresh-Squeezed Orange Juice</td>
<td>Naomi Lindsay</td>
<td>Wakefield High School</td>
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<tr>
<td>10:20-10:40 AM</td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Different Pill Capsules on Capsule Opening Time</td>
<td>Abhilash Mangamuri</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Various Household Remedies on Neutralizing Stomach Acid</td>
<td>Arjun Modi</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of Type of Catalyst on Efficiency of Water-Splitting with an Application Towards Solar Energy</td>
<td>Daniel Philip</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>12-12:40 PM</td>
<td>BREAK</td>
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</table>
12:40-1 PM  The Effect of Cooking on Vitamin C Concentration  Hannah Kim  Central Virginia Governor's School.

1-1:20 PM  A New Treatment? An Analysis of the Effect of Known Phytochemicals on SARS-CoV-2 Pathogenesis  Aatish Sethi & Jasmine Agyepong  Governor's School@Innovation Park

1:20-1:40 PM  The Effect of Different Levels of Oxygen on the Exothermic Oxidation of Iron Powder  Trisha Taparia  Mills E. Godwin High School

1:40-2 PM  The Effect of Water pH on Copper Oxidization Using Pennies  Christina Wen  Mills E. Godwin High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
### Engineering A (HS EGR-A)

**Zoom link**

https://cwm.zoom.us/j/94102685518?pwd=UytRdWNtUFFaTEhudEdwcGl4dXFpQT09

Please convene by 8:55 AM for Announcements

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<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
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<tbody>
<tr>
<td>9-9:20 AM</td>
<td>An Indoor Farm Scouter Through Time-Based Imaging</td>
<td>Naman Agarwal</td>
<td>Patriot High School</td>
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<td>9:20-9:40 AM</td>
<td>Validation of semi-automatic computational methods for the assessment of stiffness and deformation of the thoracic aorta from magnetic resonance imaging</td>
<td>Joshua Alexander</td>
<td>Deep Run High School</td>
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<tr>
<td>9:40-10 AM</td>
<td>The Effect of 3D Printing Material on 3D Print Strength</td>
<td>Eyuel Berhanu</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>10-10:20 AM</td>
<td>The Effect of Varying the Thickness-to-Chord Ratio of an Airfoil and the Pitch of the Blades on a Wind Turbine on the Wind Turbine’s Electrical Output</td>
<td>Zachary Burgess</td>
<td>Clover Hill High School</td>
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<tr>
<td>10:40-11 AM</td>
<td>Small Scale Vertical Farming</td>
<td>Mia Constantin &amp; Elizabeth Quimby</td>
<td>Harrisonburg High School</td>
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<tr>
<td>11-11:20 AM</td>
<td>Simulating the Feasibility of a Chlorophyll-Based Photovoltaic Cell Design</td>
<td>Samuel Cutler</td>
<td>Ocean Lakes High School</td>
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<td>11:20-11:40 AM</td>
<td>Whitewater Helmet STAR: Evaluating the Biomechanical Performance and Risk of Head Injury for Whitewater Helmets</td>
<td>Brock Duma</td>
<td>Blacksburg High School</td>
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<td>Time</td>
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<td>Presenter</td>
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<td>11:40-12 PM</td>
<td>IntelliCure: A Novel Deep Learning Platform to Distinguish Morphological Features from Malignant and Benign Endometrial Carcinoma</td>
<td>Khushi Garg</td>
<td>Thomas Jefferson High School for Science and Technology</td>
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<td>12-12:40 PM</td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>12:40-1 PM</td>
<td>Using AI to Detect and Deter Telemarketers</td>
<td>Max Gordon</td>
<td>T C Williams High School</td>
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<td>1-1:20 PM</td>
<td>The Effect of Parabolic Reflectors Constructed of Household Materials on the Signal Strength of a Router</td>
<td>Will Gregory</td>
<td>Central Virginia Governor's School.</td>
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<td>1:20-1:40 PM</td>
<td>Effect of Varying Temperatures on The Performance of a Passive Suspension System with a Nonlinear Air Spring in a Seismic System</td>
<td>Grant Helm</td>
<td>Central Virginia Governor's School.</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of the Front Angle of a Carbon Dioxide Powered Car (degrees) on the Speed of the Car(m/s)</td>
<td>Michael Hunter</td>
<td>Clover Hill High School</td>
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<td>2:20-2:40 PM</td>
<td>The Effect of Wingspan Length on Distance a Balsa Wood Glider Travels</td>
<td>John Jensen</td>
<td>Clover Hill High School</td>
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<tr>
<td>2:40-3 PM</td>
<td>The Effect of Anti-aliasing Method Used on Speed of Video Output</td>
<td>Richard Jones</td>
<td>Clover Hill High School</td>
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<tr>
<td>3-3:20 PM</td>
<td>Trainable WEKA Segmentation Tool Machine</td>
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<td>Learning-Enabled Segmentation on Features of Orthopantomograms</td>
<td>Nitin Kanuri</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>9-9:20 AM</td>
<td>A Novel Integrative WSI-Based Framework For Breast Cancer Molecular Classification</td>
<td>Laasya Konidala</td>
<td>Mills E. Godwin High School</td>
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<td>9:20-9:40 AM</td>
<td>The Effect of Different Sorting Algorithms on Program Runtime</td>
<td>Devesh Kumar</td>
<td>Maggie L. Walker Governor's School</td>
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<td>9:40-10 AM</td>
<td>Cost Effective Setup For Testing Mask Efficacy</td>
<td>Teddy Liu</td>
<td>Central Virginia Governor's School</td>
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<td>10-10:20 AM</td>
<td>Non-Invasive Enhancement of Bionic Vision for Patients of Photoreceptor Degeneration through Computer Vision Techniques</td>
<td>Gwyneth Liu</td>
<td>Mills E. Godwin High School</td>
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<td>10:20-10:40 AM</td>
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<tr>
<td>10:40-11 AM</td>
<td>Automobile Window Tinting on the Transmission of Ultraviolet-A Radiation and Laterality of Skin Cancer Analysis</td>
<td>Grace Loos</td>
<td>Mills E. Godwin High School</td>
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<td>11-11:20 AM</td>
<td>Comparing Sustainable Materials as Filters for Aqueous Dye Solution</td>
<td>Ina Lynch</td>
<td>Central Virginia Governor's School</td>
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<td>11:20-11:40 AM</td>
<td>A comparison of different percents of ethanol mixed with different octanes on small combustion engine run times.</td>
<td>Hunter Maul</td>
<td>Chesapeake Bay Governor's School</td>
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<td>11:40-12 PM</td>
<td>The Effect of Different Wavelengths on the Photovoltaic Electricity Produced</td>
<td>Ella McNally</td>
<td>Washington-Liberty High School</td>
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<td>12:40-1 PM</td>
<td>The Effect of Hair Conditioner on Cheerleading Bow Dimensions and Rate of Color Fading Based on UV Index</td>
<td>Katelynn Menjivar</td>
<td>Clover Hill High School</td>
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<td>1-1:20 PM</td>
<td>Finding a Correlation Between Temperature and Melt Pool Size in Laser Additive Manufacturing</td>
<td>Victoria Midkiff</td>
<td>Blacksburg High School</td>
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<td>1:20-1:40 PM</td>
<td>The Effect of Car Seat Safety Devices on Body Pressure</td>
<td>Namit Nallapaneni</td>
<td>Mills E. Godwin High School</td>
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<td>1:40-2 PM</td>
<td>The Effect of Fiber Orientation on the Flexural Properties of Carbon Fiber Reinforced Polymer</td>
<td>Jarred Newcomb</td>
<td>Central Virginia Governor's School.</td>
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<td>2:20-2:40 PM</td>
<td>The Effect of Rat Brain Phantom Construction on Mimicry of the True Brain Model</td>
<td>Chirayu Nimonkar</td>
<td>Mills E. Godwin High School</td>
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<td>2:40-3 PM</td>
<td>Effect of Aspect Ratio of Aerofoil on Downforce Produced by Aerofoil</td>
<td>Andrew Orndorff</td>
<td>Clover Hill High School</td>
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<tr>
<td>3-3:20 PM</td>
<td>The Effect of Various Earthquake Resistance Methods on Reducing Movement of a Wooden Structure During a Simulated Earthquake</td>
<td>Ishita Patel</td>
<td>Clover Hill High School</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Lining a Sound Box with Various Materials on the Intensity and Duration of the Sound Created</td>
<td>Caleb Peake</td>
<td>Clover Hill High School</td>
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# Engineering C (HS EGR-C)

**Zoom link**
https://cwm.zoom.us/j/99893288257?pwd=TG5ldmZLZGUzMEpzblN4bCtaSjdMUT09

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<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Ultraviolet Light on Thermoplastic Tensile Strength</td>
<td>Annabel Puritz</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>DORC: Dynamic Operating Room Companion for Surgical Workflow Recognition</td>
<td>Pravalika Putalapattu</td>
<td>Thomas Jefferson High School for Science and Technology</td>
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<tr>
<td>10-10:20 AM</td>
<td>The Effect of Various Concrete Additives on the Structural Integrity of Concrete</td>
<td>Carter Ramkey</td>
<td>Clover Hill High School</td>
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<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
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<tr>
<td>11-11:20 AM</td>
<td>Effect of number of symptoms on the accuracy of the Na\ oversimove Bayes classifier for diagnosis of Heart Disease</td>
<td>Roshan Sarangi</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of CPU and GPU Based Parallel Processing on the Execution Time of Different Types of Computational Workloads</td>
<td>Rishav Sen</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>People Spotter</td>
<td>Sejal Sharma, Jennine Faruque &amp; Kalea Wen</td>
<td>Governor's School@Innovation Park</td>
</tr>
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</table>
12-12:40 PM  
 **LUNCH BREAK**

12:40-1 PM  
Investigation of the Tumoricidal Effects of Sonodynamic Therapy in Malignant Glioblastoma Brain Tumors  
Kimball Sheehan & Darrah Sheehan  
Western Albemarle High School

1:10-1:20 PM  
ELMOPP: An Application of Graph Theory and Machine Learning to Traffic Light Coordination  
Fareed Sheriff  
Mills E. Godwin High School

1:20-1:40 PM  
The Effect of Flaps on Aircraft Landing Distance  
Ardenne Sklavos  
Mills E. Godwin High School

1:40-2 PM  
The Effect of Various Sleeve Materials on the Force Exerted and Percent Contraction of Pneumatic Artificial Muscles  
Andrew Tabor  
Central Virginia Governor's School

2-2:20 PM  
**BREAK**

2:20-2:40 PM  
Modeling the Effect of Environment on Collision Detection Runtime  
Josh Tomiak  
Southwest Virginia Governor's School

2:40-3 PM  
Risk-Adjusted Return Analysis of Asset Allocation Strategies for Retirement Savings  
Carson Wang  
Maggie L. Walker Governor's School

3-3:20 PM  
The Effect of Various Existing Algorithms on Success at Correctly Identifying Emotions by Facial Expressions  
Sarah Wilms  
Clover Hill High School

3:20-3:40 PM  
Effect of Pelletized Plastic On Asphalt Compressive Strength  
Frank Wright  
Central Virginia Governor's School

**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

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Crumb Rubber on the Height of Tall Fescue Grass</td>
<td>Elizabeth Adams</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Different Types of Fertilizers on the Regeneration of Lumbriculus Variegatus</td>
<td>Sujhan Alwin</td>
<td>Clover Hill High School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>The Effect of Aquatic Plants on Nitrate Reduction in Ecosystems.</td>
<td>Nikhil Amin</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>10:20-10:40 AM</td>
<td><strong>BREAK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>Baby Got Leatherback! Anthropogenic Effects on Sea Turtle Nesting and Reproduction in North Carolina</td>
<td>Sydney Bakir</td>
<td>Chesapeake Bay Governor’s School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>Atlantic, Caribbean and Great Barrier Reef Coral Bleaching as a Function of SST</td>
<td>Isaac Barber</td>
<td>Chesapeake Bay Governor’s School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Water Source on the Number of Microplastic Particles in the Water</td>
<td>Anita Bennett</td>
<td>Clover Hill High School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>Can 3D Printed Substrates Provide a Suitable Substrate for Fouling Organisms in the Lower Chesapeake Bay Estuary?</td>
<td>Kylie Berry</td>
<td>Chesapeake Bay Governor’s School</td>
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<tr>
<td>12-12:40 PM</td>
<td><strong>LUNCH BREAK</strong></td>
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<td>Time</td>
<td>Presentation</td>
<td>Presenter</td>
<td>School</td>
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<tr>
<td>12:40-1 PM</td>
<td>A Preliminary Assessment of the Recovery of Stony Creek from Pollution Using Aquatic Macroinvertebrates</td>
<td>Jenna Beville</td>
<td>Dinwiddie High School</td>
</tr>
<tr>
<td>1-1:20 PM</td>
<td>The Effect of Weather Patterns on the Spread of Airborne Plastic</td>
<td>Kathryn Boerckel &amp; Allison Grove</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>The Effect of Water Turbulence on Microalgae Growth</td>
<td>Nelson Bonilla</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>An Analysis of Fire Call Frequencies During Severe Storm Events in a Rural Area</td>
<td>Olivia Brocklebank</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>2-2:20 PM</td>
<td>Break</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>Salinity and Temperature Effects on the Growth of Diploid Oysters in the Lower Rappahannock River</td>
<td>Katherine Brooke</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>The Effect of Air Pollution on the Efficiency of Solar Panels</td>
<td>Isla Carlson</td>
<td>Wakefield High School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>A Study on the Changes in Pollution and Turbidity Affected by Riparian Buffers of Local Lakes after Three Years</td>
<td>Amulya Chowdhory</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>A Comparison of Littoraria Irrorata Populations Along the Rappahannock River</td>
<td>Margaret Collins</td>
<td>Chesapeake Bay Governor's School</td>
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</tbody>
</table>

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
## Environmental & Earth Science B (HS ENV-B)

### Zoom link

https://cwm.zoom.us/j/96816916200?pwd=TE1iNk10Q0VXLzlOe1lE5dWJVtIJUUT09

Please convene by 8:55 AM for Announcements

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>The Effect of Different Plants on the Amount of Soil Eroded</td>
<td>Caroline Colucia &amp; Tessa Muldowney</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Production of Fabric from Pleurotus eryngii and Ganoderma lingzhi Mycelia</td>
<td>Reesa Taylor Devers Frazier</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>10:00-10:20 AM</td>
<td>Stress Levels of Mummichogs in Response to Noise</td>
<td>Amar Dunham</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
<td></td>
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</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effect of Conflict on Air Pollution</td>
<td>Andrew Edmondson</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>11:00-11:20 AM</td>
<td>The Effect of Acidity Level on Paper Degradation</td>
<td>Sarah Eichorn</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>11:40-12 AM</td>
<td>Does Our Bay and Surrounding Water Areas Produce Enough Wind Energy that Building Wind Turbines Would be Efficient in Our Area?</td>
<td>Clayton Garrett</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td><strong>12-12:40 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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</tbody>
</table>
12:40-1 PM  A Solution to Plastic Pollution: An Investigation into Microplastic Removal from Water Using Ferrofluid  Madison Goeke  Washington-Liberty High School
1-1:20 PM  The Effect of Waxworms on Plastic Decomposition  Vaidehi Goyal  Mills E. Godwin High School
1:20-1:40 PM  The Effect of Biodiversity on Water and Pollution Retention  Serena Grant  Mills E. Godwin High School
1:40-2 PM  The Effect of Human Activity on Biodiversity in a Freshwater Marsh  Cassy Hixson  Chesapeake Bay Governor's School
2-2:20 PM  BREAK
2:20-2:40 PM  The Effects of Naturally Occurring Acids on Scenedesmus sp. Population Growth  Sara Holt  Central Virginia Governor's School
2:40-3 PM  Eastern Skunk Cabbages: A Natural and Sustainable Solution for Combating Bank Erosion  Chelsea Hu  BASIS Independent McLean
3-3:20 PM  The Effect of Organic Compost Tea vs. Chemical Fertilizer on Growth and Fruit Production of Tomatoes  Abigail Hudgins  Chesapeake Bay Governor's School
3:20-3:40 PM  The Effect of Conditional Processing on Atlantic Hurricane Prediction Accuracy  Ojas Joshi  Mills E. Godwin High School

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
# Environmental & Earth Science C (HS ENV-C)

**Zoom link**: https://cwm.zoom.us/j/94798761628?pwd=Vm9iNllaSWFoRFJUdCt4VSS2Qk43QT09

Please convene by 8:55 AM for Announcements

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<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
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<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Different Locations on Background Radiation</td>
<td>Ishan Joshi</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Different Nutrients on Plant Growth</td>
<td>Maya Kent</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>The Effect of Plastic on the Growth of Raphanus sativus</td>
<td>Ella Lewis</td>
<td>Central Virginia Governor's School</td>
</tr>
<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Microplastics in the Form of Glitter on Freshwater Chlorella Algae Growth and pH Levels</td>
<td>Eujine Kim</td>
<td>Central Virginia Governor's School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Different Oil Spill Cleanup Methods on the Survival Rate of Brine Shrimp</td>
<td>Rohan Kurup</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>A Machine Learning Approach to Wildfire Spread Prediction and Risk Assessment</td>
<td>Ethan Ky &amp; Santiago Campos-Merida</td>
<td>Governor's School@Innovation Park</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of the pH of Simulated Acid Rain on Radish Seed Germination</td>
<td>Ava Lansbury</td>
<td>Washington-Liberty High School</td>
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<tr>
<td><strong>12-12:40 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>12:40-1 PM</td>
<td>Effect of Drift of the Herbicide Dicamba on the Health of SAV in the Estuarine Environment</td>
<td>Madelyn Junker</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>Time</td>
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<td>Presenter</td>
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<tr>
<td>1-1:20 PM</td>
<td>The Effect of Different Filtration Methods on the Consistency and Reduction of Water TDS</td>
<td>Fahad Khan</td>
<td>Mills E. Godwin High School</td>
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<td>1:20-1:40 PM</td>
<td>Analysis of Microbial Diversity in PCB-Contaminated Environments</td>
<td>Eleanor Little</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>The Effect of Different Bio-compatible Coagulants on Microplastic Extraction from Water</td>
<td>Aryan Mhaskar</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>2-2:20 PM</td>
<td><strong>BREAK</strong></td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Materials in Compost on Compost Temperature</td>
<td>Lillian Moo</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>2:40-3 PM</td>
<td>Effect of Glycerol on the Reproduction Rate of Daphnia magna</td>
<td>Lauren Noel</td>
<td>Central Virginia Governor's School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>Sequencing Analysis of Microbial Abundance and Diversity of Different Shorelines in the Lower Chesapeake Bay</td>
<td>Kathryn Parnell</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>Effect of Soil Acidity on Rate of Decomposition of Paper</td>
<td>Ellie Potts</td>
<td>Washington-Liberty High School</td>
</tr>
</tbody>
</table>

**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

<table>
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<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
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</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Soil Location on pH</td>
<td>Siddhant Prakash</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>9:20-9:40 AM</td>
<td>Catch of the Century!</td>
<td>Lauren Rahn</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>9:40-10 AM</td>
<td>The study of microplastic concentrations of soil and water from Northern Virginia's freshwater bodies and their effect on the growth of Persicaria punctata</td>
<td>Pearl Raichura, Vinay Bhakthan &amp; Mehreen Rahman</td>
<td>Governor's School@Innovation Park</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>The Effect of Concentrations of Herb Mixtures on Memory Retention in Dugesia Tigrina</td>
<td>Arvind Rajesh</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>10:20-10:40 AM</td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Various Colloidal Metals on Nymphaeaceae Phytoextraction Performance</td>
<td>Snehitha Ravilla</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Limonene from Different Extracts of Citrus Fruits on the dissolving Styrofoam</td>
<td>Rithvik Rayala</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Rising Water Temperature on the Respiration Rate of Mummichogs, Fundulus heteroclitus</td>
<td>Taylor Rice</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>11:40-12 PM</td>
<td>Ash in Alexandria</td>
<td>Reid Ridenhour</td>
<td>T C Williams High School</td>
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<tr>
<td><strong>12-12:40 PM</strong></td>
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<td>12:40-1 PM</td>
<td>Corrosion of Different Fish Hook Coatings Under Estuarine Saltwater Conditions</td>
<td>John Robins</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>1-1:20 PM</td>
<td>The effect of different fertilizers on plant height</td>
<td>Zachary Roman</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>Can Man-Made Ponds Serve All of the Ecological Functions of Naturally Formed Ponds?</td>
<td>Kayla Schill</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Plant Type of a Green Roof on Internal Building Temperature</td>
<td>Harriet Shapiro</td>
<td>Washington-Liberty High School</td>
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<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Surface Dynamics on Atmospheric Water Harvesting</td>
<td>Cameron Sharma</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>2:40-3 PM</td>
<td>The Effect of Water Temperature on the Amount of Dissolved Oxygen in Water</td>
<td>Maya Sherlick</td>
<td>Arlington Tech</td>
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<tr>
<td>3-3:20 PM</td>
<td>The Effect Of Additives on Melting Ice</td>
<td>Ananya Sinha</td>
<td>Arlington Tech</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>Lunar Effect on Fish Catch Rate</td>
<td>Jeremey Smith</td>
<td>Chesapeake Bay Governor's School</td>
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</tbody>
</table>

*Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.*
**Environmental & Earth Science E (HS ENV-E)**

**Zoom link**: [https://cwm.zoom.us/j/97217053767?pwd=eUY4eEE4NzFxRVdVUFFhNkVFV3pzdz09](https://cwm.zoom.us/j/97217053767?pwd=eUY4eEE4NzFxRVdVUFFhNkVFV3pzdz09)

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</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>Budgetary Investment in Environmental Preservation and how it relates to Monetary Damage caused by Natural Disasters from 1988-2019</td>
<td>Seonbin Song</td>
<td>Blacksburg High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Distance from I-95 on Prevalence of Epiphytic Lichen</td>
<td>Adam Stievater</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Ventilation Method on Level of Indoor Carbon Dioxide</td>
<td>Lanyi Stroud</td>
<td>Yorktown High School</td>
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<td>10-10:20 AM</td>
<td>The Effect of Impervious Surfaces on Steam Health: a Study of Machine Learning and Multivariate Statistical Analyses</td>
<td>Lynn Tao</td>
<td>Thomas Jefferson High School</td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Time on Surgical Mask Degradation</td>
<td>Benjamin Tsai</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The effect of Carbon Dioxide on the heat absorption and heat retention of an artificial atmosphere.</td>
<td>Evan Tuckley</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>Evaluation of Four Materials for Growing Aquatic Algae to Produce Biofuel</td>
<td>Eleanor Veazey</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>11:40-12 PM</td>
<td>It's Not Easy Being Green: Examining Factors for the Growth Rate of Chlorella Vulgaris</td>
<td>Lydia Wallace</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td><strong>12-12:40 PM</strong></td>
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<tr>
<td>12:40-1 PM</td>
<td>How Important is the Shallow Water Refuge for Small Prey Species in the Chesapeake Bay Food Web</td>
<td>Laura Walton</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>1-1:20 PM</td>
<td>The Effect of Firework Display Length and Frequency on Amount of Particulate Matter 2.5 in the Air</td>
<td>Ivy Watson</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>How the Increasing Microplastic Presence in the Oceans Poses a Threat to Vital Phytoplankton</td>
<td>Bay Wiggins</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect Of Various Locations In The Greater Richmond Metro Area On Rainwater Quality</td>
<td>Hanna Wirtu</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>Comparing the Effectiveness of Various Sorbents at Remediating Oil Pollution</td>
<td>Jeffrey Wooters</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>The Effect of Fuel Octane on Carbon Monoxide Emissions</td>
<td>Marshall Wright</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>The Effect of COVID-19 Quarantine Measures on AQI of 100 US Cities</td>
<td>Rose Yang</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Different Heating Methods on Vitamin C Concentrations in Capsicum annuum</td>
<td>Aaron Yuan</td>
<td>Mills E. Godwin High School</td>
</tr>
</tbody>
</table>

**Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.**
# Math: Theoretical & Modeling (HS MTM)

**Zoom link**
https://cwm.zoom.us/j/92926570100?pwd=N2ZZckltUZm5uWFZpRjRVU2Q4eDNkdz09

Shared Room/Judges with Middle School Math Section (First 3 papers are MS Math)

Please convene by 8:55 AM for Announcements

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Poverty Percentages on Voter Turnout</td>
<td>Sattwik Nath</td>
<td>George Moody Middle School</td>
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<tr>
<td>9:20-9:40 AM</td>
<td>The Effect Of Mail-in Voting Fraud On a Battleground State's Election Result</td>
<td>Zareef Said</td>
<td>Ronald Reagan Middle School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of School Size, Per-Pupil Expenditure, and Percent of Teachers with Advanced Degrees on SOL Pass Rates</td>
<td>Henry Stievater</td>
<td>Swanson Middle School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td><strong>BREAK</strong></td>
<td></td>
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</tr>
<tr>
<td>10:20-10:40 AM</td>
<td>Using Transit Light Curves for Ground-Truthing the Orbital Radius and Planet Radius of Exoplanets Examined by the K2 Campaign 10 Mission</td>
<td>Mahin Atturu</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effect of Model Type on the Accuracy of Predicted Values</td>
<td>Pranav Bandla</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>Using Energy Conservation to Estimate Bullet Penetration into Differing Materials</td>
<td>Christopher Behre</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>Time</td>
<td>Title</td>
<td>Presenter</td>
<td>School and Academy</td>
</tr>
<tr>
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<tr>
<td>11:40-12 PM</td>
<td>Investigation in Microbiota Dysbiosis of E-cigarette Users and Smokers</td>
<td>Nina Dao</td>
<td>Ocean Lakes High School Mathematics and Science Academy</td>
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<tr>
<td>12-12:40 PM</td>
<td><strong>LUNCH BREAK</strong></td>
<td></td>
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<tr>
<td>1-1:20 PM</td>
<td>Momentum-Based Interaction Networks for Modeling Rigid Body Dynamics</td>
<td>Junho Lee</td>
<td>Thomas Jefferson High School for Science and Technology</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>The Effect of Various Software on Protein Structure Prediction</td>
<td>Abhinav Mara</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>Algorithmic Simulations of Hydrocortisone-Induced Degeneration</td>
<td>Philip Naveen</td>
<td>Mills E. Godwin High School</td>
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<td>2-2:20 PM</td>
<td><strong>BREAK</strong></td>
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<tr>
<td>2:20-2:40 PM</td>
<td>De Novo Prediction of RNA-Protein Interactions for Discovery of Tissue-Specific Binding Sites</td>
<td>Lillian Sun</td>
<td>Thomas Jefferson High School for Science and Technology</td>
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<tr>
<td>2:40-3 PM</td>
<td>Assessing the Efficacy of Various NOX Enzyme Inhibitors as Potential Treatments for Ischemic Stroke in Silico</td>
<td>Samhita Vinay &amp; Keertana Yalamanchili</td>
<td>Thomas Jefferson High School for Science and Technology</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>Investigating Trends in the Multiple Ligand Activation of PPAR Gamma</td>
<td>Jacqueline Wang</td>
<td>Blacksburg High School</td>
</tr>
</tbody>
</table>

**Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.**
Medicine & Health A (HS MDH-A)

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>The Effect of Hand Sanitizer Composition and Brand on Antimicrobial Efficacy</td>
<td>Emma Almassy</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>Identification of Fluoxetine as a direct NLRP3 inhibitor to treat atrophic macular degeneration: Molecular modeling, mechanism, morphometry, and meta-analysis (Year 2)</td>
<td>Meenakshi Ambati</td>
<td>Albemarle High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Tissue Thickness on Temperature Change Induced by Cellular Radiation</td>
<td>Lina Aniss</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>10:00-10:20 AM</td>
<td>The Effect of Different Suturing Techniques on Skin Closure</td>
<td>Shreyas Arcot</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>10:20-10:40 AM</td>
<td>BREAK</td>
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<tr>
<td>10:40-11 AM</td>
<td>Discovery of Novel Extracellular Vesicle Plasma and Tumor miRNAs As Biomarkers For Lung Cancer via Next Generation Sequencing, Bioinformatics, and In-Vitro Analyses</td>
<td>Perisa Ashar</td>
<td>Maggie L. Walker Governor's School for Government and International Studies</td>
</tr>
<tr>
<td>11:00-11:20 AM</td>
<td>The Effects of Tap Water CaCO3 on Kidney Health</td>
<td>Emily Atkins</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Relationship Between Exposure to Fine Particulate Matter During Pregnancy and Preterm Births.</td>
<td>Malek Ben Hammouda</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>12:00-12:40 PM</td>
<td>LUNCH BREAK</td>
<td></td>
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<tr>
<td>Time</td>
<td>Title</td>
<td>Presenter(s)</td>
<td>School</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Effect of Mask Type on Ability to Block Droplets from Passing Through</td>
<td>Jonah Bierman</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>1-1:20 PM</td>
<td>The Effect of Homeopathic Antifungals on Yeast CO2 Production</td>
<td>Sarah Bolles &amp; Lucy Anderson</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>Analyzing Custom DNA Oligo Synthesis Using a Polymerase Chain Reaction to Target TGFR-Ø≤1</td>
<td>Madison Brown &amp; Dhruvi Patel</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>The Effect of the Type of Cardiovascular Exercise on the Number of Calories Burned</td>
<td>Natalie Cecil</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>2-2:20 PM</td>
<td><strong>BREAK</strong></td>
<td></td>
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</tr>
<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Hairbrush Design on Amount of Hair Collected</td>
<td>Allison Chen</td>
<td>Clover Hill High School</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>The Effect of Elapsed Time on the Thickness Level of Commercial Kefir as Measured by the IDDSI Flow Test and Framework</td>
<td>Charlotte Cunningham</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>Left vs. Right Handedness: The Effect of Handedness on Aspect Chosen to Order Objects</td>
<td>Morgan Dalton</td>
<td>Southwest Virginia Governor's School</td>
</tr>
</tbody>
</table>

**Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.**
**Medicine & Health B (HS MDH-B)**

**Zoom link**  
https://cwm.zoom.us/j/99835452059?pwd=aUF6eG1xb0hHMIYyVVBsT1ZoMFJKdz09

*Please convene by 8:55 AM for Announcements*

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The effect of antipsychotic drugs on patients diagnosed with schizophrenia</td>
<td>Skylar Farrar</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Cellular Device Type on the Amount of Electromagnetic Radiation</td>
<td>Caroline Fern &amp; Caleigh Sleeth</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>10-10:20 AM</td>
<td>The Effect of Different Drinks on Electrolyte Content</td>
<td>Reagan Goodwyn</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
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<tr>
<td>10:40-11 AM</td>
<td>Using a Computational Model to Determine the Binding Ability of Selected Estrogen Derivatives to ß- AND ß- Type Estrogen Receptors to Prevent Amyloid-ß Aggregations</td>
<td>Keren Czyra Gonzaga, Iqra Ahmad &amp; Thu Luong</td>
<td>Governor's School@Innovation Park</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Suture Material on Dissolution Rate</td>
<td>Yasmine Groener</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Genetic Correlation Between Multiple Sclerosis and Various Autoimmune and Neurodegenerative Diseases</td>
<td>Holly Hinchy &amp; Ella Bryant</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>The Effect of Increasing Indoor Ventilation on Artificially Generated Aerosol Particle Counts</td>
<td>Ashwin Johri</td>
<td>Collegiate School</td>
</tr>
<tr>
<td><strong>12-12:40 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>Time</td>
<td>Presentation</td>
<td>Presenter</td>
<td>School</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Correlation Between a Country's Development, Unclean Fuel Use, and Prevalence of Respiratory Disease</td>
<td>Pranav Jothi</td>
<td>Central Virginia Governor's School</td>
</tr>
<tr>
<td>1-1:20 PM</td>
<td>The Effect of Acidic Substances on Dental Erosion</td>
<td>Harleen Kaur</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>The Effect of Different Lenses on Blue-Light Filtration</td>
<td>John Mario Kiely</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>The Effect of Soluble Factors on turning Stem Cells into Kidney Cells</td>
<td>Sricharan Lankalapalli</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>Differential expression of genes associated with innate immune cell function in individuals with and without alpha-gal syndrome</td>
<td>Katerina Leedy</td>
<td>Blacksburg High School</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>The Effect of Proximity and Particles Exhaled Based on Breath Rate on the Number of COVID-19 Virus Particles Accumulated</td>
<td>Anne Licato</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Chemically Active Skincare Products on the Zones of Inhibition of Propionibacterium acnes</td>
<td>Lantz Martin</td>
<td>Central Virginia Governor's School</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>9-9:20 AM</td>
<td>Examining Potential for Prognostic Predictions by ALS Biomarkers using Neural Networks</td>
<td>Vaibhavreddy Maru</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Third-Hand Smoke (min) on the heart rate of Daphnia magna (bpm)</td>
<td>Maggie Matzen</td>
<td>Clover Hill High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Obesity on Drosophila Reproduction</td>
<td>Jessica Medlin</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>10:10:20 AM</td>
<td>Comprehensive Computational Genomic Analysis of 1,134 Samples to Understand Genomic Alterations and Their Influence on Outcome in Colorectal Cancer: A Retrospective Study</td>
<td>Anju Natarajan</td>
<td>Collegiate School</td>
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<tr>
<td>10:20-10:40 AM</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10:40-11 AM</td>
<td>The Effects of Information Source on Acceptance of COVID-19 Vaccine</td>
<td>Kimayah Nelson</td>
<td>Portsmouth <a href="mailto:STEM@I.C">STEM@I.C</a>. Norcom High School</td>
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<tr>
<td>11-11:20 AM</td>
<td>The Effect of Different Liquids on Dissolving Time of Iron Supplements</td>
<td>Manushi Nepal</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:20-11:40 AM</td>
<td>Using Raman Spectroscopy to Identify Bladder Cancer Biomarkers</td>
<td>Lacey Ngo</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>Investigating Alternatives to Conventional Chronic Kidney Disease Treatment Through Analysis of Differential Gene Expression</td>
<td>London Paige</td>
<td>Roanoke Valley Governor's School</td>
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<tr>
<td>Time</td>
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<td>Author(s)</td>
<td>School</td>
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<tr>
<td>12-12:40 PM</td>
<td>LUNCH BREAK</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Effect of Virgin Coconut Oil on Regeneration Rate of Dugesia tigrina</td>
<td>Ponnarasi Rajakumaran</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>1-1:20 PM</td>
<td>The Effect of Plant-Based Metabolites on the Binding Affinity between the ACE2 Receptor and the Prefusion Spike Glycoprotein</td>
<td>Divya Ramakrishnan, Soneha Datta &amp; Hermela Tadesse</td>
<td>Governor's School@Innovation Park</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>Effects of Supplemental Oxygen on the Regeneration of Planaria</td>
<td>Leanne Ranger</td>
<td>Central Virginia Governor's School.</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Breast Cancer Medications on Various Body Tissues of Patients</td>
<td>Elina Rastegar</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>2-2:20 PM</td>
<td>BREAK</td>
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<tr>
<td>2:40-3 PM</td>
<td>The Effect of Children’s Helmet Cost Variance (USD) on Mass Deviation (g) from Simulated Skull Impact</td>
<td>Charles Redding</td>
<td>Clover Hill High School</td>
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<tr>
<td>3-3:20 PM</td>
<td>The Effect of Different Types/Brands of Water on Avocado Root Length</td>
<td>Ryann Remias</td>
<td>Clover Hill High School</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>The effect of different types of tinted sunscreens on how much light goes through a solar panel measured in kilowatts</td>
<td>Sofia Reyes</td>
<td>Washington-Liberty High School</td>
</tr>
</tbody>
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Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
**Medicine & Health D (HS MDH-D)**

Please convene by 8:55 AM for Announcements

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<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>The Right Mask for the Task: The effect of different face masks on the expelled droplets or particles</td>
<td>Zahra Rizvi</td>
<td>York High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>Comparing the Antimicrobial Efficacy of Hand Sanitizers on Staphylococcus epidermidis and Escherichia coli</td>
<td>Avery Roark</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>Knowledge of Tissue Donation Survey Project</td>
<td>Lauren Rylander</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>10:00-10:20 AM</td>
<td>The Effect of the Storage Temperature on the Tomatoes' Nutrious Value</td>
<td>Veronica Samaan</td>
<td>Mills E. Godwin High School</td>
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<td><strong>BREAK</strong></td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of vitamin supplements on the pH of stomach acid</td>
<td>Saniya Sangle</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:00-11:20 AM</td>
<td>The Effect of Using Multiple Languages on Parkinson,Â’s Disease Detection with Machine Learning</td>
<td>Yash Saxena</td>
<td>Maggie L. Walker Governor's School</td>
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<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Early Monocyte Reconstitution on CD4+ and CD8+ T Cell Populations after Allogeneic Stem Cell Transplantation</td>
<td>Aashka Shah</td>
<td>Maggie L. Walker Governor,Â’s School</td>
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<tr>
<td>11:40-12 PM</td>
<td>The Effect of the Type of Toothpaste on Enamel Damage</td>
<td>Yousif Shakroo</td>
<td>Mills E. Godwin High School</td>
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<tr>
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<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>12:40-1 PM</td>
<td>Analyzing Different Socio-economic Factors and its Effects on Pandemic Response</td>
<td>Ameya Sinha</td>
<td>Yorktown High School</td>
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<tr>
<td>Time</td>
<td>Title</td>
<td>Presenter</td>
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<tr>
<td>1-1:20 PM</td>
<td>Testing Food Formulas for Glucose Concentrations Before and After Invertase</td>
<td>Tanvee Sunkari</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>Correlation of the National Institute of Health Stroke Scale (NIHSS) with Emergent Large Vessel Occlusion (ELVO) in Stroke Alert Patients, A Single-Center Experience</td>
<td>Annabel Tang</td>
<td>Maggie L. Walker Governor's School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>Race vs. the amount of Confirmed Covid-19 Cases in the US</td>
<td>Abby Welker</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>2-2:20 PM</td>
<td>BREAK</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Fermentation Time on Sugar Content of Kombucha</td>
<td>Tuong Vo</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>The Effect of Building Age on the Amount of Lead in Water</td>
<td>Lewis Wearmouth &amp; Brady Krohl</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>3:3:20 PM</td>
<td>The Effect of a Musical Composition on Stress Levels in the Listener</td>
<td>Owen Tucker</td>
<td>Ocean Lakes High School</td>
</tr>
</tbody>
</table>

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
# Microbiology & Cell Biology A (HS MCB-A)

**Zoom link**

https://cwm.zoom.us/j/99715818632?pwd=b0U0WU1YMGNIWWF5MW9DMzZUK0FmQT09

Please convene by 8:55 AM for Announcements

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Antiseptics on Bacterial Growth</td>
<td>Anika Agarwal</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>An Analysis of Cleaning Method Efficacy on Shared Surfaces in a Gym</td>
<td>Lane Anderson</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>Effects of 5G Compatible Broadband Waves on Average Change in Color of Sacchoromyces cerevisae</td>
<td>Ryan Beck</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>Analyzing the PETase enzyme activity in Bacillus cereus and its effect on plastic degradation</td>
<td>Kallena Branham</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Different Hand Drying Techniques on Quantity of Microbes</td>
<td>Sumiyya Butt</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Temperature on Concentration of Sugar After 10 Days in the Musa acuminata</td>
<td>Ella Cohen</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>11:20-11:40 AM</td>
<td>The Comparison Between Different Straw Materials to Determine Which Material Grows the Most Bacterial Colonies</td>
<td>Brooke Coleman</td>
<td>Central Virginia Governor's School.</td>
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<tr>
<td>11:40-12 PM</td>
<td>Diversity of Arctic Ice Bacteria in Relation to Position and Distance From the Shore</td>
<td>Katelyn Collett</td>
<td>Southwest Virginia Governor's School</td>
</tr>
<tr>
<td><strong>12-12:40 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>Time</td>
<td>Presentation</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Analysis of the Viral Transmission between the HIV-1 Envelope Glycoprotein and the Lymphocyte Receptor Integrin α4β7</td>
<td>Harrish Ganesh</td>
<td>Thomas Jefferson School for Science and Technology</td>
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<td>1:00-1:20 PM</td>
<td>The Effect of Supplements on the Regeneration of Planaria</td>
<td>Matthew Gavin</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>Analyzing the Cell Viability and Cell Signaling Activity of an Alginate-based Synthetic Extracellular Matrix Scaffold</td>
<td>Caroline Grant, Vineel Kavuru &amp; Catherine Chen</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>Analysis of Bacteria Presence After High Pressure Hand Dryer Use</td>
<td>Katelynn Headley</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effects of Natural Antifungal Remedies on Baker's Yeast</td>
<td>Diya Johar</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>2:40-3 PM</td>
<td>The Effect of Container Material on Lactobacillus Count in Yogurt</td>
<td>Anika Kashyap</td>
<td>Mills E. Godwin High School</td>
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<td>3:30-3:40 PM</td>
<td>Testing the Effectiveness of Different Supplements on the Breaking Down of Lactose in Whole Milk</td>
<td>Diana Kirilov</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Hand-washing vs Hand Sanitizer on Hand Bacteria</td>
<td>Nitya Kumar</td>
<td>Douglas S. Freeman High School</td>
</tr>
</tbody>
</table>

*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

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
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<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Medicinal Plant Concentrates on Saccharomyces cerevisiae</td>
<td>Hannah Loos</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Transition Metals on Gram-negative and Gram-positive Bacterial Growth</td>
<td>Reagan Morford</td>
<td>Central Virginia Governor's School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>Your Shoes are More than Smelly</td>
<td>Grace Oren</td>
<td>Chesapeake Bay Governor's School</td>
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<td><strong>10:20-10:40 AM</strong></td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Trametes versicolor Infused Bandages on Staphylococcus epidermidis</td>
<td>Jennie Pham, Cynthia Lin &amp; Emma Greer</td>
<td>Roanoke Valley Governor's School</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Lyophilization on Rates of Saccharomyces cerevisiae Proliferation</td>
<td>Mihir Pokhriyal</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Time Spent in Contact Lens Solution on Number of Bacterial Colonies Plated From the Lenses</td>
<td>Swetha Poluri</td>
<td>Clover Hill High School</td>
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<tr>
<td>11:40-12 PM</td>
<td>The Effect of Water-Soluble Vitamins on Saccharomyces Cerevisiae Survival Rate</td>
<td>Avirat Raj</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>Time</td>
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<td>12:40-1 PM</td>
<td>The Effect of Children’s Toothpastes on S. cerevisiae</td>
<td>Shreya Rajkumar</td>
<td>Mills E. Godwin High School</td>
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<td>1-1:20 PM</td>
<td>The dependence of milk type on the shelf life beyond the</td>
<td>Netra Shah</td>
<td>Mills E. Godwin High School</td>
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<td>1:20-1:40 PM</td>
<td>The Effect of Different Materials on Purity of Water</td>
<td>Sudarshan Srinaiyer</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Turbidity on the Reproduction of Culex</td>
<td>Leem Taha</td>
<td>Mills E. Godwin High School</td>
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<td>pipien Mosquitos</td>
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<td>2-2:20 PM</td>
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<td>2:20-2:40 PM</td>
<td>The Effect of Streptococcus Thermophilus on Average</td>
<td>Raymond Wen</td>
<td>Mills E. Godwin High School</td>
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<td>Bread Crumb Grain</td>
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<tr>
<td>2:40-3 PM</td>
<td>Finding the Least Harmful Aircraft Runway De-Icing</td>
<td>Noor Zakriya</td>
<td>Southwest Virginia Governor's School</td>
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<td>Chemicals On Nitrifying Bacteria in Water Masses</td>
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<td>3-3:20 PM</td>
<td>The Effect of Coronavirus Species on the Binding Strength</td>
<td>Monona Zhou</td>
<td>Mills E. Godwin High School</td>
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<td>to a Neutralizing Antibody</td>
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Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
Physics & Astronomy (HS PHY)

Zoom link: https://cwm.zoom.us/j/94368835476?pwd=YWtwSjZoK0NHbWFRbXcyNNGwN3JCU09

Please convene by 8:55 AM for Announcements

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Different Blue Light Mitigation Techniques on LED Blue Light Irradiance</td>
<td>Angelica Bain</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>Spectral Signatures of Simulated Black Hole Accretion</td>
<td>Brian Cate</td>
<td>Central Virginia Governor's School.</td>
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<tr>
<td>9:40-10 AM</td>
<td>The Effect of Different Parts of the Foot On Distance a Soccer Ball Travels</td>
<td>Madeline Cheatham</td>
<td>Clover Hill High School</td>
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<tr>
<td>10-10:20 AM</td>
<td>Kinematic Analysis: Transition Skateboarding on Force Components</td>
<td>Brandon Chung</td>
<td>Mills E. Godwin High School</td>
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<tr>
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<tr>
<td>11-11:20 AM</td>
<td>The effect of different shin guards on force reflected</td>
<td>Mohnish Gopalan</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:40-12 PM</td>
<td>The Effect of Location on the Amount of Skyglow Detected By a Digital Camera</td>
<td>Ian Hooks</td>
<td>Clover Hill High School</td>
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<tr>
<td>12-12:40 PM</td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>Time</td>
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<td>Presenter</td>
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<td>12:40-1 PM</td>
<td>The Effect of Coronal Mass Ejection Acceleration (km/s^2) In Relevance of Earth’s Orbital Position on Gamma Ray Dose Equivalent Rate (nSv/H) in Virginia</td>
<td>Anvita Korrapati</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>1-1:20 PM</td>
<td>The Effect of Artificial Lighting on the Ability to View the Night Sky</td>
<td>Maya Kaminski</td>
<td>Washington-Liberty High School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>Quantum Dot Supercapacitors - The Impact of Variation of Supercapacitor Electrolyte Base Material on Capacitance and Supercapacitor Discharge Time</td>
<td>Anika Mukul &amp; Aditi Mukul</td>
<td>Battlefield High School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Grain Size on Temperature in the Protoplanetary Disk IM Lup</td>
<td>Jillian Nylund</td>
<td>Central Virginia Governor's School.</td>
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<td>2:20-2:40 PM</td>
<td>The Connection Between Spiral Galaxies and Asymmetry: Analyzing Quadrupole Multipole Asymmetry in Spiral Galaxies and its Relation to other Galactic Characteristics</td>
<td>Simran Patibanda, Kaylyn Nguyen &amp; Trent Schuyler</td>
<td>Governor's School@Innovation Park</td>
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<tr>
<td>2:40-3 PM</td>
<td>The Effect of Type of Carbohydrate on a Solution’s Refractive Index</td>
<td>Ryan Poquis</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>3-3:20 PM</td>
<td>Let’s Play Ball: A Study on How the Material of A Softball Bat Affects the Distance of a Ball Hit</td>
<td>Kelly Taylor</td>
<td>Chesapeake Bay Governor’s School</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Various Wavelengths on the Detection of Point Sources in the Galactic Center</td>
<td>Erum Vohra</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>3:40-4 PM</td>
<td>The Effect of Constellation on Radio Signal Received at 21cm</td>
<td>Sam Watchman</td>
<td>Arlington Tech</td>
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</table>

*Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.*
**Psychology A (HS PSY-A)**

**Zoom link**
https://cwm.zoom.us/j/94015796034?pwd=OUhnclpoYXpqDlvZ1Rna0N3Vk9LUT09

Shared Room/Judges with Middle School Human Behavior Section (First paper is the MS HB Paper)

Please convene by 8:55 AM for Announcements

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of Traffic Level on Number of Stress Responses</td>
<td>Zara Musa</td>
<td>Williamsburg Middle School</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>The Effect of Visual Messaging on Hand Sanitizer Use</td>
<td>Isabel Baggette</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effects of Classroom Environment on Average Student Participation in a Group Discussion</td>
<td>Sarah Blair</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>9-9:20 AM</td>
<td>Emotional Trauma Caused By The Lack Of Sports Due To The Covid-19 Pandemic</td>
<td>Wyatt Brown</td>
<td>Chesapeake Bay Governor's School</td>
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<td>10-10:20 AM</td>
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<tr>
<td>10:20-10:40 AM</td>
<td>How does the media influence perception of law enforcement?</td>
<td>Johannah Caudill</td>
<td>Southwest Virginia Governor's School</td>
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<tr>
<td>10:40-11 AM</td>
<td>The Comparison of Online Learning Strategies on Information Retention</td>
<td>Kate Devitt</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>11:11:20 AM</td>
<td>Active Versus Passive Virtual Education</td>
<td>Peter Garrison</td>
<td>Central Virginia Governor's School</td>
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<td>11:20-11:40 AM</td>
<td>Cameron Gilmore</td>
<td>Cameron Gilmore</td>
<td>Blacksburg High School</td>
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<td>12-12:40 PM</td>
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<td>Time</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Correlation Between Dominant/Submissive Personality Traits and the Tendency to Socially Conform</td>
<td>Caitlin Grant</td>
<td>Chesapeake Bay Governor's School</td>
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<td>1:120 PM</td>
<td>The Relationship Between ABO Blood Groups and Certain Personality Types</td>
<td>Sofia Harrison</td>
<td>Chesapeake Bay Governor's School</td>
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<td>1:20-1:40 PM</td>
<td>Ethnicity and Education: Do Gifted Programs Get a Passing Grade?</td>
<td>Kelsey Henry</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Socioeconomic Status on an Individual's Ability to Swim</td>
<td>Nathan Karnes</td>
<td>Central Virginia Governor's School</td>
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<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>Effect of Social Isolation During the COVID-19 Quarantine on General Mental Health</td>
<td>Eric Kauppi</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>2:40-3 PM</td>
<td>Evaluating Loneliness Scales to Assess Loneliness During the COVID-19 Pandemic</td>
<td>Dasol Lee</td>
<td>Blacksburg High School</td>
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<tr>
<td>3:30-3:20 PM</td>
<td>Influence of Virginia State Sentencing Guidelines on Jury Recommended Maximum Sentences</td>
<td>Madison Lilly</td>
<td>Southwest Virginia Governor's School</td>
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<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Academic Reconditioning on Perception of Connotation</td>
<td>Kylie Maupin</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>3:40-4 PM</td>
<td>How Lifestyle Affects Fast Food Consumption</td>
<td>Benjamin McGuire</td>
<td>Central Virginia Governor's School</td>
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**Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.**
# Psychology B (HS PSY-B)

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<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
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<tbody>
<tr>
<td>9:00-9:20 AM</td>
<td>Is There a Correlation between Anxiety and Trypophobia?</td>
<td>Eleanor McPhatter</td>
<td>Central Virginia Governor's School</td>
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<td>9:20-9:40 AM</td>
<td>The Effects of Political Advertisements on Voter Response</td>
<td>Sara Murray</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>9:40-10 AM</td>
<td>Studying Demographic Trends in Life Quality Based on Maslow's Hierarchy</td>
<td>Alaysia Oakes</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>10:00-10:20 AM</td>
<td>The Effect of Hours of Sleep on Creativity Test Scores</td>
<td>Amanda Powell</td>
<td>Central Virginia Governor's School</td>
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<td>10:20-10:40 AM</td>
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<tr>
<td>10:40-11 AM</td>
<td>The effect of weekly practice time on a violinist's ability to sight read</td>
<td>Elliott Putnam</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>11-11:20 AM</td>
<td>Generational Differences in the Perception of Diabetes Mellitus</td>
<td>Jade Riddle</td>
<td>Southwest Virginia Governor's School</td>
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<tr>
<td>11:20-11:40 AM</td>
<td>The Effect of Meal Planning and Grocery Lists on the Amount of Food Waste in Households</td>
<td>Leilani Rucker</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>11:40-12 PM</td>
<td>The Correlation between Perceiving Faces in Optical Illusions and the Ability to Read Emotional Expressions in Faces</td>
<td>Lindsey Shortt</td>
<td>Chesapeake Bay Governor's School</td>
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<td>12-12:40 PM</td>
<td>LUNCH BREAK</td>
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<tr>
<td>12:40-1 PM</td>
<td>The Effect of Knowing Yourself Better Through the Enneagram on Mental Health</td>
<td>Anna Sloan</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>1-1:20 PM</td>
<td>How Background Music Affects Concentration and Cognitive Processing</td>
<td>Jonah Snyder</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>1:20-1:40 PM</td>
<td>The Effects of Reading, Listening, and Dual-Modalities on the Comprehension of Different Passages Among High School Students</td>
<td>Alex Taylor</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>1:40-2 PM</td>
<td>The Effect of Relaxation Techniques on Chronic Pain</td>
<td>Hannah Taylor</td>
<td>Central Virginia Governor's School</td>
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<td>2-2:20 PM</td>
<td>BREAK</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Increased Blue Light Exposure on Sleep Quality</td>
<td>Lauren Vossen</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>2:40-3 PM</td>
<td>Relationships Between Screen Time and Anxiety and Depression in High School Students</td>
<td>Ella Wesolowski</td>
<td>Central Virginia Governor's School</td>
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<tr>
<td>3-3:20 PM</td>
<td>Gender Morality Differences</td>
<td>Jacob Williams</td>
<td>Central Virginia Governor's School</td>
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<td>3:20-3:40 PM</td>
<td>COVID-19 and Mental Health</td>
<td>Lauren Wilson</td>
<td>Ocean Lakes High School Mathematics and Science Academy</td>
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</tbody>
</table>

Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.
## Statistical Analysis & Inferences (HS SAI)

### Paper Title | Student Name | School
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9:20-9:40 AM | The Effect of the Type of Instruction Received on High School Math Test Scores | Isaiah Bradner | Central Virginia Governor's School.
9:40-10 AM | The Effect of Natural Disasters on the Severity of Cholera in Africa | Natalia Chahil | Washington-Liberty High School
10:10:20 AM | The Effect of Aircraft Type on Irregular Operation Rate | Alex Coffman | Mills E. Godwin High School
10:20-10:40 AM | BREAK |
10:40-11 AM | The Effect of Virginia State Budget Allocation on Rates of Incarceration and Recidivism | Bethany Duncan | Central Virginia Governor's School.
11-11:20 AM | Use It or Lose It: An Analysis of Unnecessary Spending in Flexible Spending Accounts | Diego Elias | Blacksburg High School
11:20-11:40 AM | The Effect of a student attending Governor's School on College Acceptance | Camden Good | Central Virginia Governor's School.
11:40-12 PM | Access to High Quality Child Care Centers in Rural Countries in Different Virginian Regions | Ellen Habteyonas | Blacksburg High School
12-12:40 PM | LUNCH BREAK |
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
<th>School</th>
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</thead>
<tbody>
<tr>
<td>1-1:20 PM</td>
<td>The Effect of the Occupation on the Difference in Pay Between Males and Females</td>
<td>Rory McAndrew</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>The relationship between gun law strength and homicide rates</td>
<td>Chandler O'Rourke</td>
<td>Central Virginia Governor's School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>The Effect of Sex, Age, and Geographic Location on Allergy and Asthma Frequency</td>
<td>Jordyn Rollins-Williams</td>
<td>Chesapeake Bay Governor's School</td>
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<tr>
<td>2-2:20 PM</td>
<td><strong>BREAK</strong></td>
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<tr>
<td>2:20-2:40 PM</td>
<td>The Effect of Algorithm Based Neural Network Machine Learning on the Projection of the Basis and Progression of Alzheimer's Disease</td>
<td>Ambica Sharma</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>2:40-3 PM</td>
<td>Correlations Between the Traditional Diets of Different Cultures and the Human Genome's Disease Allele Frequency</td>
<td>Kayli Smith</td>
<td>Chesapeake Bay Governor's School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>Data Analysis and Evaluation of an Area's Median Household Income on Varying Success in Hospice</td>
<td>Nate Stevenson</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>Development of a Machine Learning Algorithm to Detect Amyotrophic Lateral Sclerosis(ALS) in Patients</td>
<td>Ashwitha Surabhi</td>
<td>Thomas Jefferson High School for Science and Technology</td>
</tr>
<tr>
<td>3:40-4 PM</td>
<td>Classification of Neurons by Activation Stages using an Artificial Neural Network</td>
<td>Eric Xie</td>
<td>Blacksburg High School</td>
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</tbody>
</table>

**Judges - Please Keep to Schedule. Complete & Submit All Scores on Reviewr by 5 PM.**
# Zoology (HS ZOO)

**Zoom link**
https://cwm.zoom.us/j/95229531456?pwd=K3pwMUdxNURralRRMGx3RUVBcVB4Zz09

Please convene by 8:55 AM for Announcements

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper Title</th>
<th>Student Name</th>
<th>School</th>
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</thead>
<tbody>
<tr>
<td>9-9:20 AM</td>
<td>The Effect of the Type of Recyclable Waste on Vermicompost pH Levels</td>
<td>Elora Burchette</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>9:20-9:40 AM</td>
<td>Prevalence of Mixed Species Herding with Giraffe Calves</td>
<td>Rachel Dickerson</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td>9:40-10 AM</td>
<td>The Effect of Colored Feeding Stations on Honeybee Attraction</td>
<td>Jackson Drewry</td>
<td>Clover Hill High School</td>
</tr>
<tr>
<td>10-10:20 AM</td>
<td>The Effect of Water pH on the Heart Rate of Daphnia magna</td>
<td>Anujin Enkhee</td>
<td>Washington-Liberty High School</td>
</tr>
<tr>
<td><strong>10:20-10:40 AM</strong></td>
<td><strong>BREAK</strong></td>
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<tr>
<td>10:40-11 AM</td>
<td>The Effect of Ultraviolet Radiation on the Survival and Hatch Rates of Artemia salina</td>
<td>Julie Fitzgerald</td>
<td>Central Virginia Governor's School.</td>
</tr>
<tr>
<td>11-11:20 AM</td>
<td>The Effect of Agricultural Pesticides on Daphnia magna.</td>
<td>Shreel Golwala</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>11:40-12 PM</td>
<td>What's All the Buzz? Drosophila melanogaster as a Unique Model for Addiction Disorders and Physiology after Traumatic Brain Injury (TBI)</td>
<td>Shan Lateef</td>
<td>Thomas Jefferson High School for Science and Technology</td>
</tr>
<tr>
<td><strong>12-12:40 PM</strong></td>
<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>12:40-1 PM</td>
<td>The Effect of Oxygenator Design on the Survival Rate of Culex tarsalis Larvae</td>
<td>Emily Lionberger</td>
<td>Mills E. Godwin High School</td>
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<tr>
<td>Time</td>
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<tr>
<td>1-1:20 PM</td>
<td>The Effect of Nitrate Levels on Daphnia Magna’s Heart rate</td>
<td>Olivia Nguyen</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>1:20-1:40 PM</td>
<td>Determining Relatedness of L. Kempii Nesting Sites Using Bioinformatics</td>
<td>Anooshka Pendyal</td>
<td>Deep Run High School</td>
</tr>
<tr>
<td>1:40-2 PM</td>
<td>Nectar Feeding Preferences of Ruby-Throated Hummingbirds in the Middle Peninsula</td>
<td>Paula Perez</td>
<td>Chesapeake Bay Governor’s School</td>
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<td>2-2:20 PM</td>
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<tr>
<td>2:20-2:40 PM</td>
<td>Investigation of Bio-printed Hydrogels for Purification of Danio rerio Habitats During Embryonic Development</td>
<td>Liala Sofi &amp; Alicia Carvalho</td>
<td>Roanoke Valley Governor’s School</td>
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<tr>
<td>2:40-3 PM</td>
<td>Using the Embryonic Danio rerio Stress Response System to Investigate the Toxicity of Metal Oxide Nanoparticles</td>
<td>Uyen Nhi Tran</td>
<td>Roanoke Valley Governor’s School</td>
</tr>
<tr>
<td>3-3:20 PM</td>
<td>The Effect of Different Foods on Fruit Fly Preference</td>
<td>Varun Yeri</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3:20-3:40 PM</td>
<td>The Effect of Silver Nanoparticles on the Heart Rate of Daphnia magna</td>
<td>Paul Yang</td>
<td>Mills E. Godwin High School</td>
</tr>
<tr>
<td>3:40-4 PM</td>
<td>The Effect of Monosodium Glutamate on the Reproduction Rates of Daphnia magna</td>
<td>Virginia Trost</td>
<td>Central Virginia Governor’s School</td>
</tr>
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</table>

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

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For information, contact Sujan Henkanaththedegedara at henkanaththedegedarasm@longwood.edu or 434-395-2731.

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