

# Virginia Regional Junior Science and Humanities Symposium

February 22<sup>nd</sup>, 2025



Hosted by:

**LONGWOOD**  
UNIVERSITY

Sponsored by:



## **Longwood Campus Police Number**

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## **Future Meetings**

### **63<sup>rd</sup> National JSHS**

April 22-26, 2025

Chantilly, Virginia

**The 2025 National JSHS Registration launch is TBD.**

All participants in the National JSHS must register through the National JSHS registration website. Participants include students; teachers; DoD/STEM professionals- invited officials, judges, presenters, speakers, volunteers; JSHS staff and all other guests- family members and friends.

### **64<sup>th</sup> Regional Virginia JSHS**

February 28<sup>th</sup>, 2026

Longwood University

Farmville, VA

# Virginia Regional Junior Science and Humanities Symposium

February 22<sup>nd</sup>, 2025



## Visit Longwood



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## About JSHS

The Junior Science and Humanities Symposium (JSHS) is a Tri-Service – US Army, Navy, Air Force, and the Department of Defense – program that encourages high school students to conduct original research in the fields of science, technology, engineering, and mathematics (STEM). Administered by the Academy of Applied



Science (AAS), JSHS is a collaborative effort between the research arm of the Department of Defense (DoD) and nationwide colleges and universities. JSHS aims to prepare and support students to contribute as future scientists and engineers, both directly and indirectly, for DoD, federal research laboratories and to help advance the Nation’s scientific and technological progress. More than 7,600 talented youth compete in 48 regional symposia across the US, Puerto Rico, and DoD Dependent Schools in Europe and the Pacific to receive recognition and scholarships for their research achievements. Finalists of the regional JSHS symposia advance to National JSHS, where the winners of each judging category are announced.

For more details, please visit: [www.jshs.org](http://www.jshs.org)

## JSHS Objectives

- Promote research and experimentation in the sciences, technology, engineering, and mathematics (STEM) at the high school level.
- Recognize the significance of research in human affairs and the importance of humane and ethical principles in the application of research results.
- Identify talented youth and their teachers, recognize their accomplishments at symposia and encourage their continued interest and participation in science, technology, engineering, and mathematics (STEM).
- Expand the horizons of research-oriented students by exposing them to opportunities in STEM within the Department of Defense, academia, industry, and government.
- Increase the number of adults capable of conducting research and development.

The JSHS Program is sponsored by the:

Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, Washington, DC; Office of Naval Research, Arlington, VA; and Air Force Research Laboratory (AFRL), Wright-Patterson AFB, OH; U.S. Office of the Secretary of Defense, Arlington, VA.

JSHS is administered by the National Science Teaching Association, the largest organization in the world committed to promoting excellence and innovation in science teaching and learning for all.

## About Longwood University

Situated in the heart of Virginia, and the heart of the nation's oldest two-college community of Farmville, Longwood is one of America's hundred-oldest colleges and universities. A public liberal arts university of 5,000 students, Longwood has a distinctive mission: to shape citizen leaders.

Longwood is known for its mission, camaraderie, and small class size. Students have unparalleled access to faculty members, as Longwood has the highest percentage of courses taught by full-time faculty of any public university in Virginia. Students are famous for their enthusiastic extracurricular involvement—many are members of several of the more than 200 clubs and organizations on campus.

Over the past decade, Longwood has become recognized as a statewide leader on keeping college costs affordable for families—the average annual tuition raise at the university is among the lowest in the commonwealth among public universities. That has come while major construction projects have added exciting new spaces to campus, including the 79,000-square-foot Upchurch University Center, new academic building, dramatic renovation of Moss and Johns residence halls, and the brand new Joan Perry Brock convocation center.

Longwood's historic 60-acre central campus has witnessed some of the most critical events in American history. The final hours of the Civil war played out along High Street on the north end of campus, while in 1951 the south end of campus witnessed the student-led birth of the modern civil rights movement with the student strike at the then all-black Moton School. The strikers' campaign for educational opportunity became an essential part of the *Brown v. Board of Education* school desegregation case, accounting for 75 percent of plaintiffs. Today, Moton is an award-winning museum affiliated with Longwood and plays an important role in the life of the university.



## President's Welcome

Visitors to the Junior Sciences and Humanities Symposium,

Welcome to Longwood University in the heart of Virginia. We are honored to host the Virginia Regional Symposium, which will bring so many talented and accomplished high school students, teachers, and parents to campus.

At this meeting, you'll engage in a rich exchange of scientific ideas and perspectives that will inspire and challenge your thinking. I can think of no more fitting place for that type of gathering than a university campus, where those exchanges are fostered daily.

Longwood is one of the hundred-oldest colleges and universities in the country, a Virginia public institution with a distinctive mission to create citizen leaders. Our science programs are a great point of pride—we have a number of thriving research programs for undergraduates, including our signature paid summer research experience called PRISM. Participants have gone onto top graduate schools nationally and have found rewarding careers in the STEM fields. As you get to know us, I hope you'll consider Longwood as an option for your own collegiate career. It is a beautiful place, and one of great camaraderie, cherished traditions, and where the professor-student relationship is nurtured, and truly has an impact on the lives and careers of students.

I also hope you'll find time to wander through our historic campus and down the hill to downtown Farmville, as charming a college town as you can find in any corner of the country. It's a place rich in history, including as a birthplace of the student-led Civil Rights movement, honored at the Moton Museum on the southern edge of campus.

We applaud your achievements in science, technology, engineering and mathematics, and are happy to have you on campus. I hope that your time here will be productive, enlightening, and that you return soon.

Sincerely,

W. Taylor Reveley IV  
President



## Meet the Hosts



**Program Director – Sarah E. G. Porter, Ph.D.** Dr. Porter is a Professor of Chemistry at Longwood University, where she has taught since 2007. She is currently serving as the director of the Longwood Summer Scholars: Exploring Science program (funded jointly by the AEOP and the American Chemical Society). She has a Ph.D. in chemistry and an M.S. in forensic science from VCU. She teaches chemistry at all levels, from intro courses to the research-intensive senior capstone.



**Regional Director – Andrew A. Yeagley, Ph.D.** Dr. Yeagley is an Associate Professor of Chemistry that joined the ranks at Longwood University in 2013. He is the director of the summer research program (PRISM) and has helped host the VJAS competition here on Longwood's campus. His research interests are in medicinal chemistry, but is formally trained as a Ph.D. organic chemist from UVa and further studied biofilm inhibitors under Dr. Christian Melander at NCState. He teaches the organic chemistry series and inorganic chemistry.



**Assistant Director – Tyler St. Clair, Ph.D.** Dr. Tyler St. Clair grew up in Poquoson, Virginia. He taught high school chemistry, physics, and general science in both China and New York before getting his Ph.D. in the field of science education from Oregon State University in 2016. Since that time, he has been an assistant professor at SUNY Potsdam and now in the Department of Chemistry and Physics at Longwood University. His research interests include studying project-based learning with a global focus, teaching the nature of science, and chemistry/polymer education.

**Assistant Director – Larry B. Collins, Ph.D.** Dr. Collins is an Assistant Professor of Earth/Environmental Science and joined the faculty of Longwood in 2023. He graduated from Mansfield University with a B.S.E. in Earth/Space Science Education and taught high school earth/environmental science in Altavista, VA for several years. He earned an M.S. in Environmental Geoscience from Mississippi State University and PhD at Washington State University. Dr. Collins conducts research in the area of climate science and teaches courses at the introductory to upper level in the earth/environmental sciences.

## A Thank You to Our Judges

Longwood University would like to thank the many judges that have taken their time to volunteer here at the Virginia Regional Junior Science and Humanities Symposium. Without their devotion to the sciences, events like this are not possible.

**Araba Abaidoo-Myles** from Virginia Commonwealth University

**Jennifer Bradley** from Virginia Commonwealth University

**Phoebe Bridy** from VCU School of Dentistry

**Kim Butun** from Longwood University

**Belle Buzzi** from Virginia Commonwealth University

**Travis Chiarelli** from VCU School of Medicine

**Kathy Fox** from Regulatory Insights & Solutions

**James Gaul** from Fuqua School

**Gilbert Glago** from Virginia Commonwealth University

**Karen Kinslow** from Longwood University

**Heather Kissel** from Longwood University

**Ava Kreider-Mueller** from Hampden-Sydney College

**Mary Lehman** from Longwood University

**Usha Mahawar** from Virginia Commonwealth University

**Ann Mayo** from Longwood University

**Jo Morrison** from Longwood University

**Gary Page** from Longwood University

**Leslie Poling** from The Governor's School of Southside Virginia

**Sanish Rai** from Longwood University

**Joanna Reinhold** from Longwood University

**Charles Ross** from Longwood University

**Tyler St. Clair** from Longwood University

# Summary Schedule of Events

## Schedule for attendees

Time	Event	Location
7:30 a.m. – 8:15 a.m.	Registration and continental breakfast	Chichester main lobby
<b>8:30 a.m. -12:30 p.m.</b>	<b>Oral presentations</b>	<b>Chichester classrooms</b>
12:30 p.m. - 1:30 p.m.	Lunch and round table discussions	Dorrill Dining Hall
1:45 – 3:00 p.m.	Maker’s Space Tour (Sign-up required)	Meeting at Front of Dorrrill Dining Hall
2:30 – 3:30 p.m.	Campus tours (leave from Upchurch)	Leave from Upchurch
3:00 – 4:00 p.m.	Department bullpen sessions and tours of Chichester	Upchurch Gallery
2:00 – 3:45 p.m.	Lawn games	Wheeler Lawn
4:00 – 4:30 p.m.	Awards ceremony	Soza Ballroom, Upchurch

## Schedule for judges

Time	Event	Location
7:15 a.m. – 7:45 a.m.	Registration and continental breakfast	Chichester main lobby
7:45 – 8:15 a.m.	Orientation	Chichester G12
<b>8:30 a.m. -10:00 p.m.</b>	<b>Oral presentations</b>	<b>Chichester classrooms</b>
10:00 – 10:15 a.m.	Break	
<b>10:15 a.m. - 12:30 p.m.</b>	<b>Oral presentations</b>	<b>Chichester classrooms</b>
12:30 p.m. - 1:30 p.m.	Working lunch and final candidate discussions	Chichester classrooms, lunch in front first floor lobby
1:00 – 3:00 p.m.	Special/Head Judges read papers and final decisions	Various
4:00 – 4:30 p.m.	Awards ceremony (optional for judges)	Soza Ballroom, Upchurch

## Presentation Room Locations

- Engineering & Technology
- 8:30 - 10:00

Rm 105



- Chemical Sciences
- 11:30 - 12:30

Rm 105



- Physical Sciences
- 10:15 - 11:15

Rm 105



- Biomedical Sciences
- 8:30-12:30

Rm 112



- Behavioral & Life Sciences
- 8:30-12:30

Rm G08



- Mathematics & Comp. Sci.
- 8:30-11:30

Rm 109



- Medicine & Health
- 8:30-12:30

Rm G11



- Environmental Science A
- 8:30-12:15

Rm G02



- Environmental Science B
- 8:30-12:30

Rm G03



# Schedule of presentations:

## Engineering & Technology, Physical, and Chemical

### Room 105

- 8:30AM: **HydroPlane**  
Srihith Mudakala from Rock Ridge High School
- 8:45AM: **The Accuracy of an ASL-Recognition Deep Neural Network (Transfer Learning Approach) under Simulated Healthcare Conditions**  
Ingrid Jora from Southwest Virginia Governor's School
- 9:00AM: **Repeated Impacts on Cycling Helmet Efficacy**  
Ian Jora Macrea from Southwest Virginia Governor School
- 9:15AM: **Big Tech, Mainstream Media, and Politicians: How Unwanted Artificial Intelligence Has Found a Home in American Politics**  
Thomas Ferguson from St. Christopher's School
- 9:30AM: **Smart Bike Helmet**  
Shreyas Kalidindi from Rockridge High school
- 9:45AM: **Real-Time Sign Language Interpreter Using Computer Vision and Neural Networks**  
Abhinav Chaudhary from Loudoun Valley High School
- 10:00-10:15AM: Break
- 10:15AM: **Baryon Acoustic Oscillations Detected at High Redshift Ranges**  
Kevin Zhang from Academy of Science
- 10:30AM: **Advancing Particle Image Velocimetry: Implementing Physics-Informed Neural Networks for Accurate Flow Field Reconstruction**  
Aarnav Trivedi from Academies of Loudoun
- 10:45AM: **Identifying optimal metal-organic frameworks for adsorption-based carbon capture using natural language processing**  
Aneesh Kandimalla from Academies of Loudoun
- 11:00AM: **Optimizing Meta-atoms for Large Scale Metalenses**  
Minh Nguyen from Blacksburg High School
- 11:15-11:30AM: Break
- 11:30AM: **Combating Alzheimer's Disease: Design and Synthesis of a Novel Drug Molecule for Targeted Metal Chelation Therapy**  
Avani Kaur from Mills E. Godwin High School
- 11:45AM: **Aerogel as a Water Purifier: A Continuation**  
Sofia Wojcik from The Governor's School at Innovation Park
- 12:00PM: **The Effect of Alkaline and Tap Water on Electrolysis**  
Fiona Schwarz from Roanoke Valley Governor's School
- 12:15PM: **Characterizing Contrail Formation Dynamics Over the US**  
Ian Walters from Chesapeake Bay Governor's School

# Schedule of presentations:

## Life & Behavioral Sciences

Room G08

- 8:30AM: **Understanding Grit: A Comparative Study of Student Habits and Demographics**  
Suki Zheng from Chesapeake Bay Governor's School
- 8:45AM: **Correlation Study Among Students who Attended Early Childhood Education (at MCPS) with Current Senior Class Statistics**  
Madilyn Marsden from Blacksburg High School
- 9:00AM: **The Effect of CO<sub>2</sub> Concentration on *Chlorella vulgaris* Growth and pH**  
Isabella Geng from Mills E. Godwin High School
- 9:15AM: **The Effects of Attire on Tipping Behavior in the Music Industry**  
Maxwell Failmezger from Chesapeake Bay Governor's School
- 9:30AM: **The Effect of Protein Intake on Fruit Fly Reproductive Success**  
Logan Pyle from Mills. E Godwin High School
- 9:45AM: **Investigating the Abundance and Diversity of *Vibrio* Bacteria in Eastern Oysters, *Crassostrea Virginica***  
Elizabeth Dawkins from Chesapeake Bay Governors School
- 10:00AM: **Partying Parulidae: Interspecific Social Networks of Parulidae Warblers in Active Migratory Passage**  
Xavier Gitre from Blacksburg High School
- 10:15AM-10:30AM: Break
- 10:30AM: **Motivation with Mozart: A Study of Classical Music and its Effect on Academic Procrastination**  
Humza Chaudhry from St. Christopher's School
- 10:45AM: **Effect of Respiratory Techniques on Cortical Brain Activity Through Electroencephalography**  
Hridhay Pothunoori from Mills. E. Godwin High School
- 11:00AM: **Gauging the Cultural Relevance of Bluegrass Lyrics to Central Appalachia via Linguistic Analysis**  
Ida Polys from Blacksburg High School
- 11:15AM: **A Comparison of Sports Involvement and Reaction Time**  
Margaret Wonderling from Chesapeake Bay Governor's School
- 11:30AM: **Ex-vivo air-layering of *Ficus carica*, an approach to fig propagation**  
Katelyn Luu from Cosby High School
- 11:45AM: **Episodic Future Thinking to Improve Management of Type 2 Diabetes: Machine Learning Aided Analysis of Remote Delivery and Outcomes**  
Sophia Zeng from Roanoke Valley Governor's School
- 12:00PM: **Evaluating Water Pollution Through the Effect of Organic Kelp Fertilizer on Brine Shrimp (*Artemia salina*)**  
Devansh Kumar from Maggie L. Walker
- 12:15PM: **Evaluating Mycorrhizal & Nitrogen-Fixing Influences on Plant Fitness**  
Sage Lahmers from Blacksburg High School

# Schedule of presentations:

## Medicine & Health

### Room G11

- 8:30AM: **Alt. Non-Cardioembolic Stroke Therapy to Minimize Gastrointestinal Bleeding**  
Shaankari Ravulaparathi from Mills E. Godwin High School
- 8:45AM: **The Antimicrobial Inhibition Effect of Tropical Fruits**  
Jordan Asinugo from The Governor's School at Innovation Park
- 9:00AM: **A novel comp approach to predict the incidence of Parkinson's Disease**  
Aditi Nair from Maggie L. Walker Governor's School
- 9:15AM: **Relationship between maternal glucose levels in gestational diabetes and preeclampsia**  
Vicky Alberti from Mills E Godwin Highschool
- 9:30AM: **Using SGLT2 Inhibitors to Treat Medically Induced Nephrotoxicity and Kidney Injury in Mice Models**  
Arinan Johri from Maggie L. Walker Governor's School
- 9:45AM: **The Effect of UV Radiation Over Time on Sunscreen Efficacy by DNA Damage on *Staphylococcus epidermidis*.**  
Venkat Maheesh Kolahalam from Mills E Godwin High School
- 10:00AM: **AI-Augmented Comp Modeling of Bispecific antibody targeting B7H4+ cancer cells and CD3e+ CAR T-Cells for Targeted Therapy in Solid Tumor**  
Rishi Nair from Blacksburg High School
- 10:15AM-10:30AM: Break
- 10:30AM: **Design and Validation of CRISPR-Cas9 Guide RNAs Targeting the HBB Gene Mutation in Sickle Cell Anemia**  
Tarun Alex from Academies of Loudoun
- 10:45AM: **Assessing Personal Care Product Usage by Teens and Identifying Gender-Specific Trends and Potential Implications for Health**  
Hannah Tober from Chesapeake Bay Governor's School
- 11:00AM: **The Effect of Lethal Mutagenesis on Viral Population count**  
Srinidhi Subramanian from Mills E. Godwin High School
- 11:15AM: **Effects of Differing Macronutrient Ratio on Canine Oral Microbiomes**  
Elena Milsted from Chesapeake Bay Governor's School
- 11:30AM: **Reconstructing Natural Vision from fMRI & EEG Using Generative Models for Communication and Covert Awareness in Neurological States**  
Yashvir Sabharwal from Battlefield High School
- 11:45AM: **The effect of sleep quality on the power output of youth cyclists**  
Jackson Pollyea from Blacksburg High School
- 12:00PM: **Morphometrical changes to the pelvic floor muscle complex before, during, and after pregnancy in a murine model**  
Elizabeth Zhang from Blacksburg High School
- 12:15PM: **Effectiveness of B-Lactam Antibiotics Combined with Clavulanic Acid Against Escherichia (Resistance)**  
Ritvik Adusumilli from Mills E. Godwin High School

# Schedule of presentations:

## Mathematics and Computer Science

### Room 109

- 8:30AM: **GEMINI: A Breakthrough System for Robust Genetic Interaction Discovery, Revolutionizing Biological Insight For the Discovery of Novel Gene Regulatory Networks and Application of Gene Regulatory Networks to Industrial Level Genetic Engineering**  
Ridhi Gutta from Academies of Loudoun
- 8:45AM: **Training an Optical Proximity Correction Model Using Conditional Generative Adversarial Networks**  
William Lin from Maggie L. Walker
- 9:00AM: **TRANSCEND – Training and Rendering Algorithms for Novel Sustainable Computational Engineering and Design**  
Siddha Bambardekar from Rock Ridge High School
- 9:15AM: **English Place-Names and Viking Activity**  
Lyra Piche from Blacksburg High School
- 9:30PM: **Error and Efficiency of Fractional Numerical Integrators**  
Marcus Mason from The Governor's School for Science and Technology
- 9:45AM: **SketchNet: A Radiance Field Framework for 3D Reconstruction from Sparse 2D Inputs**  
Ajay Vinjamuri from Academies of Loudoun
- 10:00-10:15AM: Break
- 10:15AM: **Modeling Neuroconnectivity To Enhance the Energy Efficiency and Processing Power of Neural Networks**  
Zayan Hasan from Academies of Loudoun
- 10:30AM: **Using Modeling Methods to Analyze Environmental Effects on Coral Regeneration**  
Shriya Bandla from Mills E Godwin High School
- 10:45AM: **Analyzing the Effect of a Block Coding Course on the Interest Levels of Students in a Rural Education Setting**  
Jean Sebatumitsi from Chesapeake Bay Governor's School
- 11:00AM: **Identifying novel dehydrogenase mutations linked to 5-fluorouracil sensitivity by integrating computational mutation predictions.**  
Jack Janiga from Roanoke Valley Governor's School
- 11:15AM: **Classification of Breast Cancer Tumor Types Using Convolutional Neural Networks**  
Arav Srivastava from Grafton High School



# Schedule of presentations:

## Biomedical Sciences

Room 112

- 8:30AM: **The Effect of Influenced Water on Bacterial Growth on Spinach**  
Krithik Poondru from Mills E. Godwin High School
- 8:45AM: **In-Silico Design of RNA Aptamers for Targeted Therapy of CD117+ Glioblastoma**  
Pranav Sundarrajan from Mills E. Godwin High School
- 9:00AM: **The Effect of Ultraviolet-C Light Exposure Time on Bacterial Viability**  
Alex Buhler from Mills E. Godwin
- 9:15AM: **Observing Mitochondrial Health by Monitoring Blueberry Anthocyanin Extract in *C. elegans***  
Aishu Varanasi from Academies of Loudoun
- 9:30PM: **Investigating the Distinct Roles of the Anterior and Posterior Insula in Gating of Nociceptive Stimulus using Low-Intensity Focused Ultrasound**  
Parneet Gill from Roanoke Valley Governor's School
- 9:45AM: **The Effect of Homeopathic vs. Western Medicine on Wound Infection Control**  
Anshika Yadav from Mills E Godwin
- 10:00AM: **Hiv-2 Tar: The Missing Puzzle Piece In The Search For A Cure To Aids**  
Sidharth Yenireddy from Academies Of Loudoun
- 10:15AM-10:30AM: Break
- 10:30AM: **The Effect of Transcranial Magnetic Stimulation on the Resistivity of a Fiber Based Synaptic Devices**  
Sanaya Bothra from Maggie L Walker Governors School
- 10:45AM: **The Effect of Types of Protease Inhibitors on Guinea Pig Sperm Acrosomal Matrix Disassembly**  
Neha Beeravalli from Godwin High School
- 11:00AM: **The Effect of Different Acne Medications on *Escherichia coli* Culture**  
Suhana Sangerpal from Mills E. Godwin High School
- 11:15AM: **Using Lavender as a Natural Preservative to Prevent Fungal and Microbial Growth**  
Jaxon McDonald from Chesapeake Bay Governor's School
- 11:30AM: **Studying the Overlap Between Alcohol Response Genes and Behavioral State Genes in *C.elegans* Using CRISPR-Cas9 and Locomotion Assays**  
Deepanshi Kumar from Maggie L. Walker Governor's School
- 11:45AM: **Testing the reliability of serum-free media in mammalian cells**  
Vimridh Vasudev from Mills E Godwin High School
- 12:00AM: **Targeting RAGE: A Novel Therapeutic Strategy Against AGE-Mediated Prostate Cancer Progression**  
Bhoomika Kaur from Mills E. Godwin High School
- 12:15AM: **Targeted Inhibition of Oncogenic p300 Proteins Using Novel PROTACs for Hepatocellular Carcinoma Therapy**  
Sreeram Gourineni from Academies of Loudoun

# Schedule of presentations:

## Environmental Science A

### Room G02

- 8:30AM: **The Effect of Phytohormones on the Root Density of Radishes**  
Deepika Alapilla from Mills E. Godwin High School
- 8:45AM: **How does PVA and PEG affect the Regeneration of Planaria Worms?**  
Grayson Griffith from Chesapeake Bay Governor's School
- 9:00AM: **The Effects of Different Sunscreens on Water Pollution.**  
Sahasra Sudeep from Mills E. Godwin High School
- 9:15AM: **The Impact of Salinity and Temperature on the Total Population and Species Distribution of Jellyfish in the Rappahannock River**  
Anne Motley from Chesapeake Bay Governor's School
- 9:30AM: **The Effect of Different Concentrations of Nanosilver on Daphnia Magna Heart Rate**  
Aarnav Rudraraju from Mills E. Godwin High School
- 9:45AM: **Determining The Effect of Fiddler Crabs on Spartina alterniflora Based on Height, Density, and Dissolved Oxygen**  
Mason Walker from Chesapeake Bay Governors School
- 10:00AM: **The Impact of Carbonation in saltwater.**  
Areen Amr from Appomattox Regional Governor's School
- 10:15-10:30AM: Break
- 10:30AM: **The Effect of pH on the Disintegration Rate of Coral Skeletons**  
Kathryn Simal from Chesapeake Bay Governors School
- 10:45AM: **The Effect of Natural Filtering Materials on the Heavy Metal Concentration in Drinking Water**  
Aditi Vasudev from Mills E Godwin High School
- 11:00AM: **The Effect of Acetylsalicylic Acid on Various Herbs Under Stress Conditions**  
Ngozi Imala from Governor's School @ Innovation Park
- 11:15AM: **A Field Study of Water Quality Impacts of Rainfall Events on Maracossic Creek**  
Kaitlyn Klock from Chesapeake Bay Governor's School
- 11:30AM: **The Effect of The Antioxidant, Mannitol, on Bleaching in The Sea Anemone, Exaiptasia pallida**  
Emma Clark from Academies of Loudoun
- 11:45AM: **The Effects of Hydrogen Peroxide and Seed Types on the Length of Seed Germination**  
Gurjaap Singh from Godwin High School
- 12:00AM: **The Use of Time Series Forecasting to Determine the Spatiotemporal Variability of Fog in the Atacama Desert**  
Shonu Sengupta from Academies of Loudoun

# Schedule of presentations:

## Environmental Science B

### Room G03

- 8:30AM: **Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) - “Forever” Chemicals Presence in Virginia Drinking Water and Household Usage**  
Aiden Eanes from Chesapeake Bay Governor's School - Glens
- 8:45AM: **A Strategy for Flood Mitigation and Urban Resilience by Assessing the Effectiveness of Retention and Detention Ponds: A Case Study in Norfolk, VA**  
Veronica Vitko from Albemarle High School
- 9:00AM: **Air Pollution and Population Density Correlation in the District of Columbia, Maryland, and Virginia (DMV): Insights into Urban Development Trends**  
Alex Gan from Mclean High School
- 9:15AM: **A Computational Approach to Reducing Methane Emissions in Cattle**  
Anika Parashar from Roanoke Valley Governor School
- 9:30AM: **The Effect of the Type of Pesticide on the Mortality Rate of Daphnia Magna**  
Pari Wadnerkar from Mills E. Godwin High School
- 9:45AM: **The Effect of Low Frequency Sound on The Behavior of C. Elegans**  
Lucyna Laplante from Roanoke Valley Governor's School
- 10:00AM: **Utilizing Micro Artificial Reefs to Improve Biodiversity in the Chesapeake Bay**  
Lilly Riffe from Chesapeake Bay Governor's School
- 10:15-10:30AM: Break
- 10:30AM: **Potential for Coastal Alkalinity Enhancement Using Calcium Ion Supplementation Under Normal and Acidified Conditions**  
Olivia Allen from Chesapeake Bay Governor's School
- 10:45AM: **Studying the Effect of Different Substrates and Textures on the Settlement of *Crassostrea virginica* Larvae using a Spat-on-Shell Aquaculture Method**  
Victoria Whitt from Chesapeake Bay Governors School
- 11:00AM: **Comparing Growth of Crops in a Salinity-Fluctuating Aquaponics System**  
Laney Williams from Chesapeake Bay Governor's School
- 11:15AM: **A Study on the Effect of Varying Levels of Iron Supplementation on Lettuce (*Lactuca sativa*) Growth in Media-Bed Aquaponics**  
Abby Dobson from Chesapeake Bay Governor's School
- 11:30AM: **The Effect of Different Decontamination Methods on Purity of Water**  
Saharsh Shetty from Mills E. Godwin High School
- 11:45AM: **Analyzing The Extent Certain Factors Affect The Air Quality In Classrooms**  
Clavio Ascari from Collegiate School
- 12:00AM: **The Study of Anthropogenic Beach Pollution Along the Chesapeake Bay and Ocean Shorelines**  
Katherine Murphy from Chesapeake Bay Governor's School
- 12:15AM: **SAV's Role in Combatting Climate Change and Nutrient Pollution: A Comparative Analysis on SAV Water Quality Impact**  
Stephen Welch from Chesapeake Bay Governor School

Judging Score Sheet  
JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM  
ORAL JUDGING RUBRIC – 2024-2025



Judges will use the following criteria to compare student presentations. The points earned are determined using a 1-5 scale then scaling that score (multiplied by 2 or 3) to the points possible for that criteria.

Criteria	Points Possible
Identification of Research Problem	5
Scientific Thought	5
Creativity/Originality	5
Acknowledgements	5
Research Design	15
Methods	15
Results	15
Discussion & Conclusions	15
References	5
Communication	15

You can find the full rubric here:



# Academic Departments in STEM at Longwood



## Chemistry

•Dr. Sarah Porter ([Portersg@longwood.edu](mailto:Portersg@longwood.edu))



## Physics

•Dr. Tim Holmstrom ([Holmstromtk@longwood.edu](mailto:Holmstromtk@longwood.edu))



## Biological and Environmental Sciences

•Dr. Mary Lehman ([Lehmanme@longwood.edu](mailto:Lehmanme@longwood.edu))



## Mathematics and Computer Sciences

•Dr. Toni Sorrell ([sorrelltp@longwood.edu](mailto:sorrelltp@longwood.edu))



## Kinesiology

•Dr. Mike Mucedola ([mucedolams@longwood.edu](mailto:mucedolams@longwood.edu))



## Psychology

•Dr. Eric Laws ([lawsel@longwood.edu](mailto:lawsel@longwood.edu))



## Nursing

•Dr. Kim Little ([littleke@longwood.edu](mailto:littleke@longwood.edu))

# Virginia Regional JSHS Awards

Each section (category) will have a gold medallion award. The gold medallion winners make up the selection pool for the three scholarship winners (see below) and 5 invitees to the National Junior Science and Humanities Symposium, except for team projects. Teams may receive gold medallions, but are not eligible for scholarships or trips to the National JSHS.

## **Army-Navy-Air Force Scholarship Awards (Regional Winners)**

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For 1st Place oral presentation	<b>\$2,000*</b>
For 2nd Place oral presentation	<b>\$1,500*</b>
For 3rd Place oral presentation	<b>\$1,000*</b>

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## **Army-Navy-Air Force Teacher's Award**

Award honors the teacher and the school for contributing to the advancement of student participation in research. **\$500**

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*\*Scholarship amounts are subject to change according to JSHS sponsors.*

## **\*Eligibility for scholarship awards**

Students must be a citizen or permanent resident of the United States to be eligible for government supported scholarship awards.

All scholarships are payable upon matriculation to college and upon meeting the JSHS scholarship conditions.

# National JSHS Awards

In addition to scholarships, the Departments of the Army, Navy and Air Force invite the top five finalists from the Virginia Regional JSHS Symposium to the National JSHS Symposium to present their original research; expenses paid. The 1st and 2nd place Virginia regional finalists will present their research in the oral competition to compete for National JSHS scholarships. The 3rd, 4th and 5th place regional finalists will present their research in the poster competition to compete for cash awards.

## **Army/Navy/Air Force Scholarship Awards Presented at the National JSHS Symposium\***

A total of \$192,000 in undergraduate tuition scholarships is presented to the top three finalists in the National Symposium research paper oral competition in each of the subject categories.

<b>Up to 7 - 1st place Scholarship Awards</b> (Including the award made at the regional level, a total of up to a \$14,000 scholarship)	<b>\$12,000</b>
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<b>Up to 7 - 2nd place Scholarship Awards</b> (Including the award made at the regional level, a total of up to a \$9,500 scholarship)	<b>\$8,000</b>
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<b>Up to 7 - 3rd place Scholarship Awards</b> (Including the award made at the regional level, a total of up to a \$5,000 scholarship)	<b>\$4,000</b>
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A cash award in the amount of \$350 will be presented to the top finalists in the National Symposium research poster competition in each of the subject categories.

Each of the 1st Place finalists in the poster competition receives \$350

\*Scholarship amounts are subject to change according to availability of funds from JSHS sponsors.

Scholarships are payable at a certain amount per year for 4 years; some restrictions apply.

### **\*Eligibility for scholarship awards**

Students must be a citizen or permanent resident of the United States to be eligible for government supported scholarship awards.

All scholarships are payable upon matriculation to college and upon meeting the JSHS scholarship conditions.

