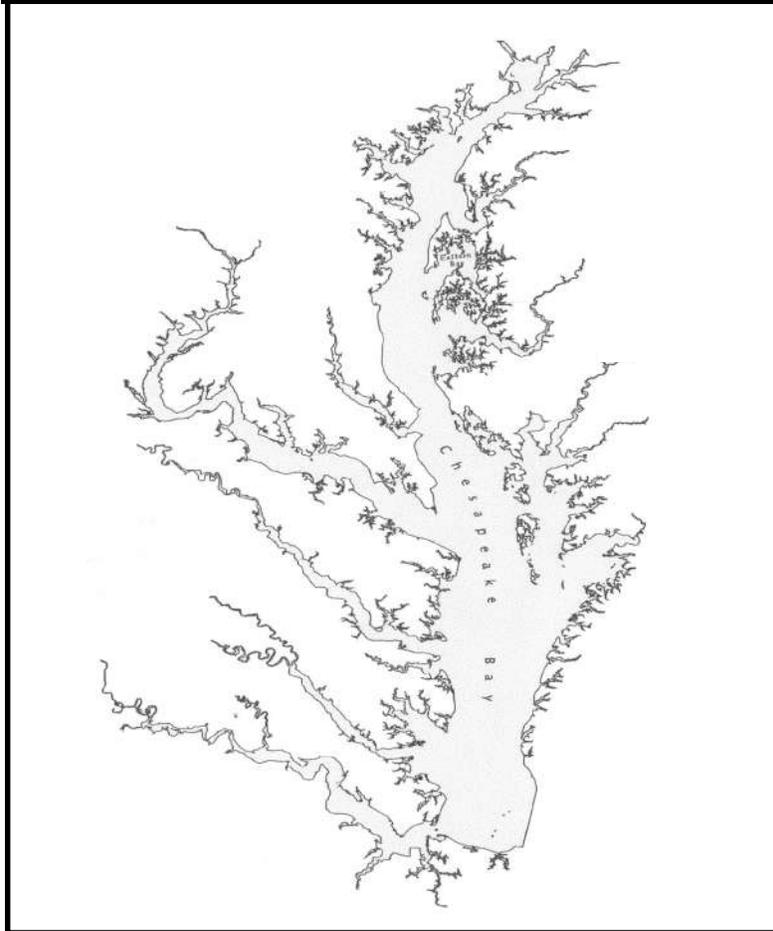


**Chesapeake Bay  
Governor's School**  
for Marine & Environmental Science

**22nd Annual  
Science Symposium**



**Virginia Commonwealth University  
Student Commons  
Saturday, March 8, 2025  
9:00 a.m. – 2:00 p.m.**

**CBGS Faculty**

Claire Adrian-Tucci  
James Beam  
Sara Chaves Beam  
Tracie Fulks  
Dr. Kevin Goff  
Livia Gong  
Dr. Vinh Hoang  
Meredith Jones  
Jennifer Magruder  
Kim Olsen  
Chenoa Payne  
Phillip Sanderson  
Brooke Sanders  
Lynn Smith

**CBGS Staff**

Teresa Drumheller  
Rose Jones  
Lindsay Knight  
Michele Phillips

**CBGS Director**

Dr. Jason Strong



# Program Schedule

**8:50**            **Report to Rooms for Introduction**

**9:00-11:55**    **Student Presentations**

- Commons Theater
- Richmond Salon I
- Richmond Salon II
- Richmond Salon III
- Richmond Salon IV
- Virginia Room A-B
- Virginia Room C-D
- SGA Senate Chambers

**11:55-12:45**   **Lunch**

**12:55**            **Commonwealth Ballroom**  
**Welcome and Introduction of Speaker:**

*Dr. Jason Strong*  
Director

**1:00-1:30**       **Keynote Address:**  
**“Insights into the transmission ecology of *Hematodinium***  
***perezi*, significant pathogen of blue crabs”**

*Dr. Jeffrey Shields*  
Professor  
Virginia Institute of Marine Science

**1:30-2:00**       **Awards Ceremony and Closing Remarks:**

*Dr. Jason Strong*  
*Marine and Environmental Science Faculty*

**Student Presentations by Last Name**

Abbie Adams	Richmond Salon I	11:00
Olivia Allen	Commons Theater	10:40
Teagan Allen	Richmond Salon IV	11:40
Michael Asnicar	SGA Senate Chambers	11:40
Paris Bacon	Richmond Salon IV	10:00
Daniel Bissoon	Richmond Salon I	9:40
Tre Booth	Commons Theater	11:40
Chloe Brann	Virginia Room A-B	10:00
Hunter Byrd	Richmond Salon II	10:20
Jada Byrd	Richmond Salon III	9:20
Edward Carney	Virginia Room A-B	10:40
William Casey	Virginia C-D	9:00
Jasmine Chen	Richmond Salon III	11:00
Casey Christensen	Richmond Salon II	9:40
Mia Cintron	Virginia Room A-B	9:40
Tommy Coffelt	SGA Senate Chambers	10:40
Sydney Davis	Richmond Salon III	10:20
Tripp Davis	Richmond Salon I	9:00
Abigail Dobson	Richmond Salon II	11:40
Aiden Eanes	Richmond Salon IV	9:40
Maxwell Failmezger	SGA Senate Chambers	9:20
Mackenzie Ferguson	SGA Senate Chambers	9:40
Meghan Fly	Richmond Salon III	11:20
Ellie Franklin	Richmond Salon II	9:20
Jacob Garrett	Richmond Salon III	9:40
Grayson Griffith	Richmond Salon I	11:20
Charles Hapgood	Virginia A-B	11:40
Rachael Haynie	Richmond Salon III	10:00
Elizabeth Hazell	SGA Senate Chambers	11:20
Charlie Holewa	Commons Theater	11:00
Kaitlyn Klock	Richmond Salon II	10:00
Jaxon McDonald	Commons Theater	10:00
Keyonna Mebane	Virginia C-D	10:00

Scott Michalik	Virginia C-D	11:20
Elena Milsted	Richmond Salon IV	9:00
Matthew Minner	Richmond Salon I	9:20
Anne Sterling Motley	Richmond Salon I	11:40
Katherine Murphy	Virginia C-D	11:40
Stephanie Ochoa	Commons Theater	9:40
Nagela Richards	Virginia C-D	9:20
Jenna Richardson	Richmond Salon I	10:20
Lilly Riffe	Virginia Room A-B	9:20
Diego Rojas	Richmond Salon IV	11:00
Sophia Ross	Commons Theater	11:20
Kaylee Russell	Richmond Salon IV	10:40
Danielle Sanchez	Richmond Salon IV	9:20
Itzel Santamaria	Richmond Salon III	9:00
Jean Sebatumitsi	Richmond Salon I	10:00
Anne Shackelford	Richmond Salon II	9:00
Kathryn Simal	SGA Senate Chambers	10:00
Joshua Thomas	Richmond Salon III	11:40
Sanaa Thomas	Virginia Room C-D	11:00
Hannah Tober	Commons Theater	9:00
Ethan Walker	Richmond Salon II	11:00
Mason Walker	Richmond Salon IV	11:20
Ian Walters	Richmond Salon III	10:40
Stephen Welch	Richmond Salon II	11:20
Brennan Werner	Commons Theater	10:20
Brooklyn Wheeler	Virginia A-B	11:20
Victoria Whitt	Commons Theater	9:20
Laney Williams	Virginia A-B	9:00
Paige Willis	Virginia Room C-D	9:40
Ava Wilson	SGA Senate Chambers	11:00
William Winters	Virginia A-B	11:00
Margaret Wonderling	Virginia C-D	10:20
Suki Zheng	SGA Senate Chambers	9:00

<b>9:00 - 9:15</b>		
Hannah Tober	Assessing Personal Care Product Usage by Teens and Identifying Gender Specific Trends	Commons Theater
Tripp Davis	Bait for Your Buck: The Performance of Alternative Baits for Improving Catch Rates and Cost Effectiveness in the Chesapeake Bay Blue Crab Fishery	Richmond Salon I
Anne Shackleford	How Salinity and Grade Affects the Molting of Blue Crabs	Richmond Salon II
Itzel Santamaria	Exploring the Biodegradability of Fast Fashion Fabrics and Thrifted Fabrics in a Simulated Landfill	Richmond Salon III
Elena Milsted	The Effects of Differing Macronutrient Ratio Consumption on the Canine Oral Microbiome	Richmond Salon IV
Laney Williams	Comparing the Growth Rates of Crops In a Salinity-Fluctuating Aquaponics System	Virginia Room A-B
Will Casey	More Than Skin Deep: The Correlation Between Acne Severity and Symptoms of Stress, Anxiety, and Depression Among Adolescents and Young Adults	Virginia Room C-D
Suki Zheng	Understanding Grit: A Comparative Study of Student Habits and Demographics	SGA Senate Chambers

<b>9:20 - 9:35</b>		
Victoria Whitt	Why Settle for Less? A Study of the Effectiveness of Different Substrates and Textures on the Settlement of Eastern Oyster ( <i>Crassostrea virginica</i> ) Larvae using a Spat-on-Shell Aquaculture Method	Commons Theater
Matthew Minner	How Does Wing Sweep Angle Affect Aircraft Performance?	Richmond Salon I
Ellie Franklin	A Study of Spat on Shell Settlement in the Lower Chesapeake Bay	Richmond Salon II
Jada Byrd	How Room Occupancy Affects Airborne Bacteria	Richmond Salon III
Danielle Sanchez	A Field Study on the Water Quality Impacts of Rainfall Events on the Potomac and Rappahannock Rivers	Richmond Salon IV
Lilly Riffe	Utilizing Micro Artificial Reefs (MAR) to Improve Biodiversity in the Chesapeake Bay	Virginia Room A-B
Nagela Richards	The Physiological Effect of Different Energy Drink Brands on Individuals	Virginia Room C-D
Maxwell Failmezger	The Effects of Attire on Tipping Behavior in the Music Industry	SGA Senate Chambers

<b>9:40 - 9:55</b>		
Stephanie Ochoa	Maze Crawlers: Testing Fiddler Crab Learning and Memory Ability	Commons Theater
Daniel Bissoon	Seed Sabotage: Allelopathic Influence of Wavyleaf Basketgrass ( <i>Oplismenus hirtellus</i> ) on Seed Germination of Native Woodland Undergrowth Plants and Domesticated Grasses	Richmond Salon I
Casey Christensen	Coliform Levels in Aquatic Ecosystems	Richmond Salon II
Jake Garrett	Investigating the Sustainability of Hydroponics as an Alternative Agricultural Process	Richmond Salon III
Aiden Eanes	Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) "Forever" Chemicals Presence in Virginia Drinking Water and Prevalence in Household Usage	Richmond Salon IV
Mia Cintron	Does Hype Music Really Work? The Effect of Pre-Practice Music on Volleyball Performance	Virginia Room A-B
Paige Willis	Determining the Effects of Climate Change and Severe Weather on US Coastal Military Bases	Virginia Room C-D
Mackenzie Ferguson	How Does the Increase of Salinity Affect <i>Althaea officinalis</i> Growth Levels and Survival Rate?	SGA Senate Chambers

<b>10:00 - 10:15</b>		
Jaxon McDonald	Using Lavender as a Natural Preservative to Prevent Fungal and Microbial Growth	Commons Theater
Jean Sebatumitsi	Analyzing the Effect of a Block Coding Course on the Interest of Students in a Rural Education Setting	Richmond Salon I
Kaitlyn Klock	A Field Study on the Impacts of Rainfall Events on the Water Quality of Maracossic Creek	Richmond Salon II
Rachael Haynie	The Effect of Shoreline Stabilization Methods on Diploid and Triploid Oyster Growth and Survival	Richmond Salon III
Paris Bacon	How a Student's Academic Placement and Age Affects their Likelihood of Conformity	Richmond Salon IV
Chloe Brann	A Comprehensive Evaluation of Reverse Osmosis Water Filtration: Assessing Impurity Removal, Mineral Depletion, and Health Risks	Virginia Room A-B
Keyonna Mebane	Bacterial Contamination: The Impact on Kitchen Cloths	Virginia Room C-D
Katy Simal	Let's Get Back to Basics: The Effect of pH on the Disintegration Rate of Coral Skeletons	SGA Senate Chambers

<b>10:20 - 10:35</b>		
Brennan Werner	Comparing Informed Path Finding Algorithms Computation Time to Different Map Densities	Commons Theater
Jenna Richardson	Microplastic Particle Prevalence in Seaside and Wetland Environments on the Eastern Shore	Richmond Salon I
Hunter Byrd	Measuring the Speed of Putting Greens under Different Moisture and Temperature Conditions	Richmond Salon II
Sydney Davis	The Effect of Biocidal Antifouling Paint on Rye Grass Growth	Richmond Salon III
	BREAK - No Student Presentation	Richmond Salon IV
	BREAK - No Student Presentation	Virginia Room A-B
Margaret Wonderling	A Comparison of Sports Involvement and Reaction Time	Virginia Room C-D
	BREAK - No Student Presentation	SGA Senate Chambers

<b>10:40 - 10:55</b>		
Olivia Allen	The Potential for Calcium Supplementation in Coastal Waters to Mitigate Coastal Acidification	Commons Theater
	BREAK - No Student Presentation	Richmond Salon I
	BREAK - No Student Presentation	Richmond Salon II
Ian Walters	Characterizing Contrail Formation Dynamics Over the Continental United States	Richmond Salon III
Kaylee Russell	Caffeinated Beverages and High School Student-Correlations of Caffeine Intake to Health Conditions	Richmond Salon IV
Eddie Carney	Where Am I? Who Messed with my Map?! A Study of Disruption of Ant Pheromone Trails by Environmental Pollutants in Runoff	Virginia Room A-B
	BREAK - No Student Presentation	Virginia Room C-D
Tommy Coffelt	The Electrifying Truth: The Effect of Electrostatic Fields on the Growth Rate of <i>Escherichia coli</i> and <i>Micrococcus luteus</i>	SGA Senate Chambers

<b>11:00 - 11:15</b>		
Charlie Holewa	Oh My Milk! A Comparison of the Overall Milk Quality of Holstein Friesian Cattle ( <i>Bos taurus</i> ) Between a High Dairy Production State and a Low Dairy Production State	Commons Theater
Abbie Adams	Does Nature Impact a Student's Mental Health and Education?	Richmond Salon I
Ethan Walker	Measuring Ultra-Processed Food Consumption in Adolescents' Diets	Richmond Salon II
Jasmine Chen	Breaking the Mold! A Comparison of the Antifungal Properties of Different Materials Found in Hospitals for Invasive Fungal Infections	Richmond Salon III
Diego Rojas	The Effect of Artificial Sweeteners in the Growth Rate of Plants	Richmond Salon IV
William Winters	The Southern Hemisphere Ozone Hole and Its Correlation to Antarctic Surface Temperatures	Virginia Room A-B
Sanaa Thomas	Investigating the Physiological Effects of Chemosignals in Female Pheromones on the Male Olfactory System	Virginia Room C-D
Ava Wilson	The Growth of Barnacles and Other Fouling Species on Various Surfaces in Autumn	SGA Senate Chambers

<b>11:20 - 11:35</b>		
Sophia Ross	Comparison of Different Bioluminescent Algae Species as Environmental Biosensors	Commons Theater
Grayson Griffith	The Effect of Household Chemicals PVA and PEG on the Regeneration of Planaria Worms	Richmond Salon I
Stephen Welch	SAV's Role in Combatting Climate Change and Nutrient Pollution: A Comparative Analysis on SAV Water Quality Impact	Richmond Salon II
Meghan Fly	The Effectiveness of Wet and Dry Swales in Reducing Eutrophic Stormwater Runoff	Richmond Salon III
Mason Walker	Determining the Effect of Fiddler Crab Burrows on <i>Spartina alterniflora</i>	Richmond Salon IV
Brooklyn Wheeler	The Effect of Sports Drinks on Salt Content in Sweat	Virginia Room A-B
Scott Michalik	Macro Matters: The Effect of Point Source Pollution on Water Quality and Macroinvertebrate Biodiversity in a River Ecosystem	Virginia Room C-D
Liz Hazell	Physiological Indicators of Test Anxiety and Their Effects on Exam Performance	SGA Senate Chambers

<b>11:40 - 11:55</b>		
Tre Booth	The Performance and Safety of Artificial Turf and Natural Grass When Performing Various Athletic Movements	Commons Theater
Anne Sterling Motley	The Impact of Salinity and Temperature on the Total Population and Species Distribution of Jellyfish in the Rappahannock River	Richmond Salon I
Abby Dobson	Can We Iron Out the Kinks in Aquaponics? A Study on the Effect of Varying Levels of Iron Supplementation on Lettuce ( <i>Lactuca sativa</i> ) Growth in Media-Bed Aquaponics	Richmond Salon II
Joshua Thomas	The Effect of Angular Layback on Pitch Velocity in Relation to Temperature	Richmond Salon III
Teagan Allen	Human Hair as Fertilizer: The Effect of Dissolved European-American and African-American Hair on Radish Growth Rate	Richmond Salon IV
Charles Hapgood	Every Drop Counts: The Potential to Lower Water Usage in Agriculture by Using Low Salinity Water	Virginia Room A-B
Katherine Murphy	The Study of Anthropogenic Beach Pollution on Chesapeake Bay and OBX Shorelines-Is it Mindset or Convenience?	Virginia Room C-D
Michael Asnicar	Analyzing the Impact of RGGI on Emissions and Energy Trends in the Northeastern US	SGA Senate Chambers

## Senior Mentors

**On behalf of the Chesapeake Bay Governor's School students and staff, we extend our gratitude to the mentors for sharing their expertise and encouragement with our seniors in the preparation and presentation of research projects. We are looking for mentors for future student research projects. If you know someone who may be interested, please contact CBGS.**

**Dr. Jason Strong**  
**(804) 443-0267**  
**[jstrong@cbgs.k12.va.us](mailto:jstrong@cbgs.k12.va.us)**  
**[www.cbgs.k12.va.us](http://www.cbgs.k12.va.us)**

# Thank You

*We would like to extend a special thank you to all the judges participating in today's program. Our students and teachers appreciate your attention to detail and valuable feedback.*

## Judges

**Ms. Melanie Cummings-Grande**, *Aerospace Engineer, Mars Architecture Team, NASA Langley Research Center*

**Ms. Oluwakemi Dada**, *Graduate Student, Virginia Institute of Marine Science*

**Ms. Isabelle Danforth**, *Graduate Student, Virginia Institute of Marine Science*

**Mr. Carlos Disla**, *Geographic Information Systems Coordinator, Essex County; Former CBGS Faculty*

**Mr. Eric Echard**, *Mission Analyst, United States Department of the Navy; Former CBGS Faculty*

**Dr. Grayson Johnson**, *Chemical Engineering Research Associate, University of Virginia; CBGS Alumnus*

**Dr. Rochelle Jordan**, *Director of Analytics and Strategic Initiatives, Virginia Commonwealth University*

**Ms. Katie MacCormick**, *Environmental Services Manager, Dominion Energy*

**Mr. Darcy Mays**, *Executive Associate Dean for Administration and Analytics, Virginia Commonwealth University*

**Dr. Patrick McGrath**, *Marine Scientist Senior, Virginia Institute of Marine Science; Former CBGS Faculty*

**Mr. Richard Moncure**, *Director of S.T.R.E.A.M., St. Margaret's School*

**Dr. Charles Rosenbaum**, *Retired Clinical Professor of Family Medicine, Medical College of Virginia/ Virginia Commonwealth University*

**Ms. Kristen Sharpe**, *Assistant Director of Outreach and Engagement, Virginia Institute of Marine Science*

**Dr. Janet Steven**, *Biology Associate Professor, Christopher Newport University*

**Mr. Hugh Sullivan**, *Estuary Monitoring Specialist; Virginia Commonwealth University Biology BS '96, MS '98*

**Mr. David Wright**, *Retired Educator of Marine & Environmental Science; Former CBGS Faculty*

## University Student Commons

