

**Virginia Junior Academy of Science
Research Symposium and 78th Annual Meeting
May 21-23, 2019**



**Virginia Academy of Science
97th Annual Meeting
May 22-24, 2019**

**Old Dominion University
Norfolk, Virginia**

Programs will be distributed to meeting registrants at
Preregistration Check-in and On-site Registration

Program is also available on the VJAS website
www.vjas.org

ODU Police Department

Office: 757-683-4003
Emergency: 757-683-4000
(3-4000 from a campus phone)

ODU ITS Helpdesk

757-683-3192

ODU Dormitories (staffed 24/7)

England House 757-683-4356

France House 757-683-4502

Scotland House 757-683-0252

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.

Future Annual Meeting Location:

Spring 2020, James Madison University, Harrisonburg

Fall Undergraduate Research Meeting:

The focus of this meeting is support of undergraduate student research. Specific details about the 2019 Fall Undergraduate Research Meeting at Christopher Newport University on November 2 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.

A Tradition of Excellence, A Commitment to Action

Join the Virginia Academy of Science

Support the Virginia Academy of Science

Virginia Junior Academy of Science

**Research Symposium and 78th Annual Meeting
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Virginia Academy of Science

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**Old Dominion University
Norfolk, Virginia**

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**97th Annual Meeting
Virginia Academy of Science**



**President
Woodward S. Bousquet
Shenandoah University
Winchester, VA**

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- Vice-President.....Michael J. Wolyniak
Hampden-Sydney College, Hampden-Sydney, VA
- Secretary.....Christopher J. Osgood
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Longwood University, Farmville, VA
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- Executive Officer Emeritus.....Arthur F. Conway
- Associate Executive Officer.....Carolyn M. Conway

Research Symposium and 78th Annual Meeting Virginia Junior Academy of Science

VJAS Director.....	Susan P. Booth
VJAS Committee Chair.....	Se W. Jeong
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Co-President.....	Yashodhara Varma Maggie L. Walker Governor's School
Vice President.....	Townson Cooke T. C. Williams High School
Secretary/Historian.....	Pranaav Rao Mills E. Godwin High School
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Regional Director.....	Haley Barefoot Clover Hill High School
Officer Alumni.....	Kayla Holston
Officer Alumni.....	Amruta Ponugupati

**VAS 97th Annual Meeting
and
VJAS Research Symposium and 78th Annual Meeting
May 21-24, 2019**

The Virginia Academy of Science and the Virginia Junior Academy of Science express their sincere appreciation to the following individuals for their involvement in preparing for our 2019 meeting.

ODU Local Arrangements Committee:

Dept. of Biological Sciences:

Christopher Osgood, Chair
Deborah Waller, Co-Chair
David Gauthier
Lisa Shollenberger
Christina Steel
Lisa Wallace

Dept. of Chemistry & Biochemistry:

Lesley Green

Dept of Education:

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Dept. of Electrical & Computer Engineering:

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Dept of Physics:

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Dept of Psychology:

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College of Sciences Dean's Office:

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University Events & Community Outreach:

Christina LiPuma

Webb University Center:

Wendell Cruz

**VAS 97th Annual Meeting
and
VJAS Research Symposium and 78th Annual Meeting
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Old Dominion University Sponsorships

Aramark
Batten College of Engineering
College of Sciences
NROTC
Office of Academic Affairs
Office of Admissions
Office of Housing and Residential Life
Office of Parking Services
Student Ambassadors

The Virginia Academy of Science and the Virginia Junior Academy of Science express their appreciation to the above for their generous financial support of this year's meeting. Appreciation is also expressed to Old Dominion University for hosting the meeting.

VAS 97th Annual Meeting Program Committee

VAS Vice President and Program Chair

Michael J. Wolyniak

Hampden-Sydney College, Hampden-Sydney, VA

Section Secretaries/Program Officers:

Agriculture, Forestry and Aquaculture.....Vitalis Temu

Archaeology.....H. Robert Hayes

Astronomy, Mathematics and Physics.....Joseph D. Rudmin
with Materials Sciences

Biology.....Deborah L. Zies
with Microbiology and Molecular Biology

Biomedical and General Engineering.....Anisa Kannan

Botany.....Joshua A. Kincaid

Chemistry.....Thomas C. Devore

Data Science, Computing and Statistics.....Robert M. Marmorstein

Education.....Deborah L. Neely-Fisher

Entomology.....Jake Bova

Environmental and Conservation Sciences.....Sujan Henkanaththegedara

Medical Sciences.....Shravan Moria

Natural History and Biodiversity.....Brooke Haiar

Psychology.....Antonina Farmer

Structural Biology, Biochemistry and Biophysics.....Christopher Berndsen

Program Editor: Carolyn M. Conway

VAS President's Welcome

May 2019

To VAS and VJAS Members,

Welcome to the 97th Annual Meeting of the Virginia Academy of Science (VAS) and the 78th Annual Meeting of the Virginia Junior Academy of Science (VJAS), which we are holding this year in Norfolk, Virginia, at Old Dominion University.

On April 26, 1923, University of Virginia biologist Ivey F. Lewis convened the first meeting of the Virginia Academy of Science at the College of William and Mary. Since then, the Academy has supported scientific research, sought to improve science education, and encouraged fellowship among scientists, undergraduate students, graduate students, and citizen scientists throughout the state. An official affiliate of the American Association for the Advancement of Science since 1926, the VAS has been at the forefront of science, scientific research and science education in Virginia for nearly a century.

Our mutual interests draw Academy members from throughout Virginia and beyond. If you are not currently a member of the Virginia Academy of Science, please consider joining. Membership is open to any individual with an interest in scientific research and science education. We have special rates for students. Each spring, we return to our professional home at this Annual Meeting to share findings, compare experiences, and renew friendships.

While you are enjoying this year's meeting, please take time to learn more about the VAS and VJAS, and consider joining our group of volunteers. We have an open door to all those who wish to serve, and the possibilities are diverse. Contact President-elect Gary Isaacs or speak with another Academy officer if you are interested.

Meanwhile, I hope that you will enjoy all of our presentations, invited speakers, and social events including the VAS Banquet on Thursday evening. The Annual Meeting is a great time to form networks, make friends, encourage our young K-12 scientists and their teacher sponsors, and discover new opportunities in research, education, and service in the name of science and science education.

Thanks so much for making our Annual Meeting a success!

Sincerely,

Woodward S. Bousquet

Professor of Environmental Studies and Biology
Shenandoah University

VJAS Committee Chair's Welcome

May 21, 2019



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 97th Virginia Academy of Science (VAS) and the 78th Virginia Junior Academy of Science (VJAS) joint Annual Meeting. We are delighted to be hosted by Old Dominion University in Norfolk, Virginia this year.

First, I would like to congratulate our student finalists. To be accepted into the VJAS program, your research papers have been thoroughly reviewed and was 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 begin our Annual Meeting, I implore each of you to think about how scientific and technological advancements are changing and shaping our world. The scientific community is advancing at a fast pace and evolving to new heights every year – but we should all pause and ponder frequently, how are these discoveries contributing to the overall well-being of our society and are they shaping our world for the better?

The public's trust and respect of the scientific community remains strong – but lately, there are signs of erosion in that confidence. As scientists, we must be vigilant and step up to clarify any misconceptions and communicate better to the public about how these advancements we are making can be integrated into the society for an improved quality of life for everyone. In addition, in today's global society where news can travel fast, articulation, transparency, and clarity of our communication matter deeply.

This year's theme is, "**Serving the World Through Science**". As scientists, we often get caught up in exciting new advancements and discoveries – but let us showcase to the world that a true scientist not only can make great discoveries but also be willing to serve to make our society and the world a better, healthier place to live, through these innovations.

I look forward to meeting you and learning about your work at the 2019 VJAS Research Symposium. Once again, welcome and congratulations on your accomplishments, and I hope this year's meeting is memorable.

Sincerely,
Se W. Jeong
Chairman, VJAS Committee

Old Dominion University President's Welcome

May 2019

To the members of the Virginia Academy of Science and the Virginia Junior Academy of Science:

Welcome to our campus! We are honored to be the 2019 host of your 97th Annual Meeting. As the second-largest producer of STEM-H degrees among doctoral institutions in the Commonwealth of Virginia, Old Dominion University is committed to making advances in science and engineering on a daily basis.

ODU receives more than \$50 million a year in funding to support research in such cutting-edge fields as bioelectrics, cybersecurity, flooding resilience, nuclear physics and modeling and simulation. Last year, the University won a prestigious \$1.5 million Maximizing Access to Research Careers grant from the National Institutes of Health to encourage minority students to concentrate in biomedical and behavioral sciences.

ODU professors bring the classroom to life through their real-world expertise. They are masters in their fields, recognized by their peers and organizations across the country and internationally. Our award-winning faculty include physicist Raul Briceño, who received an Early Career Research grant from the U.S. Department of Energy last year, and Jennifer Michaeli in engineering technology and Anatoly Radyushkin in physics, recent recipients of the Outstanding Faculty Award from the State Council of Higher Education for Virginia.

Our students also play a vital role in research and have opportunities to participate in unique experiences. More than 50 engineering students participated in the design of a miniature satellite, which recently was launched from Wallops Island and will be sent into orbit from the International Space Station later this year. Students also work alongside researchers at the Jefferson Lab and take part in the latest modeling and simulation programs in gaming, transportation and medicine.

On behalf of our faculty, staff and students, I wish you success this week and in your future educational pursuits. We invite you to return to Old Dominion to explore more of our offerings.

Sincerely,

John R. Broderick
President

John R. Broderick
President
Old Dominion University



John R. Broderick President, Old Dominion University

John R. Broderick, Old Dominion University's eighth president, doesn't mind rolling up his sleeves and serving hot dogs at a university picnic.

A constant presence on campus, whether it's to escort a visitor, walk his dog or attend athletic and cultural events, he has developed a reputation as a friendly, approachable president. But he's all business when it comes to his insistence on forging progress at Old Dominion, solving real-world problems and building on the region's strengths.

Under his leadership since 2008, Old Dominion has emerged as a research leader in fields from cybersecurity to bioelectrics, where the University is pioneering advances in cancer treatment and cardiac procedures.

The University established the Center for the Study of Sea Level Rise in 2010, elevating Old Dominion to the top tier in addressing a significant environmental problem. Since then, Old Dominion has broadened its approach with the creation of the multidisciplinary Resiliency Collaborative. Last year President Broderick was featured in articles in the Chronicle of Higher Education focusing on Old Dominion's resiliency efforts.

During his tenure, Old Dominion has received more than \$860 million in new public and private resources. The value of the University's endowment has risen to \$250 million, as of June 30, 2018. Old Dominion is pursuing a \$250 million fundraising initiative to increase resources for scholarships, faculty research and academic centers, among other areas.

But bucking the "bigger is better" movement, President Broderick has held Old Dominion's enrollment to approximately 24,000 to maximize the quality of the student experience.

To improve academic achievement, the University constructed a \$10 million Student Success Center and Learning Commons. In 2017, Old Dominion recorded the highest graduation rate in its history. The University also has the second-largest percentage of degrees awarded in STEM-H (science, technology, engineering, math and health care) fields among Virginia's research universities. Students from other disciplines have also flourished.

In 2013, Old Dominion received an \$11 million gift from alumnus Mark Strome to create the Strome Entrepreneurial Center, expanding entrepreneurial initiatives for students inside and outside the classroom. In 2017, Old Dominion opened THE Monarch Way, a unique retail store run by students and selling the products of student, alumni, faculty and staff entrepreneurs.

Last fall, Old Dominion launched an expansion of health sciences offerings at its Virginia Beach Higher Education Center, with an increase in nursing classes and the creation of a center focusing on the cutting-edge field of telehealth. Later phases will include a School of Public Health, primary care clinic and substance abuse prevention center. The University also plans a new \$75 million health sciences building on its main campus in Norfolk in the next several years.

Also last year, Old Dominion opened the Barry Art Museum, funded by a \$37 million donation - the largest in the University's history - from Richard and Carolyn Barry. The museum is positioned to be one of the region's major cultural destinations.

President Broderick has received the President's Award from the National Association of Student Personnel Administrators, the Virginia Center for Inclusive Communities' Humanitarian Award, the Urban League of Hampton Roads' Marian Palmer Capps Award, the New Journal & Guide's Impacting Lives award, the Dr. Hugo A. Owens Sr. Humanitarian Award from Alpha Phi Alpha fraternity, the Trailblazer Award from Men for Hope, and a Visionary Award from the Hampton Roads Chamber of Commerce. Inside Business journal ranked President Broderick No. 4 on its 2018 Power List of Hampton Roads.

ABOUT OLD DOMINION UNIVERSITY

Old Dominion University, located in the coastal city of Norfolk, is Virginia's entrepreneurial-minded doctoral research university with more than 24,000 students, rigorous academics, an energetic residential community, and initiatives that contribute \$2.6 billion annually to Virginia's economy. Our Monarchs can choose from over 120 undergraduate programs, over 130 graduate programs at the master's, education specialist and doctoral levels and a wealth of certificate and professional development programs. They learn from experts in their chosen field, as our award-winning faculty bring their real-world expertise to classrooms that foster innovation and collaboration.

Student success lives at the heart of the Monarch experience. Monarchs have full access to services such as academic advising, peer mentoring and subject-specific resource centers. The Learning Commons at Perry Library provides students with 24/5 study space, computing resources, teamwork spaces and even presentation practice rooms. Students can begin planning their future with our comprehensive career development services or forge their own path by engaging with the Strome Entrepreneurial Center.

Visit campus, schedule a tour or attend an open house and explore all that Old Dominion University has to offer and become part of the Monarch Experience!

SCHEDULE OF EVENTS

Virginia Junior Academy of Science Tuesday, May 21 - Thursday, May 23, 2019

VJAS Headquarters: Webb University Center, Room 1306

VJAS Paper Room: Webb University Center, Rooms 1304-1305

VJAS Special Judge's Meeting Room: Webb University Center,
Room 1302

Tuesday, May 21		
3 – 10 pm	VJAS On-site Registration Check-in	Dorm Quad Scotland House
3:30 – 5 pm	ODU Campus Tours	Webb University Center Front Lobby (1100)
5:15 – 6:30 pm	VJAS Dinner	Broderick Dining Commons
6 – 6:30 pm	VJAS Committee Meeting with Officer Candidates and their Sponsors	Webb University Center North Café (1402)
7:15 - 7:45 pm	School Sponsors Meeting with VJAS Committee	
8 - 10 pm	VJAS General Session and Invited Lecture	
10 – 10:15 pm	VJAS Mandatory Safety Talk	
10:30 pm	CURFEW	

Wednesday, May 22		
7 – 9 am	VJAS Breakfast	Broderick Dining Commons
7 – 11 am	VJAS On-site Registration Check-in	Webb University Center Front Lobby (1100)
7:30 – 8:30 am	VJAS Judges Check-in, Continental Breakfast and Meeting	Webb University Center North Café (1402)
8:55 am – 4 pm	VJAS Student Paper Presentations	<i>See VJAS Program for Section Locations and Schedules</i>
11:30 am – 1:30 pm	VJAS Lunch	Broderick Dining Commons
11:30 am – 1:30 pm	VJAS Judges Luncheon	Webb University Center North Café (1402)
4 – 6:45 pm	VJAS Activities	Locations will be provided at Registration Check-in
4:30 – 9 pm	VJAS Special Judges Meeting	Webb University Center Student Senate Chambers (1302)
5 – 6:30 pm	VJAS Dinner	Broderick Dining Commons
7 – 8:15 pm	VJAS General Session & George W. Jeffers Memorial Lecture	Webb University Center North Café (1402)
8:30 – 10:30 pm	VJAS Activities	Locations will be provided at Registration Check-in
11 pm	CURFEW	

Thursday, May 23		
6:30 – 8 am	VJAS Breakfast	Broderick Dining Commons
8 – 10:15 am	VJAS Awards Ceremony	Webb University Center North Café (1402)
10:15 am – noon	VJAS Dorm Check-out & Key Drop-off	Dorm Quad Scotland House
10:15 am – noon	VJAS Paper Pick-up (Sponsors Only)	Webb University Center Rooms 1304-1305
10 am – noon	VJAS Participants Invited to Attend VAS Poster Session	Webb University Center North Mall (1545)
10 – 11:30 am	VJAS Participants Invited to Attend VAS Section Sessions	<i>See VJAS Program for VAS Section Locations</i>
11 – 11:30 am	Presentation of VJAS Award Papers at VAS Section Sessions	<i>See VJAS Program for VAS Section Locations</i>

SCHEDULE OF EVENTS

Virginia Academy of Science Wednesday May 22 - Friday, May 24, 2019

VAS Headquarters: Webb University Center, Room 1303

Wednesday, May 22		
1 - 9 pm	VAS Preregistration Check-in and On-site Registration	Webb University Center Front Lobby (1100)
3:30 – 4:30 pm	VAS Executive Committee Meeting	Webb University Center Room 1303
7 - 8.30 pm	VJAS General Session & George W. Jeffers Memorial Lecture	Webb University Center North Café (1402)

Thursday, May 23		
7 am - 5 pm	VAS Preregistration Check-in and On-site Registration	Webb University Center Front Lobby (1100)
8 – 9:55 am	VAS Poster Check-in and Set-up	Webb University Center North Mall (1545)
8 – 10:15 am	VJAS Awards Ceremony	Webb University Center North Café (1482)
8 – 11:30 am	VAS Section Morning Sessions	<i>See VAS Program for VAS Section Locations and Schedules</i>
10 am - 5 pm	VAS Poster Session <i>Poster authors will be present from noon – 2 pm to discuss posters and answer questions</i>	Webb University Center North Mall (1545)

Thursday, May 23

10 am – noon	VJAS Participants Invited to Attend VAS Poster Session	Webb University Center North Mall (1545)
10 – 11 am	VJAS Participants Invited to Attend VAS Section Sessions	<i>See VAS Program for VAS Section Locations and Schedules</i>
11 - 11:30 am	VJAS Award Paper Presentations at VAS Section Sessions	
11:30 am – 12:15 pm	VAS Section Business Meetings	
11:30 am – 1 pm	VAS Fellows Luncheon and Meeting	Webb University Center Executive Dining Room (1310)
11:45 am – 2:15 pm	ODU Provost's Reception	Webb University Center North Mall (1545)
Noon – 2 pm	VAS Poster Session <i>Poster authors will be present during this time to discuss posters and answer questions</i>	
2:15 - 5:15 pm	VAS Section Afternoon Sessions	<i>See VAS Program for VAS Section Locations and Schedules</i>
4 – 5:15 pm	Meeting of current & newly elected Section Officers with VAS Vice-President and Associate Executive Officer	Dragas Hall Room 2108
5 – 5:30 pm	VAS Poster Removal	Webb University Center North Mall (1545)
5:30 - 7 pm	Academy Conference & Sidney S. Negus Memorial Lecture	Webb University Center Hampton & Newport News Rooms (1316-1317)
7:15 - 9 pm	VAS Banquet and Installation of 2019-2020 VAS Officers	Webb University Center North Café (1402)

Friday, May 24

9:00 am – ~12:30 pm	VAS Council Breakfast and Meeting (NOTE: All VAS Council Members for both 2018-2019 and 2019-2020 are expected to attend this meeting.) The members of the VAS Trust Committee will meet following the conclusion of the Council Meeting.	Webb University Center Executive Dining Room (1310) and Student Senate Chambers Room (1302)
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Invited Speakers

**Virginia Academy of Science
and
Virginia Junior Academy of Science
2019
Old Dominion University**

Lisa M. Shollenberger

Overcoming Vaccine Failure

Invited Lecture - VJAS General Session

Tuesday, May 21, 2019

8:00 pm

Webb University Center, North Café (Room 1402)

John A. Adam

Patterns in Nature: A Treasure Trove for the Curious

George W. Jeffers Memorial Lecture – VJAS General Session

Wednesday, May 22, 2019

7:00 pm

Webb University Center, North Café (Room 1402)

Fred C. Dobbs

**Microplastics in Oceans and Estuaries –
An Emerging Global Issue**

Sidney S. Negus Memorial Lecture – VAS Academy Conference

Thursday, May 23, 2019

5:30 pm

Webb University Center,
Hampton & Newport News Rooms (1316-1317)

Invited Lecture
Tuesday Evening VJAS General Session

Overcoming Vaccine Failure

Lisa M. Shollenberger
Old Dominion University



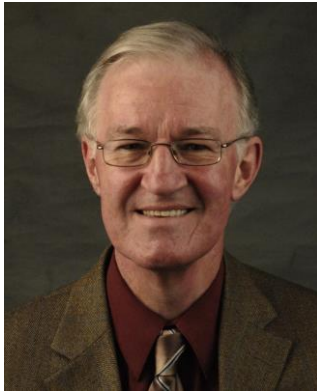
For more than two decades, Lisa Shollenberger has been conducting consistent research in the fields of microbiology, drug and gene delivery, nanotechnology, immunology, parasitology, and vaccinology, with the long-term goals of improving human health and mentoring the next generation of scientists. She has developed or co-developed 10 unique innovations, three of which are patented. Her current research program focuses on the mechanisms of disparate vaccine responses and understanding how confounding factors influence vaccine efficacy.

Dr. Shollenbert is a Co-Investigator on a malaria vaccine project through the Department of Defense and is a 2019 awardee of the Summer Research Fellowship Program through ODU. She is in her first year as an Assistant Professor of Biological Sciences at ODU. She is also an Adjunct Researcher at Fiocruz Rene Rachou in Brazil and Chief Scientific Officer of EnduraVax.

***George W. Jeffers Memorial Lecture
Wednesday Evening VJAS General Session***

Patterns in Nature: A Treasure Trove for the Curious

**John A. Adam
Old Dominion University**



Dr. Adam has broad interests in mathematical modeling and applied mathematics, ranging from mathematical biology to meteorological optics. He has published approximately 110 papers in mathematical and scientific journals and given over 160 talks and presentations to professional and university/college groups. He also enjoys writing resource articles on applied mathematics for teachers. In addition, he is a frequent contributor to Earth Science Picture of the Day (<http://epod.usra.edu/>).

Dr. Adam has written several books - *Mathematics in Nature: Modeling Patterns in the Natural World*, *X and the City: Modeling Aspects of Urban Life* and *A Mathematical Nature Walk*. His latest book, *Rays, Waves and Scattering: Topics in Classical Mathematical Physics* was published in June 2017. He is also co-author (with physicist Lawrence Weinstein) of *Guesstimation: Solving the World's Problems on the Back of a Cocktail Napkin*.

Dr. Adam has been Professor of Mathematics at Old Dominion University since 1984. His Ph.D. from the University of London was in theoretical astrophysics. In 2007 he was winner of an Outstanding Faculty Award for the State of Virginia. In 2012 he was a recipient of a Carl B. Allendoerfer Award from the Mathematical Association of America (MAA).

**Sydney S. Negus Memorial Lecture
VAS Academy Conference**

**Microplastics in Oceans and Estuaries –
An Emerging Global Issue**

**Fred C. Dobbs
Old Dominion University**



Dr. Dobbs is a broadly trained biological oceanographer with expertise in marine microbial ecology. His research interests range from microorganisms in ships' ballast waters to disease ecology to (more recently) bacteria on plastics in the ocean. He received his Ph.D. from Florida State University in 1987.

Dr. Dobbs arrived at Old Dominion University in 1993 and presently serves as Chair of its Department of Ocean, Earth & Atmospheric Sciences. At ODU, he has secured more than \$4.5M in grants from funding sources that include the National Science Foundation, NOAA (and NOAA Sea Grant), Office of Naval Research, Department of Energy, Environmental Protection Agency, US Coast Guard, and the Great Lakes Protection Fund.

VAS POSTER SESSION
and
OLD DOMINION UNIVERSITY
PROVOST'S RECEPTION

VAS POSTER SESSION

Thursday, May 23, 2019
10 am - 5 pm

Webb University Center
North Mall – Room 1545

See VAS Section Programs for List of Poster Titles and Authors

*Poster presenters will be present from noon - 2 pm
to discuss posters and answer questions*

NOTE: *Poster presenters are expected to set up their posters between
8 -9:55 am. All posters should remain in place from 10 am - 5 pm.
Poster presenters should remove their posters from 5 – 5:30 pm.*

OLD DOMINION UNIVERSITY
PROVOST'S RECEPTION

Thursday, May 23, 2019
11:45 am – 2:15 pm

Webb University Center
North Mall – Room 1545

LOCATION OF VJAS PAPER SESSIONS

The VJAS Paper Presentation Sessions will take place in the following buildings and rooms as indicated below.

NOTE: On ODU campus map the building locations are noted by #s.

- Batten Arts & Letters – BAL (#112)
- Constant Hall – CONST (#118)
- Diehn Center for the Performing Arts – DIEHN ((#127)
- Dragas Hall – DRGS (#130)
- Education Building – ED (#131)
- Engineering Systems Building – ESB (#136)
- Kaufman Hall – KAUF (#154)
- Oceanography & Physics Building – OCNPS (#178)

Category-Section	Building	Room
Animal and Human Sciences	KAUF	213
Botany	ESB	1113
Chemical Sciences A	BAL	2058
Chemical Sciences B	BAL	2066
Chemistry	DIEHN	1102
Ecology and Earth Sciences A	BAL	3058
Ecology and Earth Sciences B	BAL	3070
Engineering A	ED	1100
Engineering B	ED	1104
Engineering and Technology A	CONST	1047 (in am) 1048 (in pm)
Engineering and Technology B	CONST	1052 (in am) 1059 (in pm)
Environmental Science A	DRGS	2104
Environmental Science B	DRGS	2106
Environmental Science C	DRGS	2108
Environmental Science D	DRGS	2110

Category-Section	Building	Room
Human Behavior	BAL	3067
Math: Patterns and Relationships	CONST	1048
Math: Theoretical and Modeling	ED	1105
Medicine and Health A	CONST	1002
Medicine and Health B	CONST	1005
Microbiology and Cell Biology A	ESB	1124
Microbiology and Cell Biology B	ESB	1125
Physical Science and Astronomy	OCNP	202
Physics and Astronomy	DIEHN	1103
Plant Sciences and Microbiology	CONST	2134
Psychology A	BAL	2060 (in am) 2064 (in pm)
Psychology B	BAL	3062 (in am) 3071 (in pm)
Statistical Analysis and Inferences	ED	1115
Zoology	DIEHN	1104

LOCATION OF VAS SECTION MEETING ROOMS

VAS Oral Presentation Sessions will take place in **Batten Arts & Letters, Constant Hall, Dragas Hall** and **Education Building** as indicated below.

Section	Building	Room
Agriculture, Forestry & Aquaculture	Dragas Hall	2108
Archaeology	Constant Hall	1055
Astronomy, Mathematics & Physics with Materials Science	Education Building	1101
Biology with Microbiology & Molecular Biology	Dragas Hall	2118
Biomedical & General Engineering	Education Building	1110
Botany	Dragas Hall	2106
Chemistry	Batten Arts & Letters	2066
Data Science, Computing & Statistics	Education Building	1114
Education	Constant Hall	1008
Entomology	Dragas Hall	2120
Environmental & Conservation Sciences	Dragas Hall	2110
Medical Sciences	Batten Arts & Letters	2062
Natural History & Biodiversity	Dragas Hall	2104
Psychology	Batten Arts & Letters	2061
Structural Biology, Biochemistry & Biophysics	Batten Arts & Letters	2064

Animal and Human Sciences

Kaufman Hall
Room 213

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Salt affecting brine shrimp**
Tucker Albaugh and Felix Green, Mary Ellen Henderson Middle School
- 9:15 **The effect of different types of antioxidants against hydrogen peroxide on the heart rate of *Daphnia magna***
Nikhil Amin, George H. Moody Middle School
- 9:30 **The effect of different antacids on the rate of neutralization**
Shreyas Arcot, George H. Moody Middle School
- 9:45 **The effect of sound on ants**
Guthrie Bowers, Sabot at Stony Point
- 10:00 **The effect of grooming on the heart rate of *Equus caballus***
Stella Brakman, Sabot at Stony Point
- 10:15 BREAK
- 10:30 **To breathe or not to breathe: Can face masks diminish inhaled pollution and improve health outcomes in *Drosophila melanogaster*?**
Tony Bright, Arman Lateef and Gabriel Ralston, Louise Benton Middle School
- 10:45 **Iron versus speed**
Claire Buchholz and Abbey Shumsky, Swanson Middle School

- 11:00 **The effect of decrease in MCV-1 vaccination rates on incidents of disease**
Cassie Couch, Sabot at Stony Point
- 11:15 **The cardiovascular effect of increased swim practice time on swimmers age 11-14**
Abigail Fleenor, Sabot at Stony Point
- 11:30 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of static and dynamic stretches on flexibility using a modified sit and reach box**
Mackenzie Gregory, Home School
- 12:45 **The effect of color on a butterfly's diet**
William Hahn, Mary Ellen Henderson Middle School
- 1:00 **The effect of gel electrophoresis on the migration of different colored food dyes**
Irene John, George H. Moody Middle School
- 1:15 **The effect of different anticoagulants on the height and diameter of blood clots**
Rohan Kurup, George H. Moody Middle School
- 1:30 BREAK
- 1:45 **Why does blood pressure vary in human beings?**
Shriya Majumdar, George H. Moody Middle School
- 2:00 **The effect of natural antioxidants on the heart rate of *Daphnia magna***
Sivani Nemani, George H. Moody Middle School

- 2:15 **The effect of fluoride on the thickness of teeth**
Manushi Nepal, George H. Moody Middle School
- 2:30 **The effect of different silver nitrate nanosilver on the population of *Daphnia magna***
Viswanath Subramanian, George H. Moody Middle School
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Botany

Engineering Systems Building
Room 1113

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different added electrolytes on the height of *Vigna radiata***
Bhavana Adhikari, Mills E. Godwin High School
- 9:15 **The effect of various heavy metals on the mortality of plant root border cells**
Haasita Akkala, Mills E. Godwin High School
- 9:30 **The effect of phosphate and potassium on spinach (*Spinacia oleracea*) grown with saltwater**
Maria Zamora, Mills E. Godwin High School
- 9:45 **The allelopathic effect of *B. oleracea italica* on the germination of *B. oleracea botrytis***
Ella Bryant and Michelle Zheng, Roanoke Valley Governor's School for Science & Technology
- 10:00 **The effect of various herbicides on *Stellaria media* deterioration**
Kate Devitt, Mills E. Godwin High School
- 10:15 **The effect of magnets on plant growth rate and size**
Malak Elsherbiny and Nicholas Morgan, Charles J. Colgan, Sr. High School
- 10:30 **The effect of road salts on chlorophyll content of *Hydrilla verticillata***
Elizabeth Eroshenko, Mills E. Godwin High School

- 10:45 BREAK
- 11:00 **The allelopathic effect of *M. officinalis* organs on the germination of *D. sanguinalis***
Caroline Grant and Margaret Laflam, Roanoke Valley Governor's School for Science & Technology
- 11:15 **The effect of plant species on the phytoremediation of petroleum**
Estelle He, Mills E. Godwin High School
- 11:30 **The effect of motor oil in soil on the growth of *Lolium***
Erin Hedrick, Central Virginia Governor's School for Science & Technology
- 11:45 **The allelopathic effect of *P. montana* organs on the germination of *L. esculentum***
Merryn Isbell and Lillian Jamison, Roanoke Valley Governor's School for Science & Technology
- 12:00 **The effect of different aquatic hyperaccumulators on the concentration of lead in water**
Shivesh Joshi, Mills E. Godwin High School
- 12:15 **The effect of grafting *Capsicum annuum* serrano on pepper plants**
Anvita Korrapati, Mills E. Godwin High School
- 12:30 LUNCH BREAK - Broderick Dining Commons

Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **The effect of sound pollution on plant growth**
Sricharan Lankalapalli, Mills E. Godwin High School
- 1:45 **The effects of aquaculture species on plant growth**
Logan Layne, Chesapeake Bay Governor's School for Marine & Environmental Science

- 2:00 **The role of the IPK1 and ITPK1 genes in plant sucrose sensing**
Sophia Link, Blacksburg High School
- 2:15 **The effects of different concentrations of copper sulfate on the germination time of *Solanum lycopersicum* seeds**
Nishaanth Mulpuru, Mills E. Godwin High School
- 2:30 **The effect of sunlight on mycorrhizal network quantity in soil and growth in plants**
Noah Portner, Washington-Lee High School
- 2:45 BREAK
- 3:00 **The effect of glycerol concentration on chamomile freezing-induced dehydration rates**
Esha Sharma, Mills E. Godwin High School
- 3:15 **The effect of different essential oils on the growth of *Tagetes erecta***
Emma Smith, Clover Hill High School
- 3:30 **Effects of different fertilizers on *Phaseolus vulgaris***
Michaela Tate, Chesapeake Bay Governor's School for Marine & Environmental Science
- 3:45 **The effect of nitrogen, phosphorus, and potassium fertilizers on the growth of the common waterweed, *Elodea canadensis***
Katrjn Watson, Chesapeake Bay Governor's School for Marine & Environmental Science
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Chemical Science A

Batten Arts and Letters
Room 2058

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different clothing treatment chemicals on the strength of cotton fabrics**
Aaryan Asthana, George H. Moody Middle School
- 9:15 **The effect of acid on aluminum wires**
Aurnab Barua, Thomas Jefferson Middle School
- 9:30 **The effect of different types of rocks on the pH and phosphate levels of water**
Dhruva Barua, Thomas Jefferson Middle School
- 9:45 **Using pykrete as a cooling device**
Logan Blanchard, Sabot at Stony Point
- 10:00 **Change in salinity and pH levels of creek water when filtered through microwaved graphene nanoplatelets**
Stan Craig, Collegiate School
- 10:15 **The effect of dairy milks on thickness of kefir**
Charlotte Cunningham, Swanson Middle School
- 10:30 BREAK
- 10:45 **The effect of different analgesics on the dissolving time in a carbohydrate solution**
Shriya Das, George H. Moody Middle School

- 11:00 **Reliability of red cabbage juice strips as a pH indicator used to test date rape drugs**
Isabel Decker, Sabot at Stony Point
- 11:15 **The amount of vitamin C in tablets based on the brand**
Alexander Dillon, George H. Moody Middle School
- 11:30 **What kills ice without killing the earth?**
Megan Dooley and Libby Moir, Swanson Middle School
- 11:45 **The effect of butter substitutes on the density of vanilla cupcakes**
Samantha Douthit, Sabot at Stony Point
- 12:00 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of different substances on the prevention of rust**
Marlena Gutshall and Finley Odar, Gunston Middle School
- 1:15 **The effect of carbonated water pH on Tooth Enamel**
Nolan Hoover, Sabot at Stony Point
- 1:30 **The effect if different types of food on the amount of biofilm produced by *Streptococcus mutans***
Allison Ip, George H. Moody Middle School
- 1:45 **The effect of temperatures on radioactive decay**
Ishan Joshi, George H. Moody Middle School
- 2:00 **The effect of different amounts of detergent on the neutralization of lemon juice**
Abigail Kant, Thomas Jefferson Middle School
- 2:15 BREAK

- 2:30 **The effect of different pain relivers on the solubility in stimulated stomach acid**
Harish Krishnakumar, George H. Moody Middle School
- 2:45 **The effect of different bromelaine containing substances on removing Knox gelatin**
Anne Licato, Swanson Middle School
- 3:00 **The effect of the acidity and salinity of a liquid on the melting time of ice**
Daniel Lim, George H. Moody Middle School
- 3:15 **The effect of different chlorinated water exposure times on the strength of a strand of hair**
Marlise Lucas, George H. Moody Middle School
- 3:30 **The effect of aging on the sugar content of different fruits**
Ankita Mandal, George H. Moody Middle School
- 3:45 **The effect of different colors of hair dye on the color values of dyed hair before and after sulfatae shampoo wash**
Owen Marcus, Sabot at Stony Point
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Chemical Science B

Batten Arts and Letters
Room 2066

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of fertilizer with different leading chemicals on the pH of water**
Tessa Muldowney, Thomas Jefferson Middle School
- 9:15 **The effect of adding different materials to ice on how fast the ice melts**
Zoe Nagle, Swanson Middle School
- 9:30 **The effect of different types of food wrap on the decrease of moisture levels in white bread**
Sarah Newman, Swanson Middle School
- 9:45 **How does pizza box protectants affect stain depth and stain area?**
Robert Overstreet, Sabot at Stony Point
- 10:00 **The effect of baking soda on the rate of electrolysis in water**
Aaditi Parab, George H. Moody Middle School
- 10:15 **The effect of ambient air temperature on ice melt in salt versus fresh water**
Owen Parker, Sabot at Stony Point
- 10:30 BREAK
- 10:45 **The effect of humidity of the thickness of wood**
Timothy Porter, George H. Moody Middle School

- 11:00 **The effect of different types of flours on the density of cupcake**
Nithyasai Ravula, George H. Moody Middle School
- 11:15 **Heartburn helpers**
Sophia Reyes, Swanson Middle School
- 11:30 **The effect of pH on the rate of corrosion**
Chris Robles and Joseph Sparks, Gunston Middle School
- 11:45 **The effect of wood type on energy released during combustion**
Abel Rudolph, Sabot at Stony Point
- 12:00 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of different types of salts on the boiling point of water**
Rishav Sen, George H. Moody Middle School
- 1:15 **The effect of different cold medications on the rate of dissolution**
Kaleb Sisay, Thomas Jefferson Middle School
- 1:30 **The effect of different sports drinks on the amounts of electrolytes and sugar consumed**
Jordanna Silverman, George H. Moody Middle School
- 1:45 **The effect of borax on the height a ball bounces**
Katherine Snelbecker, Williamsburg Middle School
- 2:00 **The effect of different temperature on the caffeine content of the coffee**
Sreebals Sreekesh, George H. Moody Middle School
- 2:15 BREAK

- 2:30 **The effect of different NSAID's on its rate of dissolution**
Arya Suram, George H. Moody Middle School
- 2:45 **The effect of of the pH of different substances on the corrosion of iron**
Annabel Tang, George H. Moody Middle School
- 3:00 **Nutritious, or just delicious?**
Alena Topchy, Swanson Middle School
- 3:15 **The effect of wheat flour type on gluten content**
Julia Wall, George H. Moody Middle School
- 3:30 **The effect of different temperature on the amount of pineapple enzyme activity based on the amount of Jello dissolved**
Monona Zhou, George H. Moody Middle School
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Chemistry

Diehn Center for the Performing Arts
Room 1102

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of gold nanoparticle concentration on the photothermal energy conversion efficiency**
Joshua Alexander, Deep Run High School
- 9:15 **The effect of filtration material on lead concentration**
Natalie Aramendia and Lillian Watson, Washington-Lee High School
- 9:30 **The simultaneous corrosive effects of atmospheric pollutants**
Ryan Berry, Thomas Jefferson High School for Science & Technology
- 9:45 **Effects of various types and concentrations of solutes on passive daytime radiative cooling in paint**
Yiming Chen, Yorktown High School
- 10:00 **The effect of cleaning agent on the reversal of environmental exposure in aluminum fences**
Sarah Coffman, Mills E. Godwin High School
- 10:15 **The effect of pH on the amount of glucose produced when using lactase over time**
Grace Franklin and Megan Peck, Washington-Lee High School
- 10:30 **The effect of adding different substances to gelatin on the gel strength and solid shape of gelatin**
Samantha Graham, Clover Hill High School

- 10:45 BREAK
- 11:00 **Behavior of gases in contact with liquid nitrogen**
Ellen Habteyonas and Dasol Lee, Blacksburg High School
- 11:15 **The fate and transport of triclosan in treated effluent of rural receiving streams**
Isabel Hendrix, Southwest Virginia Governor's School
- 11:30 **Analysis of nitrogen compound concentrations in the lower western Chesapeake Bay**
William Hutcheson, Chesapeake Bay Governor's School for Marine & Environmental Science
- 11:45 **The effect of pH on the time it takes for amylase to break down starch**
Andrew Murray, Yorktown High School
- 12:00 **The effect of size of gadolinium silicide nanoparticle on magnetization**
Chirayu Nimonkar, Mills E. Godwin High School
- 12:15 **Determining UVB radiation effects on CO₂ production of *Saccharomyces cerevisiae* with GABAA-rho supporters**
Pooja Patel, Mills E. Godwin High School
- 12:30 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **Testing the effects of sodium chloride on metals used in exhaust systems**
Abigail Pitts, Central Virginia Governor's School for Science & Technology
- 1:45 **The effect of various catalysts on the rate of fermentation**
Sahil Reddy, Mills E. Godwin High School

- 2:00 **Reduction of hydrogen porosity in aluminum welding with vibratory methods**
Kathleen Reuwer, Southwest Virginia Governor's School
- 2:15 **The effect of different solutions on hydrogel crystal release levels**
Suhani Samaroo, Clover Hill High School
- 2:30 **The efficiency of common metals at blocking gamma radiation in comparison to lead**
Tyler Santini, Central Virginia Governor's School for Science & Technology
- 2:45 BREAK
- 3:00 **The effect of types of chemical lightening on the strength of human hair**
Aidan Shenk and Sophie Snider, Washington-Lee High School
- 3:15 **The effect of different oxidizers on the chemiluminescence of luminol**
Trisha Taparia, Mills E. Godwin High School
- 3:30 **Fabrication and activity screening of surface enhanced Raman spectroscopy substrates**
Lars Wirstrom, The Mathematics & Science Academy at Ocean Lakes High School
- 3:45 **The effect of trimethylamine-N-oxide on prevention of protein aggregation**
Sabrina Ye, Mills E. Godwin High School
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Ecology and Earth Sciences A

Batten Arts and Letters
Room 3058

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Combating allergens using air filters**
Aidan Basloe, Swanson Middle School
- 9:15 **The effect of soil type on its capacity to hold water**
Yalguun Baterdene, Thomas Jefferson Middle School
- 9:30 **Network analysis of Virginia's mineralogical systems**
Cadence Boucher, Home School
- 9:45 **The effect of micro-plastic polymers on the *Ficus religiosa*
Bodhi tree's shoot and root systems**
Desmen Boykin, Graham Park Middle School
- 10:00 **The effect of the type of water on soil erosion**
Natalie Cecil and Grace Varrieur, Swanson Middle School
- 10:15 **The effect of different types of plants on soil erosion**
Nikita Chandra, George H. Moody Middle School
- 10:30 BREAK
- 10:45 **The effect of surface texture of wood on water absorption**
Jennifer Chen, George H. Moody Middle School
- 11:00 **The effect of active energy conservation on reducing carbon
footprints**
Elaine Chu, Thomas Jefferson Middle School

- 11:15 **The effect of “green” versus “conventional” detergents on worms**
Richa Dhakal, Thomas Jefferson Middle School
- 11:30 **The effect of various forsterite sand quantities on the toxicity of a tap water and carbon dioxide solution**
Anya Dutta, Thomas Jefferson Middle School
- 11:45 **The effect of type of water on paper degradation**
Sarah Eichorn, Thomas Jefferson Middle School
- 12:00 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of angle on thermal radiation on temperature increase of water**
Willa Eisnehauer, George H. Moody Middle School
- 1:15 **Root length of soil erosion fighting plants**
Cassie Elsberg and Rebecca Estevao, Swanson Middle School
- 1:30 **The relationship between city Green View Index and mean Air Quality Index value of particulate matter**
Kara Felker, Thomas Jefferson Middle School
- 1:45 **The effect of type of worms on the degradation of polyethylene**
Suyana Fernandez, Thomas Jefferson Middle School
- 2:00 BREAK
- 2:15 **The effects of different pH levels of spring water on population of *Daphnia magna***
Ava Fischer, Thomas Jefferson Middle School

- 2:30 **The effect of natural herders on the efficiency of petroleum removal from water**
Ananya Gomatam, George H. Moody Middle School
- 2:45 **The effect of different lights on the amount of bacterial colonies in water**
Nitya Goyal, George H. Moody Middle School
-

Ecology and Earth Sciences B

Batten Arts and Letters
Room 3070

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different environments on the mass (g) reduction of decomposing bioplastic**
Gayatri Guda, George H. Moody Middle School
- 9:15 **The effects of erosion on different types of soil**
Dillon Humphrey, Sabot at Stony Point
- 9:30 **The effect of different types of cost effective barriers on fertilizer runoff**
Sania Jain, George H. Moody Middle School
- 9:45 **The effect of bleaching triggers on coral reefs**
Jayadeepika Jayasekar, Thomas Jefferson Middle School
- 10:00 **The effect of fertilizer brands on nitrogen in water**
Cheyenne Klapper, Thomas Jefferson Middle School
- 10:15 **How much water do I really use?**
Marley Kurey, Swanson Middle School
- 10:30 BREAK
- 10:45 **The Effect of Filtration Method on Protozoa Remaining in Water**
Freya Matheson, Thomas Jefferson Middle School
- 11:00 **The effect of different curbside inlets on the proportion of plastic in storm drains**
Anmol Mital, George H. Moody Middle School

- 11:15 **The effect of different liming materials on the pH of soil**
Akshay Pappu, Pocahontas Middle School
- 11:30 **The effect of location on water quality**
Mia Pisacane, Thomas Jefferson Middle School
- 11:45 **The effect of different schools on water fountain pH**
Nabela Rahman, Kenmore Middle School
- 12:00 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of carbon dioxide on ice**
Kritika Rai, Thomas Jefferson Middle School
- 1:15 **The effect of dish soap on the survival rate of worms**
Estee Ruiz, Thomas Jefferson Middle School
- 1:30 **The effect of different pollutants on the health of brine shrimp**
Skylar Schuetze, George H. Moody Middle School
- 1:45 **The effect of water depth on the frequency of waves**
Mahi Shah, George H. Moody Middle School
- 2:00 BREAK
- 2:15 **The effect of location on nitrogen and phosphorus amounts in water**
Maya Sherlick, Thomas Jefferson Middle School
- 2:30 **The effect of different dish soaps on the efficiency of oil removal from goose feathers**
Mabia Sikder, George H. Moody Middle School

- 2:45 **The effect of different types of heavy metals on the purification of water**
Sruthi Vegunta, George H. Moody Middle School
- 3:00 **The effect of beet juice concentration on the melting of ice**
Sarah Wager, George H. Moody Middle School
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Engineering A

Education Building
Room 1100

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Comparing the durability of shin guard materials to metal alternatives through shock absorbance**
William Adu-Jamfi, Central Virginia Governor's School for Science & Technology
- 9:15 **Triaxial attitude control of a picosatellite using stimulated emissions**
Neema Ahmadian and Emerson Dove, Blacksburg High School
- 9:30 **Designing a 16-bit microcontroller in VHDL**
Evan Allen, The Mathematics & Science Academy at Ocean Lakes High School
- 9:45 **Velocity limiting exoskeleton for children with cerebral palsy**
Alexandra Barrett, Southwest Virginia Governor's School
- 10:00 **The effect of ABEC bearing grade on velocity**
Jake Bennett, Clover Hill High School
- 10:15 **The effect of wood type, width, and length on the durability of drumsticks**
Seth Bliley, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:30 **Different projectile materials affecting propulsion in a prototype electromagnetic projectile launcher**
Ross Brown, Southwest Virginia Governor's School
- 10:45 BREAK

- 11:00 **The effect of various materials on the rate of temperature increase and energy output of solar cells**
Hunter Bowles, Central Virginia Governor's School for Science & Technology
- 11:15 **Developing an unmanned solution for wetland observation**
Gavriel Cambridge, T. C. Williams High School
- 11:30 **An autonomous quadcopter for urban search and rescue**
Owen Cardwell and Brendan Doney, T. C. Williams High School
- 11:45 **The effects of elliptic curve cryptography on the efficiency of consumer grade backup encryption**
Nicholas Cooney, Southwest Virginia Governor's School
- 12:00 **Building a better servo gear**
Roman Cutler, Chesapeake Bay Governor's School for Marine & Environmental Science
- 12:15 **The effect of alternative reinforcement on concrete beams**
Nolan Dawson and Beatrice Savarie, T. C. Williams High School
- 12:30 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **Parallel parking device**
Adam Downs, Southwest Virginia Governor's School
- 1:45 **Effect of lightweight concrete additives on the weight and load bearing capacity of concrete**
Andrew Dunlop, Central Virginia Governor's School for Science & Technology
- 2:00 **Comparing agro-waste products from corn, rice, and hemp for use in thermal insulation**
Armelle Duston, Central Virginia Governor's School for Science & Technology

- 2:15 **The effect of 3D printing infill on strength**
John Evans, Yorktown High School
- 2:30 **An AI-based system for discovering potential adverse drug events using open data**
Brandon Fan, Blacksburg High School
- 2:45 BREAK
- 3:00 **The effect of wind turbine spacing on power output**
Matthew Ganser, Central Virginia Governor's School for Science & Technology
- 3:15 **The solar power gauntlet**
Neil Gascon and Alan Gonzalez, T. C. Williams High School
- 3:30 **The effect of various materials on the efficiency of wireless charging**
Caleb Grohs, Central Virginia Governor's School for Science & Technology
- 3:45 **The effect of type of uniform convex polyhedra on industrial strength**
Lillian Hallock, Mills E. Godwin High School
-

Engineering B

Education Building
Room 1104

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different amounts of pure graphite powder on the thermal conductivity of geothermal heat pump grout**
Charles Hamilton, Mills E. Godwin High School
- 9:15 **The measure of data rates and signal strength on the reliability of the iBwave software**
Timothy Hannan, Central Virginia Governor's School for Science & Technology
- 9:30 **The effect of different audio compression algorithms on file size and fidelity**
Carl Hayden, Central Virginia Governor's School for Science & Technology
- 9:45 **Hydroponic gardening: A solution to limited produce production in urban environments**
Savannah Keough, T. C. Williams High School
- 10:00 **Using a neural network to identify invasive species of fish**
Noah Khan, T. C. Williams High School
- 10:15 **The effects of track spikes on running time**
Jeremy Kraisser, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:30 **Modeling the effects of shoreline engineering structures on shoreline erosion**
Calvin Kramer, Chesapeake Bay Governor's School for Marine & Environmental Science

- 10:45 BREAK
- 11:00 **The effect of a 45 degree windward wall on the damage caused by hurricanes**
JT Lotz, Central Virginia Governor's School for Science & Technology
- 11:15 **The effect of different cooling devices on CPU temperature**
Sean Mapes, Central Virginia Governor's School for Science & Technology
- 11:30 **The effect of the angle of a rudder on a paper glider on the landing angle**
John Matuszewski, Washington-Lee High School
- 11:45 **The comparative tensile strength of two chainmail weaves**
Jadelin McLeod, Harrisonburg High School
- 12:00 **The effect of medical casting materials on force absorbency**
Spencer Morrison, Central Virginia Governor's School for Science & Technology
- 12:15 **The effect of cable materials on the grip strength of a prosthetic hand**
Bryan Polk, Central Virginia Governor's School for Science & Technology
- 12:30 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **Reducing lithium ion battery fade in phones**
Fernando Posada and McGrath Seamus, Harrisonburg High School
- 1:45 **The effect of thermal conductivity in metals on thermoelectric power generation**
Carynne Posey, Central Virginia Governor's School for Science & Technology

- 2:00 **Different protective coatings effect at maintaining elastic limit of aluminum post-gallium penetration**
Justin Schoeneweis, Central Virginia Governor's School for Science & Technology
- 2:15 **Solar airframes: What is the most aerodynamically efficient design?**
Aaron Vickers, Southwest Virginia Governor's School
- 2:30 BREAK
- 2:45 **The effectiveness of acid resistant paint in protecting wood from acid corrosion**
Christopher Webb, Central Virginia Governor's School for Science & Technology
- 3:00 **Comparison of the thermal properties of different roof materials**
Matthew Wiechman, Chesapeake Bay Governor's School for Marine & Environmental Science
- 3:15 **Flexural strength of beam structures**
Dilin Williams, Washington-Lee High School
- 3:30 **SimpleChIP: A microfluidic device for accessible ChIP-seq**
Alice Xu, Blacksburg High School
-

Engineering and Technology A

Constant Hall

Room 1047 (morning session)

Room 1048 (afternoon session)

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different colored light bulbs on distance traveled by a solar-powered robot**
Lily Allen and Ellie Potts, Swanson Middle School
- 9:15 **The effect of bridge design on bridge strength**
Eyuel Berhanu, Thomas Jefferson Middle School
- 9:30 **The effect of different artificial intelligence technologies on the accuracy on recognition of diseases**
Anshul Chiranth, George H. Moody Middle School
- 9:45 **The effect of bridge design on weight held**
Ryan Cohen, Thomas Jefferson Middle School
- 10:00 **The effect of bridge design on the ability to hold load**
Caroline Colucia, Thomas Jefferson Middle School
- 10:15 BREAK
- 10:30 **The effect of different toothpaste on stain removal**
Rachel Dai, George H. Moody Middle School
- 10:45 **The effect of heat on a solar panel's efficiency**
Leonardo Fall, Swanson Middle School
- 11:00 **The effect of different shapes on radar visibility**
William Frank, Kenmore Middle School

11:15 **The effect of different light types on RGB values**
Elizabeth Knerr, George H. Moody Middle School

11:30 LUNCH BREAK - Broderick Dining Commons

Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

12:30 **The effect of propeller's pitch angle on its efficiency**
Devesh Kumar, George H. Moody Middle School

12:45 **The effect of the shape of the supports on the amount of weight supported**
Shorya Malani, George H. Moody Middle School

1:00 **The effect of different sunlight angles on the power produced by a solar cell**
Ella McNally, Thomas Jefferson Middle School

1:15 **The effect of distance from mobile device on the amount of radiation received**
Nayan Mehta, George H. Moody Middle School

1:30 **The effect of different materials on the functionality of and friction produced by an arm prosthetic**
Akul Miriyala, George H. Moody Middle School

1:45 **The effect of different tennis racket overgrips on its permeability when saturated**
Kaushik Narasimhan, George H. Moody Middle School

Engineering and Technology B

Constant Hall

Room 1052 (morning session)

Room 1059 (afternoon session)

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of aluminum fin density on heat dissipation**
Siddhant Prakash, George H. Moody Middle School
- 9:15 **The effect of gear ratio on torque in Arduino based robots**
Harini Ramaswamy, Swanson Middle School
- 9:30 **The effect of tuned mass dampers on buildings affected by vortex shedding**
Raphael Sanchez, Thomas Jefferson Middle School
- 9:45 **The effect of angled/curved wind turbine blades on output**
Yash Saxena, George H. Moody Middle School
- 10:00 **Invisible Fence:#NotJustForDogs: The effect of subdividing an array of an 802.11ac SOHO Router on the ability to localize a mobile device**
Maxwell Sigrest, Louise Benton Middle School
- 10:15 BREAK
- 10:30 **The effect of the age of the cell phone on the electromagnetic radiation**
Aquib Syed, George H. Moody Middle School
- 10:45 **The effect of the angle of the buckets on a Pelton wheel on the amount of energy produced**
Pranithi Thoota, George H. Moody Middle School

- 11:00 **The effect of wingtips on the fuel efficiency of an airplane**
Parth Tornekar, George H. Moody Middle School
- 11:15 **The effect of carbon filtration on microplastic content**
Ben Tsai, Thomas Jefferson Middle School
- 11:30 Lunch Break - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of different obstacles on WiFi signal strength**
Nivriti Vanga, George H. Moody Middle School
- 12:45 **The effect of toss placement on the accuracy of a second serve in tennis**
Viktor Vaniakin, George H. Moody Middle School
- 1:00 **The effect of different reflective materials on the voltage generated by a non-tracking solar concentrator**
Carson Wang, George H. Moody Middle School
- 1:15 **The effect of different voltages in undervolting on the temperature of CPUs**
Raymond Wen, George H. Moody Middle School
- 1:30 **The effect of temperature on an electromagnetic train**
Natalie Xie, George H. Moody Middle School
- 1:45 **The effect of the type of fruit battery on the voltage produced**
Margaret Yacobucci, Swanson Middle School
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Environmental Science A

Dragas Hall
Room 2104

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Assessment of campsite sustainability along the Pacific Crest Trail corridor in Desolation Wilderness, California**
Haley Freeborn, Blacksburg High School
- 9:15 **The efficacy of various polymer plastics on the removal of estrogen from water**
Holly Acker, Roanoke Valley Governor's School for Science & Technology
- 9:30 **The effect of various environmentally-friendly algae deterrents on the control of phytoplankton growth on plastic**
Ankita Adhvaryu, Mills E. Godwin High School
- 9:45 **The effect of day-night cycles of plants on carbon sequestration**
Eugene Akoto, Mills E. Godwin High School
- 10:00 **The effect of material type on speed of degradability**
Hannah Ahmed, Mills E. Godwin High School
- 10:15 **The effect of different types of potatoes on the melting point of bioplastic**
Ansah Akhtar, Washington-Lee High School
- 10:30 BREAK
- 10:45 **The effect of carbonated drinks on heart rate**
Mahin Atturu, Mills E. Godwin High School

- 11:00 **Analysis of sediment health in a contaminated section of the Lower James River**
Kenneth Beam, Chesapeake Bay Governor's School for Marine & Environmental Science
- 11:15 **The case for permeable property in Arlington**
William Bernhardt and Haylee Feist, Yorktown High School
- 11:30 **The effect of differing levels of streamflow on the prevalence of Ephemeroptera, Plecoptera and Trichoptera and the biodiversity of an aquatic environment**
Chelsea Brennan and Emma Levon, Clover Hill High School
- 11:45 **The effect of land use on dissolved oxygen and nitrates**
Emily Brown, Chesapeake Bay Governor's School for Marine & Environmental Science
- 12:00 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **Carbon sequestration in the urban forest of the James River Park System**
Beverly Buchanan and Milan Marsh, Open High School
- 1:15 **Testing oil absorption of a cellulose barrier on cardboard**
Isabella Burgoyne, Southwest Virginia Governor's School
- 1:30 **The correlation between the populations of *Crassostrea virginica* and *Ulva lactuca* on the oyster castles at Greenbackville, VA**
Jessica Byers, Washington-Lee High School
- 1:45 **The survival and growth of *Sinapis alba* when grown under UV-B radiation**
Kennedy Campbell, Central Virginia Governor's School for Science & Technology
- 2:00 **The effect of proximity to airports on water lead levels**
Sydney Coffman, Mills E. Godwin High School

- 2:15 **BREAK**
- 2:30 **The effect of air circulation on short-term radon levels**
Alexander Coffman, Mills E. Godwin High School
- 2:45 **Lead toxicity and its risk to wildlife and humans through fragmentation**
Christiana Cole, Andrea Fox, Noah McIntire and Hannah Miller,
Harrisonburg High School
- 3:00 **Changes in the fouling community in oyster sanctuary reefs**
Madison Dent, Chesapeake Bay Governor's School for Marine &
Environmental Science
- 3:15 **The effect of different seagrass species on carbon sequestration**
Pavan Desai, Mills E. Godwin High School
- 3:30 **The effect of propeller shape on the amount of energy it produces**
Natalie Ellis and Keira Taylor, Washington-Lee High School
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Environmental Science B

Dragas Hall
Room 2106

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effects of propolis based pesticides for use in agricultural settings**
Melany Fuentes, Southwest Virginia Governor's School
- 9:15 **The effect of compost contents on the approximate chemical concentrations in the resulting soil**
Caroline Gage, Washington-Lee High School
- 9:30 **The effect of turbidity on oxygen production of aquatic plants**
Ian Garland, Central Virginia Governor's School for Science & Technology
- 9:45 **The effect of different pollutants on the turbidity of pond water**
Aadhira Gopalan, Mills E. Godwin High School
- 10:00 **The effect of plastic concentration on the rate of water evaporation**
MayGrace Gozzi, Clover Hill High School
- 10:15 **Rising tides: Assessing the potential marsh loss to higher sea levels**
Tristan Gross, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:30 BREAK

- 10:45 **The effect of grocery bag material on the change in mass of material after being composted**
Elyse Hartmann, Washington-Lee High School
- 11:00 **The effect of organic and inorganic fertilizers on the weight of earthworms**
Emily Haueis, Mills E. Godwin High School
- 11:15 **The effect of sunscreen brand on *Daphnia magna* survival**
Caroline Hedrick, Mills E. Godwin High School
- 11:30 **The effect of varying concentrations of oxybenzone on cell density in *Chlorella* and *Chlamydomonas***
Summer Hensley, Central Virginia Governor's School for Science & Technology
- 11:45 **Chemical versus photochemical degradation of crude oil**
Maddison Hughey, The Mathematics & Science Academy at Ocean Lakes High School
- 12:00 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **Using waste biomass-based electrodes in electro-coagulation for lead and phosphate removal from water**
Janine Icalla, Mills E. Godwin High School
- 1:15 **A colorimetric int11 gene gold nanosensor for monitoring environmental wastewater pollution**
Adithya Iyer, Roanoke Valley Governor's School for Science & Technology
- 1:30 **The effect of graphene oxide membranes on ethanol concentration**
Sahil Jaiswal, Deep Run High School

- 1:45 **The effect of distance from Washington, D.C. on the mercury presence in the Potomac River**
Laura Jayne, Washington-Lee High School
- 2:00 **The effect of the type of stormwater control system on water quality**
Riley Johnson, Washington-Lee High School
- 2:15 BREAK
- 2:30 **The effect of water purification method on the area of bacterial growth and the level of turbidity in water after purified**
Brianna Kenealy and Laura Rapazzo, Washington-Lee High School
- 2:45 **The effect of lime additive amounts on the bearing capacity of soils**
Caroline Klotz, Clover Hill High School
- 3:00 **The effect of coagulants and electro-coagulation on remediation of dye-polluted wastewater**
Parker Le, Mills E. Godwin High School
- 3:15 **A study of the change in the bacteria on free range chicken eggs throughout the seasons**
Anna Lewis and Jerry Turner, Chesapeake Bay Governor's School for Marine & Environmental Science
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Environmental Science C

Dragas Hall
Room 2108

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Optimizing metformin Removal: Utilizing molecular sieves and absorbents within sand filtration units**
James Licato, Washington-Lee High School
- 9:15 **The effect of electricity on magnetic strength**
Rowen Link, Mills E. Godwin High School
- 9:30 **The effect of volume of *Dactylis glomerata* grasses planted on volume of runoff**
Katherine Little, Yorktown High School
- 9:45 **The effect of iron sulfate ($\text{Fe}_2(\text{SO}_4)$), aluminum sulfate ($\text{Al}_2(\text{SO}_4)_3$), and potassium manganate (KMnO_4) on the growth of *Acrochaetium***
Anthony Marraccini, Central Virginia Governor's School for Science & Technology
- 10:00 **Cycles of growth in long lived individual *Arctica islandica***
Emma McKee, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:15 **The effects of ambient light intensity of *Pyrocystis fusiformis***
Renee Meade, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:30 BREAK

- 10:45 **The effect of antihistamines on the heart rate of *Daphnia magna***
Ammy Medina-Centeno, Clover Hill High School
- 11:00 **The effects of ghost fishing on crab and fish populations**
Jewel Mitchell, Chesapeake Bay Governor's School for Marine & Environmental Science
- 11:15 **Periwinkle site fidelity at a local marina**
David Mullins, Chesapeake Bay Governor's School for Marine & Environmental Science
- 11:30 **The effect of salinity on the growth of *Amphidinium carterae***
Daniel Murray, Central Virginia Governor's School for Science & Technology
- 11:45 **The effect of body cleansers on *Daphnia magna***
Nमित Nallapaneni, Mills E. Godwin High School
- 12:00 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of type of synthetic fabric on mass of microfibers released, when washed**
Angela Oandasan, Clover Hill High School
- 1:15 **The effect of bioplastic composition on the rate of decomposition**
Cy Pabis, Central Virginia Governor's School for Science & Technology
- 1:30 **The effect of colloidal silver on *Daphnia magna***
Shaily Pal, Mills E. Godwin High School
- 1:45 **The effects of location on water quality**
Kayla Parada, Portsmouth STEM @ I.C. Norcom High School

- 2:00 **The effects of shallow water environments on small fish and invertebrate populations in the Chesapeake Bay**
Nathan Parker, Chesapeake Bay Governor's School for Marine & Environmental Science
- 2:15 BREAK
- 2:30 **The effect of household chemicals on the heart rate of *Daphnia magna***
Aum Patel, Mills E. Godwin High School
- 2:45 **Sand characteristics and erosion potential in a nourished beach environment**
Kayla Paulos, Chesapeake Bay Governor's School for Marine & Environmental Science
- 3:00 **The effect of various pH on fruit fly larvae**
Thuc-Uyen Phan, Mills E. Godwin High School
- 3:15 **The effect of cigarette butts on brine shrimp in an aquatic environment**
Anna Pitts, Chesapeake Bay Governor's School for Marine & Environmental Science
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Environmental Science D

Dragas Hall
Room 2110

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of tree cover loss and population on air quality**
Mahia Rahman and Belen Tesfaye, Washington-Lee High School
- 9:15 **The effect of antecedent soil moisture on topsoil runoff**
Laurel Seay, Central Virginia Governor's School for Science & Technology
- 9:30 **The effect of time and combinations of meteorological variables on the accuracy of deep-learning-predicted dry bulb temperature**
Fareed Sheriff, Mills E. Godwin High School
- 9:45 **The effect of sterilization methods on coliform presence/absence**
Nate Stevenson, Mills E. Godwin High School
- 10:00 **Seasonal populations of gelatinous zooplankton in local estuaries**
Payton St. Louis, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:15 **The effect of different clothing fibers on the amount of microplastics collected**
Emilio Tognelli, Arlington Career Center
- 10:30 BREAK

- 10:45 **Analyzing the difference in the sorption concentrations of copper, lead, iron, and zinc in polylactic acid and high density polyethylene plastic bags**
Rose Tomiak, Southwest Virginia Governor's School
- 11:00 **Analysis and comparison of ibuprofen and triclosan on the growth and germination of *Pisum sativum***
Reilly Towns, Mills E. Godwin High School
- 11:15 **The physiological effect of microplastic on *Daphnia magna***
Alyssa Underwood, Central Virginia Governor's School for Science & Technology
- 11:30 **Application of microbial fuel cells in detecting water pollution**
Anna Vargas, New Horizons Governor School for Science & Technology
- 11:45 **The effect of soil conservation methods on the amount of soil eroded**
Joe Vimalathithan, Clover Hill High School
- 12:00 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of the age and use of pavement on the amount of pollutant runoff into storm drains in Arlington, VA**
Rose Von Eckartsberg, Yorktown High School
- 1:15 **Is there evidence of male limitation in the summer blue crab fishery?**
Sarah Walton, Chesapeake Bay Governor's School for Marine & Environmental Science
- 1:30 **The eelgrass microbiome: A study of microbial development in restored *Zostera marina***
Tahi Wiggins, Chesapeake Bay Governor's School for Marine & Environmental Science

- 1:45 **The effect of the intensity of nighttime light pollution on the survival rate of ladybugs**
Shenandoah Worrel, Clover Hill High School
- 2:00 BREAK
- 2:15 **Investigating coral's appetite for plastic**
Virginia Worrell, Southwest Virginia Governor's School
- 2:30 **The effect of permeable pavement type on the amount of water absorbed into the ground**
Rose Yang, Mills E. Godwin High School
- 2:45 **Sunscreen efficacy by chemical composition and its effect on aquatic life**
Taylor Yates, Chesapeake Bay Governor's School for Marine & Environmental Science
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Human Behavior

Batten Arts and Letters
Room 3067

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of music tempo on the effectiveness of studying**
Jonathan Bierly, George H. Moody Middle School
- 9:15 **Computer versus paper testing**
Sophia Carney, Mary Ellen Henderson Middle School
- 9:30 **The effect of song genre on earworm likelihood**
Elizabeth Coe and Tara Udani, Gunston Middle School
- 9:45 **The effect background music on reading speed**
Joseph Cohen, Sabot at Stony Point
- 10:00 **Fidget wars: The effect of fidget toys on the concentration of school-age children**
Fares Elsherbiny and Caleb Morgan, Louise Benton Middle School
- 10:15 **The effect of vehicle type and color on vehicle speed**
Ryan Ermovick, Kenmore Middle School
- 10:30 BREAK
- 10:45 **The effect of auditory distractions on task efficiency**
Oliver Frankel, Sabot at Stony Point
- 11:00 **Praising children for their intelligence: Constructive or destructive?**
Alexandra Funk, Mary Ellen Henderson Middle School

- 11:15 **The effect of the amount of time video game played in the last week in hours on the person's reaction time**
Qingyuan Hu, George H. Moody Middle School
- 11:30 **The effect of physical fatigue on REM sleep**
Amrit Kundan, George H. Moody Middle School
- 11:45 **The effect of timed math problems on heart rate**
Brady Lang, Sabot at Stony Point
- 12:00 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of bergamot oil on critical thinking**
Marissa Milton, Sabot at Stony Point
- 1:15 **The effect of bilingualism on one's divergent thinking**
Risshi Naavaal, George H. Moody Middle School
- 1:30 **The effect of nanometer frequencies on circadian rhythm and retina physiology**
Nihal Pothunoori, George H. Moody Middle School
- 1:45 **The effect of aging on memory**
Saniya Sangle, George H. Moody Middle School
- 2:00 **The effect of different actions taken while on a screen on difference in visual acuity**
Aashka Shah, George H. Moody Middle School
- 2:15 BREAK
- 2:30 **The effect of choice on happiness**
Katarina Shilland, Gunston Middle School
- 2:45 **Which type of humor will invoke the most laughter in 7th grade students?**
Jana Simmons, Indian River Middle School

- 3:00 **The effects of multitasking**
Kathryn Snyder, Mary Ellen Henderson Middle School
- 3:15 **The effect of time on the reliability of eyewitnesses**
James Teague, Mary Ellen Henderson Middle School
- 3:30 **The effect of different color texts on the speed of reading**
Navya Thoota, George H. Moody Middle School
- 3:45 **The effect of dark chocolate on the short-term memory in adolescents 13-14 years old**
Ryan Wen, George H. Moody Middle School
-

Math: Patterns and Relationships

Constant Hall
Room 1048

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Afternoon Session: Please convene at 2:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 2:30 **The effect of different banks on the amount of accumulated money with interest rate in a standard savings account**
Afrin Akhtar, Kenmore Middle School
- 2:45 **The effect of media on voting in the Greater Richmond Area**
Eilaf Aljasari, George H. Moody Middle School
- 3:00 **The effect of average daily temperature on total crime rates per day**
Maya Jones, Thomas Jefferson Middle School
- 3:15 **The effect of different average income per capita levels on the suicide rate**
Grant Lee, George H. Moody Middle School
- 3:30 **The effect of distance travelled on home-field advantage in soccer**
Lucas Orthober, Sabot at Stony Point
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Math: Theoretical and Modeling

Education Building
Room 1105

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of surface angle on the width and length of a simulated blood drop**
Emma Berver, Washington-Lee High School
- 9:15 **Qualitative analysis of stability and robustness of domestic flight schedules**
Gavin McCabe, Jacob Rice and Kai Vylet, New Horizons Governor School for Science & Technology
- 9:30 **The effect of alignment algorithm on identification of microbial pathogenicity**
Cameron Sharma, Mills E. Godwin High School
- 9:45 **Music on math - The mathematical basis of musical chords**
Ameya Sinha, Yorktown High School
- 10:00 BREAK
- 10:15 **Combatting gerrymandering using mathematical methods to define compactness and account for natural boundaries**
Maria Stuebner, New Horizons Governor School for Science & Technology

- 10:30 **Interactive storyteller to improve student engagement and performance**
Reid Tenzer, Roanoke Valley Governor's School for Science & Technology
- 10:45 **The effect of sentence characteristics on readability and text ranking**
Lindsey Wang, Chantilly High School
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Medicine and Health A

Constant Hall
Room 1002

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of varying concentrations of sodium nitrite on the regeneration lengths of planaria**
Olivia Bell, Central Virginia Governor's School for Science & Technology
- 9:15 **The effect of varying concentrations of sucrose on the fecundity of *Drosophila melanogaster***
Callie Booth, Central Virginia Governor's School for Science & Technology
- 9:30 **The effect of pulsed electromagnetic field exposure on planaria regeneration**
Audrey Carlson, Central Virginia Governor's School for Science & Technology
- 9:45 **A novel approach to identifying inhibitors to neurodegenerative prion misfolding using AutoDock Vina**
Nikhil Challa, Mills E. Godwin High School
- 10:00 **Role of EphA4 in vascular gene expression during inflammation**
Michael Chen, Blacksburg High School
- 10:15 BREAK
- 10:30 **The effect of individual probiotics and combinational probiotics on *Drosophila melanogaster* reproduction and longevity**
Bennett Clark, Mills E. Godwin High School

- 10:45 **The effect of toothbrush design on the splaying of bristles**
Jared Conway, Clover Hill High School
- 11:00 **The effect of advertised use time on dissolution rate of antihistamines**
Jack Dwyer, Mills E. Godwin High School
- 11:15 **The effect of the menstrual cycle on the risk of knee injury in females**
Madison Gallagher, Central Virginia Governor's School for Science & Technology
- 11:30 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of sensitive detergents on skin irritability**
Serena Grant, Mills E. Godwin High School
- 12:45 **The effect of various essential oils versus the antibiotic vancomycin on the growth inhibition of *Staphylococcus epidermidis***
Katie Harrison, Central Virginia Governor's School for Science & Technology
- 1:00 **The effect of auricle shape and angle of hearing on the amplification of sound**
Luke Hatch, Central Virginia Governor's School for Science & Technology
- 1:15 **Computer-aided discovery of NDM-1 inhibitors to reverse antibiotic-resistance**
Christopher Heron, Mills E. Godwin High School
- 1:30 **Rehearsed memorization's effects on voice recognition in Alzheimer's patients**
Charlie Jones, Southwest Virginia Governor's School

- 1:45 **The effect of natural materials on prevention and management of radiation dermatitis**
Sreedhatri Kandlakunta, Mills E. Godwin High School
- 2:00 **Using *Drosophila* as an integrated model to elucidate the neuropathy and cellular and genetic mechanisms underlying traumatic brain injury (TBI)**
Shan Lateef, Thomas Jefferson High School for Science & Technology
- 2:15 BREAK
- 2:30 **The effect of deletion of the SPAG17 gene on fibrotic gene expression**
Eric Liberczuk, Mills E. Godwin High School
- 2:45 **The effect of moisture prevention products on the hydration level of skin after rock climbing**
Michael Mann, Clover Hill High School
- 3:00 **The effect of brazilian pepper tree extract on bacteria**
Kelly Melnick, Arlington Career Center
- 3:15 **The effect of various companies' bottled water on the materialization of microplastics**
Carter Morris, Mills E. Godwin High School
- 3:30 **The relationship between the FTO SNP rs9939609 and food satisfaction in men and women**
Julia Moschella, Southwest Virginia Governor's School
- 3:45 **The effect of pH on the solubility of ibuprofen**
Samuel Muzinski, Arlington Career Center
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Medicine and Health B

Constant Hall
Room 1005

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of rapamycin against ischemic damage in diabetic heart cells**
Shuvojeet Paul, Mills E. Godwin High School
- 9:15 **The effect of perfume type on the death rate of crickets**
Elizabeth Pepper, Clover Hill High School
- 9:30 **The effect of rapamycin against doxorubicin-induced cardiotoxicity**
Arijit Pradhan, Mills E. Godwin High School
- 9:45 **Knockout of AEG-1 promotes sensitivity to sorafenib in human hepatocellular carcinoma (HCC)**
Anusha Puri, Mills E. Godwin High School
- 10:00 **The effect of the circadian rhythm on human blood pressure**
Arvind Rajesh, Mills E. Godwin High School
- 10:15 BREAK
- 10:30 **The effect of FD drugs on inhibition of cholangiocarcinoma cell growth**
Karuna Ramnani, Mills E. Godwin High School
- 10:45 **The effect of daily situations on blood pressure**
Ardenne Sklavos, Mills E. Godwin High School

- 11:00 **The effect of time-restricted eating on *Drosophila melanogaster* longevity**
Marianne Tan, Mills E. Godwin High School
- 11:15 **The effect of different races on similarity of fingerprints**
Reenie Tian, Mills E. Godwin High School
- 11:30 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of microwaves on defibrinated sheep blood**
Evan Tuckley, Mills E. Godwin High School
- 12:45 **Investigating combinations of various chemotherapies coupled with NURF knockdown on tumor cell cytotoxicity**
Ashish Vaidyanathan, Mills E. Godwin High School
- 1:00 **A computational approach toward targeting protein-ligand interaction of asthma**
Devi Veeramgari, Mills E. Godwin High School
- 1:15 **The effect of antibacterial mouthwash on growth of bacteria**
Grace Walters, Mills E. Godwin High School
- 1:30 **Elucidating the mechanism underlying the anticancer activity of kiwifruit**
Jalen Wang, Mills E. Godwin High School
- 1:45 **An analysis of the mosquito vector population in the Middle Peninsula of Virginia**
Elizabeth Wilding, Chesapeake Bay Governor's School for Marine & Environmental Science
- 2:00 BREAK
- 2:15 **Efficacy of tick tubes on reducing tick population in a woodland area**
Matthew Wilson, Chesapeake Bay Governor's School for Marine & Environmental Science

- 2:30 **The effect of various mouthwashes on pH level**
Hanna Wirtu, Mills E. Godwin High School
- 2:45 **The effect of age related cytokine expression on proliferation of cancer cells**
Nathan Wu, Mills E. Godwin High School
- 3:00 **The effect of various antifungal creams on the production of carbon dioxide by *Saccharomyces cerevisiae***
Joanne Yang, Mills E. Godwin High School
- 3:15 **The effect of different methods of extraction of 6-shogaol from ginger (*Zingiber officinale*) on the protection of dopaminergic neurons in a Parkinson's disease model**
Edward Zhang, Mills E. Godwin High School
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Microbiology and Cell Biology A

Engineering Systems Building
Room 1124

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Utilizing CRISPR/Cas9 to investigate connexin43 under hypoxic stress**
Lauren Frampton, Roanoke Valley Governor's School for Science & Technology
- 9:15 **The effect of native species of countries with high prevalence of *Helicobacter pylori* infection in adults on the inhibition of *Lactococcus lactis***
Adhvika Ambikapathi, Maggie L. Walker Governor's School for Government & International Studies
- 9:30 **The effect of sugar substitutes on yeast fermentation**
Kayla Anderson, Washington-Lee High School
- 9:45 **The effect of different types of sugar on the zone of inhibition of *Escherichia coli***
Fardeen Bablu, Washington-Lee High School
- 10:00 **The evaluation of swarm intelligence in *Physarum polycephalum* to expand adaptive network applications**
Elianna Bailey, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:15 **The effect of yeast expiration dates on height of rising bread**
Kaelynn Bemis, Clover Hill High School
- 10:30 **The effect of number of maze pathways on *Physarum polycephalum*'s maze solving ability**
Joshua Bowling, Clover Hill High School

- 10:45 BREAK
- 11:00 **The effect of acetylsalicylic acid on *Escherichia coli* colonies**
Victoria Bui, Mills E. Godwin High School
- 11:15 **The effect of various homeopathic substances on the zone of inhibition of *Propionibacterium acne***
Lauren Chase, Central Virginia Governor's School for Science & Technology
- 11:30 **Sweetener effects on fermentation rates in kombucha**
Solace Church, Southwest Virginia Governor's School
- 11:45 **The effects of treatments on bacterial infection**
Amya Clark, Portsmouth STEM @ I.C. Norcom High School
- 12:00 **The effect of different pH levels on the amount of bacteria measured on pork meat**
Lucas Codispoti, Washington-Lee High School
- 12:15 **The effect of different cleaning disinfectants on the bacteria *E.coli***
Charleston Couture and Sofia Warfield, Washington-Lee High School
- 12:30 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **The effect of calcium carbonate and calcium sulfate on the growth of *P. pannorum***
Bethany David, Central Virginia Governor's School for Science & Technology
- 1:45 **Resveratrol mediated Epstein-Barr virus lytic induction: A novel therapeutic approach for EBV-positive lymphomas**
Logan Dunkenberger, Roanoke Valley Governor's School for Science & Technology

- 2:00 **The effect of varying colors of light on the growth rate of *Micrococcus luteus***
Emiko Ebreneyin, Central Virginia Governor's School for Science & Technology
- 2:15 **The effect of black cumin, turmeric and ginger oils on colony forming units of *E. coli***
Jacob Foster and Spencer Lewis, Washington-Lee High School
- 2:30 **The effect of various solutions on H₂O₂ breakdown in liver cells**
Jefin Jose, Mills E. Godwin High School
- 2:45 BREAK
- 3:00 **The inhibition of methane-producing bacteria using novel compound: β -carboline**
David Kang, John Randolph Tucker High School
- 3:15 **The effect of different natural organic compounds on the growth of *Staphylococcus aureus***
Abhishek Kulkarni, Mills E. Godwin High School
- 3:30 **The impact of *Escherichia coli* age on antibiotic effects**
Graysen Adams, Central Virginia Governor's School for Science & Technology
- 3:45 **The effect of the type of solvent on the mass of fat lost**
Gaston Finger, Washington-Lee High School
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Microbiology and Cell Biology B

Engineering Systems Building
Room 1125

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different acne medications on *Staphylococcus epidermidis* growth**
Diana Kirilov, Mills E. Godwin High School
- 9:15 **Various chelating agents on the concentration of calcium oxalate in *Spinacea oleracea* (spinach)**
Chamanthi Konidala, Mills E. Godwin High School
- 9:30 **The effect of the type of light on the opacity of *E. coli* growth**
Elizabeth Koumans, Yorktown High School
- 9:45 **What is the effect of handwashing methods on diameter of zone of inhibition in bacteria?**
Ainsley McCabe, Washington-Lee High School
- 10:00 **The effect of the amount of artificial urine on wattage output in microbial fuel**
Alexandra McDonald, Yorktown High School
- 10:15 **The effects of natural versus synthetic cleaners on the zone of inhibition of *Escherichia coli***
Alyssa McGinnis, Mills E. Godwin High School
- 10:30 **The relationship between codon usage bias, mRNA half-life, and the Ste13 protein**
Claire Morton, Blacksburg High School
- 10:45 BREAK

- 11:00 **The effect of transition metals on the ability of *Escherichia coli* to replicate**
Matthew Murray, Central Virginia Governor's School for Science & Technology
- 11:15 **The effects of different amplitudes of a particular song on the antibiotic susceptibility of *Escherichia coli* against ampicillin**
Shardul Naphade, Central Virginia Governor's School for Science & Technology
- 11:30 **The effect of caffeine on target of rapamycin complex (TOR)**
Constance Newell, Mills E. Godwin High School
- 11:45 **The effect of different over-the-counter acne products on the inhibition of *E. coli***
Angela Nguyen, Mills E. Godwin High School
- 12:00 **Solar water disinfection**
Lily Odenwelder, Washington-Lee High School
- 12:15 **Antiproliferative effect of rapamycin against phenylephrine induced cardiac fibrosis**
Shakthi Ramasamy, Mills E. Godwin High School
- 12:30 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **The effect of sugar on soil's electroactivity produced by bacteria**
Elina Rastegar, Mills E. Godwin High School
- 1:45 **The effect of various seed oils on fermentative metabolism**
Katie Selvaraj, Mills E. Godwin High School
- 2:00 **The effect of concentration of colloidal silver and gram positive or negative bacteria on zone of inhibition**
Hamna Shafiq, Washington-Lee High School

- 2:15 **How rougher locations on the Thomas Jefferson Memorial affect biofilm growth**
Adam Stievater, Washington-Lee High School
- 2:30 BREAK
- 2:45 **A study on the antibiotic resistance of bacteria found in conventionally raised poultry**
Catherine Sword, Yorktown High School
- 3:00 **The effect of light exposure on dinoflagellate's bioluminescence**
Leem Taha, Mills E. Godwin High School
- 3:15 **Peptide nucleic acids as potential designer antimicrobials**
Unmesha Vullikanti, Blacksburg High School
- 3:30 **Are hand dryers actually hygienic?**
Sally Work, Washington-Lee High School
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Physical Science and Astronomy

Oceanography and Physics Building
Room 202

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Investigating the variation of speed of sound with air temperature**
Nicholas Artiedamarin, Mary Ellen Henderson Middle School
- 9:15 **Ball bounce, energy loss**
Carolyn Bohnert, Swanson Middle School
- 9:30 **The physics of a magnetic linear accelerator**
Farouk Boudjemaa and Cameron Gleaton, Swanson Middle School
- 9:45 **The effect of the type of light bulb on the current, light output and temperature**
Isla Carlson, Gunston Middle School
- 10:00 **The effect of snare drum head tension on the length of sustain**
William Chenoweth, Williamsburg Middle School
- 10:15 **Physics of a string**
Evelyn Courard-Durso and Frances O'Malley, Swanson Middle School
- 10:30 BREAK
- 10:45 **The effect of dance footwear on rotational friction**
Sydney Douthit, Sabot at Stony Point

- 11:00 **The effect of simulated use on tennis ball's softness**
Owen Eklund, Sabot at Stony Point
- 11:15 **The effect of different roof colours on building temperatures**
Juliet Geers, Thomas Jefferson Middle School
- 11:30 **The effect of frequency on acoustic panel effectiveness**
Scott Gowdy, Thomas Jefferson Middle School
- 11:45 **The effect of dirt on solar energy**
Rose Haron, Swanson Middle School
- 12:00 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **The effect of different materials on the reflection of sound**
Dylan Hill-Joyce, Sabot at Stony Point
- 1:15 **The effect of the amount of salt on the rate of corrosion**
Esha Kidambi, George H. Moody Middle School
- 1:30 **The effect of texturing piston rings on friction**
Lorenzo Mazzeo, Sabot at Stony Point
- 1:45 **The effect of increasing heat on flywheel speed of a Stirling engine**
Tom Meyers, Sabot at Stony Point
- 2:00 **Skin effect loss with waveform**
Ryan Mickelwait, Peter Muhlenburg Middle School
- 2:15 BREAK
- 2:30 **The effect of the type of magnet on how much mass the magnets can support before touching**
Emma Pericak, Swanson Middle School
- 2:45 **Exploring how sound frequency affects distance traveled**
Emerson Rose, Sabot at Stony Point

- 3:00 **The effect of wrist width on forearm pass height of a volleyball**
Sophia Smith, Sabot at Stony Point
- 3:15 **The effect of the temperature on the bounce height of a tennis ball**
Parvathi Tadi, George H. Moody Middle School
- 3:30 **The effect of wind speed on the distance water travels**
Sophia Voulgaris, Thomas Jefferson Middle School
- 3:45 **The effect of lifting envelope volume on hot air balloon lift**
Jason Woodworth, Kenmore Middle School
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Physics and Astronomy

Diehn Center for the Performing Arts
Room 1103

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of temperature on the pressure change in a football**
Carter Blanks, Clover Hill High School
- 9:15 **The truth hertz: The effect of different materials on sound reducing capabilities**
Joy Block, Arlington Career Center
- 9:30 **The effect of delivery methods of acetaminophen on its dissolvability**
Amulya Chowdhory, Mills E. Godwin High School
- 9:45 **The effect of repurposed materials on thermal insulation**
Michael Dertke and Kyle Wilson, Washington-Lee High School
- 10:00 **The efficacy of different soccer headgear on reduction of impact force from collisions**
Connor Dunlop, Central Virginia Governor's School for Science & Technology
- 10:15 **The effect of different types of flooring on the height a basketball bounces**
Olivia Ebert, Clover Hill High School
- 10:30 **Property study of the globular cluster NGC 6266**
Charley Inman, Central Virginia Governor's School for Science & Technology
- 10:45 BREAK

- 11:00 **The effect of golf ball dimple patterns on the distance the ball traveled**
Anthony LoBosco, Clover Hill High School
- 11:15 **The effect of different types of glass on the speed of light**
Laurel Logan, Central Virginia Governor's School for Science & Technology
- 11:30 **The effect of deflated footballs on game performance**
Colby Mandeville, Central Virginia Governor's School for Science & Technology
- 11:45 **Studying properties of globular cluster NGC 6712 based on star membership**
Madison Markham, Central Virginia Governor's School for Science & Technology
- 12:00 **Studying variables of globular cluster NGC 6304 Using star membership**
Daniel Moon, Central Virginia Governor's School for Science & Technology
- 12:15 **A comparison of lunar cratering frequency based on latitude and longitude**
Mary O'Sullivan, Chesapeake Bay Governor's School for Marine & Environmental Science
- 12:30 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **The effect of drag swimsuit materials on the speed of a simulated swimmer**
Mallory Pham, Clover Hill High School

- 1:45 **The effect of the material of the subfloor system placed under Marley matting on the maximum acceleration of a dropped mass (m/s^2)**
Katelyn Roberts, Clover Hill High School
- 2:00 **The effect of bat composition on rebound height**
Caiden Romero, Clover Hill High School
- 2:15 **The effect of metal on resistance to a vacuum**
Arupava Saha, Mills E. Godwin High School
- 2:30 **What is the effect of the length of a catapult arm on how far a ping pong ball is launched?**
Gabriel Sessions, Washington-Lee High School
- 2:45 BREAK
- 3:00 **The effect of synthetic and natural fiber materials on sound absorption**
Mia Shenkman, Washington-Lee High School
- 3:15 **Studying star cluster NGC 6539**
Taylor Tolbert, Central Virginia Governor's School for Science & Technology
- 3:30 **Simulation of timescale matching between organic and metallic phase-change materials for transient thermal reduction**
Justin Wang, Chantilly High School
- 3:45 **The effect of the material wound in guitar strings on the length of sustain on an electric guitar**
Brett Zimmermann, Clover Hill High School
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Plant Sciences and Microbiology

Constant Hall
Room 2134

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **Turn that ground upside down! (The effect of the angle of plants on their heights)**
Ellen Boling and Magdalene MacMullen, Swanson Middle School
- 9:15 **The effect of pH of water on the height of *Alliaria petiolata***
Mara Gerardi, Williamsburg Middle School
- 9:30 **The effect of mycorrhizal fungi on the pigmentation, height, and amount of water in the leaves of the Oregon Snow Pea**
Eleanor Gookin, Thomas Jefferson Middle School
- 9:45 **The effect of the levels of soil pH in the growth rate of *Phaseolus lunatus***
Nazeed Habib, George H. Moody Middle School
- 10:00 **The effect of type of vinegar on zone of inhibition**
Charlotte Haldeman Papacosma, Gunston Middle School
- 10:15 **The effects of dyes added to mycelium on mushroom color**
Finnegan Holland, Sabot at Stony Point
- 10:30 BREAK
- 10:45 **The effect of volatile organic compounds commonly found in urban areas on the health of Mexican marigolds**
Nabiha Islam, Thomas Jefferson Middle School

- 11:00 **The effect of method of cleaning sponge on the amount of bacteria colonies remaining**
Phillip Johnson, Williamsburg Middle School
- 11:15 **The effect of container material on the growth of bacteria to make yogurt**
Shreesh Kalagi, George H. Moody Middle School
- 11:30 **The effect of different concentrations of Tricantanol on the height of *Raphanus sativus* sprout**
Laasya Konidala, George H. Moody Middle School
- 11:45 **The effect of duration of UV-A exposure on *Ocimum basilicum* growth**
Gwyneth Liu, George H. Moody Middle School
- 12:00 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:55 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:00 **Does magentizing *Raphanus sativus* seeds multiply crop yield?**
Shreya Madan, Hidden Valley Middle School
- 1:15 **The effect of salinity on cell preservation**
Aria Merrill, Thomas Jefferson Middle School
- 1:30 **The effect of hybridization on the mass and growth of a tomato plant**
Lara Mohamed, Thomas Jefferson Middle School
- 1:45 **The effect of potash on the release of CO₂ from decomposing plants**
Benjamin Portner, Williamsburg Middle School
- 2:00 **The effect of the type of surfactant in shampoo on the growth of marigolds**
Ellie Rowland, Thomas Jefferson Middle School

- 2:15 **BREAK**
- 2:30 **The effect of additional nutrients on algae biomass**
Amelia Sahm, Thomas Jefferson Middle School
- 2:45 **The effect of greywater on plant growth**
Lydia Schumann and Celeste Wetmore, Swanson Middle School
- 3:00 **The effect of the duration of cryopreservation on the germination of seeds**
Shreya Shanmugan, George H. Moody Middle School
- 3:15 **The effect of essential oils on the growth of oral bacteria**
Isabella Sun, George H. Moody Middle School
- 3:30 **The effect of different types of lighting on the growth of *Zinnia elegans***
Vishnoy Vadakkancheri, George H. Moody Middle School
- 3:45 **The effect of type of aquatic plant on phosphate absorption**
Lewis Wearmouth, Thomas Jefferson Middle School
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Psychology A

Batten Arts & Letters
Room 2060 (morning session)
Room 2064 (afternoon session)

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of priming on risk perception**
Naomi Abramowicz and Rachel Brill, Washington-Lee High School
- 9:15 **The impact of financial experiences and the VA EPF course on financial literacy among teenagers**
Colin Berry, Yorktown High School
- 9:30 **The effect of age on perception of time**
Ava Boston, Yorktown High School
- 9:45 **The effect of music on the reading comprehension abilities of high school students**
Madison Clarke, Chesapeake Bay Governor's School for Marine & Environmental Science
- 10:00 **The high activity allele of MAOA's association with nervous habitual behavior not linked to a disorder**
Audrey DeCosta, Southwest Virginia Governor's School
- 10:15 BREAK
- 10:30 **The effect of religious involvement as a teenager on major life decisions**
Bailey Duncan, Central Virginia Governor's School for Science & Technology

- 10:45 **The effect of cellular devices on student performance**
ThanhLong Duong, Mills E. Godwin High School
- 11:00 **The effect of color on short-term memory retention**
Ronojoy Dutta, Deep Run High School
- 11:15 **Effect of meditation on overall anxiety of high school students**
Meah Ellis, Central Virginia Governor's School for Science & Technology
- 11:30 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of extraversion on emotive perception**
Emma Farney, Mills E. Godwin High School
- 12:45 **Does the self reference effect extend to handwriting?**
Sophie Finkelstein and Alissa Rivero, Washington-Lee High School
- 1:00 **Assumptions of gender and sexuality based on appearance**
Shelby Hewes, Chesapeake Bay Governor's School for Marine & Environmental Science
- 1:15 **The effect of social influence on confirmation bias**
Ian Hodsdon-McGuire, Central Virginia Governor's School for Science & Technology
- 1:30 **Detecting correlation between need for cognition and moral development**
Aidan Horton, Central Virginia Governor's School for Science & Technology
- 1:45 **Does the Virginia 365 Project have a positive impact on Virginia elementary school students?**
Alicia Hundley, Southwest Virginia Governor's School

- 2:00 **BREAK**
- 2:15 **The effect of kawaii aesthetic on attention to detail**
Leah Karush, Washington-Lee High School
- 2:30 **The effect of different human attributes on eyewitness
identification accuracy**
Emily Lionberger, Mills E. Godwin High School
- 2:45 **The correlation between students' academic performance in
elementary school and their academic performance in high
school**
Cecelia MacNamara, Chesapeake Bay Governor's School for
Marine & Environmental Science
- 3:00 **Examining the relationship between eye contact, learning
styles, and student performance**
Cassady Marion, Southwest Virginia Governor's School
- 3:15 **Sleep's effect on cognitive capability in fruit flies**
Michaela McCormack, T. C. Williams High School
- 3:30 **Testing the efficacy of virtual reality systems for educational
purposes**
Noah Keeney, Central Virginia Governor's School for Science &
Technology
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Psychology B

Batten Arts & Letters

Room 3062 (morning session)

Room 3071 (afternoon session)

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of personality on stress levels and response to stress**
Kirsten McDaniel, Chesapeake Bay Governor's School for Marine & Environmental Science
- 9:15 **The effect of traumatic brain injury on anxiety-like behavior in a rat model**
Collin Murphy, Mills E. Godwin High School
- 9:30 **A study of substance abuse on *Girardia tigrina* sensitization**
Vijay Nagandla, Mills E. Godwin High School
- 9:45 **The effect of multitasking of the efficiency of task completion**
Robert Newman, Mills E. Godwin High School
- 10:00 **The effect of the Pollyanna principle on the word order of non-antonym pairs with opposing connotations**
Henry Newton, Central Virginia Governor's School for Science & Technology
- 10:15 BREAK
- 10:30 **The effect of neuroticism on the accuracy of eyewitness testimony**
Vibhas Panchal, Mills E. Godwin High School

- 10:45 **Investigating the association of the A1 allele of the dopaminergic DRD2 gene with extraversion in teenagers**
Binal Patel, Southwest Virginia Governor's School
- 11:00 **The effect of participants' background on their perceptions of character designs**
Annabelle Paulette, Central Virginia Governor's School for Science & Technology
- 11:15 **The effect of letter arrangement in misspelled words on subject's ability to detect error**
Daniel Philip, Mills E. Godwin High School
- 11:30 LUNCH BREAK - Broderick Dining Commons
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Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of mindfulness meditation on working memory**
Ryan Poquis, Mills E. Godwin High School
- 12:45 **The effect of time of day on academic performance**
Shreya Rajkumar, Mills E. Godwin High School
- 1:00 **The effect of personality on decision-making**
Chloe Ramsey, Central Virginia Governor's School for Science & Technology
- 1:15 **Examining the extent of Milgram's obedience study**
Christoph Schoer, Washington-Lee High School
- 1:30 **Memory retention of details in adolescents**
Nadine Shannon, Southwest Virginia Governor's School
- 1:45 **Increasing the reliability of eyewitness testimony through strategic questioning**
Leila Shepard, Mills E. Godwin High School
- 2:00 BREAK

- 2:15 **The association of 5-HTTLPR gene variants with humor styles of teenagers**
Savannah Spencer, Southwest Virginia Governor's School
- 2:30 **Generational joy: A look into sources of happiness and how they change with the times**
Hannah Swann, Chesapeake Bay Governor's School for Marine & Environmental Science
- 2:45 **The association of oxytocin receptor gene variant rs53576 with optimism and pessimism**
Asha Thomas, Southwest Virginia Governor's School
- 3:00 **The effect of different class types on the successfulness of the signaling theory**
Erum Vohra, Mills E. Godwin High School
- 3:15 **The effect of different electronic applications on blinks**
Aaron Yuan, Mills E. Godwin High School
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Statistical Analysis and Inferences

Education Building
Room 1115

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Afternoon Session: Please convene at 12:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 12:30 **The effect of I-66 tolling on I-66 traffic**
Thomas Ackleson, Washington-Lee High School
- 12:45 **The effect of ethnicity on medical compliance of kidney and liver transplant patients**
Gowre Gautham, Deep Run High School
- 1:00 **The effects of resolution on animation quality**
Keeshara Harris, Portsmouth STEM @ I.C. Norcom High School
- 1:15 **Traumatic brain injury (TBI) effects in relation to sex and age**
Emily Neel, Central Virginia Governor's School for Science & Technology
- 1:30 **Do government enforcement actions against undocumented immigrants affect locality decisions of legal immigrants?**
Zoe Powers, Washington-Lee High School
- 1:45 BREAK
- 2:00 **Investigation of the relationship between fitness trackers and physical activity**
Grace Shockley, Southwest Virginia Governor's School

- 2:15 **Examining correlations among regional U.S. & Chinese CO₂ emissions, populations, and GDPs**
Jamael Smith, Central Virginia Governor's School for Science & Technology
- 2:30 **The effect of weaning weight on dollar value of Angus cattle**
Jenna St. John, Central Virginia Governor's School for Science & Technology
- 2:45 **Regression modeling of U.S. health care costs**
Allyson Wang, Mills E. Godwin High School
- 3:00 **Identifying and evaluating effective predictors for high school success**
Jerry Zhang, Mills E. Godwin High School
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Zoology

Diehn Center for the Performing Arts
Room 1104

Wednesday, May 22, 2019

Session Chair: Member or Representative of VJAS Committee

Morning Session: Please convene at 8:55 am for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 9:00 **The effect of different cleansers on change in weight of used motor oil – soaked bird feathers**
Shraddha Anup, Mills E. Godwin High School
- 9:15 **Assessing the pipefish population in the Chesapeake Bay**
Katherine Casper, Chesapeake Bay Governor's School for Marine & Environmental Science
- 9:30 **The effect of magnetic field on bees for purpose of hive relocation**
Abhay Dharanikota, Mills E. Godwin High School
- 9:45 **Counting penguins: Expanding animal conservation through neural network and citizen science integration**
Henry Ge, Mills E. Godwin High School
- 10:00 **Comparing levels of Clostridiaceae abundance in equines at high-risk versus low-risk for laminitis**
Isabelle Hollars, Southwest Virginia Governor's School
- 10:15 **The effect of UV radiation on *Dugesia tigrina* regeneration**
Mrunal Kute, Mills E. Godwin High School
- 10:30 **The effect of colloids on survival rate of *Daphnia magna***
Abhinav Mara, Mills E. Godwin High School
- 10:45 BREAK

- 11:00 **The effect of gold nanoparticle size on *Daphnia magna* heartbeat**
Christopher Marotta, Central Virginia Governor's School for Science & Technology
- 11:15 **The effect of different nutrients on the attraction of *Tapinoma sessile* (odorous house ant)**
Keagan Miller, Clover Hill High School
- 11:30 **The effect of different macronutrient-concentrated diets on cricket weight**
Thomas Moore, Mills E. Godwin High School
- 11:45 **The effect of tyramine on *Daphnia magna* heart rate**
Michael Murphy, Mills E. Godwin High School
- 12:00 **The effect of various concentrations of capsaicin on *Pogonomyrmex barbatus* avoidance**
Patricia Anne Mutia, Mills E. Godwin High School
- 12:15 **The effect of pH on type and number of *Daphnia* eggs**
Shrinidhi Nadgouda, Mills E. Godwin High School
- 12:30 LUNCH BREAK - Broderick Dining Commons
-

Afternoon Session: Please convene at 1:25 pm for Announcements

Important Reminder

Please do not enter session while a student presentation is in progress.

- 1:30 **The effect of electrolytes on *Daphnia magna* heart rate**
Ruthrapathy Patanjali Babu, Mills E. Godwin High School
- 1:45 **Juvenile blue crab densities in seagrass beds and shallow-water creeks within the lower Chesapeake Bay**
Christina Pellico, West Potomac High School
- 2:00 **The effect of light bulbs on insect behavior**
Annabel Puritz, Mills E. Godwin High School

- 2:15 **The effect of humidity on the Madagascar hissing cockroach reproduction cycle**
Morgan Ralph, Southwest Virginia Governor's School
- 2:30 **The effect of repetition of a maze by *Cassius auratus* on completion time**
Ben Tharakan, Mills E. Godwin High School
- 2:45 BREAK
- 3:00 **Observing the effects of organic insecticidal soap on hatching of *Callosobruchus maculatus***
Mia Varghese, Glen Allen High School
- 3:15 **The effects of salinity on oyster growth**
Rosalina Volo, Chesapeake Bay Governor's School for Marine & Environmental Science
- 3:30 **House flies as disease vectors**
Caroline Wigboldy, Central Virginia Governor's School for Science & Technology
- 3:45 **The effect of curcumin on the regeneration rates of *Girardia tigrina***
Paul Yang, Mills E. Godwin High School
-

2018-2019 VJAS School Members

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Chesapeake Bay Governor's School for Marine & Environmental Science
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Hanover High School
Harrisonburg High School
H-B Woodlawn Secondary Program
Indian River Middle School
Kenmore Middle School
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New Horizons Governor's School for Science & Technology
Ocean Lakes High School
Open High School
Peter Muhlenburg Middle School
Portsmouth STEM @ I. C. Norcom High School
Roanoke Valley Governor's School
Ronald W. Reagan Middle School
Sabot at Stony Point
Southwest Virginia Governor's School
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Washington-Lee High School
Williamsburg Middle School
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For additional information, contact Christopher Osgood at cosgood@odu.edu or 757-683-6778.

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

For information, contact Sujan HenkanaththeGEDARA at henkanaththeGEDARasm@longwood.edu or 434-395-2731.

The **Virginia Junior Academy of Science** is one of the Nation's foremost junior academies. In addition to the nationally recognized annual refereed paper competition involving hundreds of volunteers, VJAS and VAS programs reach about 40,000 Virginia secondary students each year. Over \$80,000 in scholarships, prizes, research support grants, trips to national meetings and events are awarded annually. Scientists and science educators are encouraged to adopt school science programs, classes, and clubs; to provide information on Academy programs; and to foster new clubs and opportunities for Virginia's youth.

For additional information, contact Susan P. Booth at susanscience@gmail.com or 757-897-3104.

Fall Undergraduate Research Meeting: In Fall 2001 VAS held the first Fall Undergraduate Research Meeting which focused on support of undergraduate student research. Subsequently this meeting has been held on an annual basis. Awards of \$500 are given to each of the five top student proposals chosen by judges. The awardees selected at the 2018 Fall Undergraduate Research Meeting at Ferrum College will be presenting the results of their research projects at this year's VAS Annual Meeting at Old Dominion University. Guidelines for the 2019 Fall Meeting (to be held at Christopher Newport University on November 2) will be announced on the Academy website www.vacadsci.org.

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

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Virginia Academy of Science Website
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Old Dominion University Campus Information

Campus Map:

A downloadable and printable PDF version of the Old Dominion University Campus map is available at the link below.

<https://www.odu.edu/content/dam/odu/images/maps/campus/campus-map.pdf>

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Detailed driving directions to Old Dominion University are available at the link below.

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All VAS and VJAS meeting attendees (including observers/guests) should park on levels 3, 4, & 5 of the 49th Street Stadium Lot (Garage E) – located in upper right section map.

Handicapped parking spaces are available in the 49th Street Stadium Lot. These spaces are available to attendees with the appropriate DMV handicap parking permit/hang tag.

Location of Meeting Events:

During the VAS-VJAS Meetings most VJAS events will occur in the following campus locations (building locations are noted on campus map by #s):

Batten Arts & Letters (#112)
Constant Hall (#118)
Diehn Center for Performing Arts (#127)
Dragas Hall (#130)
Education Building (#131)
Engineering Systems Building (#136)
Kaufman Hall (#154)
Oceanography & Physics Building (#178)
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