

Virginia Academy of Science

97th Annual Meeting

May 22-24, 2019



Virginia Junior Academy of Science

Research Symposium and 78th Annual Meeting

May 21-23, 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 VAS website
www.vacadsci.org

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

ODU ITS Helpdesk
757-683-3192

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 Academy of Science

**97th Annual Meeting
May 22-24, 2019**



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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
Old Dominion University, Norfolk, VA
- Treasurer.....Amorette Barber
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- Executive Officer.....Philip M. Sheridan
- 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
Co-President.....	Reona Pereira Maggie L. Walker Governor’s School
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
Editor-in Chief.....	Justin Wang Chantilly High School
STEM Chair.....	Jakob Yirga Mills E. Godwin High School
Communication Liaison.....	Selik Morishetty Henrico High School
Regional Director.....	Spencer Macturk Mills E. Godwin High School
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:

Melanie Loney

Dept. of Electrical & Computer Engineering:

Christian Zemlin

Dept of Physics:

Justin Mason
Charles Sukenik

Dept of Psychology:

Ivan Ash

Batten College of Engineering & Technology Dean's Office:

Carol Considine

College of Sciences Dean's Office:

Pinky McCoy
Nora Noffke
Terri Mathews

ODU Support Personnel:

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Danielle Achterfeld

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Elizabeth Smith

Housing & Residence Life:
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Information Technology Services:
Urjita Dani
Dwayne Smith

Office of Leadership & Student Involvement:
Nicole Kiger

Provost's Office:
Brian Payne

University Events & Community Outreach:
Christina LiPuma

Webb University Center:
Wendell Cruz

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

Old Dominion University Sponsorships

Aramark
Batten College of Engineering
College of Sciences
NROTC
Office of Academic Affair
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 Morla

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

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



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 bioelectronics, 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
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
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



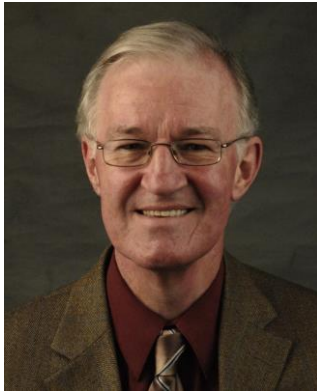
For more than two decades, Lisa Shollenberger has been conducting consistent research in the fields of microbiology, drug and gene delivery, nanotechnology, immunology, parasitology, and vaccinology, with the long-term goals of improving human health and mentoring the next generation of scientists. She 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 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

**KEY TO INSTITUTIONAL ABBREVIATIONS
USED IN SECTION PROGRAMS**

ASV	Archaeological Society of Virginia	ODU	Old Dominion University
AU	American University	PMNS	Perot Museum of Nature & Science
BC	Bridgewater College	RCC	Rappahannock Community College
BU	Brandeis University	RDU	Radford University
CNU	Christopher Newport University	RGU	Regent University
EHC	Emory & Henry College	RMC	Randolph-Macon College
FC	Ferrum College	RNCC	Reynolds Community College
GMU	George Mason University	SMV	Science Museum of Virginia
HPU	Hampton University	SU	Shenandoah University
IALR	Institute for Advanced Learning and Research	TCC	Tidewater Community College
JMU	James Madison University	TFF	The Fairfield Foundation
JTCC	John Tyler Community College	TNCC	Thomas Nelson Community College
LU	Liberty University	UL	University of Louisville
LWU	Longwood University	ULB	University of Lynchburg
MBRS	Meadowview Biological Research Station	UMW	University of Mary Washington
MSU	Morgan State University	UPITT	University of Pittsburg
MTS	Marine Technology Society	UR	University of Richmond
NIH	National Institutes of Health	USGS	US Geological Survey
NSU	Norfolk State University	UVA	University of Virginia
NVCC	Northern Virginia Community College	VCP	Veteran's Curation Program

KEY TO INSTITUTIONAL ABBREVIATIONS USED IN SECTION PROGRAMS (continued)			
VCU	Virginia Commonwealth University	VT	VA Polytechnic Inst. and State Univ. (VA Tech)
VDHR	Virginia Department of Historic Resources	VUU	Virginia Union University
VMNH	Virginia Museum of Natural History	VWU	Virginia Wesleyan University
VSGC	VA Space Grant Consortium	WLU	Washington-Lee University
VSU	Virginia State University	WVSOM	West Virginia School of Osteopathic Medicine

AGRICULTURE, FORESTRY, and AQUACULTURE

Chair: Timothy Durham, FC
Vice-Chair: Yixiang Xu, VSU
Secretary: Vitalis Temu, VSU
Editor: Edward N. Sismour, VSU
Councilor: M. David Crosby, VSU

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Dragas Hall, Room 2108

8:45 am - noon

Timothy Durham, Presiding

- 8:30 OPENING REMARKS
- 8:45 [1] **Formation of char-like, fused-ring aromatic structures from a non-pyrogenic pathway during decomposition of wheat straw**
X. Chen¹, W. Chu² and J. Mao²
¹School of Resources & Environment, Anhui Agricultural University; ²Dept. of Chemistry & Biochemistry, ODU
- 9:00 [2] **The impact of fish health regulations on the aquaculture industry in Virginia**
M. D. Crosby
Cooperative Extension, College of Agriculture, VSU
- 9:15 [3] **Development of Eudragit EPO/chitosan/cellulose nanocrystal-based nanocomposite taste masking film**
A. McKinney, S. R. Willis and Y. Xu
Agricultural Research Station, VSU
- 9:30 [4] **Functional and antioxidant properties of chickpea protein hydrolysates affected by enzymatic hydrolysis**
M. Galanopoulos, E. N. Sismour, P. Lynch and Y. Xu
Agricultural Research Station, VSU
- 9:45 [5] **Overexpression of PoDRM2, an epigenetic regulator from purslane, enhances starch accumulation in *Arabidopsis thaliana***
D. Joseph and S. Ren
Agriculture Research Station, VSU

- 10:00 [6] *INVITED SPEAKER*
**The Center for the Study of Plant Endophytes - Bridging
academia and industry**
S. Lowman
IALR
- 10:45 CLOSING REMARKS
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD
PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- AFA-1 **Characterization of protein isolate from blue catfish fillet**
J. Robinson, M. Aldossari, E. N. Sismour and Y. Xu
Agriculture Research Station, VSU
-

Agriculture, Forestry & Aquaculture
Invited Speaker
Dragas Hall, Room 2108
10 am

**The Center for the Study of Plant Endophytes -
Bridging academia and industry**



J. Scott Lowman
Institute for Advanced Learning and Research

Dr. Lowman joined the Institute for Advanced Learning and Research (IALR) in 2014 and was named Director of Applied Research in 2018. He has most notably championed work in biotechnology and advanced imaging to improve agricultural productivity and sustainability. His team seeks to identify promising natural microbial biostimulant and biocontrol agents (including beneficial plant bacteria, or endophytes) to increase plant growth and health while protecting the environment. In addition, his team uses the latest technology in unmanned aerial vehicles, multispectral and thermal imaging and robotics to improve plant productivity.

In recognition of his work, Dr. Lohman was named a 2017 Outstanding Recent Graduate Alumnus at Virginia Tech and was presented the Commonwealth Environmental Leadership Award from the Waldorf Foundation. He played an integral role in IALR's recent licensure of a collection of endophytes to Indigo Ag, Inc., a leading company dedicated to harnessing nature to help farmers sustainably feed the planet. In addition, he has helped lead efforts to produce a library of more than 1,500 characterized endophytes, which continues to grow.

ARCHAEOLOGY

Co-Chairs: H. Robert Hayes, ASV and Thane H. Harpole, TFF

Vice Chair: (vacant)

Secretary: H. Robert Hayes, ASV

Editor: (vacant)

Councilor: (vacant)

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Constant Hall, Room 1055

8:00 am - noon

H. Robert Hayes, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] **A survey of Virginia's dugout canoes**
H. R. Hayes
Maritime Heritage Chapter, ASV
- 8:30 [2] **The evolution of Gloucester's plantation landscapes**
T. H. Harpole
TFF
- 8:45 [3] **Developing an interactive model of archaeology at
Fairfield Plantation with photogrammetry and 3D printing**
A. McCuiston
TFF
- 9:00 [4] **Archaeology without (good) stratigraphy: What we can
learn from compressed mountain sites**
C. L. Nash
School of Integrated Sciences, JMU
- 9:15 [5] **Discovery through rehabilitation: The Betty Veatch
Potomac Creek estuary collection**
E. Cagney
VCP
- 9:30 [6] **Dendrochronology of the Atlantic White Cedar
(*Chamaecyparis thyoides* (L.) Britton, Sterns &
Poggenb): Implications for colonial woodcraft**
J. M. Doyle and R.B. Atkinson
Dept. of Organismal Environmental Biology, CNU

9:45 BREAK

10:00 [7] *INVITED SPEAKER*

Mapping landscapes of resistance and finding a way forward for an archaeology of marronage in the Great Dismal Swamp

B. Peixotto

Center for the Exploration of the Human Journey, PMNS and Dept. of Anthropology, AU

11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**

11:30 **SECTION BUSINESS MEETING**

2019-2020 Section Officers will be elected during meeting

POSTER SESSION

Thursday Morning and Afternoon, May 23, 2019

10 am – 5 pm

Webb University Center

North Mall (1545)

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

ORAL PRESENTATION SESSION

Thursday Afternoon, May 23, 2019

Constant Hall, Room 1055

2:15 – 4:15 pm

Thane H. Harpole, Presiding

2:15 OPENING REMARKS

2:30 [8] **Sea level rise and the loss of archaeological resources:
Time and tide wait for no man**

M. B. Barber

VDHR

- 3:00 [9] **An examination of Dutch, English, and Native American tobacco pipes recovered at Eyreville in Northhampton County, Virginia**
M. Clem
VDHR
- 3:15 [10] **Ritualized practices of the pre-colonial Chesapeake: An examination of the Hatch site (44PG51)**
M. Makin
VDHR
- 3:30 [11] **Finding Richmond's first and second African burial grounds**
B. C. Green¹ and M. R. Laird²
¹Commonwealth Architects; ²James River Institute for Archaeology, Inc.
- 3:45 [12] **An exploration of historic burial customs and the evolution of archaeological data recovery methods through examination of technical reports, 1980-2018**
J. W. Green
VDHR
- 4:00 CLOSING REMARKS
-

Archaeology
Invited Speaker
Constant Hall, Room 1055
10 am

Mapping landscapes of resistance and finding a way forward for an archaeology of marronage in the Great Dismal Swamp



Becca Peixotto

**Center for the Exploration
of the Human Journey,
Perot Museum of Nature & Science
and
Dept. of Anthropology,
American University**

Dr. Peixotto is currently involved in three very different research projects involving a cave, a cornfield and a swamp. With the University of Witwatersrand and colleagues around the world, she is part of the Rising Star/*Homo naledi* research team investigating hominin fossils found deep in a South African cave. She also is working with archaeologists at American University, Maryland Historic Trust, Towson University, and the Archaeology Society of Maryland on the Middle and Late Woodland Biggs Ford site (18FR14). The project that speaks most to her interests in marginalized landscapes and histories is her research on Maroons of the Great Dismal Swamp in the 17th to 19th centuries. Building on the pioneering work of American University's Dan Sayers, her dissertation utilized lidar data, and on-the-ground exploration and excavations to better understand the lives of enslaved Dismal Swamp laborers who claimed a measure of freedom for themselves in a seemingly inhospitable place.

In May 2018, Dr. Peixotto joined the Perot Museum of Nature and Science as Director and Research Scientist for the Center for the Exploration of the Human (everything is bigger in Texas, even titles). She holds a Ph.D. and M.A. from American University, an M.A. from Universiteit van Amsterdam, and a B.A. from University of Alabama-Huntsville. Her expertise in wilderness expeditions, rock climbing, backpacking, mountaineering has served her well, both in the field and teaching in the classroom.

ASTRONOMY, MATH and PHYSICS with MATERIAL SCIENCE

Chair: Thomas C. Mosca III, RCC
Vice Chair: Charles R. Crook, RCC
Secretary: Joseph D. Rudmin, JMU
Editor: Craig Group, UVA
Councilor: Donal B. Day, UVA

ORAL PRESENTATION SESSION Thursday Morning, May 23, 2019 Education Building, Room 1101 8:45 am - noon

Thomas. C. Mosca III, Presiding

- 8:45 OPENING REMARKS
- 9:00 [1] **Effect of radio waves on the nervous system**
A. Federick and G. Scarel
Dept. of Physics, JMU
- 9:15 [2] **A high-efficiency cosmic ray veto system for the Mu2e experiment**
K. Fielman and Q. C. Mendelson
Dept. of Physics, UVA
- 9:30 [3] **A geometric algorithm for the quantum satisfiability problem**
S. DiRocco and M. Aldi
Dept. of Mathematics & Applied Mathematics, VCU
- 9:45 BREAK
- 10:00 [4] **Quantum ghost imaging of intensity and phase objects**
D. Jayakodige, T. Neupane, S. Yu, B. Tabibi, F. J. Seo
Dept. of Physics, HPU
- 10:15 [5] **Cubic nonlinearity of tungsten disulfide nanoflakes through resonant excitation**
T. Neupane, D. Jayakodige, S. Yu, B. Tabibi, F. J. Seo
Dept. of Physics, HPU
- 10:30 BREAK

11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**

11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

AMP-1 **Fabrication of a cosmic ray veto system for the Mu2e experiment**
K. R. Fielman and Q. C. Mendelson
Physics Dept., UVA

AMP-2 **Mathematical model of cancer growth and treatment**
I. Panayotova¹, T. Elizarova² and J. Hines¹
¹Dept. of Mathematics and ²Dept. of Molecular Biology & Chemistry, CNU

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Education Building, Room 1101
2:30 – 4:45 pm
Donal Day, Presiding

2:30 OPENING REMARKS

2:45 [6] **Is the grass really greener on the other side? (Is the fishing really better in the other river?)**
T. Mosca III
Dept. of Mathematics, RCC

- 3:00 [7] **Design of semiconducting materials for photovoltaic applications using python machine learning with tensor flow**
A. A. Teate
School of Integrated Sciences, JMU
- 3:15 [8] **Finding minor planet Pluto using several images taken 2 days apart**
A. J. Goldstein
Information Technology Department, TCC; BackBay
Astronomy Association
- 3:30 [9] *INVITED SPEAKER*
Guesstimation: Solving the world's problems on the back of a cocktail napkin
L. B. Weinstein
Dept. of Physics, ODU
- 4:30 CLOSING REMARKS
-

Astronomy, Math and Physics with Materials Science

Invited Speaker

Education Building, Room 1101

3:30 pm

**Guesstimation: Solving the world's problems
on the back of a cocktail napkin**

**Lawrence Weinstein
Dept. of Physics
Old Dominion University**



Dr. Weinstein is the author of "*Guesstimation: Solving the world's problems on the back of a cocktail napkin*" (with John Adam) and "*Guesstimation 2.0: Solving today's problems on the back of a napkin*" (soon to be a major motion picture), both published by Princeton University Press. *Guesstimation* has been featured in the New York Times and translated into several other languages. He also edits the monthly Fermi Problems column for the journal "The Physics Teacher" and has given dozens of talks on Guesstimation to audiences ranging from the Portsmouth Women's Club to national labs. He is also the lecturer for the The Great Courses video course "*Nuclear Physics Explained*".

Dr. Weinstein received his B.S. from Yale University and his Ph.D. from MIT and is now Eminent Scholar and University Professor of Physics at Old Dominion University. He received the Virginia Outstanding Faculty Award in 2009. In his spare time, he smashes atoms at the Thomas Jefferson National Accelerator Facility for which he was named a Fellow of the American Physical Society.

BIOLOGY

with MICROBIOLOGY and MOLECULAR BIOLOGY

Chair: R. Parrish Waters, UMW
Vice Chair: April Wynn, UMW
Secretary: Deborah L. Zies, UMW
Editor: Pei Zhang, LU
Councilor: Michael S. Price, LU

ORAL PRESENTATION SESSION

Thursday, May 24, 2018

8:00 am - noon

Dragas Hall, Room 2118

Deborah Zies, UMW, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] **Analysis and comparison of regulatory regions between *Oryza sativa* and non-plant eukaryotic species**
S. Rawat
Dept. of Bioinformatics & Computational Biology, GMU
- 8:30 [2] **Characterization of pH-responsive genes in *Cryptococcus neoformans***
K. John and M. Price
Dept. of Biology & Chemistry, LU
- 8:45 [3] **Defects in *Cryptococcus neoformans* carbon metabolism alter host immune signaling patterns during infection**
L. Caulfield and M. Price
Dept. of Biology & Chemistry, LU
- 9:00 [4] **Monitoring the stability of transgenes in *Thermosynechococcus elongatus* BP1**
C. Barnes
Dept. of Chemistry & Biochemistry, ODU
- 9:15 [5] **Determining the role of the *Saccharomyces cerevisiae* gene, YDL199C, in DNA repair**
M. Tekle and D. Zies
Dept. of Biological Sciences, UMW

- 9:30 BREAK
- 9:45 [6] **Degradation of polyethylene terephthalate plastic by *Indeonella sakaiensis***
T. Gruber, C. Tsui and A. Chafin
Dept. of Molecular Biology & Chemistry, CNU
- 10:00 [7] **The prevalence of *Babesia* spp. in Virginia blacklegged ticks**
Z. Bement, H. Gaff and W. Hynes
Dept. of Biological Sciences, ODU
- 10:15 [8] **The prevalence of *Borrelia miyamotoi* in *Ixodes affinis* and *Ixodes scapularis* in Virginia**
A. Phan
Dept. of Biological Sciences, ODU
- 10:30 [9] **Investigating phenotypic differences between the STP1 *k/o* and WT *Arabidopsis thaliana* in response to various environmental stresses**
C. Shola, A. Andos, A. Clem, L. Foor and J. Daniel
Dept. of Biology, JMU
- 10:45 [10] **The effects of environmental conditions on expression of the ETTIN (ETT) gene in PERIANTHIA (PAN) mutant *Arabidopsis thaliana***
E. Contompasis and A. Wynn
Dept. of Biological Sciences, UMW
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday, May 24, 2018
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- BIOL-1 **The role of Mad2 gene expression in elongation of cuboctahedral magnetosome morphology**
T. Alvey, C. Hyle, B. Cervantes and D. Trubitsyn
Dept. of Biological & Environmental Sciences, LWU
- BIOL-2 **How RelB contributes to tumor progression in glioblastoma multiforme?**
H. F. Ange^{1,2} and T. K. Kordula²
¹TNCC; ²Dept. of Biochemistry & Molecular Biology, VCU
- BIOL-3 **QMP mediated expression of dopamine in the honey bee**
O. C. Blake, T. Al-Qaq and D. A. O'Dell
Dept. of Biological Sciences, UMW
- BIOL-4 **Mathematical modeling of the PER2-p53-MDM2 network dynamics**
K. Cao¹, C. Finkielstein¹ and J. Tyson²
¹Dept. of Biological Sciences and ²Computational Cell Biology Laboratory, VT
- BIOL-5 **Molecular strain typing for the tick-borne pathogen *Rickettsia parkeri***
R. Ferrara, S. Simmons, H. Gaff, W. Hynes and D. Gauthier
Dept. of Biological Sciences, ODU
- BIOL-6 **Combined effects of chemotherapeutic agents and statins on HNSCC**
S. Fioretti and R. Barra
Dept. of Biological Sciences, UMW
- BIOL-7 **Degradation of polyethylene terephthalate plastic by *Ideonella sakaiensis* - Part II**
T. D. Gruber, C. Tsui and A. Chafin
Dept. of Molecular Biology & Chemistry, CNU

- BIOL-8 **Investigating the effects of cancer mutations on Mre11 function and the DNA damage response**
C. Harris, J. Savas and E. K. Shanle
Dept. of Biological & Environmental Science, LWU
- BIOL-9 **Xuman tumor xenografts in *Xenopus* frogs**
E. Marshall^{1,2}, S. Lima² and A. Dickinson²
¹TNCC; ²Dept. of Biology, VCU
- BIOL-10 **Anti microbial peptides against gram positive bacteria**
T. Muzaffar
GMU
- BIOL-11 **Genetically engineered cyanobacteria in sustainable biofuels: A bio-risk perspective**
T. Nguyen, S. Sherazi, L. Greene and J. W. Lee
Dept. of Chemistry & Biochemistry, ODU
- BIOL-12 **Fine scale spatial structure in symbiotic rhizobia in nodules of *Chamaecrista fasciculata* and the rhizosphere soil**
M. H. Nobarinezhad¹ and L. Wallace²
¹Dept. of Biological Sciences, MISSU; ²Dept. of Biological Sciences, ODU
- BIOL-13 **A eukaryotic-like RaDAR motif is critical for nuclear translocation of the *Orientia tsutsugamushi* effector Ank13**
N. B. Otto^{1,2}, J. A. Carlyon² and H. E. Adcox²
¹TNCC; ²Dept. of Microbiology & Immunology, VCU
- BIOL-14 **Competition study between wild type *Cyanobacteria* and genetically engineered *Thermosynechococcus elongatus* BP1**
O. Sacko, T. Aziz and J. W. Lee
Dept. of Chemistry & Biochemistry, ODU
- BIOL-15 **Multilevel regulation of the iron metabolic network by circadian factors**
S. Schiffhauer, R. McDevitt, A. Locker and C. V. Finkielstein
Dept. of Biological Sciences, VT

- BIOL-16 **Investigation into the function of *Saccharomyces cerevisiae* ORFan genes**
L. Smorodintsev-Schiller and D. L. Zies
Dept. of Biological Sciences, UMW
- BIOL-17 **Determining the roles of the NUCEDC operon in bacteriocin secretion and biofilm formation in *Serratia marcescens***
O. F. Sweatt^{1,2} and G. E. Christie²
¹TNCC; ²Dept. of Microbiology & Immunology, VCU
- BIOL-18 **Identification of secreted protein-encoding genes involved in moss spermatogenesis**
A. Taylor, A. Albert and E. E. Johnson
Dept. of Biology, VWU
- BIOL-19 **Fluoxetine suppresses mast cell responses to IgE independent of serotonin**
E. M. Torres^{1,2}, T. T. Haque² and J. J. Ryan²
¹TNCC; ²Dept. of Biology, VCU
- BIOL-20 ***rdiA* influences aflatoxin production in *Aspergillus flavus***
R. E. Treadwell and M. S. Price
Dept. of Biology & Chemistry, LU
- BIOL-21 **Enzymatic activity assay development for pyruvate kinase**
N. Q. Truong, A. Vickers and P. Zhang
Dept. of Biology & Chemistry, LU
- BIOL-22 **Common gene variants in G6PC gene may contribute to fatty liver disease/hyperlipidemia in general population**
S. H. Zaidi and A. Baranova
Dept. of Biology, GMU
-

ORAL PRESENTATION SESSION

Thursday, May 23, 2019

2:15 – 4:00 pm

Dragas Hall, Room 2118

Deborah Zies, UMW, Presiding

2:15 OPENING REMARKS

2:30 [11] **Circadian regulation of the p53 response in cancer therapeutics**

E. Wisdom¹, X. Zou¹, S. Jachim¹, P. Stauffer¹, A. Brown², L. Jiang¹ and C. Finkielstein¹

¹Dept. of Biology Sciences and ²Research & Informatics/ University Libraries, VT

2:45 [12] **The effect of GLUT1 inhibition on colon cancer cells**

P. Moran, S. St. John and R. Barra

Dept of Biological Sciences, UMW

3:00 [13] **Patterns of wheel running in bulbectomized mice**

A. Rinko, D. Coppola and P. Waters

Dept of Biological Sciences, UMW

3:15 [14] **Life in the cystic fibrosis upper respiratory tract influences competitive ability of the opportunistic pathogen *Pseudomonas aeruginosa***

J. Bara¹, S. Remold² and Z. Matson²

¹Dept. of Biology, SU; ²Dept. of Biology, UL

3:30 [15] **Succinate dehydrogenase activity assay development and potential effects from a post-translational modification**

A. Vickers, N. Truong and P. Zhang

Dept. of Biology & Chemistry, LU

3:45 CLOSING REMARKS

BIOMEDICAL and GENERAL ENGINEERING

Chair: Seth Weinberg, VCU
Vice Chair: Rupak Dua, HPU
Secretary: Anisa Kannan, VCU
Editor: Paul A. Wetzel, VCU
Councilor: Thomas Haas, VCU

ORAL PRESENTATION SESSION
Thursday Morning, May 23, 2019
Education Building, Room 1110
8 am - noon
Seth Weinberg, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] *KEYNOTE SPEAKER*
Recent progress in brain-computer interface technology
D. J. Krusienski
Dept. of Biomedical Engineering VCU
- 9:00 [2] **Enhanced excipient growth surfactant replacement therapy in an *in vivo* rat lung injury model**
F. J. Kamga Gninzeko, M. S. Valentine, S. R. Chindal, M. Hindle, P. W. Longest and R. L. Heise
Dept. of Biomedical Engineering VCU
- 9:15 [3] **Voluntary drive amplifies effects of paired-pulse TMS and arm posture on biceps corticomotor excitability**
T. Roumengous, P. A. Howell and C. L. Peterson
Dept. of Biomedical Engineering VCU
- 9:30 [4] **The effect of intermittent Theta Burst Stimulation on corticomotor excitability of the biceps and transferred muscles**
B. Majdic, N. Mittal and C. Peterson
Dept. of Biomedical Engineering VCU
- 9:45 BREAK

- 10:00 [5] **Guided development of native-like ligament to bone junctions**
E. Brown and J. Puetzer
Dept. of Biomedical Engineering VCU
- 10:15 [6] **High pressure-controlled mechanical ventilation induces age-specific alterations in lung tissue mechanics and macrophage polarization**
M. Valentine, F. K. Gninzeko, M. Parekh, S. Chindal, A. M. Reynolds and R. L. Heise
Dept. of Biomedical Engineering VCU
- 10:30 [7] **Characterization of physical interaction between epithelia and fibroblasts**
N. Patel and D. Conway
Dept. of Biomedical Engineering VCU
- 10:45 BREAK
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- BGE-1 **Survival and characterization of human induced pluripotent stem cells and neural stem cells in porcine brain ECM-derived hydrogels**
M. Zamponi¹, P. A. Mollica^{2,3}, P. C. Sachs² and R. D. Bruno²
¹Dept. of Electrical & Computer Engineering and ²School of Medical Diagnostics & Translational Sciences, ODU;
³Molecular Diagnostics Laboratory, Sentara Norfolk General Hospital
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Education Building, Room 1110
2:15 – 4:00 pm
Seth Weinberg, Presiding

- 2:15 **OPENING REMARKS**
- 2:20 [8] **Computational model comparing Lisfranc surgical repairs**
M. T. Perez, J. R. Owen, R. S. Adelaar and J. S. Wayne
Dept. of Biomedical Engineering VCU
- 2:35 [9] **Immunofluorescence image feature analysis and clustering pipeline for distinguishing epithelial-mesenchymal transition**
S. Hirway and S. Weinberg
Dept. of Biomedical Engineering VCU

- 2:50 10] **Coupled influence of heart rate variability and subcellular calcium heterogeneity on cardiac electromechanical dynamics**
V. Phadumdeo and S. Weinberg
Dept. of Biomedical Engineering VCU
- 3:05 BREAK
- 3:15 [11] **Development of a device for the quantification of arm rigidity in patients with Parkinson's Disease**
G. Miller and P. A Wetzal
Dept. of Biomedical Engineering VCU
- 3:30 [12] **Segregated anatomical and functional sub-circuits of the basal ganglia-thalamocortical network differentially contribute to distinct motor pathologies including dystonia and Parkinson's Disease**
G. Weistroffer, P. A Wetzal and M. Baron
Dept. of Biomedical Engineering VCU
- 3:45 CLOSING REMARKS
-

Biomedical and General Engineering
Keynote Speaker
Education Building, Room 1110
8:15 am

**Recent progress in brain-computer
interface technology**



Dean J. Krusienski
Dept. of Biomedical Engineering
Virginia Commonwealth University

Dr. Krusienski's primary research focus is neural signal processing and analysis for the development of brain-computer interfaces and neuroprosthetic devices. His research has been supported by the National Science Foundation (NSF), the National Institutes of Health (NIH), and the National Institute of Aerospace (NIA)/NASA.

Dr. Krusienski is a Professor of Biomedical Engineering at Virginia Commonwealth University. He received the B.S., M.S., and Ph.D. degrees in Electrical Engineering from The Pennsylvania State University, University Park, PA. He completed his postdoctoral research at the New York State Department of Health's Wadsworth Center Brain-Computer Interface Laboratory in Albany, NY.

BOTANY

Chair: Andrea Weeks, GMU

Vice Chair: Jordan Metzgar, VT

Secretary: Joshua A. Kincaid, SU

Editor: (vacant)

Councilor: Woodward S. Bousquet, SU

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Dragas Hall, Room 2106

8:30 am - noon

Andrea Weeks, Presiding

8:45 OPENING REMARKS

9:00 [1] **The Flora of Virginia Project: A 2018-2019 progress update**
M. Lobstein
NVCC

9:15 [2] **An update on the SERNEC herbarium digitization project in Virginia**
A. Weeks
Dept. of Biology, GMU

9:30 [3] **The University of Richmond Herbarium fungi collection**
W. J. Hayden
Dept. of Biology, UR

9:45 BREAK

10:00 [4] **The year of the trees: JMU celebrates 30 years of outdoor engagement in a woodland sanctuary**
C. K. McMullen and J. S. Mahon
Dept. of Biology, JMU

10:15 [5] **Evaluating Atlantic White Cedar (*Chamaecyparis thyoides*) tree rings between non-tidal and storm-driven tidal wetlands**
J. F. Oswald and R. B. Atkinson
Dept. of Organismal & Environmental Biology, CNU

- 10:30 [6] **An ecological community survey of Gaylord Marsh, a calcareous fen in Clarke County, Virginia**
D. M. Blakely, W. S. Bousquet, P. D. Poston, H. Bauserman, J. Falletta, E. Rengifo, C. Smeltzer and J. Crider
Environmental Studies Program, SU
- 10:45 BREAK
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- BOT-1 **The structures and functions of woody debris in headwater streams of the northern Shenandoah Valley, Virginia**
P. D. Poston, J. Kincaid and A. Rubano
Environmental Studies Program, SU
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Dragas Hall, Room 2106
2:15 – 4 pm
Andrea Weeks, Presiding

- 2:15 OPENING REMARKS
- 2:30 [7] **Target enrichment and high throughput sequencing approaches to resolve the molecular phylogeny of *Platanthera section* Limnorchis (Orchidaceae)**
E. H. Wettewa and L. E. Wallace
Dept. of Biological Sciences, ODU
- 2:45 [8] **Encapsulation of African violet (*Saintpaulia rupicola* B.L. Burtt) shoot primordia for mass propagation**
T. W. Lowry
Dept. of Biology, JMU
- 3:00 [9] *INVITED SPEAKER*
Studying intraspecific diversity can reveal novel aspects of plant ecological interactions and evolutionary divergence
L. Wallace
Dept. of Biological Sciences, ODU
- 3:45 CLOSING REMARKS
-

Botany
Invited Speaker Botany
Invited Speaker
Dragas Hall, Room 2106
3 pm

Studying intraspecific diversity can reveal novel aspects of plant ecological interactions and evolutionary divergence



Lisa Wallace
Dept. of Biological Sciences
Old Dominion University

Dr. Wallace's research program focuses on understanding patterns of biodiversity in a variety of study systems, including temperate orchids (*Platanthera*), plants of the California Floristic Province (*Acmispon*), and legume-rhizobia mutualisms. She served as lead PI on *Magnolia grandiflora*FLORA, a NSF-funded project to digitize more than 200,000 herbarium specimens in Mississippi and has recently obtained funding to digitize the ODU herbarium where she is the curator. She currently serves as Vice Treasurer for the Southern Appalachian Botanical Society and as the Faculty Director of the Kaplan Orchid Conservatory and Director of Science at the Norfolk Botanical Garden.

Dr. Wallace attended the College of William and Mary where she received B.S. and M.A. degrees in Biology. Her Ph.D. was obtained from The Ohio State University in Evolution, Ecology, and Organismal Biology.

CHEMISTRY

Chair: Edmund M. N. Ndip, HPU

Vice Chair: Thomas C. Devore, JMU

Secretary: Thomas C. Devore, JMU

Editor: Thomas C. Devore, JMU

Councilor: George C. Grant, TCC

ORAL PRESENTATION SESSION
Thursday Morning, May 23, 2019
Batten Arts & Letters, Room 2066
8:30 am - noon
T. C. DeVore, Presiding

- 8:30 OPENING REMARKS
- 8:45 [1] **Effect of dimerization and halogen bonding on substrate binding to the thyroid hormone activating and deactivating iodothyronine deiodinases**
E. Marsan and C. Bayse
Dept. of Chemistry & Biochemistry, ODU
- 9:00 [2] **Photo-responsive metallo-gels**
K. Ghebreyessus and A. M. Sallee
Dept. of Chemistry & Biochemistry, HPU
- 9:15 [3] **A DFT study using Wiberg bond indices to identify trigger bonds in high energy density materials**
J. Garcia and Craig Bayse
Dept. of Chemistry & Biochemistry, ODU
- 9:30 [4] **Transformation of silver nanoparticles in anions**
P. N. Njoki
Dept. of Chemistry & Biochemistry, HPU
- 9:45 BREAK
- 10:00 [5] **Analysis of the light induced degradation of nitrocellulose lacquer coatings using variable temperature reflection absorption spectroscopy**
T. Pryor and H. F. Webster
Dept. of Chemistry, RDU

- 10:15 [6] **Synthesis and antimicrobial activity of spiro-oxindoles**
V. D. N. Nziko¹, B. Bennette¹ and S. M. N. Efange²
¹Dept. of Chemistry & Biochemistry, HPU; ²Dept. of Chemistry, University of Buea, Cameroon
- 10:30 [7] **Investigation into the effect of heteroatom content on kerogen structure using advanced ¹³C solid-state NMR spectroscopy**
W. Chu¹, X. Cao², K. Schmidt-Rohr², J. E. Birdwell³ and J. Mao¹
¹Dept. of Chemistry & Biochemistry, ODU; ²Dept. of Chemistry, BU; ³Central Energy Resources Science Center, USGS
- 10:45 [8] **Developing small molecule inhibitors for calpain dependent degradation of desmoplakin**
K. L. Ott and T. L. Albertelli
Dept. of Chemistry & Biochemistry, JMU
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- CHEM-1 **Determining the chemical thermostability of the dimercaprol-mercury (BAL-Hg) complex in treating heavy metal poisoning**
S. N. Chigbu, B. N. Roberts and I. Hahn
Dept. of Chemistry & Biochemistry, HPU

- CHEM-2 **Investigating the stabilizing effect that penicillamine has on copper metal poisoning**
R. C. Gresham, III, M. S. Matlock and I. Hahn
Dept. of Chemistry & Biochemistry, HPU
- CHEM-3 **The effect of trigger bonds in organic-cage materials using Wiberg bond index analysis**
M. Jaffar and C. A Bayse
Dept. of Chemistry & Biochemistry, ODU
- CHEM-4 **Effect of hydrogen bonding on the conformation dynamics of an I^h-loop of iodothyronine deiodinase**
A. Tran-Thompson and C. Bayse
Dept. of Chemistry & Biochemistry, ODU
- CHEM-5 **Examining the temporal dynamics of caspase-8 activation in the extrinsic process of apoptosis**
C. H. Zwemer
Dept. of Chemistry, UMW
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Batten Arts & Letters, Room 2066
2:15 – 4 pm

V. D. N. Nziko, Presiding

- 2:15 OPENING REMARKS
- 2:30 [9] **Molecular modeling and drug mapping hemolin protein with dragomabin analog**
M. Waddell
Dept. of Chemistry & Biochemistry, HPU
- 2:45 [10] **Engaging undergraduates in research though DPAL (Distributed Pharmaceutical Analysis Laboratory): Screening for low quality pharmaceuticals using atomic absorption spectroscopy**
M. A. Puccio
Dept. of Natural Sciences & Mathematics, FC

- 3:00 [11] **The reactivity of selective zinc finger proteins with reducible sulfur and selenium compounds - a QM/MM MD study**
A. Dreab¹, C. A. Bayse¹ and P. B. Lutz²
¹Dept. of Chemistry & Biochemistry, ODU; ²Dept. of Science, Technology & Mathematics, RGU
- 3:15 [12] **Theoretical studies of the non linear optical properties (NLO) of a series of dithienopyrrole-based donor-pi-acceptor dyes**
E. M. N. Ndip
Dept. of Chemistry & Biochemistry, HPU
- 3:30 [13] **Thermal dehydration of metal salt hydrates**
T. C. DeVore, I. Kamara and J. Harness
Dept. of Chemistry & Biochemistry, JMU
- 3:45 CLOSING REMARKS
-

DATA SCIENCE, COMPUTING & STATISTICS

Chair: Robert M. Marmorstein, LWU

Vice Chair: (vacant)

Secretary: Robert M. Marmorstein, LWU

Editor: Yen-Hung Hu, NSU

Councilor: Yen-Hung Hu, NSU

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Education Building, Room 1114

9 am - noon

Robert M. Marmorstein, Presiding

9:00 OPENING REMARKS

9:15 [1] **Machine learning techniques for malware classification**

Y. Hu, A. Ali, C. Hsieh and A. Williams

Dept. of Computer Science, NSU

9:30 [2] **Rapid application development through a unified event-driven architecture**

A. Teate Jr.

Stony Apps, Inc.

9:45 [3] **Exploring data remanence in volatile memory**

T. Bresnahan and R. Marmorstein

Dept. of Computer Science, LWU

10:00 [4] **A case study of wearable technology vulnerabilities - Fitbits**

Y. Hu, F. Blow and M. Hoppa

Dept. of Computer Science, NSU

10:15 [5] **A novel autonomous vehicle route planning system**

S. Rizvi and S. Zehra

Dept. of Computer Science, ODU

10:30 [6] **Vulnerability assessments of SCADA devices**

Y. Hu, D. Silverman and M. Hoppa

Dept. of Computer Science, NSU

- 10:45 [7] **IoT communications for smart city: A holistic architecture**
S. Rizvi and S. Zehra
Dept. of Computer Science, ODU
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1585)

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

EDUCATION

Chair: Carleitta Page-Anderson, VUU

Vice Chair: Kurt Y. Michael, LU

Secretary: Deborah Neely-Fisher, RNCC

Editor: Theresa M. Grana, UMW

Councilor: Se W. Jeong, Regeneron Pharmaceuticals

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Constant Hall, Room 1008

8 am - noon

Carleitta Page-Anderson, Presiding

8:00 OPENING REMARKS

8:15 [1] **The impact that teachers' degree level and years of teaching experience have on the complexity of their concept models**

M. W. Bowman and B. Campbell

Dept. of Biological & Environmental Sciences, LWU

8:35 [2] **Program evaluation and design: Engaging elementary teachers and students in the new VA Computer Science Standards of Learning (SOLS)**

A. R. de Mik

Assessment, Research & Accountability Dept., Norfolk Public Schools

8:55 [3] **Virginia Space Grant Consortium precollege programs, an effective model for STEM education and retention**

C. N. Carter and R. Kashiri

VSGC

9:15 BREAK

9:30 [4] **The use of problem-based projects and service learning approaches in a university environmental conservation laboratory course**

J. Roquemore and R. Atkinson

Dept. of Organismal & Environmental Biology, CNU

- 9:50 [5] *KEYNOTE ADDRESS*
Beyond lecture: Student-centered active learning in the classroom
S. Ruder
Dept. of Chemistry, VCU
- 10:50 BREAK
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- EDUC-1 **Hampton Environmental Literacy Program (H.E.L.P.)**
V. Ferrell
Science Department, Hampton City Schools
- EDUC-2 **Student retention in a STEM scholars program at small liberal arts institution**
D. Gonsalves-Jackson¹, Margaret Reese², Gabriela Martorell³
¹Biology Dept., ² Mathematics Dept. and ³Psychology Dept.,
VWU

EDUC-3 Knowledge through Experience for Youth in Science, practicing student centered instruction through scientific inquiry and argumentation

M. A. Loney

Office of Research, The Center for Educational Partnerships,
ODU

EDUC-4 Beyond lecture: Student-centered active learning in the classroom

S. Rutan

Dept. of Chemistry, VCU

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Constant Hall, Room 1008
2:15 – 4:15 pm

Deborah Neely-Fisher, Presiding

2:15 OPENING REMARKS

2:30 [6] **Citizen science workshop**

S. Henkanaththehedara

Dept. of Biological & Environmental Sciences, LWU

4:00 CLOSING REMARKS

Education
KEYNOTE ADDRESS
Constant Hall, Room 1008
9:50 am

Beyond lecture: Student-centered active learning in the classroom



Suzanne Ruder
Dept. of Chemistry
Virginia Commonwealth University

Dr. Ruder's research interests are in the area of developing and assessing active learning strategies and student process skills (soft skills) in the large classroom. She has been active in the Process Oriented Guided Inquiry Learning (POGIL) project for over 15 years, using POGIL in large organic chemistry classes, facilitating faculty workshops across the United States and in Australia, and serving on the project steering committee. She is the PI of the NSF funded project "Eliciting and Assessing Process Skills in STEM" and has authored two books, "Clickers in Action. Increasing Student Participation in Organic Chemistry" and "Organic Chemistry, A Guided Inquiry".

Dr. Ruder received a B.S in chemistry at the College of St. Benedict, St. Joseph, MN, and a Ph.D. in organic chemistry at Washington State University, in Pullman, WA. She was recently honored with VCU's Distinguished Teaching Award and has adapted POGIL for large classroom environments in Chemistry. POGIL focuses upon the redesign of course materials using the student-centered model, rather than simply transferring knowledge directly from the instructor.

**Education
WORKSHOP**
Constant Hall, Room 1008
2:30 pm

Citizen science workshop



Sujan Henkanaththedegara
Dept. of Biological & Environmental Sciences
Longwood University

Dr. Henkanaththedegara's research program focuses on the ecology of aquatic species, taxonomy, and application of this information to conservation issues. His lab members and collaborators use field surveys, laboratory and field experiments, mathematical modeling, and citizen science data to tackle their research questions.

Dr. Henkanaththedegara teaches conservation biology, ecology and related courses including a study abroad course in the Amazon rain forest. Additionally, he is very active in contributing and promoting citizen science at Longwood and in local communities.

Dr. Henkanaththedegara received a B.S. in Zoology from the University of Kelaniya in Sri Lanka, and a Ph.D. in Environmental and Conservation Sciences from North Dakota State University.

ENTOMOLOGY

Chair: Girish Neelakanta, ODU

Vice-Chair: Thomas P. Kuhar, VT

Secretary: Jake Bova, EHC

Co-Editors: Nicole Quinn and Kadie Britt, VT

Co-Councilors: Hameeda Sultana, ODU and Thomas P. Kuhar, VT

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Dragas Hall, Room 2120

8 am - noon

Girish Neelakanta, Presiding

8:00 OPENING REMARKS

8:15 [1] *INVITED SPEAKER*

Title to be announced

E. Calvo

Molecular Entomology Unit, NIH

8:45 [2] **Role of *Ixodes* tick neutral sphingomyelinase 2 (NsMase 2) in LGTV pathogen transmission**

P. Regmi, S. Khanal, G. Neelakanta and H. Sultana

Dept. of Biological Sciences, ODU

9:00 [3] **Using US conehead grasshopper (*Neoconcephalus triops*) as a model to study the African grasshopper (*Ruspolia differens*) - an edible delicacy in East Africa**

F. Favi¹, B. Musazi² and R. Bowen¹

¹Agriculture Research Station, VSU; ²Dept. of Accounting & Finance, MSU

9:15 [4] **Molecular strategies used by pathogens to survive in their vector**

G. Neelakanta

Dept. of Biological Sciences, ODU

9:30 [5] **Edamame pest research at Virginia Tech**

K. Sutton and T. Kuhar

Dept. of Entomology, VT

- 9:45 [6] **Aquatic beetles of southeastern Virginia**
D. Waller, C. Springer and J. Beard
Dept. of Biological Sciences, ODU
- 10:00 [7] **The heat is on: Comparison of thermoregulation in parasitized versus unparasitized tobacco hornworms (*Manduca sexta* (L.))**
J. M. Johnston
Dept. of Biology, VCU
- 10:15 [8] **A new species of *Scirtes* (Coleoptera: Scirtidae) and a revision of the genus for the Eastern US**
C. Springer and D. Waller
Dept. of Biological Sciences, ODU
- 10:30 [9] **Brown marmorated stink bug (*Halyomorpha halys*) association with industrial hemp**
M. K. Pagani, K. E. Britt and T. P. Kuhar
Dept. of Entomology, VT
- 10:45 [10] **Characterization of bacterial molecules in tick-*Anaplasma* interactions**
S. Khanal, H. Sultana and G. Neelakanta
Dept. of Biological Sciences, ODU
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2018-2019 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- ENTO-1 **Ants of the Weyanoke Nature Sanctuary**
S. Boone and D. Waller
Dept. of Biological Sciences, ODU
- ENTO-2 **Effects of four selective insecticides on squash bug, *Anasa tristis* (Hemiptera: Coreidae), and its primary parasitoid, *Gryon pennsylvanicum* (Hymenoptera: Scelionidae)**
S. Boyle, J. M. Wilson and T. Kuhar
Dept. of Entomology, VT
- ENTO-3 **New investigations of spotted lanternfly (*Lycorma delicatula*) in Virginia**
A. C. Dechaine, T. P. Kuhar, D. Pfeiffer and S. Salom
Dept. of Entomology, VT
- ENTO-4 **The ant (Hymenoptera: Formicidae) fauna of Virginia's remnant pyrophytic sandhill communities**
K. Ivanov and L. Hightower
VMNH
- ENTO-5 **A chemical in filter paper interferes with trail following behavior in the termite *Reticulitermes hesperus* (Banks)**
K. S. Vest and J. Ziesmann
Dept. of Biology, ULB
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
Dragas Hall, Room 2120
2:15 – 4:30 pm
Hameeda Sultana, Presiding

- 2:15 OPENING REMARKS
- 2:30 [11] **Arthropod exosomes as modified delivery vehicles of vector-borne pathogens**
H. Sultana
Dept. of Biological Sciences, ODU

- 2:45 [12] **Brown stink bug (*Euschistus servus* (Say)) management thresholds in field corn**
T. Bryant and S. Taylor
Dept. of Entomology, VT
- 3:00 [13] **Exploring questing behavior differences of *Ixodes scapularis* nymphs**
H. K. Cummins and H. D. Gaff
Dept. of Biological Sciences, ODU
- 3:15 [14] **Insect pest effects on industrial hemp**
K. E. Britt and T. P. Kuhar
Dept. of Entomology, VT
- 3:30 [15] **Sexual dimorphism in dragonflies and andromorphic females of the Blue Dasher (Odonata: Anisoptera)**
J. Beard and D. Waller
Dept. of Biological Sciences, ODU
- 3:45 [16] **Margined leatherwing (*Chauliognathus marginatus* (Fabricius)) behavior and activity throughout daylong observation periods**
K. A. Catron and T. P. Kuhar
Dept. of Entomology, VT
- 4:00 [17] **Role of arthropod subolesin in tick-pathogen interactions**
C. S. Tamakloe, H. Sultana and G. Neelakanta
Dept. of Biological Sciences, ODU
- 4:15 CLOSING REMARKS
-

Entomology
Invited Speaker
Dragas Hall, Room 2120
8:15 am

Title to be announced

Eric Calvo
Molecular Entomology Unit
National Institutes of Health

ENVIRONMENTAL and CONSERVATION SCIENCES

Chair: James Haluska, ODU

Vice-Chair: Christopher Labosier, LWU

Secretary: Sujan Henkanaththedegara, LWU

Editor: (vacant)

Councilor: Richard S. Groover, RNCC

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Dragas Hall, Room 2110

8:15 am - noon

Sujan Henkanaththedegara, Presiding

8:15 OPENING REMARKS

8:30 [1] **Assessing the arthropod diversity along an urban gradient using spiders as a model**

W. Kish and S. Henkanaththedegara,

Dept. of Biological Environmental Sciences, LWU

8:45 [2] **Pollution tolerance of crayfish ectosymbionts (Branchiobdellidans)**

M. Lecher, Z. Youngbar, M. Pizzo, S. Owens, J. Foster, A.

Barker, P. Miller, M. Blais and K. Harris

Dept. of Chemistry and Biology, LU

9:00 [3] **Investigating fish assemblages and water quality of Cedar Creek in Frederick and Shenandoah Counties, Virginia**

P. D. Poston, W. S. Bousquet, D. M. Blakely, H. Bauserman,

J. Falletta, E. Rengifo, C. Smeltzer and J. Crider

Environmental Studies Program, SU

9:15 [4] **Evaluating nutrient uptake from stormwater by freshwater algae via mesocosm experiment**

A. Marosi¹, M. Howard¹ and E. Malcolm²

¹Dept. of Chemistry and ²Dept. of Earth Environmental Science, VWU

- 9:30 [5] **Evaluating metals uptake from stormwater by freshwater algae via mesocosm experiment**
E. Hipple¹, M. Howard¹ and E. Malcolm²
¹Dept. of Chemistry and ²Dept. of Earth Environmental Science, VWU
- 9:45 BREAK
- 10:00 [6] **Variables associated with wall temperatures of mural art in Richmond, Virginia**
S. Kwon¹, E.G. Maurakis^{1,2} and J. Hoffman²
¹Dept. of Biology, UR; ²Experience Development, SMV
- 10:15 [7] **Morphology and bank stability of headwater streams in the northern Shenandoah Valley, Virginia**
A. M. Rubano
Environmental Studies Program, SU
- 10:30 [8] **Episodic disintegration of Cobb Island, Virginia**
J. D. Haluska
MTS
- 10:45 [9] **The Longwood BioBlitz: Bringing critters, people and science together for greater good**
S. Henkanaththegedara, W. Kish, E. Kinman and B. Campbell
Dept. of Biological & Environmental Sciences, LWU
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- ENVC-1 **A mesocosm experiment to evaluate mercury uptake from stormwater by freshwater algae**
W. Canady¹, K. Koehn¹, E. Malcolm¹, M. Howard² and M. Reese³
¹Dept. of Earth & Environmental Sciences, ²Dept. of Chemistry and ³Dept. of Mathematics, VWU
- ENVC-2 **Assessing the impacts of hurricanes on avian diversity and community composition: A novel method using citizen science**
B. Gadberry, T. DeWalt, T. Lenhart and S. Henkanaththegedara
Dept. of Biological & Environmental Sciences, LWU
- ENVC-3 **Ecological and economic benefits resulting from alternative shoreline management**
R. Groover¹ and D. Cooper^{1,2}
¹School of Mathematics, Mathematics & Engineering, RNCC; ²Dept. of Economics, UVA
- ENVC-4 **Community structure and succession of vernal pool organisms at High Bridge Trail State Park, Virginia**
W. Kish and S. Henkanaththegedara
Dept. of Biological & Environmental Sciences, LWU
- ENVC-5 **Microplastic presence and frequency in crayfish and associated food webs within urban and rural streams**
A. C. Reddy, B. J. Carnathan, A. N. Steadman, K. J. Harris and T. M. Bender
Dept. of Biology & Chemistry, LU
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Dragas Hall, Room 2110
2:15 – 3:30 pm
James Haluska, Presiding

- 2:15 OPENING REMARKS
- 2:30 [10] **Mid-Atlantic hurricane engineering design considerations for offshore wind turbines**
G. Hagerman
Center for Coastal Physical Oceanography, ODU
- 2:45 [11] **Peatland soil respiration In relation to soil type and volumetric water content - Implications for restoration**
K. N. Napora and R. B. Atkinson
Dept. of Organismal & Environmental Biology, CNU
- 3:00 [12] **Use of filamentous algae from phycoremediation in vermicomposting**
N. Craft¹, E. Malcolm¹, P. Rock², M. Howard³, K. Henry^{1,4}, X. Wang⁵ and M. Reese⁶
¹Dept. of Earth & Environmental Sciences, ²Dept. of Biology, ³Dept. of Chemistry; ⁴Dept. of Physics and ⁶Dept. of Mathematics VWU; ⁵Dept. of Civil & Environmental Engineering, ODU
- 3:15 CLOSING REMARKS
-

MEDICAL SCIENCES

Chair: Balaji Nagarajan, VCU
Vice Chair: Liliya Tyutyunk-Massey, VCU
Secretary: Shraavan Morla, VCU
Editor: Clare Diester, VCU
Councilor: (vacant)

ORAL PRESENTATION SESSION
Thursday Morning, May 23, 2019
Batten Arts & Letters, Room 2062
9:45 am - noon
Balaji Nagarajan, Presiding

- 9:45 **OPENING REMARKS**
- 10:00 [1] **Association between diffusion MRI based brain structural connectivity and neurocognitive outcomes in adolescents with congenital heart disease compared to healthy controls**
L. Dennis¹, V. Lee², A. Panigrahy², B. Meyers², N. Beluk², and M. Gruss²
¹College of Arts & Sciences, RGU; ²Dept, of Radiology, UPITT
- 10:15 [2] **Caffeine consumption attenuates the cardioprotective events of the dive reflex**
V. Madzinge and B. Kalu
Dept. of Biology & Chemistry, LU
- 10:30 [3] **Connexin-43 expression by CD11c+ dendritic cells is required for maintaining CD4+ Foxp3+ regulatory T cell population**
C. T. Miller, L. M. Browning and P. J. Kraj
Dept. of Biological Sciences, ODU
- 10:45 **CLOSING REMARKS & BREAK**
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**

11:30

SECTION BUSINESS MEETING

2019-2020 Section Officers will be elected during meeting

POSTER SESSION

Thursday Morning and Afternoon, May 23, 2019

10 am – 5 pm

Webb University Center

North Mall (1545)

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

- MED-1 **Reduction of the asthmatic response due to blocking mast cell degranulation in mice treated with benign IgE**
L. K. Daulton^{1,2}, R. K. Martin² and D. H. Conrad²
¹JTCC; ²Dept. of Microbiology & Immunology, VCU
- MED-2 **Combined tractional and rhegmatogenous retinal detachment**
T. Nguyen
WVSOM
- MED-3 **Ecthyma gangrenosum and the curious case of drop in hemoglobin**
T. Nguyen
WVSOM
- MED-4 **Severe proliferative diabetic retinopathy with macula edema**
T. Nguyen
WVSOM
- MED-5 **The neutralizing activity of human sera on *Cytomegalovirus* shed in urine**
L. L. Palmer^{1,2}, M. McVoy² and L. He²
¹JTCC; ²Dept. of Pediatrics, VCU

- MED-6 **Advancement of the *in-vitro* idiopathic pulmonary fibrosis disease model through isolation of senescent and active fibroblast phenotypes**
B. H. Sobieski
College of Science, GMU
- MED-7 **Tamoxifen-induced knockout of the PR65 structural subunit of phosphatase 2A in mouse neural progenitors to study the impact on the DNA damage response and CNS disease**
D. P. Wallace^{1,2}
¹JTCC; ²Dept. of Radiation Oncology, VCU
-

NATURAL HISTORY and BIODIVERSITY

Chair: Kimberly J. Bolyard, BC
Vice Chair: Takashi Maie, ULB
Secretary: Brooke Hair, ULB
Editor: Ralph Eckerlin, NVCC
Councilor: Alan B. Griffith, UMW

ORAL PRESENTATION SESSION

Thursday Morning, May 23, 2019

Dragas Hall, Room 2104

8:45 am - noon

Takashi Maie, Presiding

- 8:45 OPENING REMARKS
- 9:00 [1] **Pathological differences to parasite infection in male morphotypes of bluegill sunfish (*Lepomis macrochirus*)**
C. Ashworth and M. R. Zimmermann
Dept. of Biology, SU
- 9:15 [2] **Does voltinism play a role in determining upper thermal limits in native bees (Apoidea: Anthophila)**
K. K. Csigi XIV¹, S. J. Agosta² and K. M. Kester¹
¹Dept. of Biology and ²Center for Environmental Studies, VCU
- 9:30 [3] **Analyzing flight patterns and behavior of dragonflies engaged in aerial territory battles**
B. T. Hastings and B. E. Jackson
Dept. of Biological & Environmental Sciences, LWU
- 9:45 [4] **Intraspecific variation in the secretion and morphology of the scent glands of a neotropical cosmetid harvestman**
A. C. Albert, V. R. Townsend, Jr. and M. H. Schaus
Dept. of Biology, VWU
- 10:00 BREAK
- 10:15 [5] **SEM-based study of fecal samples from a neotropical cosmetid harvestman**
S. A. Wiltshire, V. R. Townsend, Jr. and M. H. Schaus
Dept. of Biology, VWU

- 10:30 [6] **Intraspecific variation in the distribution of elements in the chelicerae and claws of a neotropical cosmetid harvestman**
S. A. Wright, V. R. Townsend, Jr. and S. A. Wiltshire
Dept. of Biology, VWU
- 10:45 [7] **Interspecific, ontogenetic and sexual variation in ozopore morphology among cosmetid harvestmen**
V. R. Townsend, Jr.¹, S. Teevan-Kamhawi², and D. Calpo²
¹Dept. of Biology, VWU; ²Maury High School
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- NHB-1 **Correlation between morphology, escape performance, and material properties of the vertebrae in yellow perch, *Perca flavescens***
T. Maie
Dept. of Biology, ULB
- NHB-2 **Intraspecific variation in the prevalence and intensity of infestation by larval ectoparasitic mites upon a neotropical cosmetid harvestman**
E. A. Roberto, V. R. Townsend, Jr., and M. H. Schaus
Dept. of Biology, VWU
- NHB-3 **Stable isotope analysis of trophic position in Belizean harvestmen**
M. H. Schaus, M. C. Metro and V. R. Townsend, Jr.
Dept. of Biology, VWU

NHB-4 **Adhesive force and endurance during waterfall climbing in amphidromous stream gobies**
S. T. Vickers and T. Maie
Dept. of Biology, ULB

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Dragas Hall, Room 2104
2:15 – 4 pm
Takashi Maie, Presiding

2:15 OPENING REMARKS

2:30 [8] *INVITED SPEAKER*
Adhesive force and endurance in waterfall-climbing gobies
T. Maie
Dept. of Biology, ULB

3:00 [9] **Fecundity of native Virginia longleaf pine (*Pinus palustris* Miller) at Joseph Pines Preserve**
P. M. Sheridan, E. Vollmer and N. D. Stevens
MBRS

3:15 [10] **Longleaf pine habitat restoration raises groundwater levels**
P. M. Sheridan, E. Vollmer and N. D. Stevens
MBRS

3:30 [11] **Microbial assemblages in association with crayfish ectosymbionts**
K. J. Harris, M. M. Cooke, K. Bohrnstedt, T. Kepler, L. Fischer, N. Edmondson, M. Fischer, G. Hooper, J. Hoverson and M. Becker
Dept. of Biology & Chemistry, LU

3:45 CLOSING REMARKS

Natural History and Biodiversity
Invited Speaker
Dragas Hall, Room 2104
2:30 pm

Adhesive force and endurance in waterfall-climbing gobies



Takashi Maie
Dept. of Biology
University of Lynchburg

Dr. Maie's research centers around the functional morphology and biomechanics of the vertebrate musculoskeletal system, focusing on (1) gaining knowledge of the form and function of vertebrates, thereby contributing to a greater understanding of how diverse vertebrates and their body systems work; (2) evaluating how form and function are reflected in life history, behavior, and performance traits in order to explain how the organisms adapt to physical stress during ontogeny; and (3) better understanding fundamental principles that govern the adaptation and pathophysiology of vertebrates.

Since arriving at University of Lynchburg, Dr. Maie has been working on predator escape performance in yellow perch, *Perca flavescens*, bite force and its ontogenetic change in northern pike, *Esox lucius*, and waterfall-climbing biomechanics in waterfall-climbing gobies. He works with numerous undergraduate students on research projects at University of Lynchburg. He received his B.A. in Biomedical Sciences from St. Cloud State University. Subsequently he received his M.Sc. and Ph.D. in Biological Sciences from Clemson University

PSYCHOLOGY

Chair: (vacant)

Vice Chair: (vacant)

Secretary: Antonina Farmer, RMC

Editor: Michelle Lange, CNU

Councilor: (vacant)

ORAL PRESENTATION SESSION
Thursday Morning, May 23, 2019
Batten Arts & Letters, Room 2061
10 am - noon
Antonina Farmer, Presiding

10:00 OPENING REMARKS

10:15 [1] **Gender and racial differences in patterns of disordered eating behavior and alcohol misuse among young adults: A mixture model**
K. A. Romano and K. E. Heron
Dept. of Psychology and The Virginia Consortium Program in Clinical Psychology, ODU

10:30 [2] **The relationship between social anxiety and memory for social versus nonsocial information**
D. Thompson and A. Farmer
Dept. of Psychology, RMC

10:45 BREAK

11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**

11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- PSY-1 **Fear conditioning in typically developing twins: The Screaming Lady task**
A. S. Batts
JTCC and VA Institute for Psychiatric & Behavioral Genetics,
VCU
- PSY-2 **E-cigarette and alcohol use habits among college students**
S. M Cox¹, R. Roberts¹, P. D. Preonas², A. L. Stamates² and C. Lau-Barraco^{1,2}
¹Dept. of Psychology and ²VA Consortium Program in Clinical Psychology, ODU
- PSY-3 **A comparison of Molly users versus non-users on risky sexual behaviors**
K. Davis¹, R. Roberts¹, A. L. Stamates¹, C. Turner¹ and C. Lau-Barraco^{1,2}
¹Dept. of Psychology and ²VA Consortium Program in Clinical Psychology, ODU
- PSY-4 **The influence of Greek affiliation on alcohol expectancies among college students**
M. E. Doberneck, J. T. Ragsdale, M. R. Colangelo and A. L. Braitman
Dept. of Psychology, ODU
- PSY-5 **Substance use among college students with and without ADHD**
K. Goings, C. Turner and C. Lau-Barraco
Dept. of Psychology, ODU

- PSY-6 **Social support as a moderator of the negative effects of moral injury among veterans**
J. M. Higgins and A. Meca
 Dept. of Psychology, ODU
- PSY-7 **The role of gonadal hormones in stress-induced modulation of brain serotonin and dopamine receptor expression in female rats**
W. D. Knight¹, S. Garber¹, J. Picone² and O. Lipatova^{1,2}
¹Dept. of Molecular Biology & Chemistry and ²Program in Neuroscience, CNU
- PSY-8 **Does cannabis use vary by race and gender among college students?**
M. L. Porter, N. Brown, M. R. Colangelo and A. L. Braitman
 Dept. of Psychology, ODU
- PSY-9 **Normative perceptions of Molly use among college students**
R. Roberts¹, A. L. Stamates¹, K. Davis¹, P. D. Preonas^{1,2} and C. Lau-Barraco^{1,2}
¹Dept. of Psychology and ²VA Consortium Program in Clinical Psychology, ODU
- PSY-10 **Effects of perceptual separability on human-automation team efficiency**
 S. Scott-Sharoni
 Dept. of Psychology, ODU
- PSY-11 **Drinking motives and expectancies: Differential strength of prediction for alcohol use among college students**
H. Smith, A. Ladikos, M. R. Colangelo and A. L. Braitman
 Dept. of Psychology, ODU
- PSY-12 **If you give a boy a baby: Encouraging empathy in preschool boys through toy play and emotion talk**
 M. D. Straske
 Dept. of Psychology, WLU

- PSY-13 **Monetary value of positive and negative emotional experiences associated with social anxiety levels in MTurk workers**
D. Thompson, R. Paz, C. Robinson and A. Farmer
Dept. of Psychology, RMC
- PSY-14 **Sex-related Molly expectancies of male and female Molly users**
C. Turner, A. Stamatēs, S. Cox and C. Lau-Barraco
Dept. of Psychology, ODU
- PSY-15 **A review of eye contact in evidence-based treatment manuals for social anxiety disorder**
Y. Wang, N. Hager and M. R. Judah
Dept. of Psychology, ODU
-

STRUCTURAL BIOLOGY, BIOCHEMISTRY and BIOPHYSICS

Chair: Nathan T. Wright, JMU
Vice Chair: Randall Reif, UMW
Secretary: Christopher Berndsen, JMU
Editor: Rafique Islam, NIH
Councilor: (vacant)

ORAL PRESENTATION SESSION Thursday Morning, May 23, 2019 Batten Arts & Letters, Room 2064 8:45 am - noon

Nathan T. Wright, Presiding

- 8:45 OPENING REMARKS
- 9:00 [1] **A new website for learning structural biology techniques**
N. T. Wright
Dept. of Chemistry & Biochemistry, JMU
- 9:15 [2] **Molecular dynamics simulations of the beta-grasp superfamily**
J. T. Bedford, J. Poutsma and L. H. Greene
Dept. of Chemistry & Biochemistry, ODU
- 9:30 [3] **Phosphatidylinositol 5-phosphate binding contributes to a local destabilization of the VHS domain structure of Tom1**
W. Xiong
Dept. of Biological Sciences, VT
- 9:45 BREAK
- 10:00 [4] **Developing small molecule inhibitors for calpain dependent degradation of desmoplakin**
K. Ott and N. T Wright
Dept. of Chemistry & Biochemistry, JMU

- 10:15 [5] **The role of Phafin2 in autophagy**
T. Tang
Dept. of Biological Sciences, VT
- 10:30 [6] **Structural and functional characterization of the *Leishmania donovani* ufm-ylation pathway**
A. D. Lee and C. E. Berndsen
Dept. of Chemistry & Biochemistry, JMU
- 10:45 BREAK
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2019-2020 Section Officers will be elected during meeting
-

POSTER SESSION
Thursday Morning and Afternoon, May 23, 2019
10 am – 5 pm
Webb University Center
North Mall (1545)

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

- SBBB-1 **Microplastics in tidal wetlands**
C. A. Alsobrook^{1,2} and S. Neubauer²
¹JTCC; ²Dept. of Biology, VCU
- SBBB-2 **Expression, characterization, and mutagenesis of the Par-4 tumor suppressor**
A. Ayaz and A. M. Clark
Dept. of Chemistry & Biochemistry, ODU
- SBBB-3 **Optimization of a fluorescent assay for protein ubiquitination**
R. Broadberry and C. Berndsen
Dept. of Chemistry & Biochemistry, JMU

- SBBB-4 Analysis of nitroreductase variants for anticancer prodrug activation**
T. Gruber and S. B. West
Dept. of Molecular Biology & Chemistry, CNU
- SBBB-5 Studying interactions between amyloid beta 25-35 monomer and ternary bilayer**
E. C. Khayat, A. K. Smith and D. K. Klimov
School of Systems Biology, GMU
- SBBB-6 Potentiated opioid analgesia by a serotonin 5-HT receptor antagonist suggests new therapeutic target for pain management**
X. K. C. Lavilla^{1,2,3}, S. Sierra², D. L. Stevens³, J. Gonzales-Maeso² and W. L. Dewey³
¹TNCC; ²Dept. of Physiology & Biophysics and ³Dept. of Pharmacology & Toxicology, VCU
- SBBB-7 Molecular dynamics simulations of iodothyronine deiodinase embedded a lipid bilayer**
J. S. Lillard¹ and C. A. Bayse²
¹Dept. of Science, Technology & Mathematics, RGU; ²Dept. of Chemistry & Biochemistry, ODU
- SBBB-8 Autoinhibition mechanism of the endosomal trafficking protein Tom1**
E. Littleton
Dept. of Biological Sciences, VT
- SBBB-9 Characterization of the UFM-ylation activation mechanism by UBA5**
B. Ruzsala¹ and C. Berndsen²
¹Dept. of Biotechnology and ²Dept. of Chemistry & Biochemistry, JMU
- SBBB-10 Structure and energy based analyses of FGFR2 kinase mutations**
S. V. Sambare
GMU

SBBB-11 Interactions between anti-cancer drugs and the Par-4 tumor suppressor

L. E. Sweet, A. M. Clark, S. Pascal and K. Ponniah
Dept. of Chemistry & Biochemistry, ODU

ORAL PRESENTATION SESSION
Thursday Afternoon, May 23, 2019
Batten Arts & Letters, Room 2064
2:15 – 4 pm

Christopher E. Berndsen, Presiding

2:15 OPENING REMARKS

2:30 [7] **Ionic strength-induced tetramer formation in the Par-4 tumor suppressor**
A. M. Clark¹, K. Ponniah¹, M. S. Warden², E. M. Raitt³, B. G. Smith¹ and S. M. Pascal¹
¹Dept. of Chemistry & Biochemistry and ³Dept. of Biological Sciences, ODU; ²Environmental Health Sciences, NIH

2:45 [8] *INVITED SPEAKER*
Microfluidic investigations of the temporal dynamics of caspase activity in living cells
R. D. Reif
Dept. of Chemistry, UMW

3:45 CLOSING REMARKS

Structural Biology, Biochemistry & Biophysics

Invited Speaker

Batten Arts & Letters, Room 2064

2:45 pm

Microfluidic investigations of the temporal dynamics of caspase activity in living cells



**Randall D. Reif
Dept. of Chemistry
University of Mary Washington**

Dr. Reif joined the University of Mary Washington faculty in 2014. In addition to teaching biochemistry and analytical chemistry courses, he currently runs an active undergraduate research program examining apoptosis (programmed cell death) and discovering RNA aptamers to target cancer cells. He regularly presents his research findings at both regional and national meetings of the American Chemical Society as well as the Virginia Academy of Science.

Dr. Reif received his B.A. in Chemistry from St. Mary's College of Maryland and his Ph.D. in Chemistry from Texas Tech University. He completed a post-doctoral fellowship in RNA Nanotechnology at the University of Kentucky before becoming a visiting assistant professor at St. Mary's College of Maryland.

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The Virginia Academy of Science notes with appreciation the contribution and support of hundreds of individuals and dozens of organizations to the success of its 97th Annual Meeting and of the 78th Research Symposium and Annual Meeting of the Virginia Junior Academy of Science.

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NOMINATION OF VAS FELLOWS

Virginia Academy of Science members are invited to submit nominations for Fellows to be named at the 2020 Annual Meeting. A potential Fellow must be an *active member of the Academy* and have contributed to science in one or more of the following ways: (a) outstanding scientific research, (b) inspired teaching of science, or (c) significant leadership in the Academy.

Nomination letters, with adequate supporting information, must be received by the Executive Officer no later than October 1, 2019. Nominations will be forwarded to the Awards Committee for consideration and possible recommendation to Council. Upon recommendation to Council, election to Fellow status will be by majority vote of the Academy Council.

In order to be considered by the Awards Committee, each nomination letter must be signed by at least three Academy members making and/or supporting the nomination. Alternatively, each person supporting the nomination may submit an individual nomination letter. The nomination letter should include detailed biographical information and adequate supporting information (including a current CV or resume) to be used by the members of the Awards Committee and the Academy Council in evaluating the credentials of the nominee for Fellow status. The supporting information should be in a form appropriate for subsequent publication in the *Virginia Journal of Science* and/or *Virginia Scientists*.

Additional information about the Selection of Fellows may be found in the 1999 Spring issue of the *Virginia Journal of Science* [50(1):77] or may be accessed at www.vacadsci.org/fellows.htm.

For additional information, contact VAS Executive Officer, Dr. Philip Sheridan at psheridan@vacadsci.org or 804-864-1451.

Nomination letters with supporting materials for FELLOWS should be sent to:

Philip Sheridan, Executive Officer
Virginia Academy of Science
2500 W. Broad Street
Richmond, Virginia 23220

Deadline for receipt of nominations and support materials is October 1, 2019.

NOMINATION OF VAS HONORARY LIFE MEMBERS

At the 1999 Annual Meeting, the VAS Council approved a number of changes in the By-Laws. One of these changes was to establish a new category of membership, Honorary Life Membership, to honor persons for long and distinguished service to science. Honorary Life Members will have all the rights and privileges of Regular Members but will be exempt from paying dues. *Previous active membership in VAS is not a requirement for eligibility.*

VAS members are invited to submit nominations for Honorary Life Members to be named at the 2020 Annual Meeting. **Nomination letters, with adequate supporting information, must be received by the Executive Officer no later than October 1, 2019.** Nominations will be forwarded to the Awards Committee for consideration and possible recommendation to Council. Upon recommendation to Council, election to Honorary Life Member status will be by majority vote of the Academy Council.

In order to be considered by the Awards Committee, each nomination letter must be signed by at least three Academy members making and/or supporting the nomination. Alternatively, each person supporting the nomination may submit an individual nomination letter. The nomination letter should include detailed biographical information and adequate supporting information (including a current CV or resume) to be used by the members of the Awards Committee and the Academy Council in evaluating the credentials of the nominee for Honorary Life Membership status. The supporting information should be in a form appropriate for subsequent publication in the *Virginia Journal of Science* and/or *Virginia Scientists*. Additional information about the Selection of Honorary Life Members may be found in the 1999 Spring issue of the *Virginia Journal of Science* [50(1):77] or may be accessed at www.vacadsci.org/honlifememb.htm.

For additional information, contact VAS Executive Officer, Dr. Philip Sheridan at psheridan@vacadsci.org or 804-864-1451.

Nomination letters with supporting materials for HONORARY LIFE MEMBERS should be sent to:

Philip Sheridan, Executive Officer
Virginia Academy of Science
2500 W. Broad Street
Richmond, Virginia 23220

Deadline for receipt of nominations and support materials is October 1, 2019.

Selected Programs of the Virginia Academy of Science

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

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

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

For information, contact Sujana Henkanaththegegedara at henkanaththegegedarasm@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.

VAS and VJAS Scientific Research Grants, Awards, Scholarships, Assistantships, etc. are made possible by hundreds of corporate and individual donors who believe in our work to benefit the People of Virginia. Many have found this a meaningful way to memorialize a loved one, support a student's education, or recognize the work of a colleague.

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To become a Member, Institutional Member, or Business Member, please contact Carolyn Conway, Associate Executive Officer, Virginia Academy of Science at vasoffice@vacadsci.org or 804-864-1450.

VAS Membership Applications for both Individuals and Institutions & Businesses are available at www.vacadsci.org/membapp.htm.

Virginia Academy of Science Website
www.vacadsci.org

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>

Driving Directions:

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

<https://www.odu.edu/about/visitors/directions>

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Downloadable and printable PDF versions of the Old Dominion University Campus Parking maps are available at the links below.

- <https://www.odu.edu/content/dam/odu/offices/parking-and-transportation-services/docs/17-18-campus-parking-map-odu.pdf>
- <https://www.odu.edu/content/dam/odu/offices/parking-and-transportation-services/docs/campus-transportation-map.pdf>

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 all VAS events will occur in the following campus locations (building locations are noted on campus map by #s):

Batten Arts & Letters (#112)
Constant Hall (#118)
Dragas Hall (#130)
Education Building (#131)
Webb University Center (#684)



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