

Virginia Academy of Science

96th Annual Meeting

May 23-25, 2018



Virginia Junior Academy of Science

Research Symposium and 77th Annual Meeting

May 22-24, 2018

Longwood University
Farmville, 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

Longwood University Summer Conference Office

The Conference Office Staff will handle all calls
(emergency and non-emergency)
during the VAS and VJAS Meetings

Between 7 am & midnight please call
434-395-2552

Between midnight & 7 am please call
435-547-7018

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 2019, Old Dominion University, Norfolk

Fall Undergraduate Research Meeting:

The focus of this meeting is support of undergraduate student research. Specific details about the 2018 Fall Undergraduate Research Meeting at Ferrum College on November 3 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

**96th Annual Meeting
May 23-25, 2018**



Virginia Junior Academy of Science

**Research Symposium and 77th Annual Meeting
May 22-24, 2018**

**Longwood University
Farmville, Virginia**

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**95th Annual Meeting
Virginia Academy of Science**



**President
Robert B. Atkinson
Christopher Newport University
Newport News, VA**

- President-Elect.....Woodward S. Bousquet
Shenandoah University, Winchester, VA
- Vice-President.....Gary D. Isaacs
Liberty University, Lynchburg, VA
- Secretary.....Christopher J. Osgood
Old Dominion University, Norfolk, VA
- Treasurer.....Michael J. Wolyniak
Hampden-Sydney College, Hampden-Sydney, VA
- Executive Officer.....Philip M. Sheridan
- Executive Officer Emeritus.....Arthur F. Conway
- Associate Executive Officer.....Carolyn M. Conway

**Research Symposium and 76th Annual Meeting
Virginia Junior Academy of Science**

VJAS Director.....	Susan P. Booth
Co-President.....	Reona Pereira Maggie L. Walker Governor’s School
Co-President.....	Yashodhara Varma Maggie L. Walker Governor’s School
Secretary/Historian.....	Ankit Kumar Mills E. Godwin High School
Editor-in Chief.....	Selik Morishetty Henrico High School
Communication Liaison.....	Jakob Yirga Mills E. Godwin High School
STEM Chair.....	Cory Dudka Washington-Lee High School
Regional Director.....	Amruta Ponugupati Mills E. Godwin High School
Officer Alumni.....	Kayla Holston
Past-President.....	Benjamin Rhoades
VJAS Committee Chair.....	Se W. Jeong

**VAS 96th Annual Meeting
and
VJAS Research Symposium and 77th Annual Meeting
May 22-25, 2018**

Longwood University Local Arrangements Committee

Dept. of Biological & Environmental Sciences:

Kathy Gee, Co-Chair
Amorette Barber
Sujan Henkanaththegedara
Christopher Labosier
Mary Lehman
Sarah Porter

Dept. of Chemistry & Physics:

Andrew Yeagley, Co-Chair

Dept of Computer Science & Mathematics:

Robert Marmorstein

Administration & Finance:

Bruce Jenkins
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Alix Fink

Facilities Management:

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President W. Taylor Reveley, IV

Office of the Provost:

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Longwood University Police Department

Strategic Operations:

Jennifer Green
Victoria Kindon

The Virginia Academy of Science and the Virginia Junior Academy of Science wish to express their appreciation to the above individuals for their involvement in preparing for our 2018 meeting. Appreciation is also expressed to Longwood University for hosting the meeting.

Longwood University Sponsorships

Office of the Provost
Cormier Honors College
Admissions Office

The Virginia Academy of Science and the Virginia Junior Academy of Science also wish to express their appreciation to the above for their generous financial support of this year's meeting.

VAS 96th Annual Meeting Program Committee

VAS Vice President and Program Chair

Gary D. Isaacs

Liberty University, Lynchburg, VA

Section Secretaries/Program Officers:

Agriculture, Forestry and Aquaculture.....Edward N. Sismour

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

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

Biomedical and General Engineering.....Bethany M. Young

Botany.....Andrea Weeks

Chemistry.....Thomas C. Devore

Data Science, Computing and Statistics.....Elaine M. Dietz

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

Entomology.....Hameeda Sultana

Environmental Science.....Christopher F. Labosier

Medical Sciences.....S. Lauren Kyte

Natural History and Biodiversity.....Kimberly J. Bolyard

Psychology.....Amy E. Coren

Structural Biology, Biochemistry and Biophysics.....Rafique M. Islam

Program Editor: Carolyn M. Conway

VAS President's Welcome

May 2018

To VAS and VJAS Members,

Welcome to the 96th Annual Meeting of the Virginia Academy of Science and the 77th Annual Meeting of the Virginia Junior Academy of Science, which this year are being held in Farmville, Virginia, at Longwood University.

Since April 26, 1923, when the first meeting of the Virginia Academy of Science was convened by Ivey F. Lewis, University of Virginia; the Virginia Academy of Science has been supporting scientific research, seeking to improve science education, and encouraging 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 Virginia Academy of Science has been at the forefront of scientific research and science education in Virginia, for almost 100 years.

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. While our science interests draw some of us from around Virginia and others from far corners of our world, we all relish the chance to return home to this annual meeting to share our findings, experiences, and friendships.

While you are enjoying this year's meeting, please take time to learn more about VAS and VJAS, and perhaps consider joining our group of volunteers. We have an open door for all those who wish to serve, and the possibilities are varied. 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 network, renew friendships, encourage our younger K-12 scientists and teacher sponsors, as well as discover new opportunities. Please enjoy yourselves, and thanks so much for making our Annual Meeting a success!

Sincerely,

Robert Bolling Atkinson

Department of Organismal and Environmental Biology
Christopher Newport University

Longwood University President's Welcome

May 2018

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

Welcome to Longwood University in the heart of Virginia. We are honored to host this joint meeting of your two distinguished organizations that hold such an important place in the educational life of the commonwealth.

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

Longwood is one of the hundred-oldest colleges and universities in the country, with a distinctive mission of creating citizen leaders. It's that mission that has been our North Star as we recently rewrote our core curriculum with a firm emphasis on creating the kind of idea exchanges that you'll experience at this conference. For VJAS participants, as you get to know us I hope you'll consider Longwood as an option for your own collegiate career—it is a place of great camaraderie, cherished traditions, and where the professor-student relationship is fostered.

I also hope you'll find time to wander through our historic campus and down the hill to downtown Farmville, as charming a college town as you can find in any corner of the country. It's also rich in a remarkable history—the final days of the Civil War played out just outside the doors of Chichester Hall, our science building, while the genesis of the student-led Civil Rights Movement can be found at Moton Museum at the southern tip of our main campus triangle.

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

Sincerely,

W. Taylor Reveley IV
President

W. Taylor Reveley IV

**President
Longwood University**



W. Taylor Reveley IV President, Longwood University

W. Taylor Reveley IV began his term as Longwood University's 26th president in 2013, with deep ties to the University. Over the past century, members of his family have been leaders on the faculty and board of visitors as well as devoted students and alumni. As president, Reveley's principal areas of focus have included:

- Championing the value of the liberal arts and sciences, including a distinctive new Longwood core curriculum focused on citizen leadership.
- Maintaining affordability through the lowest average annual tuition increases of any Virginia public university.
- Improving student retention and graduation rates, particularly through the use of "big data" to track student progress and offer targeted support.
- Elevating the national profile of Longwood -- Virginia's third-oldest public university, and one of the hundred-oldest colleges and universities in the nation. In 2016 Longwood hosted the only Vice-Presidential debate of the general election campaign, an event that attracted thousands of journalists from around the world to campus and resulted in media exposure for the university valued at more than \$80 million.
- Leading implementation of a campus master plan focused on "new urbanism" and building joint momentum with Farmville, the nation's first two-college town.

Immediately prior to his appointment as president of Longwood, Reveley served as managing director of University of Virginia's Miller Center, a nonpartisan institute focused on the U.S. presidency, policy and political history. He had previously served as coordinating attorney for the Center's National War Powers Commission, co-chaired at the time by former U.S. Secretaries of State Warren Christopher and James Baker.

President Reveley is a third-generation college president. His grandfather, W. Taylor Reveley II, was president of Hampden-Sydney College from 1963-1977. His father, W. Taylor Reveley III, is president of The College of William & Mary.

A Richmond native, Reveley graduated with honors from Princeton University, received a master's degree from Union Presbyterian Seminary and a J.D. from the University of Virginia. His wife, Marlo is a technology entrepreneur. They have two children, Quint and May.

ABOUT LONGWOOD UNIVERSITY

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

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

In 2018, Longwood will launch an ambitious new core curriculum focused on its mission of citizen leadership and democracy that will help reshape the national conversation about higher education's importance and relevance to the nation. In 2016, the university hosted the 2016 Vice Presidential Debate, earning more national recognition of its mission, history and students, and winning praise from the thousands of politicians, journalists, and government officials who spent time on campus.

In the past five years, Longwood has emerged as a statewide leader on striving to keep college costs affordable for families—the average annual tuition raise at the university is below 3 percent, the lowest of any public university in Virginia.

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

SCHEDULE OF EVENTS

Virginia Junior Academy of Science
Tuesday, May 22 - Thursday, May 24, 2018

VJAS Headquarters: Maugans Alumni Center, Martinelli Board Room A

VJAS Paper Room: Maugans Alumni Center, Martinelli Board Room B

VJAS Special Judge's Meeting Room: Maugans Alumni Center,
Virginia Room (106)

Tuesday, May 22		
3 – 10 pm	VJAS On-site Registration Check-in	Willett Hall Lobby (100)
3:30 – 5 pm	Longwood Campus Tours	Chi Fountain Brock Commons
3:30 – 7:45 pm	Tours of Chichester Science Center	Chichester Science Center
5:00 – 6:30 pm	VJAS Dinner	Dorrill Dining Hall
6 – 6:30 pm	VJAS Committee Meeting with Officer Candidates and their Sponsors	Dorrill Dining Hall Annex (209)
7:15 - 7:45 pm	School Sponsors Meeting with VJAS Committee	Jarman Hall Auditorium
8 - 10 pm	VJAS General Session and Invited Lecture	Jarman Hall Auditorium
10:30 pm	CURFEW	

Wednesday, May 23		
7 – 9 am	VJAS Breakfast	Dorrill Dining Hall
7 – 11 am	VJAS On-site Registration Check-in	Willett Hall Lobby (100)
7:15 – 8:30 am	VJAS Chairs & Judges Check-in and Continental Breakfast	Dorrill Dining Hall Nance Room (123)
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	Dorrill Dining Hall
11:30 am – 1:30 pm	VJAS Chairs & Judges Luncheon	Dorrill Dining Hall Nance Room (123)
4 – 6:30 pm	VJAS College & Career Fair	Dorrill Dining Hall Lee Grand Room
4 – 6:45 pm	Tours of Chichester Science Center	Chichester Science Center
4:30 – 9 pm	VJAS Special Judges Meeting	Maugans Alumni Center Virginia Room (106)
5 – 6:30 pm	VJAS Dinner	Dorrill Dining Hall
7 – 8:30 pm	VJAS General Session & George W. Jeffers Memorial Lecture	Jarman Hall Auditorium
9 – 11 pm	VJAS DJ-Dance VJAS Game Night	Lankford Student Union Ballroom & ABC
11 pm	CURFEW	

Thursday, May 24		
6:30 – 8 am	VJAS Breakfast	Dorrill Dining Hall
8 – 10:15 am	VJAS Awards Ceremony	Jarman Hall Auditorium
10:15 am – noon	VJAS Dorm Check-out & Key Drop-off	Winn Great Room G02
10:15 am – noon	VJAS Paper Pick-up (Sponsors Only)	Maugans Alumni Center Martinelli Board Room B
10 – 11:30 am	VJAS Participants Invited to Attend VAS Section Sessions	<i>See VJAS Program for VAS Section Locations</i>
10 am – noon	VJAS Participants Invited to Attend VAS Poster Session	Maugans Alumni Center Blackwell Ballroom (104)
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 23 - Friday, May 25, 2018

VAS Headquarters: Maugans Alumni Center, Martinelli Board Room C

Wednesday, May 23		
1 - 9 pm	VAS Preregistration Check-in and On-site Registration	Willett Hall Lobby (100)
4 – 6:30 pm	VJAS College & Career Fair	Dorrill Dining Hall Lee Grand Room
4:30 – 5:30 pm	VAS Executive Committee Meeting	Maugans Alumni Center Prince Edward Room
7 - 8.30 pm	VJAS General Session & George W. Jeffers Memorial Lecture	Jarman Hall Auditorium

Thursday, May 24		
7 am - 5 pm	VAS Preregistration Check-in and On-site Registration	Willett Hall Lobby (100)
8 – 9:55 am	VAS Poster Check-in and Set-up	Maugans Alumni Center Blackwell Ballroom (104)
8 – 10:15 am	VJAS Awards Ceremony	Jarman Hall Auditorium
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>	Maugans Alumni Center Blackwell Ballroom (104)

Thursday, May 24		
10 am – noon	VJAS Participants Invited to Attend VAS Poster Session	Maugans Alumni Center Blackwell Ballroom (104)
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	Dorrill Dining Hall Nance Room (123)
11:45 am – 2:15 pm	Longwood University President's/ Provost's Reception	Maugans Alumni Center Blackwell Ballroom (104)
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	Ruffner Hall Room 252
5 – 5:30 pm	VAS Poster Removal	Maugans Alumni Center Blackwell Ballroom (104)
5:30 - 7 pm	Academy Conference & Sidney S. Negus Memorial Lecture	Hiner Hall Room 207
7:15 - 9 pm	VAS Banquet and Installation of 2018-2019 VAS Officers	Dorrill Dining Hall Nance Room (123)

Friday, May 25

9:30 am –
12:30 pm

VAS Council Breakfast and Meeting
(NOTE: All VAS Council Members for both 2017-2018 and 2018-2019 are expected to attend this meeting.)
The members of the VAS Trust Committee will meet following the conclusion of the Council Meeting.

Maugans Alumni Center
Virginia Room (106)

Invited Speakers

**Virginia Academy of Science
and
Virginia Junior Academy of Science
2018
Longwood University**

**Kenneth A. Pestka II
Acoustics in Action:
Modelling everything in the cosmos using only springs**

**Katie Register
Scientists from five to 105:
How the scientist in you will make a positive difference**

Invited Lectures - VJAS General Session

Tuesday, May 22, 2018
8:00 pm
Jarman Hall, Auditorium

**Andrew Yeagley
Why Does Everyone Think my Deodorant Causes Cancer?
George W. Jeffers Memorial Lecture – VJAS General Session**

Wednesday, May 23, 2018
7:00 pm
Jarman Hall, Auditorium

**Amorette Barber
Engineered T cells for Cancer Therapy
Sidney S. Negus Memorial Lecture – Academy Conference**

Thursday, May 24, 2018
5:30 pm
Hiner Hall

Invited Lecture
Tuesday Evening VJAS General Session

**Acoustics in Action:
Modelling everything in the cosmos using only springs**

Kenneth A. Pestka II
Longwood University



Dr. Pestka's research is at the interface of physical acoustics, astrophysics and material science. Recent research projects include the study of the acoustic and dynamic behavior of wooden baseball bats, elastic and oscillatory properties of crystallized white dwarf stellar cores, characterization of the healing timescales of self-healing thermoplastic ionomers using time dependent resonant ultrasound spectroscopy, determination of acoustic anisotropy within iron-nickel meteorites, and determination of the complete orthorhombic elastic tensor of several recently synthesized rare-earth scandates utilizing ab-initio calculations in combination with resonant ultrasound spectroscopy.

In addition, he is also actively engaged in the development laboratory activities that utilize every-day materials such as plastic-ware, snack foods, pretzels, popcorn, marshmallows, carrots, celery and others. All of his research projects actively incorporate collaboration with undergraduate students.

Dr. Pestka received his B.S. and M.S. in physics from The University of South Carolina and his Ph.D. in physics from The Pennsylvania State University. He taught at Dalton State College and Rollins College before coming to Longwood University in 2014.

Invited Lecture
Tuesday Evening VJAS General Session

**Scientists from five to 105:
How the scientist in you will make a positive difference**

Katie Register
Clean Virginia Waterways



Katie Register is Executive Director of Clean Virginia Waterways, which is dedicated to improving Virginia's rivers and other water resources through citizen stewardship. Clean Virginia Waterways of Longwood University has coordinated the International Coastal Cleanup in Virginia for 23 years now.

Katie works extensively on water pollution and marine debris issues, litter prevention and water conservation. She has consulted with the US EPA, NOAA, Ocean Conservancy, the Virginia Coastal Zone Management Program as well as corporations. She also co-authored a document for the United Nations about market-based solutions to marine debris.

Katie has master's degrees from Miami University and from George Mason University where she examined the environmental impacts of the #1 most common type of litter on Earth -- cigarette butts. She lives on a farm where she and her husband enjoy keeping honeybees.

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

**Why Does Everyone Think my Deodorant Causes
Cancer?**

**Andrew Yeagley
Longwood University**



Dr. Yeagley, an assistant professor of Chemistry at Longwood University, strives to bring his small undergraduate research experience to a new generation of students. He received his Ph.D. from the University of Virginia in 2010 in chemistry and went on to study anti-biofilm under Christian Melander at North Carolina State University. He then returned to his undergraduate alma mater to complete a teaching postdoctoral fellowship before joining the ranks at Longwood University. His research revolves around combining his organic chemistry and anti-microbial background to bring a working medicinal chemistry program to undergraduates. He is currently working to better understand the relationship between a phenols anti-microbial activities and propensity to cause breast cancer. The work is currently being applied to making the paraben antibiotics within consumer products safer. In addition to his scholarly research, Dr. Yeagley is interested in learning how to improve conveying the problem-solving skills necessary for students learning organic chemistry.

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

Engineered T cells for Cancer Therapy

**Amorette Barber
Longwood University**



Amorette Barber is an Associate Professor in the Department of Biological and Environmental Sciences at Longwood University. She received a B.S. in Biology from the University of Richmond, a Ph.D. in Molecular and Cellular Biology from Dartmouth College, and a postdoctoral fellowship in immunology at Dartmouth Medical School, and she joined the faculty of Longwood University in 2011.

Her research focuses on enhancing immune responses as a therapy for cancer. Specifically, her lab studies many specific aspects of T cell immunotherapy including determining what anti-tumor functions are ideal to reduce tumor burden and how to incorporate these anti-tumor functions into novel cancer therapies. Her research lab investigates many tumor types including lymphoma, melanoma, breast, ovarian, liver, colon, kidney, prostate, bladder, and pancreatic cancers. She enjoys teaching and working with undergraduate students in her research lab and during her seven years at Longwood, she has mentored over 30 undergraduate research students.

Furthermore, she has received numerous awards for her teaching and research including Longwood's Excellence in Faculty Mentoring Award, Excellence in Undergraduate Research Award, and Junior Faculty Award, and Virginia Academy of Science's J. Shelton Horsley Research Award. When she is not teaching or in her research lab, she enjoys swimming, boating, and hiking with her husband, daughter, and dog.

VAS POSTER SESSION
and
**LONGWOOD UNIVERSITY PRESIDENT-
PROVOST'S RECEPTION**

VAS POSTER SESSION

Thursday, May 24, 2018
10 am - 5 pm

Maugans Alumni Center
Blackwell Ballroom (104)

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.*

LONGWOOD UNIVERSITY
PRESIDENT-PROVOST'S RECEPTION

Thursday, May 24, 2018
11:45 am – 2:15 pm

Maugans Alumni Center
Blackwell Ballroom (104)

LOCATION OF VAS SECTION MEETING ROOMS

VAS Oral Presentation Sessions will take place in **Grainger Hall** and **Ruffner Hall** as indicated below.

Section	Building	Room
Agriculture, Forestry & Aquaculture	Ruffner Hall	252
Astronomy, Mathematics & Physics with Materials Science	Grainger Hall	114
Biology with Microbiology & Molecular Biology	Ruffner Hall	250
Biomedical & General Engineering	Ruffner Hall	116
Botany	Ruffner Hall	354
Chemistry	Grainger Hall	101
Data Science, Computing & Statistics	Grainger Hall	218
Education	Grainger Hall	116
Entomology	Ruffner Hall	356
Environmental Science	Ruffner Hall	254
Medical Sciences	Ruffner Hall	108
Natural History & Biodiversity	Ruffner Hall	352
Psychology	Grainger Hall	216
Structural Biology, Biochemistry & Biophysics	Grainger Hall	207

KEY TO INSTITUTIONAL ABBREVIATIONS USED IN SECTION PROGRAMS			
BC	Bridgewater College	NSU	Norfolk State University
CIT	California Institute of Technology	NVCC	Northern Virginia Community College
CMNH	Carnegie Museum of Natural History	ODU	Old Dominion University
CNU	Christopher Newport University	OSU	Ohio State University
DU	Duke University	PSU	Pennsylvania State University
EMU	Eastern Mennonite University	PTSU	Portland State University
EPA	Environmental Protection Agency	RCC	Rappahannock Community College
EU	Emory University	RDC	Randolph College
FC	Ferrum College	RNCC	Reynolds Community College
GMU	George Mason University	RU	Regent University
HPU	Hampton University	SMV	Science Museum of Virginia
HSC	Hampden-Sydney College	SU	Shenandoah University
JMU	James Madison University	TCC	Tidewater Community College
JTCC	John Tyler Community College	TNCC	Thomas Nelson Community College
LBC	Lynchburg College	UMICH	University of Michigan
LU	Liberty University	UMW	University of Mary Washington
LWU	Longwood University	UNT	University of North Texas
MBI	Midwest Biodiversity Institute	UR	University of Richmond
MU	Marymount University	USDA ARS	USDA Agricultural Research Service

US EPA	US Environmental Protection Agency	VMNH	Virginia Museum of Natural History
USU	Utah State University	VSU	Virginia State University
UVA	University of Virginia	VT	VA Polytechnic Inst. and State Univ. (VA Tech)
UVA-W	University of Virginia's College at Wise	VUU	Virginia Union University
UW	University of Waterloo	WLBU	West Liberty University
VCU	Virginia Commonwealth University	WM	College of William and Mary
VIMS	Virginia Institute of Marine Science	WSU	Washington State University
VMI	Virginia Military Institute	YU	Yale University

AGRICULTURE, FORESTRY and AQUACULTURE

Chair: Roman J. Miller, EMU

Vice-Chair: vacant

Secretary: Edward N. Sismour, VSU

Editor: Edward N. Sismour, VSU

Councilor: M. David Crosby, VSU

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:15 am - noon

Ruffner Hall, Room 252

Roman J. Miller, Presiding

- 8:15 OPENING REMARKS
- 8:30 [1] **Estimation of carrying capacity in loblolly pine (*Pinus taeda* L.)**
S-I. Yang and H. E. Burkhart
Dept. of Forest Resources & Environmental Conservation, VT
- 8:45 [2] **Auxiliary information in support of operational forest inventory**
P. C. Green and H. E. Burkhart
Dept. of Forest Resources & Environmental Conservation, VT
- 9:00 [3] **Potted high tunnel raspberry production in Virginia**
R. Rafie
College of Agriculture, VSU
- 9:15 [4] **Prospects for counterseasonal hydroponic Romaine (*Lactuca sativa* var. *longifolia* L.) and Boston (*Lactuca sativa* var. *capitata* L.) lettuce production in Virginia**
T. C. Durham
School of Natural Sciences & Mathematics, FC
- 9:30 [5] **Growth response of alfalfa (*Medicago sativa*) to AZOMITE mineral elements on different soil types**
A. Coleman and V. Temu
Agricultural Research Station, VSU

- 9:45 [6] **Transmuting cassava from staple food to industrial crop: The Bangladesh case**
F. Djibodé-Favi¹, M. Klingman¹, R. Bowen¹, S. Kabir² and E. Mridha³
¹Agriculture Research Station, VSU; ²Asia Farmer-to-Farmer-Winrock International; ³PRAN Agro Business Limited (PABL)
- 10:00 [7] **Challenges in raising Barbados Blackbelly sheep (*Ovis aries*): Genetics, pathologies, and marketing**
R. J. Miller
Knoll Acres
- 10:15 [8] **Cage aquaculture in Virginia**
M. D. Crosby
Cooperative Extension, VSU
- 10:45 [9] *INVITED SPEAKER*
How science impacts people, farmers and farm politics
W. Pryor
Virginia Farm Bureau
- 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- AFA-1 **Genetic variation among and within apple varieties**
J. C. Christman III and J. C. Steven
Dept, of Organismal & Environmental Biology, CNU
- AFA-2 **Comparative culture and yield of hydroponic and field
grown Romaine (*Lactuca sativa* var. *longifolia* L.) and
Boston (*Lactuca sativa* var. *capitata* L.) lettuce**
K. Smith, S. Trollinger and T. C. Durham
School of Natural Sciences & Mathematics, FC
-

Agriculture, Forestry & Aquaculture

Invited Speaker

Ruffner Hall, Room 252

10:45 am

How science impacts people, farmers and farm politics



Wayne Pryor

Virginia Farm Bureau Federation & Affiliated Companies

A Goochland County hay and grain producer Mr. Pryor of Hadensville was elected to a sixth two-year term as president of the Virginia Farm Bureau Federation in December 2016. He served as Farm Bureau's vice president from 1998 through 2006 and has been a member of the organization's board of directors since 1988.

In addition, he is president and chairman of the board of directors of Syracuse, NY-based Countryway Mutual Insurance Co. In Virginia, he serves as president and chairman of the board for the Virginia Farm Bureau Mutual Insurance Co.; the Virginia Farm Bureau Federation AgPAC; the Virginia Foundation for Agriculture Innovation and Rural Sustainability; and Commonwealth Fairs & Events Inc., which owns The Meadow Event Park and the State Fair of Virginia. He also is president of the Virginia Foundation for Agriculture in the Classroom.

He is a member of the Virginia Agribusiness Council, Virginia Cattlemen's Association and the Virginia Cooperative Extension Leadership Council. Pryor is a recipient of the Honorary American FFA Degree, an award that recognizes personal commitments and contributions to advance agricultural education and FFA.

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: Gregory A. Topasna, VMI
Councilor: Donal B. Day, UVA

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:30 am - noon

Grainger Hall, Room 114

Donal Day, Presiding

- 8:30 OPENING REMARKS
- 8:45 [1] **The distance to two variable stars of different type by the period-luminosity method of Miss Henrietta Swan Leavitt**
A. Bonevich, C.Crook¹ and T. Mosca III²
¹Dept. of Chemistry & Physics and ²Dept. of Mathematics, RCC
- 9:00 [2] **Studies on the aging of the Mu2e Cosmic Ray Veto System.**
P. J. Farris and R. C Group
Dept. of Physics, UVA
- 9:15 [3] **Electron-phonon coupling, leading to charge density waves in 2H-TaS 2**
K. Wijayaratne
Dept. of Physics, UVA
- 9:30 [4] **Pulsed laser effects on photovoltaics**
C.Jackson¹, A. Swecker¹, O. Kokhan² and G. Scarel¹
¹Dept. of Physics and ²Dept. of Chemistry, JMU
- 9:45 BREAK

- 10:00 [5] **Distribution of distances in a pair of uniformly distributed spheres**
N. Marzolf and M. Parry
Dept. of Chemistry & Physics, LWU
- 10:15 [6] **The electrodynamic wheel**
J. Del Carpio Arispe¹, V. Cordrey², B. S. Murphy³, S. Samiei⁴
and W. Majewski¹
¹Div. of Science, Mathematics & Engineering, NVCC; ²Dept. of Physics, WM; ³Dept. of Computer Science, VT; ⁴Dept. of Physics, UVA
- 10:30 [7] **A physical model of the toroidal dipole**
J. Del Carpio Arispe¹, A. Hanelli² and W. Majewski¹
¹Div. of Science, Mathematics & Engineering, NVCC; ²Dept. of Computing & Mathematical Sciences, CIT
- 10:45 BREAK
- 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- AMP-1 **Inductional magnetic levitation**
J. Del Carpio Arispe¹, V. Cordrey², B. S. Murphy³, S. Samiei⁴
and W. Majewski¹
¹Div. of Mathematics, Science & Engineering, NVCC; ²Dept of
Physics, WM; ³Dept. of Computer Science, VT; ⁴Dept of
Physics, UVA
- AMP-2 **Measuring toroidal dipole moment**
J. Del Carpio Arispe¹, A. Hanelli², A. Eshete³ and W. Majewski¹
¹Div. of Mathematics, Science & Engineering, NVCC; ²Dept. of
Computer Science, CIT; ³Dept. Of Engineering, UNT
- AMP-3 **A home run: The acoustic and physical analysis of
wooden baseball bats**
D. E. Holmberg and K. A Pestka II
Dept. of Chemistry & Physics, LWU
- AMP-4 **Using resonant ultrasound spectroscopy to determine
elastic constants of multiple samples of a self-healing
polymer**
J. W Hull and K. A Pestka II
Dept. of Chemistry & Physics, LWU
- AMP-5 **Spider ballooning: Simulating take-off, flight, and settling**
J. Masterson, J. Hines and I. Panayotova
Dept. of Mathematics, CNU
- AMP-6 **The Parker Sochacki Method of Taylor series generation
with apriori error estimates**
J. D. Rudmin
Integrated Science & Technology, JMU
- AMP-7 **Charge density wave energy gap in transition metal
dichalcogenides**
K. Wijayaratne
Dept. of Physics, UVA
-

ORAL PRESENTATION SESSION
2:30 – 4:15 pm
Thursday Afternoon, May 24, 2018
Grainger Hall, Room 114
Thomas Mosca, Presiding

2:30 OPENING REMARKS

2:45 [8] **Kan extensions in classical analysis**

M. Aldi

Dept. of Mathematics & Applied Mathematics, VCU

3:00 [9] *INVITED SPEAKER*

**Applied acoustics: A tale of self-healing polymers, white
dwarf stars, baseball bats and the resonances that bind
them**

K. A. Pestka II

Dept. of Chemistry & Physics, LWU

4:00 CLOSING REMARKS

Astronomy, Math and Physics with Materials Science

Invited Speaker

Grainger Hall, Room 114

3:00 pm

A tale of self-healing polymers, white dwarf stars, baseball bats and the resonances that bind them

Kenneth A. Pestka II
Dept. of Chemistry & Physics
Longwood University



Dr. Pestka's research is at the interface of physical acoustics, astrophysics and material science. Recent research projects include the study of the acoustic and dynamic behavior of wooden baseball bats, elastic and oscillatory properties of crystallized white dwarf stellar cores, characterization of the healing timescales of self-healing thermoplastic ionomers using time dependent resonant ultrasound spectroscopy, determination of acoustic anisotropy within iron-nickel meteorites, and determination of the complete orthorhombic elastic tensor of several recently synthesized rare-earth scandates utilizing ab-initio calculations in combination with resonant ultrasound spectroscopy. He is actively engaged in the development of laboratory activities that utilize every-day materials such as plastic-ware, snack foods, pretzels, popcorn, marshmallows, carrots, celery and others. All of his research projects actively incorporate collaboration with undergraduate students.

Dr. Pestka received his B.S. and M.S. in physics from The University of South Carolina and his Ph.D. in physics from The Pennsylvania State University. He taught at Dalton State College and Rollins College before coming to Longwood University in 2014.

BIOLOGY
with MICROBIOLOGY and MOLECULAR BIOLOGY

Chair: Michael S. Price, LU

Vice Chair: April Wynn, UMW

Secretary: Deborah L. Zies, UMW

Editor: Pei Zhang, LU

Councilor: R. Parrish Waters, UMW

ORAL PRESENTATION SESSION

Thursday, May 24, 2018

8:45 am - noon

Ruffner Hall, Room 250

Deborah Zies, Presiding

8:45 OPENING REMARKS

9:00 [1] **The effects of water stresses on the growth and development of *Arabidopsis thaliana* wild-type versus Val1 mutant**

C. Phillips and E. J. Friedman

Dept. of Biology, LBC

9:15 [2] **The *Cryptococcus neoformans* pyruvate kinase PYK1 influences pathogen interaction with host immunity**

H. E. Philips¹, Y. L. Aviles Morales¹, E. R. Rasmussen¹, E. M. Oglesby¹, L. M. Neal², M. A. Olszewski^{2,3} and M. S. Price^{1,4}

¹Dept. of Biology & Chemistry, LU; ²Dept. of Internal Medicine, UMICH; ³VA Ann Arbor Health System; ⁴Dept. of Medicine, DU

9:30 [3] **CRISPR-Cas9-mediated disruption of the FOXC2 gene in a murine melanoma cell line as a tool for investigating FOXC2 gene targets that promote melanoma progression**

D. Z. Bushhouse and K. M. Hargadon

Dept of Biology, HSC

9:45 [4] **Molecular insights into circadian regulation of p53 tumor suppressor function**

S. K. Jachim, K. H. O'Hern and C. V. Finkielstein

Dept. of Biological Sciences, VT

10:00 BREAK

- 10:15 [5] **The role of QseB in *Francisella tularensis* in IgIC expression**
R. G. Risteen and M. van Hoek
School of Systems Biology, GMU
- 10:30 [6] **Acetylation controls thyroid hormone receptor intracellular localization and intranuclear mobility**
C. Anyetei-Anum and L. Allison
Dept. of Biology, WM
- 10:45 [7] **Social transfer of rewarding information in rats**
J. Grove and R. P. Waters
Dept. of Biological Sciences UMW
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2018-2019 Section Officers will be elected during meeting
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POSTER SESSION
Thursday, May 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- BIOL-1 **Functional analysis of BRD3 bromodomain cancer mutations**
P. Amburgey, M. B. Manchester and E. K. Shanle
Dept. of Biological & Environmental Sciences, LWU
- BIOL-2 **Examining the microbial environment on the shells of American lobsters (*Homarus americanus*) infected with epizootic shell disease**
J. S. Andrews¹, J. D. Shields², P. M. Gillevet³, M. Sikaroodi³
and S. Almeida-Dalmet³
¹School of Systems Biology and ³Dept. of Biology, GMU; ²Dept. of Aquatic Health Sciences, VIMS

- BIOL-3 **Differential expression of developmental and signaling genes between normal chondrocytes and chondrosarcoma cells**
A. Ayaz^{1,2}, C. Osgood¹ and M. Stacey²
¹Dept. of Biological Sciences and ²Frank Reidy Center for Bioelectrics, ODU
- BIOL-4 **Effects of crizotinib and *Ganoderma lucidum* on apoptosis and caspase-3 activation in cultured lung cancer cells**
A. E. Barnett and R. Barra
 Dept. of Biological Sciences, UMW
- BIOL-5 **DNA extraction, amplification, and separation on STR locus D18S51**
M. T. Delacruz¹, T. Dawson Cruz², J. Cox² and H. Wines²
¹JTCC; ²Dept. of Forensic Science, VCU
- BIOL-6 **Phenotypic characterization and spatial and temporal analysis of gene expression of AINTEGUMENTA (ANT) and Early Responsive To Dehydration 10 (ERD10) in *Arabidopsis thaliana***
R. C. Evans and A. N. Wynn
 Dept. of Biological Sciences, UMW
- BIOL-7 **Spatiotemporal expression of SPAG17 Gene during bone development**
G. N. Fajardo Franco¹, J. F. Strauss III² and Maria E. Teves²
¹Div. of Mathematics, Natural & Health Sciences, JTCC; ²Dept. of Obstetrics & Gynecology, VCU
- BIOL-8 **Investigating the effects of cancer mutations on DNA damage response proteins in yeast**
C. Harris and E. K. Shanle
 Dept. of Biological & Environmental Sciences, LWU
- BIOL-9 **The identification of yeast ORFan genes that play a role in DNA repair**
M. E. Hutt, M. N. Tekle and D. L. Zies
 Dept. of Biological Sciences, UMW
- BIOL-10 **Toxicity of SPIONs in an *in vivo* setting**
 M. A. Jensen-Wachspress
 Dept. of Biological Sciences, UMW

- BIOL-11 **Characterization of pH related genes in *Cryptococcus neoformans* using split-marker PCR**
K. I John
Dept. of Biology & Chemistry, LU
- BIOL-12 **Expression and purification of type IV pilin proteins PilA1, PilJ, PilW from *Clostridium difficile***
J. R. Kinsman¹, P. K. Singh² and M. S. Donnenberg²
¹TNCC; ²Dept. of Internal Medicine, VCU
- BIOL-13 **The effects of temperature on phage-bacteria interactions**
J. Knies
Dept. of Molecular Biology & Chemistry, CNU
- BIOL-14 **The effect of *Asimina triloba* extract on quorum sensing in *Chromobacterium violaceum* and biofilm production in *Pseudomonas aeruginosa***
S. Lamont and M. van Hoek
College of Science, GMU
- BIOL-15 **Copper-induced antioxidant gene expression in developing zebrafish embryos**
S. Lilly, W. D. Knight and K. M. Wiens
Program in Neuroscience, CNU
- BIOL-16 **The effect of treatment with ultra-dilute *Phytolacca decandra* on the cellular viability of mouse mammary tumor virus infected cells**
K. E. Littlefield and L. O. Lewis
Dept. of Biological Sciences, UMW
- BIOL-17 **Analysis of effects of exosomes derived from infected monocytes on naïve recipient non-immune cells**
G. A. Matulis
School of Systems Biology, GMU
- BIOL-18 **Integrin expression during sheath cell development in *C. elegans***
C. M. Meighan, E. D. Thornton and S. K. Ho
Dept. of Molecular Biology & Chemistry, CNU

- BIOL-19 **The Effects of curcumin on *Aspergillus flavus*: An opportunistic fungus causing invasive aspergillosis**
R. Nair and M. S. Price
Dept. of Biology & Chemistry, LU
- BIOL-20 **Analysis of protein coding genes in *Pilobolus***
R. Oldridge and D. Beach
Dept. of Biological & Environmental Sciences, LWU
- BIOL-21 **The ability of cognitive exercise to enhance general performance on a cognitive task**
A. Piercy and R. P. Waters
Dept. of Biological Sciences, UMW
- BIOL-22 **Modulatory effect of TGF β -1, using natural language processing software to find potential therapeutic targets for chronic fatigue syndrome**
N. Rahman
School of Systems Biology, GMU
- BIOL-23 **Which way is up? The effects of fluctuating gravitational vectors on *Arabidopsis thaliana* growth and development**
S. Rash and E. J. Friedman
Dept of Biology, LBC
- BIOL-24 ***Wolbachia* infection's influence on population dynamics among tiger beetles**
N. Reigh and E. J. Friedman
Dept of Biology, LBC
- BIOL-25 **Diosmetin isolated from acai berry as a sensitizer to apoptosis in HepG2 cells**
T. E. Siff and G. M. Raner
Dept. of Biology & Chemistry, LU
- BIOL-26 **Enhancing the anti-tumor efficacy of chimeric-PD1 expressing T cells with naturally occurring plant stilbenes**
A. Soles and A. Barber
Dept. of Biological & Environmental Sciences, LWU
- BIOL-27 **Investigating the effects of bromodomain cancer mutations in the activity of p300**
M. St. John and E. K. Shanle
Dept. of Biological & Environmental Sciences, LWU

BIOL-28 **Functionalization of bacterial nano-sized magnetic particles**

D. Trubitsyn, C. R. Hyle and C. P. Williams

Dept. of Biological & Environmental Sciences, LWU

BIOL-28 **Effect of zymosan on mast cell activation**

J. N. Wynn III¹ and D. Straus

¹JTCC; ²Dept. Of Biology, VCU

ORAL PRESENTATION SESSION

Thursday, May 24, 2018

2:15 – 3:45 pm

Ruffner Hall, Room 250

April Wynn, Presiding

2:15 OPENING REMARKS

2:30 [8] **Effects of dietary folate on behavior and gene expression.**

G. D. Isaacs, C. Roberts, C. R. Schreiner and C. G Schreiner
Dept. of Biology & Chemistry, LU

2:45 [9] **Invasive growth response to DNA repair stress in *Saccharomyces cerevisiae* biofilms**

B. N. Hayes, A. R. Hart, S. Y. Scott, C. Smith, I. S. Whilby
and A. Marz

Dept. of Biology, NSU

3:00 [10] **Affinity chromatography and molecular docking model for epinephrine and norepinephrine**

B. N. Heath and M. van Hoek
School of Systems Biology, GMU

3:15 [11] **Glycosylation may affect succinate dehydrogenase activity**

E. Y. Jang and P. Zhang
Dept. of Biology & Chemistry, LU

3:30 CLOSING REMARKS

BIOMEDICAL and GENERAL ENGINEERING

Chair: Seth Weinberg, VCU
Vice Chair: (vacant)
Secretary: Bethany Young, VCU
Editor: Paul A. Wetzel, VCU
Councilor: Thomas Haas, VCU

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8 am - noon

Ruffner Hall, Room 116

Seth Weinberg, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] *KEYNOTE SPEAKER*
Using computational modeling to engineer therapies for tissue regeneration
S. Peirce-Cottler
Dept. of Biomedical Engineering, UVA
- 9:00 [2] **The LINC complex contributes to epithelial acini homeostasis**
V. Narayanan and D. Conway
Dept. of Biomedical Engineering, VCU
- 9:15 [3] **Sodium nanodomain signaling regulates repolarization in cardiac tissue**
M. B. Nowak and S. H. Weinberg
Dept. of Biomedical Engineering, VCU
- 9:30 [4] **Memory influences instabilities in electrical rhythms in a fractional-order cardiomyocyte model**
T. Comlekoglu and S. H. Weinberg
Dept. of Biomedical Engineering, VCU
- 9:45 BREAK
- 10:00 [5] **Influence of heart rate variability on cardiac electromechanical dynamics**
V. M. Phadumdeo and S. H. Weinberg
Dept. of Biomedical Engineering, VCU

- 10:15 [6] **Extracellular matrix stiffness and composition induced mechanotransduction within the airways**
K. Shankar, B. M. Young and R. L. Heise
Dept. of Biomedical Engineering, VCU
- 10:30 [7] **Nanoparticles formed from porcine lung extracellular matrix guide pro-regenerative macrophage phenotype *in vitro* and *in vivo***
A. M. Ritchie, P. A. Link, M. S. Valentine, G. Cotman and R. L. Heise
Dept. of Biomedical Engineering, VCU
- 10:45 [8] BREAK
- 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- BGE-1 **Expediting image analysis for novel biological applications with an automated Matlab algorithm**
W. M. Armstrong and C. A. Miller
Dept. of Engineering, JMU
- BGE-2 **Quantifying F-actin asters with computational techniques**
B. R. Baird and C. A. Miller
Dept. of Engineering, JMU

- BGE-3 Simulation of non-muscle myosin II interactions using the cross-bridge cycle**
E. L. Drummond and C. A. Miller
Dept. of Engineering, JMU
- BGE-4 Porous hydrogel and OTC muscle supplements for muscle regeneration**
K. M. Fischer¹, T. McGaughey¹, M. J. Wolyniak¹ and W. Anderson²
Depts. of ¹Biology and ²Chemistry, HSC
- BGE-5 Using Matlab to quantify extracellular matrix fiber alignment by migrating cells**
C. M. Gatto and C. A. Miller
Dept. of Engineering, JMU
- BGE-6 The effect of cold working on the properties and microstructure of low carbon steel**
C. M. Gatto, R. J. Prins and H. A. Kirkvold
Dept. of Engineering, JMU
- BGE-7 Stretch and stiffness induced senescence in lung epithelial cells**
F. J. Kamga Gnizzeko, M. S. Valentine, S. R. Chindal and R. L. Heise
Dept. of Biomedical Engineering, VCU
- BGE-8 Fibronectin mediates the temporal dependence of TGF- β -induced epithelial-mesenchymal transition**
K. P. Kim, L. Scott and C. Lemmon
Dept. of Biomedical Engineering, VCU
- BGE-9 Western blotting of unfolded protein response components in an inducible cell line model of severe congenital neutropenia**
K. J. Knepp, S. Corey and B. Garg
Div. of Pediatric Hematology, Oncology, & Stem Cell Transplantation, VCU
- BGE-10 Critical parameters in a computational model of TGF-beta-induced epithelial-mesenchymal transition**
M. J. Mendez and S. Weinberg
Dept. of Biomedical Engineering, VCU

- BGE-11 **A 3-D bioprinter system for the picosecond pulsed electric field stimulation of biological materials**
R. A. Petrella¹, P. A. Mollica², M. Zamponi¹, S. Xiao¹, R. D. Bruno² and P. C. Sachs²
¹Dept. of Electrical & Computer Engineering and ²Dept. of Medical Diagnostics & Translational Science, ODU
- BGE-12 **Development and characterization of porcine-derived, brain hydrogels for 3-D neuronal models**
M. Zamponi¹, P. A. Mollica², P. C. Sachs² and R. D. Bruno²
¹Dept. of Electrical & Computer Engineering and ²Dept. of Medical Diagnostics & Translational Science, ODU
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 5 pm
Ruffner Hall, Room 116
Seth Weinberg, Presiding

- 2:15 OPENING REMARKS
- 2:30 [8] **Aging and mechanical stretch influence ATII inflammatory responses, endoplasmic reticulum stress, and bone marrow-derived monocyte migration**
M. Valentine, P. Link, F. Kamga-Gninzeko, M. Parekh, K. Shankar and R. Heise
Dept. of Biomedical Engineering, VCU
- 2:45 [9] **Polymer application on cut-slopes to maintain structural stability**
M. Gilmore^{1,2}, B. Schieber¹, K. Smith¹, A. Hasty¹, J. Hutchens¹, C. Martin², K. Gipson¹ and Y. Admassu²
¹Dept. of Engineering and ²Dept. of Geology & Environmental Science, JMU
- 3:00 [10] **Developing smart surfaces on orthopedic implants based on biomimetic designs**
D. Elliott, B. R. Knouse and R. Dua
Dept. of Chemistry, HSC

- 3:15 [11] **Proximal version estimation without the distal femur**
N. J. Veilleux¹, N. V. Kalore² and J. S. Wayne¹
¹Dept. of Biomedical Engineering and ²Dept. of Orthopaedic Surgery, VCU
- 3:30 BREAK
- 3:45 [12] **Effectiveness of subjective rating of eye tracking tasks in detecting mild traumatic brain injury**
M. A. Kannan and P. A. Wetzel
Dept. of Biomedical Engineering, VCU
- 4:00 [13] **Hip contact stresses during a sit-to-stand transfer**
P. A. Jones, N. J. Veilleux and J. S. Wayne
Dept. of Biomedical Engineering, VCU
- 4:15 [14] **Sandcastle worm inspired bioadhesive for musculoskeletal tissue repair**
P. J. Mollica III and Rupak Dua
Dept. of Chemistry, HSC
- 4:30 [15] **Computational assessment of surgical repairs for Lisfranc injuries**
M. Tyler Perez and J. S. Wayne
Dept. of Biomedical Engineering, VCU
- 4:45 CLOSING REMARKS
-

Biomedical and General Engineering
Keynote Speaker
Ruffner Hall, Room 116
8:15 am

**Using computational modeling to engineer
therapies for tissue regeneration**



Shayn Peirce-Cottler
Dept. of Biomedical Engineering
University of Virginia

Dr. Peirce-Cottler develops and uses computational models, in conjunction with novel experimental assays, to study dynamic and multi-cell biological systems. Her research focuses on understanding how heterogeneous cell behaviors and their interactions enable tissues to adapt over time, during physiological growth and in response to disease. Her multi-scale computational models employ agent-based modeling to bridge protein-level mechanisms with tissue-level function. Her research spans basic science discovery to the design of therapies for regenerative medicine. Specific areas of interest include wound healing and tissue regeneration in the settings of cardiovascular disease, eye disease, and musculoskeletal disease. She received B.S. degrees in Biomedical Engineering and Engineering Mechanics from The Johns Hopkins University in 1997. She earned her Ph.D. in the Department of Biomedical Engineering at the University of Virginia in 2002. Dr. Peirce-Cottler is a past recipient of MIT Technology Review's "TR100 Young Innovator Award" and the National Biomedical Engineering Society's "Rita Schaffer Young Investigator Award". She was elected into the American Institute for Medical and Biological Engineering College of Fellows, and she is currently the President of the Microcirculatory Society.

BOTANY

Chair: Marion B. Lobstein, NVCC
Vice Chair: Joshua A. Kincaid, SU
Secretary: Andrea Weeks, GMU
Editor: (vacant)
Councilor: Woodward S. Bousquet, SU

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8 am - noon

Ruffner Hall, Room 354

Andrea Weeks, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] **The Flora of Virginia Project: A 2017-2018 progress update**
M. B. Lobstein
NVCC
- 8:30 [2] **An update on the SERNEC herbarium digitization project in Virginia**
A. Weeks
Dept. of Biology, GMU
- 8:45 [3] **A new name for JMU's herbarium and an update on its digitization project**
C. K. McMullen
Dept. of Biology, JMU
- 9:00 [4] **The University of Richmond herbarium myxomycete collection**
W. J. Hayden and S. M. Hayden
Dept. of Biology, UR
- 9:15 [5] **Global diversification in the fern genus *Cryptogramma***
J. Metzgar
Massey Herbarium, VT

- 9:30 [6] **Dominant tree species of the Virginia Coastal Plain: 1607 versus today**
S. Ware
Dept. of Biology, WM
- 9:45 [7] **Eastern hemlock (*Tsuga canadensis*) decline and forest dynamics at Shenandoah Retreat, Virginia**
A. Ingle and J. Kincaid
Environmental Studies Program, SU
- 10:00 [8] **The flora of Virginia's newest state park: The Blue Ridge Center for Environmental Stewardship (Purcellville, Loudoun Co.)**
E. K. McMurchie¹ and A. Weeks²
¹School of Systems Biology and ²Dept. of Biology, GMU
- 10:15 [9] **Induction of somatic embryogenesis from leaf and petiole tissues of African violets (*Saintpaulia rupicola* B.L. Burtt)**
T. W. Lowry and M. H. Renfroe
Dept. of Biology, JMU
- 10:30 [10] **Hemp and the politics of agriculture**
M. H. Renfroe
Dept. of Biology, JMU
- 10:45 BREAK
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2018-2019 Section Officers will be elected during meeting
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POSTER SESSION
Thursday Morning and Afternoon, May 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- BOT-1 Influence of pretreatment stress on subsequent responses of cucumber seedlings (*Cucumis sativus*) to allelochemicals**
A. A. Grubb and M.E. Lehman
Dept. of Biological & Environmental Sciences, LWU
- BOT-2 Curation, research, and outreach at Virginia Tech's Massey Herbarium**
J. S. Metzgar
Massey Herbarium, VT
- BOT-3 The effects of competition on growth and reproduction in *Mimulus ringens* L. in wetland mesocosms**
L. D. Williams and C. Ahn
Mathematics, Science & Engineering Div., NVCC
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 3:45 pm
Ruffner Hall, Room 354
Joshua Kincaid, Presiding

- 2:15 OPENING REMARKS
- 2:30 [11] *INVITED SPEAKER*
Agriculture as science: How Virginia crops can be used to investigate fundamental questions of plant biology
A. B. Alerding
Dept. Biology, VMI
- 3:30 CLOSING REMARKS
-

Botany
Invited Speaker
Ruffner Hall, Room 354
2:30 pm

Agriculture as science: How Virginia crops can be used to investigate fundamental questions of plant biology



Anne B. Alerding
Dept. of Biology
Virginia Military Institute

The foundation of Lieutenant Colonel Alerding's research program is its interdisciplinary nature. She is a plant biologist trained in physiological, molecular, ecological, and biochemical techniques and it is the hypothesis that drives her research rather than the organism. Focusing on how plants partition carbon resources acquired by photosynthesis to produce unique chemistries, she has worked on unicellular algae, parsley cells in suspension culture, tobacco, soybean, and the genetic model, *Arabidopsis*. Dr. Alerding's current research involves the development of a genetically modified plant, the Virginia soybean, to produce high seed yield and optimized cell wall biomolecules enabling use of its stem residues as a fuel crop. Her goal is to apply fundamental knowledge about plant chemistry to the genetic engineering of a dual-use food and fuel crop plant to be cultivated on the same plot of land.

CHEMISTRY

Chair: Charles M. Bump, HPU
Vice Chair: Edmund M. N. Ndip, HPU
Secretary: Thomas C. Devore, JMU
Editor: Thomas C. Devore, JMU
Councilor: George C. Grant, TCC

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:15 am - noon

Grainger Hall, Room 101

Thomas DeVore, Presiding

- 8:15 OPENING REMARKS
- 8:30 [1] **Transformation of pine wood biomass into pine 400 biochar and its oxygenation for enhancing cation exchange capacity**
O. Sacko
Dept. of Chemistry & Biochemistry, ODU
- 8:45 [2] **Synthesis and characterization of polyether ether ketone (PEEK) polymer**
R. J. Mingione and R. Dua
Dept. of Chemistry, HSC
- 9:00 [3] **Pentagraphene surface interactions with various liquids**
M. E. Thornton, S. Zamfir, D. Bratko and A. Luzar
Dept. of Chemistry, VCU
- 9:15 [4] **Wetting transparency of conducting graphene**
N. Ojaghlu, D. Bratko and A. Luzar
Dept. of Chemistry, VCU
- 9:30 [5] **Thermal dehydration of sodium and potassium copper oxalate dihydrate**
T. C. DeVore and Isatu Kamara
Dept. of Chemistry & Biochemistry, JMU
- 9:45 BREAK

- 10:00 [6] **(Hyper)polarizabilities: A materials design criterion.**
E. M.N. Ndip
Dept. of Chemistry & Biochemistry, HPU
- 10:15 [7] A quantitative description of interfacial affinity
J. D. Patterson
Dept. of Molecular Biology & Chemistry, CNU
- 10:30 [8] **Comparison of student learning outcomes in traditional general chemistry courses to a blended learning course environment**
M. K. Waddell, B. Young-Gqamana, W. Darby, K. Ghebreyessus and G. Nwokogu
Dept. of Chemistry & Biochemistry, HPU
- 10:45 [9] **Engaging high school students in research**
P. N. Njoki
Dept. of Chemistry & Biochemistry, HPU
- 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- CHEM-1 **Loop dynamics in thyroid hormone activating proteins**
L. G. Brown, J. R. Garcia, E. S. Marsan and C. A. Bayse
Dept. of Chemistry & Biochemistry, ODU
- CHEM-2 **Self defense of *Abies fraseri* via organic secondary metabolites**
T. L. Darnell, L. L. Grochowski and T. C. Durham
School of Natural Science & Mathematics, FC

- CHEM-3 **Thermal and rheometric properties of polymer nanocomposite**
O. N. Goodson¹, M. R. Gilmore², C. Lankford², B. Wendel¹ and K. G. Gipson²
¹Dept. of Chemistry and ²Dept. of Engineering, JMU
- CHEM-4 **Detecting the amino acids in algae using HPLC**
A. O. Moorman, T. E. Walker III and T. Allen
Dept. of Biology & Chemistry, LU
- CHEM-5 **Determining the effect of surface defects on graphene-based electrochemical double-layer capacitors by an electrochemical quartz crystal microbalance study**
A. Rosado Carrion, R. A. Outlaw, D. Premathilake, R. A. Quinlan and A. D. Maeso
Dept. of Molecular Biology & Chemistry, CNU
- CHEM-6 **Comparison of HPLC and GC-MS for analysis of Atrazine**
S. Sooklal and T. M. Allen
Dept. of Biology & Chemistry, LU
- CHEM-7 **Impact of interfacial environment on the properties of nitrate ions**
M. G. Varmecky, E. D. Boycourt and J. D. Patterson
Dept. of Molecular Biology & Chemistry, CNU
- CHEM-8 **Energetics of highly compressed, confined electrolytes**
S. Zamfir, D. Bratko and A. Luzar
Dept. of Chemistry, VCU
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 4:15 pm
Grainger Hall, Room 101
Charles Bump, Presiding

2:15 OPENING REMARKS

- 2:30 [10] **DFT modeling of thione/selone-mediated prevention of biochemical redox damage by Fe(II)**
A. Dreab and C. A. Bayse
Dept. of Chemistry & Biochemistry, ODU
- 2:45 [11] **Investigating the chemistry and biochemistry of ruthenium supramolecular coordination complexes**
F. A. Beckford and M. B. Niece
Dept. of Natural Sciences, UVA-W
- 3:00 [12] **Theoretical study of the inhibition of zinc finger proteins by reducible selenium and sulfur compounds**
P. B. Lutz¹ and C. A. Bayse²
¹Math & Science Dept., RU; ²Dept. of Chemistry & Biochemistry, ODU
- 3:15 [13] **Generalized framework for studying hydrogen bond dynamics**
M. Shafie, D. Bratko and A. Luzar
Dept. of Chemistry, VCU
- 3:30 [14] **Understanding the effect of intramolecular and intermolecular interactions on energetic material sensitivity**
A. L. Shoaf and C. A. Bayse
Dept. of Chemistry & Biochemistry, ODU
- 3:45 [15] **Thermodynamics of esterification**
C. M. Bump, S. N. Chigbu and A. M. Sallee
Dept. of Chemistry & Biochemistry, HPU
- 4:00 [16] **Thiazole orange as an everyday replacemnt for ethidium bromide and costly DMA dyes for electrophoresis**
T. D. Gruber
Dept. of Molecular Biology & Chemistry, CNU
- 4:15 CLOSING REMARKS
-

DATA SCIENCE, COMPUTING & STATISTICS

Chair: Robert M. Marmorstein, LWU

Vice Chair: Bruce Chittenden, HPU

Secretary: Elaine Dietz, HPU

Editor: Yen-Hung Hu, NSU

Councilor: Robert M. Marmorstein, LWU

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

9:15 am - noon

Grainger Hall, Room 218

Robert Marmorstein, Presiding

- 9:15 OPENING REMARKS
- 9:30 [1] **Cyber security in smart cities: Opportunities and challenges**
S. Zehra
Dept of Computer Science, ODU
- 9:45 [2] **Geometric methods in quantum complexity theory**
M. Aldi
Dept. of Mathematics & Applied Mathematics, VCU
- 10:00 [3] **Data mining a complete solution of the game dots and boxes**
T. Percario
Dept of Computer Science, LBC
- 10:15 [4] **A case study of BYOD security platforms assessment**
Y.-H. Hu, N. Mensah and M. A. Hoppa
Dept. of Computer Science, NSU
- 10:30 [5] **A case study of securing modern application architectures**
Y.-H. Hu, L. Winkfield and M. A. Hoppa
Dept. of Computer Science, NSU
- 10:45 BREAK

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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:30 am - noon

Grainger Hall, Room 116

Deborah Neely-Fisher, Presiding

- 8:30 OPENING REMARKS
- 8:45 [1] **Predicting dissertation methodology choice among doctoral candidates at a faith-based university**
K.Y. Michael and R. M. Lunde
School of Education, LU
- 9:00 [2] **Model system for the study of gene expression in the undergraduate laboratory**
K. Hargadon
Dept. of Biology, HSC
- 9:15 [3] **Using hops as a tool to integrate research into the introductory biology classroom**
M. Wolyniak
Dept. of Biology, HSC
- 9:30 [4] **Evaluating the impact of a professional development program, VISTA ELIS and MELIS, on teacher and student learning**
E. W. Edmondson¹ and J. Maeng²
¹VISTA Program, School of Education, VCU; ²Dept. of Curriculum, Instruction & Special Education, Curry School of Education, UVA
- 9:45 [5] **Learning across Virginia**
P. McCallum
Continuing & Professional Education, VT Southwest Center

- 10:00 [6] **Girls in engineering after school program**
D. Marshall and R. Lagresse
Career & Technical Education, Granby High School
- 10:15 [7] **Legacy pedagogy in agriculture education: The liberal arts tradition informs experiential learning**
N. M. Brubaker
Agriculture Program, School of Natural Sciences & Mathematics, FC
- 10:30 [8] **Building bridges across the elementary curriculum using argument driven inquiry**
J. K. Garner
The Center for Education Partnerships, 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 24, 2017
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- EDU-1 **Using undergraduate learning assistants in a flipped introductory biology course to improve student performance**
A. Almeida and S. H. B. Agolini
Biology Dept., MU
- EDU-2 **Legacy pedagogy in agriculture education: The liberal arts tradition informs experiential learning, student perspective**
E. Bucklew, C. Blankenship and N. M. Brubaker
School Natural Sciences & Mathematics, FC

EDU-3 **"Harry Potter" as a method of inspiring interest in and introducing basic science and chemistry to young audiences**

J. D. Powell, J. C. Sanders, L. L. Grochowski and M. A. Puccio
School Natural Sciences & Mathematics, FC

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 4:30 pm
Grainger Hall, Room 116
Carleitta Page-Anderson, Presiding

2:15 OPENING REMARKS

2:30 [9] *CODAP WORKSHOP*
Using databases and CODAP to conduct research
V. Lewis
Dept. of Mathematics & Computer Science, LWU

3:45 [10] *INVITED SPEAKER*
Age of innovation: Methodologies in finding solutions for tomorrow's needs, today
V. Williams
da Vinci Center, VCU

4:15 CLOSING REMARKS

Education
CODAP Workshop
Grainger Hall, Room 116
2:30 pm

***Using databases and CODAP to conduct
research***



Virginia Lewis
Dept. of Math & Computer Science
Longwood University

Dr. Lewis is both a professor of mathematics education at Longwood University and an alumna, having earned her B.S. in mathematics in 1992. She earned a Ph.D. in mathematics education from the University of Virginia and has been sharing her passion for mathematics with students at Longwood since 2003. Dr. Lewis is active in the Virginia Council of Teachers of Mathematics and the National Council of Teachers of Mathematics. Her real life experience, teaching mathematics at the middle school and high school level, provides her students with invaluable examples from the classroom. She was a Principal Investigator on a Mathematics and Science Partnership Grant and has co-authored two STEM textbooks, *STEM Research for Students Volume 1: Understanding Scientific Experimentation, Engineering Design, and Mathematical Relationships* and *STEM Research for Students Volume 2: Creating Effective Science Experiments, Engineering Designs, and Mathematical Investigations*. Her co-authors are Julia Cothron, Ronald Giese, Richard Rezba and Paula Klonowski Leach.

Education
INVITED SPEAKER
Grainger Hall, Room 116
3:45 pm

Age of innovation: Methodologies in finding solutions for tomorrow's needs, today



Vida Williams
Innovator in Residence, da Vinci Center
Virginia Commonwealth University
&
Founder and Managing Partner
The Axis Partners, Inc.

Ms. Williams is the first “Innovator in Residence” at the da Vinci Center at VCU. In 2013 she founded and is the managing partner of Axis Partners, Inc., a company that helps businesses, industry, non-profits and others make good decisions based on their data. She graduated from Duke University with an AB degree in English and History, has taught web development and database design at Reynolds Community College and has taught at Duke University. Her work history includes an interesting list of STEM based companies, including the EPA, Health Diagnostic Laboratory, Inc., Alstom Energy and B2B Solutions. She is a VCU faculty sponsor of Full STEAM Ahead, a non-profit organization that empowers young women to engage in Computer Science and STEM activities. Ms. Williams serves on the board of Virginia Union’s Center for Undergraduate Research, the Podium Foundation and CodeVa. She founded HacktasticRVA and the Innovation Education Project in 2014 to provide urban youth with access to the entrepreneurial world of innovation. Clearly, Ms. Williams is using her talent and passion for technology and data driven decision-making to make a difference, especially in STEM education in Virginia.

ENTOMOLOGY

Chair: Kal Ivanov, VMNH

Vice-Chair: Girish Neelakanta, ODU

Secretary: Hameeda Sultana, ODU

Co-Editors: Nicole Quinn, VT

Co-Councilors: Thomas P. Kuhar, VT

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:45 am - noon

Ruffner Hall, Room 356

Hameeda Sultana, Presiding

8:00 OPENING REMARKS

8:15 [1] *INVITED SPEAKER*

Unseen forces: Nocturnal and olfactory influence on insect biocontrol and behavior

D. C. Weber

Insect Biocontrol & Behavior Laboratory, USDA ARS

9:15 [2] **Overwintering mechanisms of La Crosse virus vectors**

J. E. Bova and S. L. Paulson

Dept. of Entomology, VT

9:30 [3] **Zika virus modulates arthropod histone methylation in mosquito cells**

T. Harrell¹ and G. Neelakanta^{1,2}

¹Dept. of Biological Sciences and ²Center for Molecular Medicine, ODU

9:45 BREAK

10:00 [4] **Arthropod exosomes as means of viral transmission**

H. Sultana

Dept. of Biological Sciences, ODU

10:15 [5] ***Anaplasma phagocytophilum* modulates tick oxidative phosphorylation pathways**

D. Tiznad and H. Sultana

Dept. of Biological Sciences, ODU

- 10:30 [6] ***Ixodes scapularis* Src kinase is required for rickettsial pathogen survival**
J. W. Turck and H. Sultana
Dept. of Biological Sciences, ODU
- 10:45 [7] **Modulation of vector host cell signaling by pathogens**
G. Neelakanta
Center for Molecular Medicine & 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- ENT-1 **Effects of virus infection of repellent response in *Aedes* mosquitoes**
K. Chan and S. Paulson
Dept. of Entomology, VT
- ENT-2 **The Ants of Virginia Project**
K. Ivanov, L. Hightower and J. B. Keiper
Recent Invertebrates, VMNH
- ENT-3 **Efficacy of Apritone repellent on *Halyomorpha halys***
M. K. Pagani, H. G. Bush and T. P. Kuhar
Dept. of Entomology, VT
- ENT-4 **Sugars and carbohydrates in diapause and nondiapause induced Asian tiger mosquito (*Aedes albopictus*) eggs**
S. C. Turner and J. E. Bova
Dept. of Entomology, VT
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 4:00 pm
Ruffner Hall, Room 356
Kal Ivanov, Presiding

- 2:15 OPENING REMARKS
- 2:30 [8] **The efficacy of non-registered mosquito repellents on *Aedes albopictus***
 J. A. Carver, J. Bova and S. Paulson
 Dept. of Entomology, VT
- 2:45 [9] **Assessing the importance of soldier beetles (*Chauliognathus* spp.) as predators in Southwest Virginia agricultural systems**
 K. A. Catron and T. P. Kuhar
 Dept. of Entomology, VT
- 3:00 [10] **Survivorship of brown marmorated stink bug on select vegetables under laboratory conditions**
 A. J. Formella and T. P. Kuhar
 Dept. of Entomology, VT
- 3:15 [11] Assessing insect pest pressure on industrial hemp in Virginia
 K. E. Britt and T. P. Kuhar
 Dept. of Entomology, VT
- 3:30 [12] **Communicating the science of entomology through social media**
 J. E. Bova
 Dept. of Entomology, VT
- 3:45 CLOSING REMARKS
-

Entomology
Invited Speaker
Ruffner Hall, Room 356
8:15 am

**Unseen forces: Nocturnal and olfactory
influence on insect biocontrol and behavior**



Donald C. Weber
**Insect Biocontrol &
Behavior Laboratory**
**USDA Agricultural
Research Service**

Dr. Weber grew up in northern VA with a knowledge of plants, insects and birds imparted by Burgundy Wildlife Camp. After obtaining his B.A. in Biology at Williams College, and M.S. in Entomology at UC Berkeley with research on cole crop pests, he pursued his interest in fruit and vegetable integrated pest management. For his Ph.D. he researched the biology and dispersal of the notorious Colorado potato beetle. After a stint in Zurich at the Swiss Federal Institute of Technology, Dr. Weber joined Ocean Spray Cranberries, a grower-owned cooperative in six US states and two Canadian provinces. The thrust of his research there was to develop environmentally-friendly strategies for the diverse pest complex of cranberries in all growing regions. In 2002, Dr. Weber joined the Invasive Insect Biocontrol & Behavior Laboratory of USDA's Agricultural Research Service in Beltsville, MD, as Research Entomologist. His lab researches non-pesticidal alternatives such as natural enemies and pheromones for major vegetable pests, especially beetles and true bugs. He is Lead Scientist for the current 5-year project on insect pests of small farms and urban gardens, with emphasis on cole crops and cucurbits. Recent research led to discovery of aggregation pheromones and other attractants for brown marmorated stink bug as well as harlequin bug, a serious cole crop pest, and discovery of a new egg parasitoid for brown marmorated stink bug in North America. His current professional activities include: Chair of Northeast Sustainable Agriculture Research and Education Administrative Council; President of Eastern Branch, Entomological Society of America; and Past President of Nearctic Regional Section, International Organization for Biological Control.

ENVIRONMENTAL SCIENCE

Chair: Michael L. Bass, UMW
Vice-Chair: James Haluska, ODU
Secretary: Christopher Labosier, LWU
Editor: (vacant)
Councilor: Richard S. Groover, RNCC

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:00 am - noon

Ruffner Hall, Room 254

Michael Bass, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] **A case of Appalachian endemism: Revision of the *Cambarus robustus* complex (Decapoda: Cambaridae) in the Kentucky and Licking River basins of Kentucky, USA, with the description of three new species**
S. Henkanathgedara¹, Z. Loughman², J. Fetzner³ and R. Thoma⁴
¹Dept. of Biological & Environmental Sciences, LWU; ²Dept. of Natural Sciences & Mathematics, WLBU; ³Section of Invertebrate Zoology, CMNH; ⁴MBI
- 8:30 [2] **Could Smith Mountain Lake be a suitable home for zebra mussels?**
N.R. Blankenship, K. Haley, M.P. Puccio and D.R. Heck
School of Natural Sciences & Mathematics, FC
- 8:45 [3] **Low level Atrazine exposure effects on crayfish development**
N. Chandler, M. Lecher, A. Minuto, S. Owens, A. Suttle, C. Williams, A. Reddy, S. Sookal and K.J. Harris
Dept. of Biology & Chemistry, LU
- 9:00 [4] **Murky Waters: Shifts in the nutrient-color status of lakes across the U.S. and the effect on food web structure**
D. M. Leech¹, A.I. Pollard², S.G. Labou³ and S.E. Hampton³
¹Dept. of Biological & Environmental Sciences, LWU; ²Office of Water, US EPA; ³Center for Environmental Research, Education, & Outreach, WSU

- 9:15 [5] **Dissolved organic matter flocculation in coastal streams and its effects on water quality**
K. E. Plucinski and D. M. Leech
Dept. of Biological & Environmental Sciences, LWU
- 9:30 [6] **Presence of endocrine disruptors in tidal embayments of the Potomac River**
M. Cagle
Dept. of Biology, GMU
- 9:45 [7] **Quantitative evaluation of *Clinostomum marginatum* encystment in the fish host (*Perca flavescens*) and its impact on host locomotor performance.**
T. Maie and E. Morris
Dept. of Biology, LBC
- 10:00 [8] **Post production surface oxygenation of hydrothermal biochar from un-hydrolyzed corn stover residue for soil amendment purposes**
O. Sacko
Dept. of Chemistry & Biochemistry, ODU
- 10:15 [9] **Assessing the accuracy of student phenological data collection**
A. C. Garretson, R. Forkner and L. Crerar
Dept. of Biology, GMU
- 10:30 [10] *INVITED SPEAKER*
Climate Change Impact on Virginia
R. S. Groover
School of Science, Mathematics & Engineering, RNCC
- 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- ENV-1 **Community structure and succession of vernal pool organisms at High Bridge Trail State Park**
V. Acosta, W. Kish and S. Henkanaththehedara
Dept. of Biological & Environmental Sciences, LWU
- ENV-2 **Rates of sea level rise along the United States East Coast**
J. N. Beckman and J. E. Garcia
Dept. of Biological & Environmental Sciences, LWU
- ENV-3 **Longterm trends of fecal coliform concentrations in streams of the Upper Appomattox River Watershed**
C. L. Dove and D. M Leech
Dept. of Biological & Environmental Sciences, LWU
- ENV-4 **Diversity and activity patterns of pollinators in a suburban flood plain in Virginia**
S. Elsagr, R. Haboush, N. Copenhaver and S.
Henkanaththehedara
Dept. of Biological & Environmental Sciences, LWU
- ENV-5 **Comparing circular and linear model estimation of the autumn onset date for red maples (*Acer rubrum*)**
A. C. Garretson and R. Forkner
Dept. of Biology, GMU
- ENV-6 **Hidden spiders: The diversity and distribution of spiders in a suburban landscape in Virginia**
W. Kish, M. Pagliuca and S. Henkanaththehedara
Dept. of Biological & Environmental Sciences, LWU

- ENV-7 **A survey of diversity and community structure of reptiles and amphibians in Longwood University**
C. Milliron, M. Pagliuca and S. Henkanaththegedara
Dept. of Biological & Environmental Sciences, LWU
- ENV-8 **Observing the air quality index (AQI) during periods of extreme heat**
D. Tennis and C. F. Labosier
Dept. of Biological & Environmental Sciences, LWU
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 4:30 pm
Ruffner Hall, Room 254
Michael Bass, Presiding

- 2:15 OPENING REMARKS
- 2:30 [11] **Empirical orthogonal function analysis of ocean shoreline and inlet change along the Virginia barrier islands**
J. D. Haluska
Dept. of Ocean, Earth & Atmospheric Science, ODU
- 2:45 [12] **Improving soil respiration estimates in restored peatlands by excluding root respiration.**
L. J. Sharrett, C. G. Mirda, K. N. Napora and R. B. Atkinson
Dept. of Organismal & Environmental Biology, CNU
- 3:00 [13] **Analyzing litterfall for an estimation of carbon capture in restored peatlands**
J. M. Doyle, C. G. Mirda and R. B. Atkinson
Dept. of Organismal & Environmental Biology, CNU
- 3:15 [14] **Designing artificial seagrass for use in restoration projects**
T. A. Cobb-Davis¹ and S. L. Sojka^{1,2}
¹Dept. of Environmental Studies and ²Dept. of Physics, RDC

- 3:30 [15] **Assessing and communicating the Richmond, VA area urban heat island effect to the public and policymakers**
J. S. Hoffman¹, E. G. Maurakis¹, V. Shandas², J. Voelkel³, J. Salamy⁴, T. Lookingbill⁴, A. Zlatos⁵, K. Norrell⁶, G. Harnsberger⁶ and S. S. Fong⁷
¹Experience Development, SMV; ²Sustaining Urban Places Research Laboratory and ³Dept. of Geography, PSU; ⁴Spatial Analysis Lab, UR; ⁵Office of Sustainability, City of Richmond; ⁶GroundworkRVA; ⁷School of Engineering Sustainability Lab, VCU
- 3:45 [16] **Using student volunteers to study forest succession**
S. L. Sojka¹, R. D. McDonald¹ and A. S. Umberger^{1,2}
¹Dept. of Environmental Studies and Dept. of Physics, RDC; ²Connelly School of the Holy Child
- 4:00 [17] **Evaluation of agonistic interactions between native and invasive crayfish using a novel method**
E. Lewis, B. Jackson and S. Henkanaththegedera
Dept. of Biological & Environmental Sciences, LWU
- 4:15 CLOSING REMARKS
-

Environmental Science
Invited Speaker
Ruffner Hall, Room 254
10:30 am

Climate change impact on Virginia



Richard S. Groover
School of Math, Science and Engineering
Reynolds Community College

Professor Groover has a Ph.D. in Environmental Science & Public Policy from George Mason University, with interest in aquatic ecology and dragonfly behavior. At Reynolds Community College he serves as Assistant Dean of the School of Math, Science and Engineering. He is a Fellow of the Virginia Academy of Science and served as a member of the Governor's Climate Change and Resiliency Update Commission, 2014-2015. Dr. Groover is currently on the Board of Trustees for the Science Museum of Virginia and the Virginia Association for Environmental Education. He is the author of *The Environmental Almanac of Virginia*, 2nd edition.

MEDICAL SCIENCES

Chair: Nehru Viji Sankaranarayanan, VCU
Vice Chair: Kathryn Schwienteck, VCU
Secretary: S. Lauren Kyte, VCU
Editor: Ryan Mischel, VCU
Councilor: (vacant)

ORAL PRESENTATION SESSION
Thursday Morning, May 24, 2018
9:30 am - noon
Ruffner Hall, Room 108
Nehru Sankaranarayanan, Presiding

- 9:30 OPENING REMARKS
- 9:45 [1] **FOXC2 regulates expression of the integrins ITGa5 and ITGa9 in melanoma**
C. J. Williams and K. M. Hargadon
Dept. of Biology, HSC
- 10:00 [2] **FOXC2 is a key regulator of melanoma cell adhesion to the extracellular matrix and lymphatic endothelial cells**
C. E. Johnson and K. M. Hargadon
Dept. of Biology, HSC
- 10:15 [3] **Activity, stability and structural studies of G2.2, a small molecule selective inhibitor of cancer stem cells**
S. Morla¹, E. Abdelfadei², D. K. Afosah² and U. R. Desai²
¹Dept. of Medicinal Chemistry and ²Dept. of Biochemistry & Molecular Biology, VCU
- 10:30 [4] **Enzymology and inhibition studies of the L205R mutant of cAMP-dependent protein kinase**
N. Luzi
Dept. of Medicinal Chemistry, VCU
- 10:45 [5] **Gene co-expression in young versus old mouse CD3+ splenocytes: A network approach**
M. L. Mair and T. M. Witten
Center for the Study of Biological Complexity, VCU

- 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 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- MED-1 **Caffeine and altitude affect cardiac autonomic regulation**
M. Broussard, B. Kalu, K. A. Mitchell, M. F. Lazenka and V. Madzinge
Dept. of Biology & Chemistry. LU
- MED-2 **Visceral adiposity: A potential predictor of cerebral blood flow and cerebrovascular accidents**
L. A. Hall, B. Kalu, M. F. Lazenka and K. A. Mitchell
Dept. of Biology & Chemistry. LU
- MED-3 **Effects of Red Bull consumption on common carotid artery blood flow**
K. Khanna, B. Kalu, M. Lazenka and K. Mitchell
Dept. of Biology & Chemistry. LU
- MED-4 **Development of protein degradation probes (PROTACs) for mis-regulated isoforms of PKACA**
N. Luzi and K. C. Ellis
Dept. of Medicinal Chemistry, VCU
- MED-5 **The impact of chronic adolescent stress on the adult stress response**
J. Ninkundiye¹, M. M. Hyer², S. Rowson³, M. Bekhbat³ and G. N. Neigh²
¹TNCC; ²Dept. of Anatomy & Neurobiology, VCU; ³Neuroscience Graduate Program, EU

- MED-6 **Electroencephalographic evaluation of the effects of caffeine on the frequency and power of alpha brain waves**
J. G. Park, K. Mitchell, M. Lazenka and B. Kalu
Dept. of Biology & Chemistry, LU
- MED-6 **Modeling the interaction of f-actin filaments**
M. A. Riddle and C. A. Johnson
Dept. of Engineering, JMU
- MED-7 **Role of epigenetic remodeling in sensitizing triple-negative breast cancer cells to treatment through enhanced chemotherapy-induced autophagy**
L. Tyutyunyk¹ and J. Landry²
¹Dept. of Pharmacology & Toxicology and ²Dept. of Human Genetics, VCU
-

ORAL PRESENTATION SESSION
Thursday Afternoon, May 24, 2018
2:15 – 5 pm
Ruffner Hall, Room 108
Kathryn Schwientek, Presiding

- 2:15 OPENING REMARKS
- 2:30 [6] **Body fat composition predicts anaerobic exercise performance**
A. Medero, K. Mitchell, M. Lazenka and B. Kalu
Dept. of Biology & Chemistry, LU
- 2:45 [7] **Correlation between body muscle composition and power, fatigue and cadence produced during the Wingate anaerobic test**
E. Pocius, K. Mitchell, M. Lazenka and B. Kalu
Dept. of Biology & Chemistry, LU
- 3:00 [8] **Effects of caffeine consumption on anaerobic exercise performance utilizing the Wingate test**
J. Ibanez, K. Mitchell, M. Lazenka and B. Kalu
Dept. of Biology & Chemistry, LU

3:15 [9] **Role of mu-opioid receptor agonist efficacy on antinociceptive interactions between mu-opioid agonists and the nociceptin/orphanin FQ agonist Ro 64-6198 in rhesus monkeys.**

J. C. Cornelissen, F. F. Steele and M. L. Banks
Dept. of Pharmacology & Toxicology, VCU

3:30 CLOSING REMARKS

NATURAL HISTORY and BIODIVERSITY

Chair: Nancy D. Moncrief, VMNH
Vice Chair: Brooke Hair, LBC
Secretary: Kimberly J. Bolyard, BC
Editor: Ralph Eckerlin, NVCC
Councilor: Alan B. Griffith, UMW

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

8:30 am - noon

Ruffner Hall, Room 352

Nancy Moncrief, Presiding

- 8:30 OPENING REMARKS
- 8:45 [1] **Using GIS to map multiple years of excavation at the Two Sisters Quarry, a Jurassic dinosaur deposit in the Morrison Formation of Wyoming**
N. Romine and B. Haiar
Dept. of Environmental Sciences, Studies & Sustainability, LBC
- 9:00 [2] **Functional correlation between predator escape performance and material properties of the vertebrae in yellow perch, *Perca flavescens* (Pisces: Percidae): Intraspecific divergence in functional design**
T. Maie
Dept. of Environmental Sciences, Studies & Sustainability, LBC
- 9:15 [3] **Mergence of alternative male morphotypes in bluegill sunfish (*Lepomis macrochirus*) masks differences in parasitism**
C. E. Ashworth
Dept. of Biology, SU
- 9:30 [4] **Phenotypic differences in thermal resilience of corals across time and space**
H. A. Hancock and D. J. Barshis
Dept. of Biological Sciences, ODU
- 9:45 BREAK

- 10:00 [5] **Small mammal parasites from Maine**
R. P. Eckerlin
Div. of Mathematics, Science & Engineering., NOVA
- 10:15 [6] **A stream continuum analysis of bacteria community assembly in association with crayfish and their symbionts**
M. Cooke, L. Fischer, K. Bohrnstedt, T. Kepler, H. A. Van Dorp and K.J. Harris
Dept. of Biology & Chemistry, LU
- 10:30 [7] *INVITED SPEAKER*
Surveillance of fungal and viral pathogens in Virginia herpetofauna
R. Goodman
Dept. of Biology, HSC
- 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
Friday Morning and Afternoon, May 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

NHB-1 Pen trial of estrogen-induced egg aversion in raccoons
(*Procyon lotor*)

N. D. Moncrief¹, R. D. Dueser² and J. D. Martin³

¹VMNH; ²Dept. of Environmental Sciences, UVA; ³Dept. of
Wildland Resources, USU

NHB-2 Microhabitat preferences of orb-weaver spiders on ant-
defended acacias reflect an ontogenetic shift in spider
coloration

J. D. Styrsky and H. Wolfe

Dept. of Biology, LBC

Natural History and Biodiversity
Invited Speaker
Ruffner Hall, Room 352
10:30 am

Surveillance of fungal and viral pathogens in Virginia herpetofauna



Rachel M. Goodman
Dept. of Biology
Hampden-Sydney College

Dr. Goodman received her B.A. in Environmental Biology from Columbia University and her M.Sc. and Ph.D. in Ecology and Evolutionary Biology from University of Tennessee, Knoxville. Her research over the years has focused on ecology, behavior and conservation of reptiles, including an endangered Caribbean iguana and the widespread North American green anole lizard. Since arriving at H-SC, she has been working on surveillance of two emerging infectious diseases – ranaviruses and the fungus *Batrachochytrium dendrobatidis* – in reptiles and amphibians in Virginia and Hawaii. Dr. Goodman serves as Secretary-Treasurer for the Virginia Natural History Society and is an advisor to the Virginia Herpetological Society. As Coordinator for the Environmental Studies program at H-SC, she has been involved with the development of a campus recycling program and organized numerous environmental service events on campus and in the community.

PSYCHOLOGY

Chair: Hilary Stebbins, UMW
Vice Chair: (vacant)
Secretary: Amy Coren, NVCC
Editor: (vacant)
Councilor: (vacant)

ORAL PRESENTATION SESSION

Thursday Morning, May 24, 2018

9:15 am - noon

Grainger Hall, Room 2016

Amy Coren, Presiding

- 9:15 OPENING REMARKS
- 9:30 [1] **The difference between high and low achieving STEM students in personal factors that influence academic behaviors**
V. E. Davis
Dept. of Psychology, VSU
- 9:45 [2] **The connection between organization affiliation, trait forgiveness, and the development of other positive attributes**
T. Yusuf, S. Wilkins, D. Vavra and C. Nonterah
Dept. of Psychology, UR
- 10:00 [3] **Efficacy of aquatic therapy techniques in reduction of anxiety in autistic versus non-autistic children**
L. Sparrock
Dept. of Psychology, LWU
- 10:15 [4] **Social support effects on successful navigation of the kidney transplant evaluation**
S. Wilkins, T. Yusuf, D. Vavra and C. Nonterah
Dept. of Psychology, UR
- 10:30 [5] **Personal beliefs about the effectiveness of a primary seat belt law in Virginia versus North Carolina**
R. Rushlow
Dept. of Psychology, ODU

- 10:45 BREAK
- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
2018-2019 Section Officers will be elected during meeting
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POSTER SESSION
Thursday Morning and Afternoon, May 24, 2018
10 am – 5 pm
Maugans Alumni Center
Blackwell Ballroom (104)

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

- PSY-1 **The effects of priming and source type on the believability and recognition of media headlines**
H. E. Brown and J. A. Gibbons
Dept. of Psychology, CNU
- PSY-2 **The effect of stress on learning in the open-field tower maze throughout the estrous cycle in the rat**
A. Cooper and O. Lipatova
Dept. of Psychology, CNU
- PSY-3 **The efficacy of a near peer non-academic intervention for STEM students at a HBCU**
V. E. Davis
Dept. of Psychology, VSU
- PSY-4 **Predictors of bicycle helmet use among a sample of college students**
H. A. Leon and B. E. Porter
Dept. of Psychology, ODU
- PSY-5 **Internalized sexual stigma**
M. Padilla, S. Daniszewski, A. Deshpande, L. Runion, J. Burgess and S. Sabo
Dept. of Psychology, ODU

PSY-6 **Stress-induced modulation of brain dopamine and serotonin receptor expression in male and female rats**
J. A. Picone, W. D. Knight, J. S. Boles and O. Lipatova
Program in Neuroscience, CNU

PSY-7 **Examining impact of automated vehicle control on simulator sickness**
V. Vasquez¹, N. Hatfield¹, Y. Yamani¹ and S. Samuel²
¹Dept. of Psychology, ODU; ²Dept. of Systems Design Engineering, UW

STRUCTURAL BIOLOGY, BIOCHEMISTRY and BIOPHYSICS

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

ORAL PRESENTATION SESSION Thursday Morning, May 24, 2018 8 am - noon Grainger Hall, Room 207 Ancha Baranova, Presiding

- 8:00 OPENING REMARKS
- 8:15 [1] **Synthesis, optimization, and bioconjugation of electrochemically synthesized magnetic nanoparticles to induce irreversible damage to glioblastoma invasive rim**
M. Tovar
Dept. of Chemistry, UMW
- 8:30 [2] **Prenylated products of the physiological digestion of human proteins as a novel class of natural modified peptides**
A. Randhawa¹, W. Ravich¹, A.Bragin², B.Eisenhaber³,
F.Eisenhaber³, E.Marakasova¹ and A.Baranova^{1,4}
¹School of Systems Biology, GMU; ²Institute of Cytology & Genetics, Siberian Dept. of Russian Academy of Sciences;
³Bioinformatics Institute, Agency for Science, Technology & Research (A*STAR); ⁴Research Centre for Medical Genetics
- 8:45 [3] **Folding of the intrinsically disordered Par-4 tumor suppressor and its role in cisplatin treatment of cancer**
A. Korell
Dept. of Chemistry & Biochemistry, ODU
- 9:00 [4] **Molecular basis of ligand binding by the endosomal adaptor protein Tom1**
W. Xiong
Dept. of Biological Sciences, VT

- 9:15 [5] **The role of Phafin2 in autophagy**
T.Tang
Dept. of Biological Sciences, VT
- 9:30 [6] **Persistence of key long-range interactions during GB1 unfolding simulations**
J. Bedford, J. Poutsma and L. Greene
Dept. of Chemistry & Biochemistry, ODU
- 9:45 [7] **Design of a disabled-2 derived peptide to impair platelet-mediated cancer cell extravasation**
W. Song, A. Biscardi, D. Capelluto and C. Finkielstein
Dept. of Biological Sciences, VT
- 10:00 [8] **Computational study of asparagine 79 in ubiquitin conjugating enzyme, UBC13**
K. Elliott and I. Sumner
Dept. of Chemistry & Biochemistry JMU
- 10:15 [9] **Desmoplakin AC mutations' effect on structure and stability of its NH2-terminus**
T. Albertelli¹, H. Manring², S. Campbell³, M. Ackermann² and N. Wright¹
¹Dept. of Chemistry & Biochemistry, JMU; ²Dept. of Physiology & Cell Biology, OSU; ³Department of Biomedical Engineering, YU
- 10:30 [10] **Experimental and computational studies of obscurin's flexibility**
J. Whitley, D. R. Marzolf, O. Kokhan and N. T. Wright
Dept. of Chemistry & Biochemistry JMU
- 10:45 [11] **Inclusion of α -methyl amino acid residues in apoA-I mimetic peptide improves helicity, cholesterol efflux and increases resistance to proteolysis**
R. Islam, S. Drake, G. Abdoulaeva, D. Sviridov, S. Gordon and A. Remaley
School of Systems Biology, GMU

- 11:00 **VIRGINIA JUNIOR ACADEMY OF SCIENCE AWARD PAPERS**
- 11:30 **SECTION BUSINESS MEETING**
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POSTER SESSION
Thursday Morning and Afternoon, May 24, 2018
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Blackwell Ballroom (104)

Poster authors will be present from noon - 2 pm
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- SBBB-1 **Investigating mutations that affect the function of BRD3 in cancer cells**
P. Amburgey, M. B. Manchester and E. K. Shanle
Dept. of Biological & Environmental Sciences, LWU
- SBBB-2 **Investigation of the reusability of affinity surfaces for cell capture and analysis**
E. Hurwitz and R. D. Reif
Dept. of Chemistry, UMW
- SBBB-3 **Optimization of RNA purification for RNA SELEX**
K. McFarland, N. Rothmann and R. D. Reif
Dept. of Chemistry, UMW
- SBBB-4 ***In silico* modeling of the effects of human single nucleotide polymorphisms on tetherin structure**
I. R. Roy¹, C. K. Sutton² and C. E. Berndsen³
¹Dept. of Health Sciences & Health Professions, ²Dept. of Kinesiology and ³Dept. of Chemistry & Biochemistry, JMU
- SBBB-5 **19F NMR of HDAC8 activity with inhibition**
S. Schell and K. E. Cole
Dept. of Molecular Biology & Chemistry, CNU

SBBB-6 Elucidation of HDAC8-depsiptide binding using molecular modeling

J. Sivak and K. E. Cole

Dept. of Molecular Biology & Chemistry, CNU

SBBB-7 Comparing the temporal dynamics of caspase activity between different induction pathways

C. Zwemer, S. Morris and R. D. Reif

Dept. of Chemistry, UMW

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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 96th Annual Meeting and of the 77th 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 2019 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, 2018. 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, 2018.

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 2019 Annual Meeting. **Nomination letters, with adequate supporting information, must be received by the Executive Officer no later than October 1, 2018.** 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, 2018.

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 Sujan Henkanaththegedara at henkanaththegedaram@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 2017 Fall Undergraduate Research Meeting at Hampden-Sydney College will be presenting the results of their research projects at this year's VAS Annual Meeting at Longwood University. Guidelines for the 2018 Fall Meeting (to be held at Ferrum College on November 3) 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.

To Create an Endowment or Make a Donation, please contact Philip M. Sheridan, Executive Officer, Virginia Academy of Science at psheridan@vacadsci.org or 804-864-1451.

For Information and Applications for Research Grants, please contact Philip Sheridan, Executive Officer, Virginia Academy of Science at psheridan@vacadsci.org or 804-864-1451.

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
Longwood University Campus Information

Campus Map:

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

<https://www.longwood.edu/media/top-tier/spring-2017-Campus-Map-Master.pdf>

Driving Directions:

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

<http://www.longwood.edu/about/directions/>

Parking Information:

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

<https://static.longwoodlancers.com/custompages/mbasket/2016-17/ParkingMap16.pdf>

All meeting attendees (including observers/guests) should park in the **Wynne** lot (the large lot labelled Wynne tiers & colored-coded light orange) located on the right side of the map.

Most campus parking lots include some handicapped parking spaces. These spaces are available to those attendees with the appropriate DMV handicap parking permit/hang tag.

Location of Meeting Events:

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

Chichester Science Center (#15)

Dorrill Dining Hall (#28)

Grainger Hall (#12)

Hiner Hall (#21)

Jarman Hall (#14)

Lankford Student Union (#30)

Maugans Alumni Center (#11)

Ruffner Hall (#19)

Willett Hall (#38)



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Founded the Science Museum of Virginia ... With the Garden Clubs of Virginia, established the Virginia State Parks System ... Established, with the early support of the DuPont family, the first Scientific Research Fund in Virginia ... Founded the Virginia Institute for Scientific Research (erected at the University of Richmond), the forerunner of Virginia Centers for Innovative Technology, funded by the Virginia General Assembly ... Founded The Virginia Junior Academy of Science to foster original research in Virginia middle and high schools ... Published the Flora of Richmond and Its Vicinity ... Leaders' testimony at the Scopes Trial and later resolutions on evolution and its teaching in science curricula of Virginia schools ... Advocated inclusion of women and African-American scientists and science educators in professional meetings ... Founded the Virginia Journal of Science ... Hundreds of teacher education and training programs in the sciences, mathematics, medicine, and technology ... Established the Kiser Fund for Science Teacher Education ... Published The James River Basin: Past, Present, and Future, funded by the Virginia General Assembly, the first comprehensive, multidisciplinary account of the James and its resources, landforms, flora, fauna, industries and businesses ... Established the VJAS Research Fund to support scientific investigations by Virginia's secondary school students ... Annually sponsors "The VJAS Experience" bringing hundreds of secondary students to Virginia colleges and universities to stay on campus and visit research facilities ... Founded the Virginia Science Resource Network to mentor Virginia's teachers and students ... Established the Annual Undergraduate Research Conference to financially support original research in four-year and two-year curricula ... Established scientific advisory service to Virginia Governors and state agencies beginning with the state's kepone disaster ... Supported the founding of the Virginia Institute of Marine Science (College of William and Mary) ... Decades of leadership for the publication of the first *Flora of Virginia* since 1739 (to be published 2012)... ... Annually awards over \$80,000 in sponsored/endowed scholarships and prizes to Virginia middle and high school students for original research ...

NEXT ...???

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with
The Virginia Academy of Science!***