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## A note from the department head

Those of you who have been following the news from Blacksburg will know that there are a lot of changes in the works thanks to new leadership at the top! President Sands has outlined plans to grow our undergraduate enrollment to 30,000 over the next several years. Related to this, Provost Rikakis has been leading a concerted effort to identify Virginia Tech's existing and developing strength areas, termed "Destination Areas," that will help direct investments in teaching and research across the Virginia Tech campuses.

Biological Sciences remains in the middle of it all, with a strong contingent of majors, courses that support a wide range of existing and proposed undergraduate programs across the campus, and interdisciplinary research programs with particular strength in freshwater and ecosystems ecology, molecular microbiology, and cell cycle/cancer biology, areas that align with many of the emerging "Destinations." A sampling of this diversity is evident from the cover articles recently authored by several of our students and faculty. Inside this newsletter (p. 4 - 5) you can read descriptions of several new grants that support research in these areas. You will also see an example of our ongoing investment in enhancing the department's teaching and learning environments, as evidenced by the new inquiry-based Phage Hunters course (p. 2). This fall, in partnership with our Alumni Advisory Board and VT's Career Services Center, we are launching an effort to establish internship opportunities for our undergraduate and graduate students, as well as a new "Careers in Biological Sciences" course that will be rolled out this fall. A few feature in this newsletter, adopted from our weekly internal eNotes, is the "Alumni Spotlight" (p. 8), that offers a sampling of the doors that open when you have a Biological Sciences degree from Virginia Tech in hand!

All of the department's efforts benefit from, and depend on, engagement with our alumni. Please take a moment to connect with us on LinkedIn, if you haven't already. You can now also follow us on Twitter – currently following the excitement of a Study Abroad course in Ecuador – experiential learning in action.

Wishing everyone all the best for the summer ahead. Go Hokies!

Brenda S.J. Winkel  
Department Head and  
Professor of Biological Sciences



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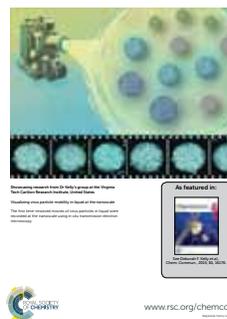
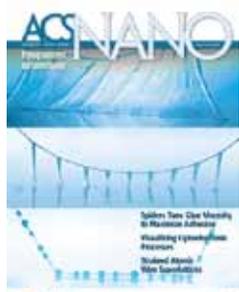


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We welcome comments and items of interest for future newsletters. Please contact Valerie Sutherland ([vsutherland@vt.edu](mailto:vsutherland@vt.edu)) via e-mail, or write to us at the Department of Biological Sciences, Mail Code 0406, Virginia Tech, Blacksburg, VA 24061.



## New biology course transforms students into young scientists, research contributors

In today's professional climate, undergraduates need research experience to be competitive for jobs that tackle complex issues such as the spread of bacterial disease. In response, Virginia Tech faculty members in the Department of Biological Sciences in the College of Science have introduced another course that provides authentic scientific research opportunities for undergraduates.



The latest course, called "Phage Hunters," provides students with real-world problem-solving activities, unlike more traditional lab courses where students merely follow pre-set instructions for experiments with known results. "Science is an active endeavor that moves beyond memorization and instruction sets, so our goal is for students to understand science as doing – as a process with real challenges and real discoveries," said **Richard Walker**, Associate Department Head of Biological Sciences in the College of Science.

Virginia Tech is partnering with the Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science program, known as SEA-PHAGES, at the Howard Hughes Medical Institute to do research in the field of bacteriophage genomics – the genetic sequencing of bacteriophages, or viruses that infect bacteria. These bacteriophages, or simply phages, are commonly found in the environment, from soil to seawater. But many have not yet been identified, leaving a wide knowledge gap in terms of how phages infect bacteria and affect the environment.

Students must discover a phage and learn wet lab techniques to grow and isolate it. Finding one of these viruses, though, is easier said than done. Some students have a hard time finding one, or producing enough of it to study, which becomes an investigational process that illustrates one of the realities of scientific research.

"This class has taught me that science and research is all about finding new ways to approach a result," said **Dawn Wright** of Suffolk, Virginia, a sophomore majoring in neuroscience. "Although we all had the same goal, we had to go about achieving it differently through trial and error. This was frustrating, but I learned that just because something is written in a protocol does not mean it is concrete – we have to adjust according to what's effective."

This past fall, students looked for phages in soil around campus and found them in samples from around the Duck Pond, the Drillfield, the Hahn Horticulture Garden, and the lawn outside of Dietrick Dining Hall. After separating phages from the soil, students purified their phage's genetic material, saw their phage close-up using electron microscopy, and named it.



***Drs. Kristi DeCourcy and Stephanie Voshell helped establish and teach the Phage Hunters course***

"Naming and characterizing the phage give students a sense of pride and ownership of their work," said **Kristi DeCourcy**, a senior research associate in the Fralin Life Science Institute. DeCourcy and **Stephanie Voshell**, an instructor in Biological Sciences, helped to establish and teach the first iteration of the course in the fall.

Once the phage were named and characterized, the four highest-quality DNA samples were selected, two from each section of the class, and sent to the University of Pittsburgh for full genome sequencing. The sequences are archived in the Actinobacteriophage Database, run by Graham Hatfull, a professor at the University of Pittsburgh, who worked with the Howard Hughes Medical Institute to develop the program into a national effort. In the spring, students continued their research in a second course, assembling and annotating the genomes of the sequenced phages.

*(Continued on page 11)*

## A Day in the Life of a Recent BIOL Grad

By **Harrison Bergeron, B.S., 2015**

I start off my morning routine with a large thermos of coffee and drink it during my commute to work. This standard practice deviates from most daily rituals in that my commute includes a 35 minute boat ride aboard a secure government ferry on my way to an animal research laboratory owned by the Department of Homeland Security. I work as an ORISE Oak Ridge Institute for Science and Education (ORISE) Fellow at a place called Plum Island, a small island in the Long Island Sound, home to a beautiful array of birds, seals, and most notably the Plum Island Animal Disease Center. The mission of the laboratory is to protect the food supply from viruses that cause "foreign animal diseases" by providing the research, diagnostics, and education required to combat these pathogens. We work with disease-causing viruses in the Biosafety Level 3 laboratory such as foot-and-mouth disease virus, one of the most (if not the most) contagious viruses known that would cost 60 billion dollars in the first year if introduced onto the mainland. Our daily work keeps the cost of food down, protects global trade, educates veterinarians, and is the first line of defense in the event of an accidental or purposeful release of these viruses into our livestock.



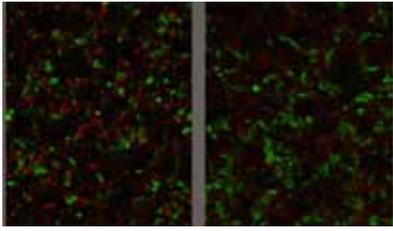
I first became interested in microbiology during my time as a Hokie undergrad in **Dr. Ann Stevens's** Introduction to Microbiology course. With her help and the help of many other professors along the way, I was able to take a course load that would prepare me for a career in infectious disease research. Before my work with Plum Island, I reached out to my Virology professor, Dr. Sally Paulson, and my Principles of Biology professor, **Dr. Mike Rosenzweig**, who both provided me with invaluable insights. I formed some very strong bonds with my professors, teaching assistants, and fellow students in a way that is only possible in Blacksburg.



I work in the diagnostic section at Plum Island which serves as an international reference laboratory and works to build the capacity of other labs. My day-to-day duties at Plum Island vary. Some days I perform molecular diagnostics, running real-time PCR on samples sent by field veterinarians to rule out a foreign animal disease introduction. During this time, animals can be quarantined so it is important that our results are produced quickly and accurately. I also spend time validating assays, making sure the diagnostic tools we use have well-defined characteristics. As new assays become available, it is our job to determine their sensitivity and specificity which includes study design using techniques like ELISA and real-time PCR. My fellowship also offers many training opportunities such as vaccine studies, large animal work, sequencing, travel to conferences, and more. It is a privilege to get to work with some of the global experts in the field. Virginia Tech definitely led me to where I am today, and I could not be more grateful to the Hokies who helped me along the way!



## New Grants



### ***Toxoplasma gondii* regulation of host GABAergic signaling** (National Institutes of Health, ~\$2.7M, 5 years)

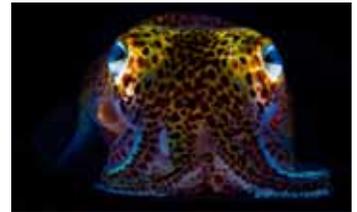
Co-Principal Investigators: **Michael Fox** (Associate Professor of Biological Sciences/VTCRI) and Ira Blader (University of Buffalo)

Seizures are a common and life-threatening complication in individuals suffering from infections and inflammation in the central nervous system. In these individuals, seizures develop due to a variety of reasons including breakdown of the blood-brain barrier, changes in ionic homeostasis, and/or increased abundance of inflammatory proteins such as cytokines and antibodies. But how these changes in the brain alter synaptic wiring and neurotransmission that cause epileptiform activity is largely unknown. The protozoan parasite, *Toxoplasma gondii*, infects approximately one-third of the world's population. Most people are asymptomatic because the parasite resides latently within brain and other tissues. But individuals who are immunocompromised or are infected in utero develop toxoplasmosis when the parasite reactivates and the host immune response is unable to control parasite replication or is dysregulated leading immune-mediated tissue destruction. If reactivation occurs in the brain, the resulting toxoplasmic encephalitis presents with a variety of neurological conditions, including seizures. Using a murine model for toxoplasmic encephalitis our data indicates that *Toxoplasma* specifically alters the distribution of key proteins that localize to GABAergic synapses. This change in GABAergic synaptic connectivity causes the mice to develop seizures because these synapses are critical for controlling the flow and timing of information transfer in the brain. This work will define how these proteins are mislocalized (Aim 1), determine the role of inflammatory cells in GABAergic protein mislocalization (Aim 2), and identify the parasite factors that affect GABAergic protein localization and onset of seizures (Aim3). The long-term goal of this work is to determine how seizures develop in *Toxoplasma*-infected individuals and use this information to generate novel therapies to treat these patients and others suffering from infection-induced seizures.

### **Collaborative Research: Experimental evolution of peptidoglycan in the bacterial symbiont *Vibrio fischeri***

(National Science Foundation, ~\$165K, 3 years)

Co-Principal Investigators: **David Popham** (Professor of Biological Sciences) and Eric Stabb (University of Georgia)



Bacterial cell walls are usually composed of an interconnected mesh made of peptidoglycan (PG). PG is unique to these microorganisms. It is essential for bacterial survival, and has a remarkably conserved structure throughout diverse bacterial groups. PG is not found in plants and animals, and given its significance and ubiquity in bacteria, it is an excellent target for antibiotics and innate immunity. Thus, PG is a focus of strategies for bacterial detection and control. Blocking the ability of bacteria to make a normal PG structure is generally lethal, yet in rare instances bacteria with novel PG have evolved naturally. This project uses the model animal-associated bacterium *Vibrio fischeri* to explore what happens when PG is experimentally forced to evolve. The results will shed light on the natural evolution of peptidoglycan, on the constraints of its function in bacteria, and on the limits of targeting PG as a means of controlling bacteria. Moreover, *V. fischeri* is a natural symbiotic bacterium that colonizes a Hawaiian squid, and PG is a key signaling molecule in this symbiosis. Thus, it offers the opportunity to examine how peptidoglycan structure affects the ability of host animal tissue to detect and respond to its resident bacteria (i.e., its microbiome). The broader impacts of this work for society include interdisciplinary graduate and undergraduate student training, outreach to community K-12 schools, and contributions to a book on bacterial symbionts geared for use in the classroom.

**New Grants (con't)****Collaborative Research: Volatile organic compounds (VOCs) released during litter decomposition and their relevance to soil ecology**  
(National Science Foundation, ~\$822K, 3 years)

Principal Investigator: **Michael Strickland** (Assistant Professor of Biological Sciences)



Walking through a forest, one can smell the characteristic scents of decomposing litter – scents that are the product of small compounds (volatile organic compounds or VOCs) that are released as litter breaks down. These VOCs not only give decomposing leaves their characteristic odor, they are also important to the chemistry of the atmosphere and to characteristics of underlying soils, including soil fertility and the types of organisms residing in soil. Hundreds of different VOCs can be released from decomposing litter by the microbes that break down litter on the forest floor, and it is known that litter from different plant species produce distinct VOCs during decomposition (contributing to the different smells of a pine forest versus an oak forest, for example). Unfortunately, it is not understood how the types and amounts of these VOCs released from leaf litter vary as the litter decomposes. Nor is it understood how the release of VOCs will be altered as U.S. forests shift seasonally and compositionally, and in the future with anticipated climate change. The proposed research will not only address these knowledge gaps, it will also determine the importance of these VOCs to underlying soils; how they may promote the storage of carbon in forest soils, and how they can influence soil fertility by altering nitrogen cycling and the types of microorganisms found in soils. The proposed work will be carried out by a team of researchers Virginia Tech and at the University of Colorado where the project will be leveraged to train undergraduate and graduate students in cutting-edge research. In addition, researchers at these universities will use the proposed work to introduce high school students to key concepts and tools in the study of soils and their roles in sustaining ecosystems.

In October 2015, the second and third-year Interfaces of Global Change (IGC) Fellows visited Washington, D.C. to gain a better understanding of the processes that communicate science to policy makers. Led by **Jeff Walters** and Bill Hopkins (FWC), the group had opportunities to attend committee meetings in the House of Representatives and to meet with a U.S. Representative VA-1 and VT Alumnus **Robert “Rob” Wittman** (Biology, '81), personal congressional staff, federal agency representatives, environmental lobbyists, and others. The trip reinforced the goal of the IGC graduate program to provide students with skills that will enable them to tackle complex problems related to global change, while considering how they may influence public policy and society. Graduate students from Biological Sciences included **Jonathan Doubek, Angie Estrada, Tamara Fetters, Daniel Medina, David Millican, Leah Novak, Laura Schoenle, Ben Vernasco, and Maya Wilson.**



## Recent Defenses

**Many of our graduate students earned M.S. or Ph.D. degrees in the past year and have gone on to exciting new challenges:**

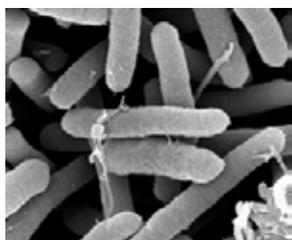
M.S. Defense by **Maggie Pryatel** (Barrett Lab), entitled, “The influence of switchgrass establishment on soil organic matter pools in an agricultural landscape” (07/17/2015). Currently a Staff Scientist at Haley & Aldrich in Independence, OH



Ph.D. Defense by **Sarah Stellwagen** (Opell Lab), entitled, “Structure and function of the viscous capture spiral and its relationship to the architecture of spider orb Webs” (07/27/2015). Currently an Interdisciplinary Biomaterials Postdoctoral Fellow with the U.S. Army Research Laboratory in Adelphi, MD

M.S. Defense by **Alexandra Gerling** (Carey Lab), entitled, “Hypolimnetic oxygenation mitigates the effects of nutrient loading on water quality in a eutrophic reservoir” (07/29/2015). Alex received the 2015 Outstanding William Preston Thesis Award in the STEM category! She is currently a Reuse Engineer at the American Water Works Association in Denver, CO

Ph.D. Defense by **Camilo Escallón** (Moore Lab), entitled, “Reproductive physiology, avian malaria, and the cloacal microbiome in tropical Rufous-collared Sparrows” (09/24/2015). Currently an invited lecturer in the Environmental Law M.S. program at the Universidad del Rosario in Colombia, and a collaborative researcher with the Centre for Research in Tropical Parasitology at the Universidad de los Andes



Ph.D. Defense by **Alison Kernell Burke** (Stevens Lab) entitled, “Analysis of the quorum sensing regulons of *Vibrio parahaemolyticus* BB22 and *Pantoea stewartii* subspecies *stewartii*” (10/29/2015). Currently a Visiting Assistant Professor of Biology at Hampden-Sydney College in Farmville, VA

M.S. Defense by **Shivani Grover** (Lawrence Lab), entitled, “The role of the *Alternaria* secondary metabolite alternariol in inflammation” (12/04/2015). Currently an Assay Services Scientist at PBL Assay Sciences in Piscataway, NJ

Ph.D. Defense by **Renee Pietsch** (Brown/Ross/Schmale Labs), entitled, “Getting out of the water and into the air: Understanding aerosolization of the bacterium *Pseudomonas syringae* from aquatic environment” (03/22/2016). Currently conducting postdoctoral research in the Schmale Lab.

Ph.D. Defense by **Brett Tornwall** (Brown Lab), entitled, “The role of dispersal networks in structuring biotic communities: A tale of streams and metacommunity theory” (04/19/2016). Currently a Summer Postdoctoral Associate at Clemson University.

Ph.D. Defense by **Hardik Zatakia** (Scharf Lab), entitled, “Characterization of symbiotically important processes in *Sinorhizobium meliloti*” (08/07/2015). Currently a Student Consultant, Keck Graduate Institute & Thermo Fisher Scientific, Claremont, CA

M.S. Defense by **Chelsea Taylor** (Brown Lab), entitled, “Dominant species in metacommunities: The interaction of dispersal and *Daphnia magna* in zooplankton communities” (04/29/2016). Currently working as an Ecologist with Enviro-Utilities of Richmond, VA.

M.S. Defense by **Simone Campbell** (Sewall Lab), entitled, “Cognitive and brain consequences of early-life immune system challenge in a songbird” (05/04/2016). Currently beginning a Ph.D. program in Neuroscience at Emory University.

Ph.D. Defense by **JingJing Liu** (Finkielstein Lab), entitled, “Identification and regulatory role of E3 ligases in the time dependent degradation of the circadian factor Period 2” (05/10/2016). Currently a Postdoctoral Associate at the University of Pennsylvania.





**David Popham**, Professor of Biological Sciences at Virginia Tech, has been elected as a Fellow of the American Academy of Microbiology, the honorific leadership group of the American Society for Microbiology, whose mission is “to recognize scientific excellence, as well as foster knowledge and understanding in the microbiological sciences.”

Also an affiliate faculty member of the Fralin Life Science Institute, Dr. Popham studies the structure, synthesis, and hydrolysis of the mesh-like wall components of bacterial vegetative cells and endospores. His past studies focused on the model gram-positive bacterium *Bacillus subtilis* and the pathogens *Bacillus anthracis* (the anthrax agent) and *Clostridium perfringens* (a common cause of food poisoning, also responsible for gangrene). His group has used molecular genetic techniques to identify and manipulate the genes encoding enzymes that polymerize and hydrolyze the peptidoglycan cell wall and biochemical methods to characterize structural changes in the cell wall. The work is critical for developing new strategies to combat these dangerous pathogens, the spores of which are highly resistant to conventional antimicrobial treatments.

“Not only is Dr. Popham internationally known for his research contributions in the field of medical microbiology, but he has made his mark while involving both undergraduate and graduate students in creative, leading-edge research in his laboratory,” said department head **Brenda Winkel**. “He joins a very elite group of scientists who have been elected fellows of the ASM. The department is delighted at this very significant recognition of Dr. Popham’s work by his professional peers.”

Popham is one of 78 Fellows inducted in 2016, joining 2,400 total members. Honorees are elected annually through a highly selective, peer-review process based on their records of scientific achievement and original contributions that have advanced microbiology, according to the organization. Fellows “represent all subspecialties of microbiology, including basic and applied research, teaching, public health, industry, and government service,” according to the academy’s website. This year’s inductees come from around the world, including Australia, Canada, China, France, India, Spain, the United Kingdom, and the United States.



**Jackson R. Webster**, Professor Emeritus of Ecology, has been selected as a Fellow of the Ecological Society of America. A member of the Department of Biological Sciences, Webster was honored for his “distinguished contributions to the discipline.”

Webster is known for his decades-long research into ecosystem-level processes of aquatic ecosystems, biogeochemistry of streams, and riparian-stream interactions. During his career, he secured more than \$6 million in grants as a principal or co-principal investigator, and another \$32 million as a part of multi-university research teams. He has published more than 100 peer-reviewed papers and 35 book chapters.

Webster previously was honored as a professor emeritus by the Virginia Tech Board of Visitors in 2015 for his dedication to the university, teaching a variety of courses ranging from junior to advanced graduate levels in biological sciences. He also was honored with Virginia Tech’s

William E. Wine Award in 2012 for his teaching work.

“Jack Webster has not only had an enormous impact on the field of freshwater ecology, but he has inspired countless students in the classroom and the great outdoors over his 40 years at Virginia Tech,” said **Brenda Winkel**, Head of the Department of Biological Sciences. “He continues to be an outstanding mentor to students and faculty colleagues, alike.”

Webster will join his fellow 2016 honorees at an awards reception at the annual meeting of the Ecological Society of America in Fort Lauderdale, Florida, this August. According to its website, the society designates as Fellows those members who have made outstanding contributions to any field in ecology. Honorees hail from academics, government, nonprofits, and the private sector. The society previously named **John Cairns**, also retired from Biological Sciences, as a Fellow in 2012.

## Alumni Spotlight



**Greg Eaton** received his B.S. in Horticulture and Biology in 1993, and his M.S. in Biology in 1995, under advisor **Orson Miller**. He went on to earn his Ph.D. in Ecology and Evolutionary Biology from Dartmouth College in 2000, then worked as an Assistant Professor in Landscape Ecology and Urban Horticulture at Virginia Tech until

2005. He is currently the Director of the Claytor Nature Study Center at Lynchburg College, and teaches in the Environmental Science, Environmental Studies, and Biology programs. In addition, he chairs the Virginia Association for Environmental Education.



**Bethany (Smouter) Jackson** received her B.S. in Biological Sciences from Virginia Tech in 2003 and went on to receive her DVM from the VA-MD Regional College of Veterinary Medicine in 2007. She is currently the owner of Jackson Veterinary Cardiology Consultants, a mobile veterinary cardiology service, in Elk Grove, CA. From the business

website: "Dr. Jackson's interest in cardiology stemmed from experience with her own dog being under the care of a veterinary cardiologist. She saw first hand how access to specialty consultation can help to further patient care. Her goal is to provide timely, accurate, and detailed cardiology consultations to allow accurate diagnosis and treatment of cardiac disease in pets so they can live long, fulfilling lives."



**David Mullins** earned B.S. degrees in Biology (Microbiology) and Biochemistry from Virginia Tech in 1989 and 1993, then received his Ph.D. in Biology in 1998, working in **Klaus Elgert's** lab on "Paclitaxel-induced macrophage activities in the tumor-bearing host: immunologic implications and therapeutic applications." Dr. Mullins went on

to work as a Research Assistant Professor and then Assistant Professor of Microbiology at UVA. In 2011 he took a position as an Assistant Professor of Microbiology and Immunology in the Geisel School of Medicine at Dartmouth College in New Hampshire. His lab "studies the cellular and molecular factors that regulate T cell access to metastatic melanoma, and develops novel combinatorial therapies to eradicate cancers."



**James Kennedy** is currently Regents Professor of Biological Sciences at the University of North Texas and Director of the Elm Fork Education Center and Natural Heritage Museum. He received his Ph.D. with **Fred Benfield** in 1980 and then remained as a postdoc in the Benfield group for another year. The research program in his lab focuses

on five areas: Stream ecology, aquatic insect biology, biodiversity studies, the use of macroinvertebrates in the ecological risk assessment process, and environmental education. Coincidentally, Dr. Kennedy was recently joined in this department by former VBI faculty member, Vladimir Shulaev, and former VBI adjunct faculty member, Rick Dixon.



**Mustafa Rasheed** received B.S. degrees in Biological Sciences and Biochemistry from Virginia Tech in 2014, and served as a member of the VT Rescue Squad for two years. He is currently a Research Specialist in David O'Connor's lab at the University of Wisconsin-Madison.



**Jennifer Sheets**, who received her B.S. in Biology from Virginia Tech in 1983, has been a member of our Alumni Advisory Board since 2014. She currently operates her own microbial product and process consulting business (Jennifer P. Sheets Consulting), operating out of Roanoke. She works with multiple

clients in the applied an industrial microbiology marketplace on client-driven projects.



**Jennifer Tank** is currently Galla Professor of Biological Sciences at the University of Notre Dame and Director of the Notre Dame Linked Experimental Ecosystem Facility. She received her M.S. ('92) and Ph.D. ('96) in **Jack Webster's** lab. Research in the Tank Lab focuses on (1) the biogeochemistry of streams and rivers, (2) the influence of agricultural

land use and conservation on streams, and (3) stream restoration. Dr. Tank recently returned to Virginia Tech to present an EEB Seminar, co-sponsored by the Global Change Center. Her seminar was entitled, "Changes in nutrient land cover and floodplain connection reduce nutrient export from agro-ecosystems."

## Awards



Associate Professor **Dana Hawley** received the 2015 College of Science Outreach Excellence Award. She was selected by the COS Honorifics Committee based upon her impressive nomination application and letters of recommendation.

Dr. Hawley has incorporated outreach into her upper-level undergraduate and graduate Ornithology courses, turning them into active-learning environments in which students work at the Price House Nature Center or in local K-12 classrooms to develop and implement teaching units and activities related to birds. The nomination letter from **Ann Stevens** and **Brenda Winkel** states, "Dana's outreach activities have had a profound and lasting effect, not only on the individuals she teaches and mentors, but also on the broader public community served by those students."

Please join us in congratulating Dr. Hawley on this well-deserved recognition!

Assistant Professor of Practice **Lori Blanc** is the 2016 recipient of the Virginia Tech Alumni Award for Excellence in International Education. This is a truly significant honor that recognizes Dr. Blanc's ongoing high-impact efforts to provide education abroad experiences for our students. Over the past 8 years, Dr. Blanc has developed and/or managed 22 education abroad courses in Australia, New Zealand, Fiji, and Antarctica; the latter is a program that she initiated and that is just one of six Antarctica programs offered in the entire U.S. Dr. Blanc has not only significantly contributed to international education opportunities in our department, but in recent years her courses have represented the majority of education abroad offerings in the entire college.



Dr. Blanc is also the director of the Da Vinci Living Learning Community at Virginia Tech, a special on-campus housing unit designed to enhance the first year experience of freshman science majors. Interestingly, students from Da Vinci have helped provide educational activities to the regional community through Kids Tech and the Virginia Science Festival, many of which have incorporated activities related to the study abroad experience. Dr. Blanc was recognized as a Diggs Teaching Scholar in 2014 for these, and other, innovative teaching approaches.

A heartfelt congratulations to Dr. Blanc for this latest recognition of her remarkable work!



Senior Instructor and Outreach Director **Michael Rosenzweig** has been awarded the 2016 Sporn Award for Excellence in Teaching Introductory Subjects. This is a student-driven award, with nominations coming solely from undergraduates and the selection committee being comprised of student representatives from Omicron Delta Kappa and the Golden Key National Honour Society. Dr. Rosenzweig was selected from among four finalists that resulted from some 200 nominations.

This is a singular recognition of Dr. Rosenzweig's diverse contributions to teaching our freshmen that ranges from being one of the first in the department to develop and lead online courses to participating in the team that recently flipped the introductory courses; his extensive efforts to engage his students in outreach, including through SOuP, SEEDS, and the Price House Nature Center, were also major factors in his being selected for this award.

Dr. Rosenzweig joins an elite group of Sporn awardees in our department: **Harry Steeves** (1974), **Dave Stetler** (1975 and 1986), **George Simmons** (1979), **Jerry Via** (1982), **Art Buikema** (1988), **Dave West** (1989), **Carol Burger** (1991), and most recently, Affiliate **David Schmale** (2010).

Dr. Rosenzweig was inducted into the Academy of Teaching Excellence at their spring meeting this April and will be presented with the Sporn Award by President Sands at the university's award ceremony in September. Please join us in congratulating him on this wonderful recognition!

# 2016 BIOLOGICAL SCIENCES AWARDS AND SCHOLARSHIPS

## Undergraduate Awards and Scholarships

**Biology Alumni Undergraduate Research Excellence Award** (Supported with discretionary funds contributed by former students, faculty and other donors; presented to outstanding undergraduate researchers): **Patrick Calhoun** (Smyth Lab)

**Arthur Buikema and M. Alison Galway Outstanding Senior Award** (Established by Alumni Distinguished Professor Emeritus Art Buikema and wife Alison; presented to a graduating senior in recognition of academic achievement, leadership and service): **Christine Tin**

**Arthur Buikema and M. Alison Galway Undergraduate Research Award** (Established by Alumni Distinguished Professor Emeritus Art Buikema and wife Alison; presented to outstanding undergraduate researchers): **Hailey Boone** (Marcella Kelly Lab, FWC)

**Ralph E. Carlson Memorial Freshman Scholarship** (Established by the late Elizabeth Bailey Carlson in honor of her husband, Ralph E. Carlson, former professor in the Pamplin College of Business; awarded to first-year students in Biological Sciences with high academic achievement): **Emily Poteat**

**Ralph E. Carlson Memorial Scholarship in Ornithology** (Established by the late Elizabeth Bailey Carlson in honor of her husband, Ralph E. Carlson, former professor in the Pamplin College of Business; awarded to Biological Sciences students pursuing careers in ornithology): **Alana Dudek**

**Joe and Barbara Cowles Scholarship** (Established by Professor Emeritus of Biological Sciences and Former Department Head Joseph Cowles and his wife Barbara Cowles, former Associate Director of the VT University Honors Program; awarded to undergraduate students who are planning to enter the fields of nursing, teaching, professoriate, or research): **Amanda Sebastian**

**Albert and Sharon Hendricks Undergraduate Excellence Award** (Established by Associate Professor Emeritus Albert Hendricks and wife Sharon; awarded to outstanding undergraduate researchers): **Alana Dudek** (Moore Lab) and **Brianna Swartwout** (Li Lab)

**Rachael Hill Memorial Scholarship** (Established in honor of student Rachael Elizabeth Hill, who died during the tragic April 16, 2007 shooting at Virginia Tech; awarded to rising sophomore undergraduates with an high academic achievement and a record of University or community involvement): **Kristen Fisher**, **Anna Gibson**, and **Han Bin Lee**

**Robert Jones Undergraduate Research Excellence Award** (Established by former Professor of Biological Sciences and Department Head Robert H. Jones; awarded to outstanding undergraduate researchers in Biological Sciences): **Jacob Alder** (Hauf Lab)

**Deborah Ayers Koller Scholarship** (Established by alumna Deborah Ayers Koller; awarded to Biological Sciences students with high academic achievement who are aspiring for a research career): **Cynthia Guerin** and **Caitlin Van Wicklin**

**Stephen D. Lutz Scholarship** (Established by alumni Stephen Lutz; awarded to Biological Sciences students who are Virginia residents and have high academic achievement): **Jose Zuniga Arana**

**Stacey Smith Biology Research Excellence Award** (Established by alumna Stacey Smith; awarded to undergraduate Biological Sciences majors interested in pursuing a career in basic research who are currently engaged in undergraduate research): **Sarah Mount** (Cimini Lab)

**I.D. Wilson Memorial Scholarship** (In honor of Dr. I.D. Wilson, former head of the Department of Biology; awarded to undergraduate Biological Sciences majors who are in their last year of study and plan on pursuing a career in veterinary medicine): **Colleen Harvey**

## Graduate Awards and Scholarships

**Arthur Buikema and M. Alison Galway Graduate Student Teaching Award** (Established by Alumni Distinguished Professor Art Buikema and wife Alison Galway; awarded to graduate teaching assistants for excellence in instruction): **Kathleen Hamre** (Carey Lab)

**Lewis Edward Goyette Graduate Fellowship** (Established by alumni Edward Goyette in honor and recognition of his father, Lewis Edward Goyette; awarded to graduate students involved in the study of industrial microbiology): **An Duy Duong** (Stevens Lab) and **Manisha Shrestha** (Schubot Lab)

**Noel Krieg Graduate Fellowship** (Established by a group of former students in honor of Alumni Distinguished Professor Emeritus Noel Krieg; awarded to an outstanding graduate student in biological sciences): **Benjamin Webb** (Scharf Lab)

**John Palmer Memorial Scholarship** (Established by alumna Rhonda Leavenworth Johnson in honor of her uncle, John Gilbert Palmer, former Adjunct Professor of Biology; awarded to an outstanding graduate student in Biological Sciences): **Laura Schoenle** (Moore Lab)

**Robert and Marion Paterson Scholarship** (Established in honor of Robert Paterson, Professor and Department Head of Biological Sciences, and wife Marion; awarded to an outstanding graduate student in Biological Sciences): **Alison Burke** (Stevens Lab) and **Skylar Hopkins** (Belden Lab)

## More Awards

Ph.D. student **Jonathan Doubek** of the Carey Lab has been awarded a prestigious NSF Doctoral Dissertation Improvement Grant. The grant will support his work, which is aimed at understanding the relationship between dissolved oxygen levels and the health of zooplankton communities in freshwater lakes and reservoirs.

**Benjamin Webb**, a Ph.D. student in the Scharf Lab, received the 2016 John Johnson Award for Graduate Excellence in Microbiology. He also had one of the top-rated posters at the VT Translational Plant Sciences Minisymposium in February.

Ph.D. student **Aboozar Monavarfeshani** (Fox Lab) has received a Young Investigator Educational Enhancement award from the American Society of Neurochemistry. The award supported his travel to the annual meeting in Denver, CO in March.

**Brent Opell** was named the VT-CIDER Teacher of the Week in November 2015.

Scharf Lab graduate students **Kate Broadway** and **Benjamin Webb** both received rewards at the Virginia Branch-American Society for Microbiology Meeting that was held in Richmond in November. Kate received second prize for her oral presentation, and Ben received second prize for his poster presentation.

**Cayelan Carey** was named the VT Scholar of the Week in March 2016 by the Office of the Vice President for Research and Innovation.

Former lab instrument maker **Jake Waller**, who retired in Spring 2015, has been selected to receive one of five Staff Career Achievement Awards presented this year. These awards recognize recently-retired employees with a history of outstanding performance in their position. The winners will receive a cash award of \$1,000 each and recognition at the annual Faculty/Staff Awards Dinner in the fall. Congratulations, Jake!

NSF Graduate Fellow **Skylar Hopkins** (Belden Lab) has been selected to participate in the NSF Graduate Research Internship Program, which allows fellows to enhance their professional development by engaging in mission related research experiences with partner agencies across the federal government. Through the NSF GRIP, she'll be spending Fall 2016 in Santa Barbara, California studying infectious disease in endangered abalone. Congratulations, Skylar!

**Carl Wepking**, a Ph.D. student in the Strickland Lab, is the inaugural recipient of the Karen P. DePauw Outstanding Interdisciplinary Presentation Award, named for VT's current Vice President and Dean for Graduate Education. Carl received the award for his presentation, entitled, "Increased antibiotic resistance – effects on microbial communities and ecosystem function," given at the Interfaces of Global Change Research Symposium on April 22, 2016. Congratulations, Carl!



**Alexandra Gerling** of the Carey Lab received the 2015 Outstanding William Preston Thesis Award in the STEM Category. She defended her thesis, entitled, "Hypolimnetic oxygenation mitigates the effects of nutrient loading on water quality in a eutrophic reservoir," in July 2015. Congratulations, Alex!

**Ariel Leon** on the Hawley Lab was recently awarded the College of Science Roundtable's "Make a Difference" Scholarship. The scholarship, a \$10,000 award, was established by the College of Science's alumni advisory group, the Roundtable, in 2006, with the intent of both making a difference in the graduate student's education and supporting a graduate student who will make a difference to the college and globally through their work. Congratulations, Ariel!



**Renee Pietsch**, of the Schmale/Ross/Brown Labs, who successfully defended her dissertation research this spring, was selected as a Member of the Academy for Graduate Teaching Assistant Excellence. She has been recognized for her strong commitment to excellence in teaching and for creating affirming learning opportunities higher education.

In addition, she was named a 2016 Citizen Scholar by the Graduate School for her project entitled, "Interdisciplinary STEM curricula: outreach for high school students." Congratulations, Renee!

### *Phage Hunters Course* (continued from page 2)

In addition to contributing new information to the Actinobacteriophage Database, students can become authors on journal articles related to their research. "In the future, we hope to collaborate with faculty in the Biological Sciences who are already conducting phage-related research," said Walker. "For example, Professor **Lisa Belden's** efforts to characterize the microbiome of amphibian skin could allow us to look at the types of phage that infect the bacterial cells comprising that microbiome."

More than 80 schools from around the county are involved in the SEA-PHAGES project, and Virginia Tech is part of the 8th cohort of these schools. The two Virginia Tech courses were recently approved as BIOL 1135-1136 Phage Hunters, and are open to all majors. There are no prerequisites, so students in any academic year can enroll.

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***Department of Biological Sciences Annual Fund***



***Above: Professor Ann Stevens engages the students in her Microbial Physiology in conducting the Volta Experiment in the VT Duck Pond***

One person can make a big difference!

The Department of Biological Sciences has a rich history, a strong international reputation, and a bright future. The department oversees one of the largest degree-granting programs at Virginia Tech, with more than 900 student majors, and also provides instruction to thousands of students, both within the major and from across the college and university.

Our undergraduate and graduate degree programs prepare society's future scientists. And our outstanding faculty members conduct cutting-edge research that impacts society as a whole.

Your support is critical to our success. Any monetary contributions you make could be used to support deserving students, provide necessary equipment, or extend our research activities. This year we are focusing our fundraising efforts on two important funds – The Department of Biological Sciences Research Day Fund (876105) and the Department of Biological Sciences General Fund (881317).

When you receive your College of Science Annual Fund letter or phone call, please earmark your support for the Department of Biological Sciences and one of these special funds. Simply make a notation on the gift card or let the caller know that you want to direct your donation to the Biological Sciences Department and then include the specific fund name and number. To make an immediate contribution, you may visit the university's web site at [www.givingto.vt.edu](http://www.givingto.vt.edu) or contact the Office of Gift Accounting at (800) 533-1144.

For more information about these funds or to learn more about other ways to give, please contact Jenny Orzolek, Director of Development for the College of Science, at (540) 231-5643 or [jorzolek@vt.edu](mailto:jorzolek@vt.edu). We thank you in advance for your support!