

TRACKS

Magazine of the Virginia-Maryland College of Veterinary Medicine





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Benjamin Okyere, a Ph.D. student in the Biomedical and Veterinary Sciences program, and Michelle Theus, assistant professor of molecular and cellular neurobiology in the Department of Biomedical Sciences and Pathobiology, study traumatic brain injuries in Theus' laboratory.

Photo by: David Hungate

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Dean Clarke and his golden retriever, Dudley

Message from the Dean

Students at the veterinary college are not only expanding their own knowledge — they are also making exciting research discoveries related to veterinary medicine, biomedical research, and public health. They are involved in all aspects of life at the veterinary college, and our continued success would not be possible without their important contributions and leadership.

In this sixth issue of TRACKS magazine, we highlight the ways in which our graduate and professional students are expanding horizons through laboratory, field, and clinical research. In addition to a feature story on graduate students who are supporting the college's signature research programs, we also have profiles on Ben Okyere, whose research on the adaptive brain earned a competitive research grant, and Caitlin Cossaboom, who has three advanced degrees from the college. Other articles bring attention to award-winning students, high-achieving faculty members, and career-oriented alumni.

Through its research program, the college is making advances in the areas of infectious diseases, immune and inflammatory responses, brain cancer, and regenerative medicine. Our graduate students and other researchers are focusing on One Health to improve the lives of people and animals around the world. As you read this magazine, I hope that you will share my excitement for what the future holds for these researchers and those who benefit from their work.



Veterinary college holds No. 2 admissions spot in North America for third year in row

When students in the Class of 2021 arrive at the Virginia-Maryland College of Veterinary Medicine, they will begin their four-year professional training after another highly competitive application period.

More than 1,600 prospective students applied to enter the college's Doctor of Veterinary Medicine (DVM) program in the fall, representing the second largest applicant pool in North America for the third year in a row, according to the latest figures from the Association of American Veterinary Medical Colleges (AAVMC). Earlier this year, the college invited 336 applicants for interviews for the 120 available seats.

The veterinary college's application periods have become increasingly competitive. In 2016 and 2015, the college's applicant pool surpassed every North American veterinary school except for Colorado State University. It also had the third largest applicant pool in 2014 and the fourth largest in 2013.

"This year, we not only received a large number of total applications, but also an increasing number of applicants from diverse backgrounds," said Jacque Pelzer (DVM '97), director of admissions and student services, who explained that the number of prospective students from underrepresented populations increased from 27 percent to 40 percent. "We continued to make progress on our strategic recruitment plan



and implemented a holistic review process that considers life experiences in addition to academic qualifications."

The Class of 2021 will also be the second cohort of students in the college's new DVM curriculum. Last August, the college introduced a revised curriculum that integrates basic and clinical sciences into new courses organized around functions of body systems, incorporates team-based learning, provides for early entry into the clinics, and converts the grading system to pass/fail.

Prospective students apply to veterinary school through the Veterinary Medical College Application Service, a common application administered by the AAVMC. Most veterinary programs require an on campus interview, including the Virginia-Maryland College of Veterinary Medicine. In 2009, the college became the first U.S. veterinary school to employ an adaptation of the multiple mini-interview format — first implemented at a Canadian medical school.



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Continued from page 5

She was one of two recipients of the Outstanding Ph.D. Student Presentation Award at the college's 2017 Research Symposium. "My current research investigates how inflammation and the immune system play a role in cancer with my focus on a canine tumor called histiocytic sarcoma and a mouse model of lung cancer," Coutermarsh-Ott said.

The Virginia-Maryland College of Veterinary Medicine prides itself in having a robust research program that focuses on One Health to address both animal and human health...

Coutermarsh-Ott is one of about 100 graduate students in the college's Biomedical and Veterinary Sciences program, which prepares both M.S. and Ph.D. students to be scholars and researchers advancing both human and animal health. An additional 130 Master of Public Health students are investigating major public health challenges, health disparities, and the effect of globalization, climate change, and other factors on infectious diseases. These students are making significant contributions to biomedical and public health research with a focus on One Health — a collaborative, multidisciplinary approach which seeks optimal health for people, animals, and the environment.

"The Virginia-Maryland College of Veterinary Medicine prides itself in having a robust research program that focuses on One Health to address both animal and human health, takes laboratory findings directly to clients in a clinical setting, and has signature research programs in the areas of infectious diseases, immune and inflammatory responses, brain cancer, and regenerative medicine," said Cyril Clarke, dean of the veterinary college.

This research program — and its growing reputation for excellence — would not be possible without the hard work of graduate students.

"In addition to the M.S. and Ph.D. students who are making important biomedical discoveries at the veterinary college today, we have more than 400 graduates of our Biomedical and Veterinary Sciences program who are continuing their success in academia, industry, government, and private clinical practice," said S. Ansar Ahmed, associate dean for research and graduate studies. "We also have Master of Public Health students and graduates who are researching both local and global public health issues, building healthy communities, and gaining a better understanding of the emergence and re-emergence of infectious diseases."

Future impact

Coutermarsh-Ott is not the only graduate student whose animal disease research has connections to human medicine. Small animal surgery resident Jenna Giangarra of Omaha, Nebraska, who is pursuing an M.S. in biomedical and veterinary sciences, is evaluating the response of an inflammatory marker following the injection of medication into canine joints. She works under the direction of Sabrina Barry, clinical assistant professor of small animal surgery in the Department of Small Animal Clinical Sciences.

"The safe use of this medication — bupivacaine — has been challenged within the human medical field due to reports of cartilage damage following continuous infusions," said Giangarra,

who received the Outstanding Master's Student Poster Award at the college's 2017 Research Symposium. "This has never been documented in veterinary species and bupivacaine is an inexpensive, widely accessible, and easily administered medication for pain control."

Meanwhile, other graduate students are conducting the basic science necessary to better understand disease. Nicholas Catanzaro of Lewiston, New York, a Ph.D. student in the Department of Biomedical Sciences and Pathobiology, anticipates that his research on porcine reproductive and respiratory syndrome virus (PRRSV) may help scientists develop safer, better vaccines. Earlier this year, he received a two-year, \$95,000 fellowship from the USDA's National Institute of Food and Agriculture for his research on how PRRSV suppresses the immune system.

"My fellowship looks at how the virus causes disease in pigs," said Catanzaro, who works in the laboratory of University Distinguished Professor and National Academy of Sciences member X.J. Meng. "This is one of the most economically devastating global swine pathogens and causes more than \$600 million in economic losses in the United States each year."

Clinical applications

Graduate students also play a critical role in the college's clinical research. "We have ongoing clinical trials in the areas of cardiology, oncology, and internal medicine that will benefit both current and future patients," Clarke explained.

Ph.D. student Giulio Menciotti of Terni, Italy, is working with his advisor Michele Borgarelli, professor of cardiology, to use advanced 3-D imaging to examine canine heart valves. The college is currently conducting a trial on a minimally invasive technique for repair of the mitral valve and has also created a one-of-a-kind database to serve as a reference library on dogs with mitral valve disease, the most common form of canine cardiac disease.

"Although very common, the cause of the disease is still unknown," said Menciotti, who, along with Coutermarsh-Ott, also received the Outstanding Ph.D. Student Presentation Award at the college's 2017 Research Symposium. "The results of my research could improve our understanding of the disease, and hopefully advance our ability to diagnose and treat this condition. Humans can be affected by a very similar condition, and dogs can represent a natural model for this disease."

Likewise, small animal internal medicine resident Wendy Wentworth-Morré of Skowhegan, Maine, is studying radioactive iodine dosages as a treatment for cats with hyperthyroidism. She is working with David Panciera, the Anne Hunter Professor of Veterinary Medicine, to investigate the common form of treatment for cats with overactive thyroids, which may not be effective for some patients and may cause secondary problems for others. Instead of giving the feline patients a fixed dose, the researchers are varying the dosage based on disease severity.

"I really enjoy working with these cats and their owners who love them," said Wentworth-Morré, who was one of two recipients of the Outstanding Master's Student Presentation Award at the 2017 Research Symposium. "It is rewarding to be able to treat these cats and make them feel better in a very short period of time with just one procedure."

Beyond Blacksburg

Graduate students are involved in more than just laboratory, field, and clinical work. Grant Waldrop of Greenville, South Carolina, a dual degree DVM/Ph.D. student, learned just how far his studies could take him last year when he attended the 2016 International Brucellosis Conference in New Delhi, India.

The three-day conference gave Waldrop an opportunity to share his research to create a dual-purpose vaccine against brucellosis and immunocontraception to control the feral swine population. He works in the laboratory of Nammalwar "Nathan" Sriranganathan, professor of veterinary microbiology.

ADVANCED RESEARCH at THE VETERINARY COLLEGE

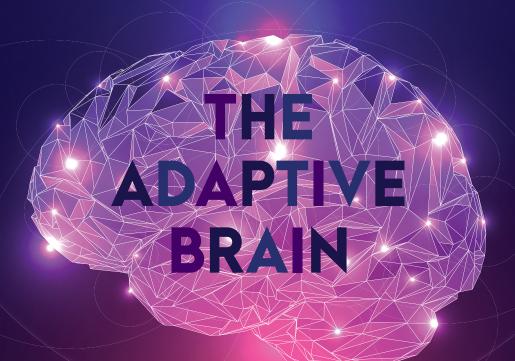
Graduate Degrees between 1987 to 2016



"Brucellosis is a world-wide problem for agriculture while posing a huge public health risk. It is caused by bacteria from the genus *Brucella* and can cause abortion in animals while causing undulant fever in humans," explained Waldrop, who is also past president of the veterinary college's Graduate Student Association. "This vaccine is specifically designed to be used in wildlife management, as wildlife in the U.S. are reservoirs of *Brucella* and can spread the disease to both humans and domestic animals."

Waldrop not only won a second-place award for his poster at the conference in India, but also received an Outstanding Ph.D. Poster Award at this year's Research Symposium.

From presenting their findings at research conferences, to serving in leadership positions, to traveling abroad to expand their horizons, graduate students are involved in all aspects of life at the veterinary college. They are making exciting research discoveries that not only expand the body of knowledge in their field, but also improve the lives of people and animals. Some of them are focused on one specific area of interest, while others are pursuing dual degrees. They are all invaluable members of the Virginia-Maryland College of Veterinary Medicine community and contribute substantially to its mission.



Graduate student Benjamin Okyere sets his sights on fifth leading cause of death

By Carrie Cousins

esearch happening right now at the Virginia-Maryland College of Veterinary Medicine may one day change the future for patients of traumatic brain injuries, thanks to a graduate student's prestigious grant recognition.

Benjamin Okyere, a Ph.D. student in biomedical and veterinary sciences, is just the ninth student from Virginia Tech to earn the Ruth L. Kirschstein National Research Service Award from the National Institutes of Health (NIH). His research focuses on adaptive brain and behavior as it relates to people who experience strokes and ways to help increase life expectancy after such an event.

Okyere's three-year, \$116,000 National Institute of Neurological Disorders and Stroke grant will advance research on stroke, which is the fifth leading cause of death in the United States. He studies in the laboratory of Michelle Theus, assistant professor of molecular and cellular neurobiology in the Department of Biomedical Sciences and Pathobiology, and says the grant is the result of hard work and Theus' mentorship.

"It's an exceptional opportunity. The grant will open a lot of doors and is a confirmation of the great science research happening in the lab," said Okyere, who hails from Ghana. "The training foundation by the Virginia Tech Initiative for Maximizing Student Development Scholars (IMSD) also emboldened my candidacy for the pre-doctoral fellowship grant."

The grant will help Okyere better understand how ischemic stroke induces active outward growth and remodeling of "pre-existing" replacement or collateral vessels into functional conduits — a process known as arteriogenesis — for blood reperfusion and drug delivery. An ischemic stroke is the most common form of stroke and involves an obstruction within a vessel supplying blood to the brain.

"It is widely known, clinically, that patients with an extensive collateral network have greater restoration of blood flow and are better protected from tissue damage following a stroke," explained Theus, who added that the extent of the brain's collateral network varies from individual to individual and has a significant impact on the brain's ability to recover from stroke.

"Our goal is to find therapeutic targets aimed at ameliorating the neurological deficits after a stroke," Okyere said. "Precisely, enhancing arteriogenesis is a novel therapeutic approach for restoring blood flow in patients with limited arteriogenic potential after vascular obstruction."

The research is important because it could potentially change the way stroke patients are treated. Ischemic stroke occurs in 87 percent of stroke cases but the only FDA approved drug effectively treats about 4 to 7 percent of this ailing population.

"Our aim is to increase the therapeutic approaches administered after the acute phase of this debilitating disease," Okyere said.

A successful therapy could extend life expectancy of people who suffer from strokes. Okyere is studying a novel growth and guidance molecule that restricts collateral development and injury-induced remodeling in the brain. His research seeks to identify key cell signaling pathways involved in orchestrating the dynamic process of collateral remodeling. Last year, Theus received a \$1.7 million NIH grant for similar research on traumatic brain injury.

According to Okyere, the overarching goal of the research is to reduce the disease burden and improve neurological recovery for individuals suffering from stroke and other vascular occlusive diseases.

The path to biomedical research

An interest in drug therapy and discovery drew Okyere to this area of research. "During my undergraduate research training, I realized my career path was aimed at becoming an independent scientist focused on finding cures for devastating human diseases," said Okyere, who also has a master's degree in biomedical science from Virginia Tech. "I was lucky enough to end up in the lab, and I just fell in love with it."



The grant will open a lot of doors and is a confirmation of the great science research happening in the lab.

Okyere is no stranger to research and academic honors. Recently, he received an Outstanding Ph.D. Poster Award at the veterinary college's 2017 Research Symposium after already winning Outstanding M.S. Poster Awards at the 2011 and 2013 college events. Okyere has also been recognized for the best IMSD graduate presentation at the 2016 Mid-Atlantic PREP/ IMSD Research Symposium in Richmond, Virginia, and the Virginia Tech Research Symposium in 2015.

In addition to receiving a Regenerative Medicine Interdisciplinary Graduate Education Scholarship in 2013, Okyere has been an IMSD Scholar at Virginia Tech since 2014. This training program is designed to increase the number of minorities with a Ph.D. in biomedical and behavioral sciences and engineering. NIH established the program to further its mission of increasing the number of biomedical researchers.

These accolades are not Okyere's primary focus though. Rather, he prefers to draw attention to his research team and the clinical relevance and translational potential of the ongoing studies.

Okyere spent over a year preparing his fellowship grant application and noted that the process was strenuous, but having a good mentor and advisor made a huge difference. "There are so many great people who deserve this award," he said. "I'm so blessed to be working with Dr. Theus. She's so driven and gifted."

The National Research Service Award fellowship will enable Okyere to gain the necessary training in neurovascular biology across several models of brain injury. It also provides a stipend and travel support to national meetings to share the outcomes of his pre-doctoral research.

And maybe it will even change the way stroke victims recover in the future.





By Kelsey Foster

aitlin Cossaboom, who graduated with her doctor of veterinary medicine (DVM) degree in May, is capping the 11 years she spent pursuing her education goals at Virginia Tech and the Virginia-Maryland College of Veterinary Medicine to begin a new journey — starting her "dream job" as an officer in the Centers for Disease Control and Prevention's (CDC) Epidemic Intelligence Service.

Cossaboom, who hails from Salisbury, Maryland, has a long history as a Hokie. As a member of the Honors College, she earned bachelor's degrees in both dairy science and animal and poultry sciences from the College of Agriculture and Life Sciences at Virginia Tech in 2010. She then completed both a master of public health degree in 2014 and a doctorate in biomedical and veterinary sciences in 2015 through the college's DVM/Ph.D. dual degree program.

Cossaboom's doctoral work was with X.J. Meng, University Distinguished Professor of Molecular Virology in the Department of Biomedical Sciences and Pathobiology and National Academy of Sciences member. "I worked with hepatitis E virus, looking into the zoonotic potential of a new strain of rabbit virus that we found," Cossaboom explained. Her research, which identified the first strains of hepatitis E virus from farmed rabbits in the United States, was published by the CDC in a 2011 issue of Emerging Infectious Diseases.

"Caitlin is a bright rising star in the field of public health and infectious diseases," Meng said. "I am certain that this prestigious

Epidemic Intelligence Service officer position that Caitlin started in July at CDC will serve as a launching pad for her to embark on a long and very successful career in public health and infectious diseases."

A background in applied public health

Her research sparked an interest in the public health aspects of veterinary medicine. "Since I was a little girl, I have always wanted to be a veterinarian, but then I was given the opportunity to do the dual degree program and became interested in emerging zoonotic diseases," explained Cossaboom, who won the Virginia Tech Graduate Student Assembly's Outstanding Dissertation Award in Science, Technology, Engineering, and Math in 2016. "What the MPH does is tie everything together. It gives me the applied public health background and knowledge, and the programmatic and policy experiences and skills that I've developed have been really helpful."

So naturally, when it came to choose a track for the DVM portion of her studies, Cossaboom chose the public and corporate veterinary program. "The public/corporate track is a really valuable opportunity for students who are interested in alternative career paths," she said. As part of her fourth-year curriculum, Cossaboom spent the last year completing various national and international externships, including working with a wildlife pathology program at the University of Georgia's College of Veterinary Medicine, in a lab animal program at North Carolina State University's College of Veterinary Medicine, and at the USDA Animal and Plant Health Inspection Service, in addition to clinical work at mixed animal private practices.



Most recently, Cossaboom returned from Cambodia, where she spent nine weeks working on a project to develop a rabies control strategy for the country as part of the Hubert Global Health Fellowship, a competitive program through CDC that accepted only three veterinary students and four medical students from across the country.

"The first part of my time was spent meeting important stakeholders and organizations because I was working through the U.S. government, in conjunction with the Cambodian government," Cossaboom said. "I was really lucky because I also got to do a good amount of field work. I was able to work with some dog vaccination campaigns and human rabies post-exposure prophylaxis (PEP) centers, and also got to participate in an outbreak investigation, which was not related to rabies, but was really important to see to understand how their current system works for responding to disease outbreaks."

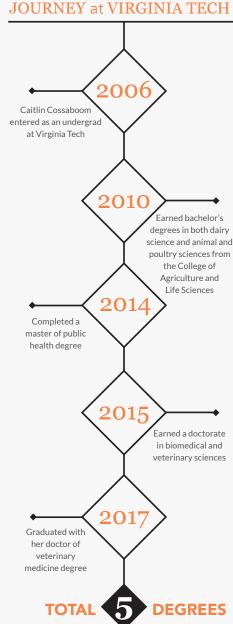
The right direction

Working cross-culturally allowed Cossaboom to experience challenges similar to those she will be facing when she becomes a CDC Epidemic Intelligence Service officer, or "disease detective," later this year. "Here, we're really lucky because we have the public health and medical infrastructure in place, but in Cambodia, the public health infrastructure is still developing. Figuring out how to implement a project like this with limited resources was really interesting," she said.

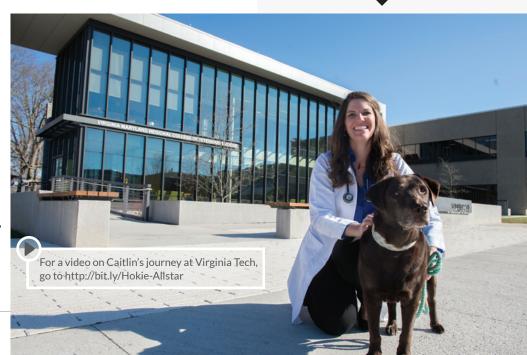
Right: Caitlin Cossaboom and her dog, Peggy.

Cossaboom is especially thankful that the veterinary college's public/corporate track afforded her these valuable experiences that confirmed her chosen career path. "I had really important experiences during my time spent on external rotations," she said. "I was able to go to Cambodia, and see a glimpse of what I will be doing in my future career, and it would not have been possible had I not been given the opportunity to spend a good amount of time away during my fourth year to get these experiences."

Her appointment at CDC lasts two years, after which Cossaboom hopes to continue government work with emerging infectious diseases. "The stars have really aligned and I've just had an incredible experience. I am just really thankful for all of the opportunities I have been given here," she said.



CAITLIN'S 11 YEAR



STUDENT PROFILE

Mary Weatherman named Class of 2017 valedictorian

Not everyone can say they followed a childhood dream to fruition, but Mary Elizabeth Grace Weatherman of Roanoke, Virginia, who earned her DVM from the veterinary college in May, did just that.

Weatherman, who also graduated as the 2017 Richard B. Talbot Memorial Award recipient and college valedictorian, described being a veterinarian as "pretty much the only job I wanted to have."

While a student in the college's food animal track, Weatherman partnered with the Christian Veterinary Fellowship to travel to Kenya the summer after her first year in the DVM program, where she vaccinated and dewormed sheep and goats, and to Honduras during spring break of her third year, where she spayed and neutered cats and dogs. The experience "opened my eyes to the struggles that other places are having and just made me more aware of how I as a veterinarian can give back to those in need," she said.

After graduating, Weatherman will be a mixed animal associate veterinarian in Waterford, Pennsylvania, which is outside of Erie. She will be working with dairy cattle, horses, and small animals. Weatherman hopes to continue with the international and local veterinary mission work she began at the veterinary college.





Sarah Bye receives 2017 Outstanding Graduating Student Award

Sarah Bye, of Holicong, Pennsylvania, has received the 2017 Outstanding Graduating Student Award for the veterinary college.

The award, which recognizes exceptional academic achievement and leadership by a graduating senior from each of the university's colleges, was distributed during the Student Recognition Banquet in April.

Bye earned her bachelor's degree in biology and French from Wellesley College in Massachusetts in 2010 and received her doctor of veterinary medicine degree in May.

While at the veterinary college, Bye was a member of numerous campus organizations, including the Veterinary Business Management Association, Pathology Club, Integrative Veterinary Medicine Club, and Alpha Psi Veterinary Fraternity. She was also the Class of 2017 social chair.

In addition to her course work, Bye worked evenings and weekends throughout the academic year as a large animal ICU student technician.

An equine track student with an interest in equine sports medicine, Bye also traveled to Peru and Nicaragua with the Humane Society Veterinary Medical Association's Rural Area Veterinary Services, where she worked alongside U.S. and host country veterinarians and veterinary students to provide equine veterinary care in economically disadvantaged populations, treating about 1,000 working equids during each campaign. While in both Peru and Nicaragua, Bye also participated in community education outreach about animal health and welfare issues.



Cassidy Rist, assistant professor in the Center for Public and Corporate Veterinary Medicine in the Department of Population Health Sciences, recently traveled to Tanzania with Dean Cyril Clarke to explore possible partnership and collaboration opportunities with the Sokoine University of Agriculture and the Southern African Centre for Infectious Disease Surveillance (SACIDS).

"This offers an exciting opportunity for our faculty and graduate students to address infectious disease and food security issues in a real world context much different than our own," Rist said.

In 2008, SACIDS formed as a One Health partnership of medical and veterinary institutions, and was selected by the World Bank in 2016 to serve as an African Center of Excellence (ACE) for infectious diseases of humans and animals in eastern and southern Africa. Each ACE institution is "identified based on their demonstrated expertise and then is supported by World Bank funds to grow as a center of excellence and serve the rest of the region as a leader in graduate education and research within that area of expertise," explained Rist. The first ACE institutions were identified in western Africa several

years ago and were so successful that the World Bank decided to expand the program into eastern and southern Africa.

While in Dar es Salaam, Rist and Dean Clarke had an opportunity to participate in the SACIDS-ACE Inception Workshop held March 13-15. The purpose of the workshop was to introduce and discuss the SACIDS-ACE implementation plan as well as the future Ph.D. program. Focus groups worked to identify priority research topics for doctorate students based on four previously identified research areas: bacterial zoonoses and antimicrobial resistance, viral diseases of food security importance, emerging and vector-borne diseases, and One Health cross-cutting issues.

At the workshop's conclusion, Rist and Dean Clarke traveled 200 kilometers west to Morogoro to meet with veterinary and medical faculty in the Sokoine University of Agriculture's College of Veterinary and Medical Sciences.

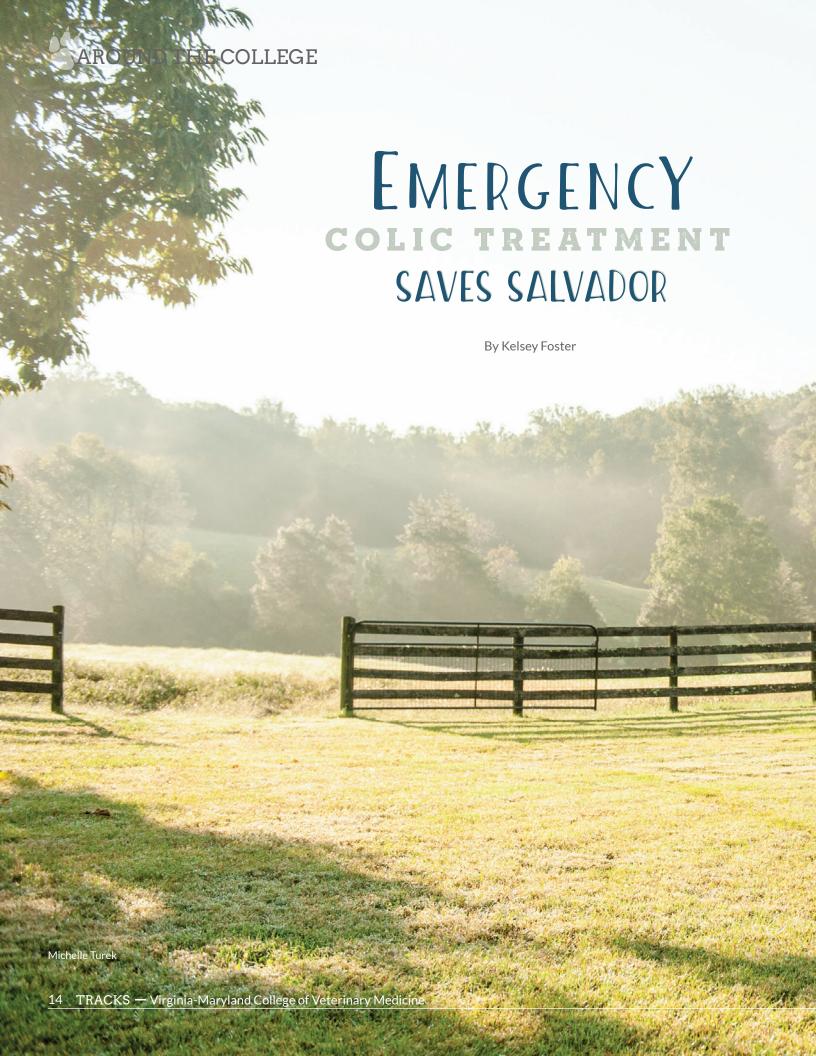
The college houses both the veterinary and medical sciences programs and is in the process of developing a master's of public health degree. Their program has "a really similar model to what we have here,"

Rist explained. Rist was also extremely impressed with the university's current quality of research, particularly, their "strong One Health approach to infectious disease research."

Rist is currently working with Sokoine University of Agriculture faculty to submit a joint grant proposal to the Gates Foundation to begin exploring further opportunities for collaboration and partnership.

Left: Cassidy Rist, Dean Cyril Clarke, and Donald Mpanduji, head of the Department of Veterinary Surgery and Theriogenology, posed in front of a portable isolation unit for contagious infectious diseases while touring the SUA campus facilities in Morogoro. Bottom: Two department heads of SUA's College of Veterinary and Medical Sciences met with Clarke and Rist.









Continued from page 15

When the time came for Salvador's retirement, his trainer had a hunch about an ideal home and put Scaletti in touch with Gargagliano and his family. They immediately connected and remain in close contact today. "Not only does my horse have a fabulous retirement situation, but I have another family," Scaletti said.

A terrifying night

On June 23, 2016, Gargagliano's wife, Joan Hedgecock, went to lead the family's horses to their stalls for dinner. She found Salvador lying down in the field, which was unusual. Joan managed to get him up and to his stall. Once there, Salvador laid back down and refused to eat dinner. Hedgecock said she knew something was very wrong.

Gargagliano and Bartee were out of town, and Bartee had the farm truck. Hedgecock called Piedmont Equine Practice. Under the assumption that Salvador was suffering an acute colic episode, the veterinarian recommended immediate emergency treatment. That meant Hedgecock needed to arrange emergency transportation in the middle of the night. Eventually, she found help from Brian Hogan, the owner of Hogan transport in Warrenton, Virginia, who rushed Salvador to the Marion duPont Scott Equine Medical Center (EMC).

"Knowing the quality of care that is available at the Marion duPont Scott Equine Medical Center, there was no doubt he was going to go to that facility," Gargagliano said.







Page 15: Richard Gargagliano with Salvador on his farm in Warrenton, Virginia. Page 17: Top left: Surgeon Norris "Norrie" Adams led the critical care team that saved Salvador from lifethreating colic. Top right: Salvador recovered in the EMC's intensive care unit after emergency colic surgery. Bottom: Gargagliano, wife Joan Hedgecock, and daughter Laura Bartee.

World-class veterinary care

Norris "Norrie" Adams, clinical assistant professor of equine lameness and surgery, had long served as Salvador's veterinarian during his competition career and happened to be on call that night along with other members of EMC's 24/7 Emergency and Critical Care service team.

"It was just the most relieving sensation to see Norrie," said Scaletti, who joined Hedgecock at the EMC as soon as she could. "I knew that he would do anything that he could to save Salvador."

Adams determined that Salvador needed emergency surgery for acute colic. It turned out that the colic involved the small intestine, which is more difficult to treat and put Salvador's survival rate at 50 percent.

Adams and his surgical team worked diligently to identify the point of obstruction, reduce it, isolate the devitalized area, resect it, and reattach it. Then "Team Salvador" had to wait. His owners, both past and present, were sitting with him and keeping him company during his 10-day stay at the EMC. Adams "pursued every option that he knew of to get that horse

well and as it turned out, that's what it took. Everyone kind of pulled together to help pull this horse through," Gargagliano said. "Saving a horse's life that is a very valuable family member and friend is very gratifying and is one of the most rewarding parts of being a veterinarian," Adams explained.

A bright future

Today, Salvador is back to his "complete, normal self," said Bartee, who along with everyone else on Salvador's team, are thankful for the EMC's life-saving care.

"Norrie Adams didn't just do surgery, he came up with a plan for Sal," explained Gargagliano, who added that this plan was integral to the horse getting back on the trail post-surgery. Because of that plan, Gargagliano looks forward to many more years on the trail with Salvador as his companion.

"It's great to see my dad interact with Salvador, because for so many years my dad took my sister and I around to all the horse shows and took care of all the horses," Bartee said. "And now it's kind of come full circle that I'm taking care of the horses, and he gets to come out and enjoy riding."





The Marion duPont Scott Equine Medical Center (EMC) in Leesburg, Virginia, now has a new dynamic endoscopy treatment that enables the examination of the nose, throat, larynx, and trachea while the horse is standing or moving.

Although the center has offered dynamic endoscopy treatments for years, the new dynamic respiratory scope (DRS) surpasses the image quality of previous versions and is housed in a completely mobile, less bulky unit that can be taken to the farm or racetrack to assess the horse in the training environment.

When in operation, a tube is passed through the nostril of the horse, fixed to the bridle and passed between the horse's ears and down to a receiver positioned in front of the saddle. A special saddle pad with equipment packs on either side completes the ensemble.

At rest, the airway can look normal and many underlying problems in the upper airway only become obvious when the horse is in motion. Under saddle, the equipment takes into account the influence of the rider on the respiratory system and the lens in the tip of the endoscope captures live, high definition video of the function of the upper airway in real time. These images are then transmitted to a small mobile unit to be assessed by the attending veterinarian. Examinations utilizing the DRS are stress-free for the horse and provide clinicians with invaluable diagnostic information to assess poor performance and diagnose respiratory noises and other related upper airway issues.

The equipment was purchased from Optomed, a veterinary technology company based in Les Ulis, France. This purchase would not have been possible without the continued generosity and support of the EMC's donors, whose philanthropy allows the center to serve the equine community with new diagnostic imaging capabilities.

Above: The Equine Medical Center held a specialized training for the new equipment on Feb. 8 to familiarize faculty and staff on the proper use and care of the DRS. Pictured here, Turnaround Tony, a 14-year-old off-the-track thoroughbred (now a dressage horse), is ridden by Jenny Spain and owned by Spain and Melinda Freckleton from Haymarket Veterinary Service.

Faculty release textbook on veterinary education

Faculty members at the veterinary college have produced the first textbook specifically about veterinary medical education. Jennifer Hodgson, associate dean for professional programs, and Jacque Pelzer (DVM '97), director of admissions and student services, served as editors of "Veterinary Medical Education: A Practical Guide," published by Wiley Blackwell.



Top: Left to right: Jacque Pelzer (DVM '97), director of admissions and student services and Jennifer Hodgson, associate dean for professional programs.

"When we decided to work on this project, there were already quite a few textbooks on medical education — but none specifically about veterinary medical education," said Hodgson, who is also a professor in the Department of Population Health Sciences. "While we do use medical education textbooks in our work and medical education and veterinary medical education have many similarities, we realized we needed a textbook which would highlight some of the differences and challenges faced by our profession."

The textbook offers a comprehensive resource for veterinary medical educators across the globe and takes a practical, real-world approach for teaching veterinary skills and knowledge. It comprises 38 chapters written by 64 authors from eight countries. In addition to Hodgson and Pelzer, other authors from the college include Karen Inzana, director of assessment, and Cyril Clarke, dean of the veterinary college.

"We wanted the textbook to have a global perspective," said Pelzer, who is also an associate professor in the Department of Population Health Sciences. "We have hopes that veterinary colleges in both developed and developing countries will be able to refer to it for ways to handle their curriculum and get a sense of what other colleges are doing."



Faculty help the body protect itself against inflammation and colon cancer

By Lindsay Key

Could inflammatory bowel disease and colon cancer be prevented by changing the shape of a single protein?

There is an intimate link between uncontrolled inflammation in the gut associated with inflammatory bowel disease and the eventual development of colon cancer. This uncontrolled inflammation is associated with changes in bacteria populations in the gut, which can invade the mucosal tissue after damage to the protective cellular barrier lining the tissue.

But Virginia Tech researchers found that modifying the shape of IRAK-M, a protein that controls inflammation, can significantly reduce the clinical progression of both diseases in pre-clinical animal models.

The altered protein causes the immune system to become supercharged, clearing out the bacteria before they can do any damage. The team's findings were published in eBioMedicine.

"When we tested mice with the altered IRAK-M protein, they had less inflammation overall and remarkably less cancer," said Irving Coy Allen, assistant professor of inflammatory disease in the Department of Biomedical Sciences.

The next step, he said, will be to evaluate these findings in human patients through ongoing collaborations with Carilion Clinic and Duke University.

The team is also evaluating their findings in laboratory-assembled "mini-guts" — live tissue models that Allen and his team assembled by growing intestinal stem cells on petri dishes to form highly complex small intestinal and colon tissue.

Colon cancer is the second leading cause of cancer-related deaths in the United States, according to the Centers for Disease Control and Prevention.

Daniel Rothschild, of Nevada City, California, currently in the combined Ph.D./ Top: Irving Coy Allen (left), assistant professor of inflammatory disease in the Department of Biomedical Sciences and Pathobiology, and doctoral student Daniel Rothschild prepare reagents to detect and characterize IRAK-M in cells.

Bottom right: This image is a mouse intestinal organoid, or "mini-gut," used to study epithelial cell barrier function in ongoing inflammatory bowel disease and cancer studies.

DVM program in the veterinary college, is working in Allen's lab, and was first author on the paper.

"Working on this project alongside Dr. Allen and our fellow collaborators has personally been a great experience," said Rothschild. "It's really exciting when your findings have the potential for clinical implications that can be applied to help patients."

ALUMNI CORNER



Message from the Alumni Society President

Dear Alumni,

As the Virginia-Maryland College of Veterinary Medicine begins what promises to be another outstanding academic year, I am excited to inform you about several new initiatives and ways for you to stay connected as alumni.

First, I am pleased to announce that our alumni will be having a combined reunion for the

DVM Classes of '87, '92, '97, '02, '07, and '12 in Blacksburg on Sept. 15-17. As a member of the Class of '87, I look forward to not only celebrating 30 years as a graduate of the veterinary college, but also connecting with other alumni who are returning to their alma mater. In the future, the Alumni Society hopes to introduce regional events so that alumni can connect with the college closer to home.

To support the work of our Alumni Society Board of Directors, the college recently assembled an Alumni Council, which consists of council agents who have agreed to lead their class by encouraging classmates to stay connected to each other and the college. Your council agent will remind you from time to time about upcoming events and other opportunities. To keep the dialogue open, we want to hear from you. Your council agent is a point of contact for stories about what you are doing and feedback about how the college can better serve you.

As alumni, you play a critical role in shaping the next generation of students and professionals through your participation and engagement. There are many ways to stay connected:

- Join the VMCVM Alumni Facebook Group to learn about news and opportunities for alumni.
- Send your accomplishments and successes to the college advancement team at vetpr@vt.edu.
- Serve as a class liaison when planning reunions, adding class Facebook groups, and other activities.
- Let our Office of Academic Affairs know if you want to assist with prospective student recruitment or participate in clinical training of students on clerkships.
- Lead class projects such as the creation of a new scholarship, fundraising activity, or engagement opportunity.

Thank you for your continued support of the college and significant contributions as alumni. These initiatives are the result of the valuable feedback that we have heard from you, and we look forward to finding even more ways to strengthen the bonds between the college and our more than 2,900 alumni.

Sincerely.

Lisa G. Carter (DVM '87) Alumni Society President

Losa of Carter DVM

Where Are They Now?

A Celebration of Our Alumni and Their Impact

Sarah Wohlford – Efficiency and Sustainability

Sara Wohlford (MPH '14) of Roanoke, Virginia, now works as the efficiency and sustainability program manager at Carilion Clinic. Wohlford, who also earned a bachelor's degree in journalism from Georgia State University in 2000, credits the veterinary college for working with her to tailor her program of study to her "specific vision" and for preparing her for her current role at Carilion.

In her current position at Carilion, Wohlford develops and implements programs to decrease waste and inefficiencies, tracks and reports on environmental sustainability programs, and develops and leads staff education programs. "It was and remains my belief that community health and environmental health are inextricably linked," she explained.



Top: Left to right: Sarah Wohlford (MPH '14) and Kirsten Simpkins (MPH '14)

Kirsten Simpkins – Infection Prevention

Kirsten Simpkins (MPH '14) of Floyd, Virginia, also graduated with her MPH degree and now works as an infection preventionist with the Carilion Roanoke Memorial Hospital. When she heard about the MPH program, Simpkins "immediately knew that I wanted to pursue my graduate education there," she explained.

In her current position, Simpkins monitors communicable diseases and multidrug resistant organisms and provides support to prevent and control infectious disease transmission. Simpkins also conducts epidemiologic investigations if a concern for a potential infectious disease outbreak arises. In addition, Simpkins provides education outreach to staff, healthcare workers, and visitors on proper hand hygiene, disinfection, and isolation practices to prevent the spread of communicable disease.





1: From left to right: Fidelis Hegngi (DVM '94),
James Cosgrove (DVM '94), and Brigette Cosgrove
(DVM '94) attended a reception for alumni and
friends at the North American Veterinary Community
Conference in Orlando, Florida, in February.
2: From left to right: Ruth Peters ('96), Kathryn Samley
(DVM '16), Karah Markins (DVM '16), Erin Struble
(DVM '16), and Lori Pasternak (DVM '98) reconnected
at the reception.

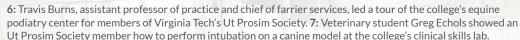


3: Ben Tham, clinical assistant professor of dermatology in the Department of Small Animal Clinical Sciences, presented a continuing education lecture on "Canine Atopic Dermatitis: What We Know and Don't Know" to veterinary and licensed veterinarian technicians at the Frontier Culture Museum of Virginia in March.





- 4: The college was well represented at the 2017 Virginia Veterinary Conference held at the Hotel Roanoke in February. In addition to a strong student presence (pictured here), several college faculty members and alumni received awards at the conference.
- 5: The college hosted a reception during the Society of Toxicology annual meeting in Baltimore in mid-March. Attendees included former Ph.D. and postdoctoral fellows, DVM graduates of the college, sponsors of current research projects, and current faculty. Pictured in the center, Marion Ehrich, professor of pharmacology and toxicology, and Bernard Jortner, professor emeritus of pathology, were among the attendees.







AWARDS & ACCOLADES



X.J. Meng inducted into National Academy of Sciences

The veterinary college hosted a reception to honor X.J. Meng, University Distinguished Professor of Molecular Virology, for his election to the National Academy of Sciences last year. Membership in the academy is one of the highest honors given to a scientist in the United States, and Meng is the fifth faculty member to be elected to the academy while at Virginia Tech and the sixth in the university's history. The reception included remarks from Virginia

Tech President Tim Sands; Provost Thanassis Rikakis; Dean Cyril Clarke; Gerhardt Schurig, former dean; and S. Ansar Ahmed, associate dean for research.

Earlier this year, Meng also received the 2017 State Council of Higher Education for Virginia Outstanding Faculty Award. He is also chair of the organizing committee for the 2017 Summit of the Virginia Academy of Sciences, Medicine, and Engineering, which will take place on Oct. 29-30. Meng is working with U.S. Senator Mark Warner, who is serving as the summit host, on the event.



Travis Burns visits London for Worshipful Company of Farriers ceremony

Travis Burns, assistant professor of practice and chief of farrier services, traveled to London to receive recognition for becoming a Fellow of the Worshipful Company of Farriers. He is one of six Americans to ever achieve this honor, which is the highest possible distinction for a farrier. Established in the 14th century in the United Kingdom, the Worshipful Company of Farriers has only ever had 202 farriers achieve the distinction of Fellow—and only 37 of them are still alive.



Phil Sponenberg named 2017 Distinguished Virginia Veterinarian

D. Phillip Sponenberg, professor of pathology and genetics in the Department of Biomedical Sciences and Pathobiology, has been named the Distinguished Virginia Veterinarian by the Virginia Veterinary Medical Association.

Presented at the Virginia Veterinary Conference at the Hotel Roanoke in February, the prestigious award acknowledges an individual who, by his/her actions, bring recognition to veterinary medicine in Virginia. Sponenberg, who joined the college in 1981, is one of only a handful of faculty members at the Virginia-Maryland College of Veterinary Medicine who have received this distinction.

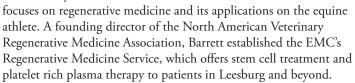
After earning both a bachelor's degree and a doctor of veterinary medicine from Texas A&M University, Sponenberg completed a Ph.D. in veterinary medicine from Cornell University. He has been a featured speaker both nationally and internationally on the topic of breed conservation and genetics and has research interests in genetics of domesticated animals, coat color genetics, conservation of rare breeds of livestock, diagnostic pathology, and reproductive pathology.

Jennifer Barrett honored with 2017 Zoetis Award for Research

Excellence

Jennifer Barrett, the Theodora Ayer Randolph Professor of Equine Surgery at the Marion duPont Scott Equine Medical Center (EMC), received the Zoetis Award for Research Excellence.

Barrett, who joined the EMC faculty in 2007,



Since her arrival, Barrett has served as principal or co-principal investigator on 25 grants totaling more than \$1.6 million. In addition to serving as the major advisor of 11 graduate students and mentoring both Virginia Tech and George Mason University students, Barrett sees equine patients at the EMC and has clinical interests in sports medicine, lameness, diagnostic imaging, and orthopedic surgery. She is board certified in both large animal surgery and equine sports medicine and rehabilitation.

Top: S. Ansar Ahmed, associate dean for research and graduate studies, presented the Zoetis Award for Research Excellence to Jennifer Barrett.

Veterinary college names distinguished alumni award winners

The veterinary college has recognized two alumni with its Lifetime Achievement Award and Outstanding Recent Alumni Award.

Steven T. Shipley (DVM '97) of Chapel Hill, North Carolina, was honored with the 2017 Lifetime Achievement Award. Shipley, has had a long and distinguished career in laboratory animal medicine. He is currently the director of the Laboratory Animal Medicine Residency Training Program, the associate director of veterinary services within the Division of Laboratory Animal Medicine, and an associate professor in pathology and lab medicine at the University of North Carolina at Chapel Hill.

Michael W. Nolan (DVM '09) of Raleigh, North Carolina, was honored with the 2017 Outstanding Recent Alumni Award. Nolan, is currently an assistant professor of radiation oncology and biology at N.C. State College of Veterinary Medicine. He is one of only 78 diplomates of the American College of Veterinary Radiology's radiation oncology specialty.

Bottom: Left to right: Steven T. Shipley (DVM '97) and Michael W. Nolan (DVM '09).





More Awards & Accolades

Several graduate students in the biomedical and veterinary sciences program took home top honors at the 2017 Virginia Tech Graduate Student Assembly Research Symposium. Kristin Eden, Lauren Sheehan, and Veronica Ringel won the gold, silver, and bronze awards for best oral presentation, respectively.

Norris "Norrie" Adams, clinical assistant professor in equine lameness and surgery at the Marion duPont Scott Equine Medical Center in Leesburg, Virginia, has achieved Diplomate status through the American College of Veterinary Sports Medicine and Rehabilitation (equine). He previously achieved board certification through the American College of Veterinary Surgeons.

Larry Freeman was conferred the title "associate professor emeritus of veterinary anatomy" at the April 3 meeting of the Virginia Tech Board of Visitors.

David Grant, associate professor of internal medicine in the Department of Small Animal Clinical Sciences, was awarded the veterinary college's 2017 Zoetis Distinguished Teacher Award.

Shaohua Lei, a Ph.D. student in the biomedical and veterinary sciences, was named the veterinary college's 2017 Outstanding Doctoral Degree Student.

Noelle Muro, a graduate student in biomedical and veterinary sciences, was named the veterinary college's 2017 Outstanding Master's Degree Student.

Daniel Nelson, associate professor in the Department of Veterinary Medicine at the University of Maryland, College Park, is the recipient of the 50th Annual College of Agriculture and Natural Resources Alumni Award for Excellence in Research.

Lijuan Yuan, associate professor of virology and immunology in the Department of Biomedical Sciences and Pathobiology, received the veterinary college's 2017 Outstanding Faculty Mentor Award.



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Upcoming Events

Aug. 26 — The VMCVM Alumni Society and the Office of Advancement Welcome Back Picnic, Blacksburg, VA

Sept. 15-16 — Reunion for Classes of '87, '92, '97, '02, '07, '12 -Blacksburg, VA

Oct. 5-6 — Mentor Workshop, Blacksburg, VA

Nov. 18 — Virginia Tech vs. Pittsburgh pre-game tailgate, Blacksburg, VA

Make a Difference

It's always a great time to give! By helping us to advance our strategic priorities and fulfill our mission of training veterinarians, your gifts also benefit pet owners, industry, and society at large.

To support the college or learn more about ways to give, contact our Development Office at 540-231-0465 or visit us online at www.vetmed.vt.edu/development

Join the Conversation!

Facebook, Instagram & Twitter: /VaMdVetMed LinkedIn Group: VA-MD Vet Med Flickr: /photos/VA-MD-VetMed/











Above: Clinical nutrition resident Lauren Dodd holds Shakespeare, a participant in the veterinary college's clinical trial for overweight and obese cats. Megan Shepherd, assistant professor of clinical nutrition, and Dodd launched a study earlier this summer to test the effectiveness and owner-perceived quality of life from individual weight loss plans. The researchers are looking for 60 "fat cats" for the Purina-sponsored study, which is already well underway thanks to local news attention on the study. Read more at: www.vetmed.vt.edu/clinical-trials/ Photo by: Logan Wallace