

CVM News July-December 2017

Mizzou Announces New Animal Research Adoption Partnership
Carolyn Henry Receives Kirk Award
Biomed Undergraduate Receives National Fellowship
Virtual 5K Run for Research Awareness Benefits Homes...
CVM's Rosenfeld Chosen for Review Board of Prestigious...
CVM Alumnus Will Receive Veterinary Service Award
Former CVM Associate Dean Corley Passes Away
Lorson Selected as CVM Interim Associate Dean
Professor Emeritus Homer Dale Passes Away
Fighting Cancer: Natural and Synthetic Progestin Therapies in Post-Menopausal Women Help Breast Cancer Grow and Spread
CVM's Rottinghaus Recognized for International Engagement
USDA Grants MU \$460,000 to Develop Immunizations for Tick-Borne Disease
Former CVM Assistant Professor Wagstaff Passes Away
Raj and Liz: Lives Devoted to Serving Others
A Video Message from Dean Henry
Horses Working in Therapeutic Riding Programs Do Not Experience Additional Stress, MU Study Finds
Bruce Whittle Named CVM 2017 Alumnus of the Year
Universities Rally Together at Mizzou-Auburn Game to Save Tigers
New Research to Investigate the Effect of Shelter Cat Adoption on Stress and Anxiety in Children with Autism
MU Veterinary Medicine Resident Receives High Honors at European Conference
Mann Receives Distinguished Service Award at International Symposium
The D.V.M. – The Dean's Video Message (October 2017)
Recipe for Success
Life in the fast lane
Author and Inspirational Speaker Coming to Mizzou
Retired VMDL Director Harvey Gosser Passes Away
Clinical Rotations Commence for CVM Class of 2019
21st Veterinary Products Event Held
MU Hosting Veterinary Educators World Symposium
The D.V.M. – The Dean's Video Message (November 2017)
Fighting disease and world hunger: New PET/CT scanner opens at the University of Missouri
CVM to Receive Shikles Distinguished Service Award
Plan for Family and Pets in Case of Disaster
CVM Ophthalmology Resident's Research Receives ACVO Award
MU Veterinary Team Walks in the Footsteps of Darwin

[Mizzou Announces New Animal Research Adoption Partnership](#)

Homes for Animal Heroes partnership to augment robust adoption program at MU

June 15, 2017

Story Contact(s):

Jeff Sossamon, sssamonj@missouri.edu, 573-882-3346

Link:

<http://munews.missouri.edu/news-releases/2017/0615-mizzou-announces-new-animal-research-adoption-partnership/>

Carolyn Henry Receives Kirk Award for Professional Excellence

Carolyn Henry, College of Veterinary Medicine associate dean for the Office of Research and Graduate Studies and incoming interim dean for the college, is the 2017 recipient of the Robert W. Kirk Award for Professional Excellence. Presented annually by the American College of Veterinary Internal Medicine (ACVIM), the award recognizes outstanding achievements and dedicated service to the veterinary profession. Kirk Award recipients' careers in veterinary medicine have garnered national and international recognition for contributions and service in activities such as clinical medical practice, instruction, research or public service.

"I look at the list of prior recipients, I am incredibly humbled," Henry said. "It is, without a doubt, the greatest honor I have ever received."

Henry, DVM, MS, ACVIM (Oncology) earned a doctor of veterinary medicine degree at Auburn University. She practiced small animal and emergency medicine in Alabama and Georgia before returning to Auburn to complete an oncology residency and a master of science degree. She joined the faculty of the University of Missouri in 1997 as an assistant professor of oncology. She became the first American College of Veterinary Internal Medicine board-certified oncologist at MU. In 2001 she received a dual appointment with the MU School of Medicine and in 2002 she became the director of the Tom and Betty Scott Endowed Program in Veterinary Oncology.



Since April 2010 she has served as the faculty facilitator for the Mizzou Advantage One Health/One Medicine initiative within the Office of the Provost. She was appointed associate director of research for the Ellis Fischel Cancer Center in 2012, and has served as the CVM associate dean for the Office of Research and Graduate Studies since 2013.

Her research has focused on clinical and translational science as it applies to improved diagnostics and therapies for cancer. She is best known for her research in bladder cancer. Canine bladder cancer is comparable to late-stage disease in people in that it is often invasive before clinical signs are detected in dogs. Henry's work has centered on biomarker evaluation for earlier detection of bladder cancer and improved therapies for patients with late-stage disease. She developed a chemotherapy protocol for canine bladder cancer that was evaluated in a multi-institutional clinical trial led by MU and is considered the standard-of-care today.

Henry has served on the ACVIM Board of Regents and is past president of both the Veterinary Cancer Society and the ACVIM Specialty of Oncology. In 2014 she was elected to the National Academies of Practice as a distinguished fellow and the Veterinary Medicine Academy as a distinguished practitioner and fellow.

She was nominated for the Kirk Award by CVM colleague Jeffrey Bryan, associate professor of veterinary oncology. Bryan, DVM, MS, PhD, DACVIM (Oncology), presented the honor during the ACVIM Forum June 8 in National Harbor, Maryland.

"One of Carolyn's greatest cited characteristics is the fact that she never meets a stranger," Bryan said. "She has a unique ability to engage, include and inspire those around her."
"Any successes attributed to me have been part of a much larger group undertaking," Henry countered. "I have been blessed to have the tremendous support of colleagues, students, staff, clients, friends and family throughout my career."

During the awards ceremony, Bryan introduced a video with tributes to Henry offered by colleagues and former students. The video can be viewed [here](https://www.youtube.com/watch?v=09KTjgnrECw). (LINK: <https://www.youtube.com/watch?v=09KTjgnrECw>)

Biomed Undergraduate Receives National Fellowship

Maloree Khan, a senior biochemistry major and undergraduate researcher in the MU College of Veterinary Medicine Biomedical Sciences Department, was awarded a summer research fellowship from the American Physiological Society (APS).

Khan, a dean's list student from St. Louis, received an APS STRIDE Fellowship. The STRIDE program — Short-Term Research Education Program to Increase Diversity in Health-Related Research — is designed to help undergraduate students nationwide from underrepresented racial and ethnic groups, disadvantaged backgrounds, and individuals with disabilities to work with APS member researchers in the fields of cardiovascular, pulmonary, hematologic, and sleep disorders research. Applicants must be full-time undergraduate students and have an overall GPA greater than 3.0.

Khan has a research interest in whether the chronic elevations of a particular hormone produces worse outcomes in patients by limiting the ability of certain receptors in blood vessels to regulate blood flow to the heart.

"I will be working in Dr. Shawn Bender's lab," Khan said. "My project will be focused on elucidating the impact of chronic hormonal changes associated with cardiovascular disease on a critical protective mechanism in the heart involving the regulation of coronary blood flow."

"Maloree is a fantastic student," said Bender, PhD, an assistant professor in the Department of Biomedical Sciences, investigator at the Dalton Cardiovascular Research Center and research health scientist at Harry S. Truman Memorial Veterans' Hospital. "She's driven, engaged in her work, diligent, and responsible. These fellowships are nationally competitive; only 10 were awarded this year, and being selected as a fellow is indicative of Maloree's high potential. She's very intelligent, and a genuine, caring person."

STRIDE Fellows complete 10 weeks of a summer research experience and professional development activities on their campus, plus interactive, online activities with fellows nationwide, exploring career options, responsible conduct of research, structuring research studies, developing abstracts, and presenting research posters.

"I was at home in St. Louis when I got the email saying that I'd been awarded the fellowship," Khan said. "Being able to celebrate with my family made it even more special."

Khan was also offered an MU summer fellowship, but students are not allowed to have both. The APS fellowship offered benefits to both Khan and Bender.

"It's really a win-win situation," Bender said. "She gets a summer stipend and gets to further her work and research experience. And, her fellowship frees up funds in my budget that now can be applied to other programs."

All APS STRIDE Fellows receive two-year complimentary undergraduate student membership in the APS and a travel award to the annual Experimental Biology meeting, a multi-society interdisciplinary, biomedical, and scientific meeting that features plenary and award lectures, symposia, oral and poster sessions, a placement center, and an exhibit of scientific equipment, supplies, and publications. The 2018 meeting will be held April 21-25 in San Diego.



Continued on next page....

“Working in a physiology lab has provided me with valuable scientific skills and knowledge,” Khan continued. “All the members of my lab have helped me greatly with my project, and Dr. Bender actively supports all my scientific and academic pursuits, so I owe them all a great deal of thanks. Physiological research is important to me because of its translational benefits in medicine.”

When she is not at school or in the lab, Khan enjoys running, listening to music, cooking, and hiking.

Virtual 5K Run for Research Awareness Benefits Homes for Animal Heroes

Residents in MU's Comparative Medicine Program organized and conducted a virtual 5K run to support Homes for Animal Heroes, a nationwide network that works with the research community to find loving, permanent homes for retired research animals that contributed to biomedical research.

A virtual 5k allows participation from *virtually* anywhere: a neighborhood, a local park, a beach, a track, or even a treadmill. Participants were encouraged to run, walk or jog with their pets, families, co-workers, or friends, and to raise money to support the rehoming effort. Mizzou Woof Pack supported the virtual 5K and decided to hold a formal event and run the 5K together on May 21 at the Katy Trail State Park Rocheport trailhead.

Team members formed the Woof Pack in order to combine forces, raise more money and make a bigger difference together than they could as individuals. The team's Run for Research Awareness fundraising Facebook page facilitated donations to Homes for Animal Heroes. Mizzou Woof Pack is currently the nation's No. 2 fundraising team in the event.

"Our fundraiser goal was \$1,500 and we surpassed it," said Willie Bidot, a graduate student in biomedical sciences/comparative medicine emphasis and a member of the Woof Pack. "We have raised \$2,730 so far, and we are still taking donations through June 30. Homes for Animal Heroes set an overall goal of \$50,000, and they are within \$5,000 of reaching that goal."

"The University of Missouri has a very diverse research program that is committed to the humane care and use of animals in research and teaching," said Bidot. "Our Comparative Medicine Program is always looking for ways to improve research awareness and to educate the public on animals in a research setting. Homes for Animal Heroes has been on the forefront sharing knowledge and creating awareness on this subject. They have also established a great rehoming network that encourages and assists institutions in fostering or adopting out research animals of various species. We decided to donate and run for this great cause because we are very passionate about what we do, want the public to be well informed, and want our animal heroes to find great homes."

The Comparative Medicine Program trains students to advance human and animal health through animal medicine research. Students in the program may pursue either a master's degree or PhD. The curriculum prepares graduates for careers including comparative medicine research, clinical and administrative laboratory animal medicine, or comparative and diagnostic laboratory animal pathology.

The Homes for Animal Heroes network is directed and operated by the National Animal Interest Alliance, a broad-based animal welfare organization founded in 1991 and based in Portland, Oregon. The University of Missouri recently [announced](#) that it is partnering with Homes for Animal Heroes to expand its adoption program.



MU CVM Professor Craig Franklin, DVM, PhD, DACLAM, runs along the Katy Trail State Park as part of the Woof Pack, raising funds for Homes for Animal Heroes.

CVM's Rosenfeld Chosen for Review Board of Prestigious NIH Science Journal

Cheryl S. Rosenfeld, an associate professor of biomedical sciences at MU's College of Veterinary Medicine (CVM), has been named to the editorial review board of the scientific journal *Environmental Health Perspectives*.

A monthly peer-reviewed journal of research and news, *Environmental Health Perspectives (EHP)* is published with support from the National Institute of Environmental Health Sciences, National Institutes of Health, and the U.S. Department of Health and Human Services. *EHP*news content is prepared by science journalists and reviewed by subject matter experts.

"This is truly an honor to be invited to be part of the editorial review board at *EHP*," Rosenfeld said. "It exemplifies the fact that the University of Missouri is becoming recognized in the environmental health sciences field. As a member of this board, I hope to be able lend my expertise in veterinary medicine and promote the notion that the One Health, One Medicine concept is especially applicable in this field as humans and animals share common environments."



Dr. Cheryl S. Rosenfeld

Rosenfeld, DVM, PhD, teaches veterinary microanatomy and veterinary pharmacology at the CVM. She also serves as an investigator at the Bond Life Sciences Center, as a research faculty member in the Genetics Area Program, and as a researcher for the Thompson Center for Autism and Neurobehavioral Disorders.

"Dr. Rosenfeld came highly recommended for the *EHP* Editorial Review Board by one of our associate editors who attested to her scientific expertise in endocrinology and the rigor of her reviews for other journals," according to Sally Perreault Darney, *EHP*'s editor-in-chief. "*EHP*'s reputation for publishing highly credible environmental health research is built upon effective and fair peer review. We are delighted to welcome Dr. Rosenfeld to our Editorial Review Board where she will help us evaluate the scientific quality of manuscripts about environmental influences on reproductive health."

EHP's mission is to serve as a forum for the discussion of the interrelationships between the environment and human health by publishing high-quality research and news of the field. It is one of the most highly ranked journals in toxicology, public, environmental and occupational health and environmental sciences.

Published since 1972, *EHP* has been online-only since January 2013. *EHP* is open access, and all content is available for free online.

CVM Alumnus Will Receive Veterinary Service Award

William Williams, DVM '95, has been tabbed to receive the 2017 William P. Switzer Award for service to the Iowa State University College of Veterinary Medicine and the Iowa Veterinary Medical Association.

Williams is co-owner of Hubbell Animal Hospital in Des Moines, Iowa, and Altoona Veterinary Hospital in Altoona, Iowa. Veterinary medicine is a family business for Williams, who is married to Amanda Fales-Williams, DVM '95, PhD, an associate professor of veterinary pathology at Iowa State. Fales-Williams had the rare privilege of hooding her father, William H. Fales, MS, PhD, when he became the MU CVM's first honorary veterinarian during May 2017 commencement.

The Switzer Award was created in 1998 to recognize individuals who have made outstanding contributions to society and to the ISU CVM. In addition to professional achievements, these individuals will also have had an association with the college that has made a positive impact for teaching, research or service. Nominees may be veterinarians or non-veterinarians, alumni or non-alumni.

Bestowed annually in October, the Switzer Award was named to honor an ISU researcher who made major contributions to the understanding of swine respiratory diseases. William P. Switzer, DVM, PhD, served as a faculty member and administrator in the College of Veterinary Medicine from 1948 until he retired as associate dean emeritus and distinguished professor emeritus in 1990.



William Williams, DVM '95

Former CVM Associate Dean Corley Passes Away

E.A. (Al) Corley, DVM, PhD, who served the University of Missouri College of Veterinary Medicine as a professor and associate dean, passed away July 7 after a long battle with cancer. He was 85.

Visitation will be held from 10-11 a.m Tuesday, July 18, followed by a memorial service at Memorial Funeral Home in Columbia, Missouri.

Corley was born Aug. 12, 1931, in Greenwood, South Carolina. He worked on the farm, and worked for the local veterinarian, cleaning out small animal kennels and assisting in minor surgeries.

He earned a degree in animal husbandry from Clemson A&M. However, his plan to earn a doctor of veterinary medicine was put on hold when he was called to serve in the Korean War. Corley was an infantry platoon leader, and a first and second lieutenant, attached to the Army's Rainbow and Thunder divisions. He was awarded two bronze stars and the Purple Heart.

He returned home from war in 1953 and began his veterinary medical studies at the University of Georgia. He earned his DVM in 1957. He stayed at the college until 1963 when he started a PhD program in radiology at Colorado State University.



E.A. (Al) Corley, DVM, PhD

Corley accepted a faculty position at the MU CVM in 1966. He served as an associate professor and professor of veterinary medicine and surgery. He also served the CVM as an associate dean. He was instrumental in building the Radiology Department. He received numerous awards for teaching and leadership.

In 1967, during his tenure at MU, Corley became affiliated with the Orthopedic Foundation. After his retirement from MU in 1989, he took over as the organization's director and later president. In 1996, he retired from OFA, but continued to read radiographs as a consultant until this year.

Corley is survived by his wife, Meredith; brother and sister-in-law, William (Bill) Corley (Sally); sons Rick (Mary) and David (Carolyn); step-son Richard (Kathy); and step-daughter, Robin (Tenny); and 10 grandchildren.

Lorson Selected as CVM Interim Associate Dean

University of Missouri College of Veterinary Medicine Interim Dean Carolyn Henry recently announced that Christian Lorson will serve as interim associate dean for the Office of Research and Graduate Studies, effective Aug. 1. The associate dean vacancy was created when Henry, DVM, MS, ACVIM (oncology), was named interim dean.

As associate dean, Lorson will provide administrative leadership, supervision and coordination of all research activities of the college; oversee research development; manage research resources; and ensure research compliance with requirements of MU's Institutional Review Board, the Institutional Animal Care and Use Committee, MU's Office of Environmental Health and Safety, and laboratory animal welfare laws and regulations.

Other responsibilities will include assisting the dean, department chairs, directors of graduate studies, and faculty in the management of graduate programs within the college, and serving as a liaison to the MU Office of Research and Graduate Studies. He will also have a variety of administrative duties.

Lorson, PhD, is a professor in the CVM's Department of Veterinary Pathobiology and an investigator at the Christopher S. Bond Life Sciences Center. Lorson has research interests in molecular genetics, gene therapy, RNA processing, neurodegeneration, and animal models of disease.

The Lorson lab has a particular focus on spinal muscular atrophy (SMA), a devastating disease that is the leading genetic cause of infantile death worldwide. The lab is collaborating with several groups to develop new drugs, with a goal of moving closer toward clinical trial. Lorson has served as scientific director at FightSMA since 2005.

Lorson received his PhD from the MU School of Medicine and received postgraduate training at Tufts University School of Medicine in Boston.



Dr. Christian Lorson

Professor Emeritus Homer Dale Passes Away

University of Missouri College of Veterinary Medicine Professor Emeritus Homer E. Dale, 95, of Solon, Iowa, passed away at the hospice unit at Mercy Hospital in Iowa City on July 22, 2017, after a short battle with lymphoma.

Professor Emeritus Homer E. Dale

Per his request, no formal services will be held.

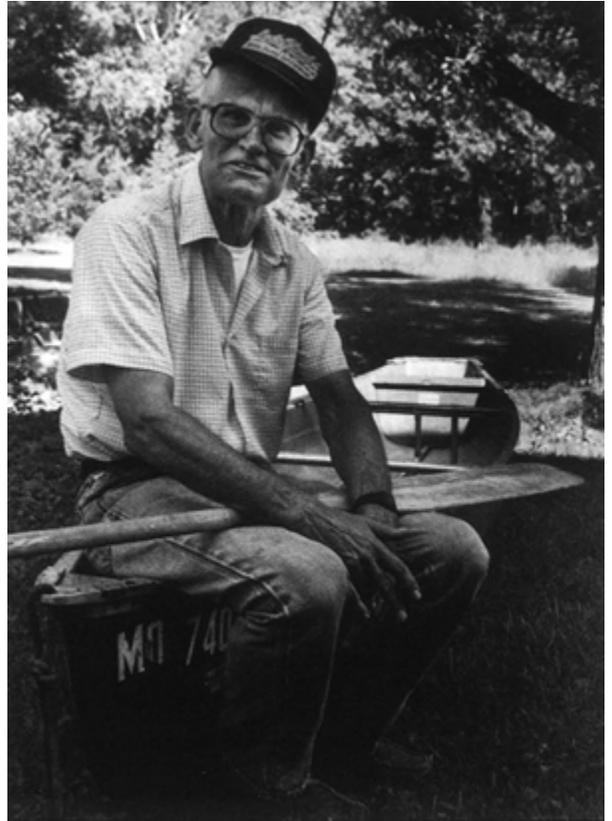
He was born in Minneapolis, Minnesota. He received his doctor of veterinary medicine and a master of science in physiology in 1944 from Iowa State University.

Following appointments at the University of Wisconsin and Texas A&M, he received his doctorate in physiology in 1951 from the University of Missouri. He remained at MU, where he taught anatomy and physiology at the CVM. He received the Norden Distinguished Teacher Award multiple times, served as chairman of the college's Department of Veterinary Physiology and Pharmacology for six years and authored more than 60 scientific publications. Additionally, he taught at Ross University School of Veterinary Medicine on the island of St. Kitts in the Caribbean for two years.

He retired as professor emeritus in 1985.

An avid outdoorsman, after retiring from MU, he canoed the entire length of the Missouri River from its headwaters to the Gulf of Mexico with his beloved toy poodle, Suki.

He is survived by his sister, Pan Gross of Philadelphia, Pennsylvania; his four children, Cynthia Churchill of Columbia, William Dale (Louanne) of Portland, Oregon, Susan (Michael) Wall of Solon, Iowa, and Sally (Tom) Greene of Columbia; grandchildren, Aaron Gravesdale (Meg) of Vancouver, British Columbia, Sara Dale Bley (David) of Denver, Colorado, Christopher Dale of Columbia, Eric Wall of Des Moines, Iowa, Kurt Wall of New Orleans, Brian Wall of Iowa City, Iowa, Thomas Greene of St. Louis, Julia Greene of Salt Lake City; step-grandchildren, Erin Fay of Portland, Oregon, and Garrett (Jenny) Fay of Las Vegas, Nevada; and great-grandchildren, Max, Annabelle, and Chloe.



Professor Emeritus Homer E. Dale

Fighting Cancer: Natural and Synthetic Progestin Therapies in Post-Menopausal Women Help Breast Cancer Grow and Spread

Mizzou researchers find hormone replacement therapies could cause spe-

Hormone replacement therapies, or medications containing female hormones that substitute those no longer produced by the body, often are prescribed to reduce the effects of menopausal symptoms in women. Research has indicated that women who take hormone replacement therapies have a higher incidence of breast cancer. Now, researchers at the **University of Missouri** have linked natural and synthetic progestins to the body's production of specialized cancer cells that act like stem cells in humans. Findings could help scientists target these rare cells that proliferate in breast cancers and metastasize elsewhere, and may help clinicians identify immunotherapies to combat the spread of the disease.

“In previous studies, we have shown that both natural and synthetic progestins accelerate the development of breast cancer and increase their metastasis to lymph nodes,” said Salman Hyder, the Zalk Endowed Professor in Tumor Angiogenesis and professor of biomedical sciences in the [College of Veterinary Medicine](#) and the [Dalton Cardiovascular Research Center](#). “Our laboratory is committed to identifying the cell mechanisms that bring about increased breast cancer risks. Recently, our research focused on special cells—which are called ‘cancer stem cell-like cells’—that induce aggressive tumor growth, metastasis and cancer recurrence.”

In a series of tests, the team used hormone-responsive human breast cancer cells to examine the effects of progestin on the cell markers typically found in breast cancers. Both natural and synthetic progestins significantly increased protein expression of CD44, a molecule involved in cell proliferation, cell communication and migration. Additionally, the presence of progestins caused these components to behave like cancer stem cell-like cells.

These rare cells are a small population of cells that—acting like normal stem cells—are self-renewing, create identical copies of themselves and proliferate exponentially. Further testing showed that the rare subset of cancer cells actually was enriched by progestin.

“The findings show that exposure to natural and synthetic progestins leads to the development of these cancer stem-cell like cells,” Hyder said. “These cells greatly increase the likelihood of resistance to therapies and the risk for metastasis. Our findings also suggest that clinicians may be able to combat the progestin-dependent tumor growth through immunotherapy.”



Salman Hyder and his team have linked natural and synthetic progestins to the body's production of specialized cancer cells that act like stem cells in humans. Findings could help scientists target these rare cells that proliferate in breast cancers and metastasize elsewhere, and may help clinicians identify immunotherapies to combat the spread of the disease.

Continued on next page....

Researchers involved with the study included Sandy Goyette, a graduate student in Hyder's lab; Yayun Liang, a research associate professor of biomedical sciences in the College of Veterinary Medicine and the Dalton Cardiovascular Research Center at MU; Benford Mafuvadze, formerly a post-doctoral fellow in Hyder's lab; Matthew T. Cook, a recent doctoral graduate and research scientist at Dalton Cardiovascular Research Center; and Moiz Munir, a Division of Biological Sciences and Capstone Scholar in Hyder's lab.

The study, "[Natural and synthetic progestins enrich cancer stem cell-like cells in hormone-responsive human breast cancer cell populations in vitro](#)", recently was published in *Breast Cancer – Targets and Therapy* with funding provided through the College of Veterinary Medicine Committee on Research and the generosity of donors to the Ellis Fischel Cancer Center at MU. The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

[Story courtesy of MU News Bureau](#)

CVM's Rottinghaus Recognized for International Engagement

George E. Rottinghaus, a clinical professor in the Department of Biomedical Sciences at MU's College of Veterinary Medicine (CVM), received the 2017 MU International Engagement Award, an honor that recognizes outstanding MU faculty, staff and students for work with an international impact.

Rottinghaus, PhD, is an analytical chemist and clinical professor of toxicology who performs research at the CVM's Veterinary Medical Diagnostic Laboratory (VMDL). Shuping Zhang, director of the VMDL and a professor of veterinary pathology, nominated Rottinghaus for the award.

Zhang, PhD, MS, ACVM, noted in her nomination that Rottinghaus "has hosted and provided training for international students for more than 10 years," and "developed strong teaching and research collaborations with a number of colleagues around the world."

Rottinghaus has trained visiting scholars from Ethiopia, Guyana, India, Mozambique, Nigeria, Serbia, South Africa, South Korea and Spain in his laboratory. The list of international universities and institutes that collaborate with Rottinghaus on research projects is nearly as long. He has traveled to many of those countries, plus Costa Rica, Mexico, the Netherlands and New Zealand to teach, research, help with grants and establish working relationships.

The measure of Rottinghaus' international respect is perhaps greatest in Brazil, particularly with colleague Carlos Augusto Oliveira and the University of Sao Paulo (USP) campus in Pirassununga. In addition to his duties at MU's CVM, Rottinghaus is an adjunct professor in the Department of Food Engineering (FZEA) at USP-Pirassununga.

Since 2014, the department's research facilities have carried Rottinghaus' name, in tribute to his commitment to collaborative research and teaching, and his impact on mycotoxin research.

"When Dr. Oliveira first told me about naming the facilities, I thought he was kidding," Rottinghaus remarked. "I told him, 'I'm not giving you any money; you can just forget that.' My daughter, who works at the Centers for Disease Control and Prevention in Atlanta, found out about it and said, 'Dad, you're not even dead yet.'"



Colleague Carlos Augusto Oliveira, PhD, MPH, reveals new signage for the George E. Rottinghaus Laboratory of Microbiology and Food Mycotoxicology, Department of Food Engineering, at the University of Sao Paulo—Pirassununga. The building was named in honor of Rottinghaus in 2014.

Continued on next page....

The only reason he did that was because I told him what a mycotoxin is,” Rottinghaus says with a smile. “He didn’t know what a mycotoxin was. Had no idea. We taught them about mycotoxins, and now he has a full career based on mycotoxins. So, I think he just did it as appreciation for getting him into mycotoxins. It’s not a big deal — it’s not like having your name on the business school — but I appreciate it.”

Rottinghaus’ field is toxicology and his focus is mycotoxins, toxic metabolites produced by organisms of the fungus kingdom. They are capable of causing disease and death in humans and animals. The term mycotoxin is usually reserved for the toxic chemical products produced by fungi that readily colonize crops.

“Dr. Rottinghaus’ current research program involves the investigation into the effects of mycotoxin contamination of animal feed ingredients and an evaluation of methods to detoxify contaminated feedstuffs,” Zhang explains. “Mycotoxin contamination of livestock feedstuffs is a major concern of the livestock industry worldwide. It has been estimated that up to 25 percent of the world’s food crops may be contaminated with mycotoxins and mycotoxin-contaminated grains have been estimated to cost U.S. grain handlers and the livestock industry several hundred million dollars annually.”

“During my PhD at Iowa State, I worked with natural products, isolating compounds from plants, that sort of stuff, so the mycotoxins were kind of the same thing,” Rottinghaus says. “They are a little different organism, but these mycotoxins are natural products. I did a post-doc in toxicology at the Iowa State Vet School, which is exactly the same thing I have here, in the diagnostic lab in toxicology.

“In 1980, a job became available here,” Rottinghaus says. “They needed a chemist in the toxicology lab here at Missouri, because they’d never had one.”

THE BRAZILIAN CONNECTION

During his years at MU, Rottinghaus has developed a collegial relationship with David Ledoux, an emeritus professor of animal nutrition at MU’s Animal Science Research Center.

“Dr. Ledoux had the Brazilian connection to start with,” Rottinghaus says. “I went with him to Brazil and met some of the people in food science and engineering. That got the relationship started about 10 years ago.”

Rottinghaus teaches a graduate course on Methods for Mycotoxin Analysis of Foods every other year in Brazil. He co-teaches the course with Oliveira and gives additional lectures in the Animal Science Department and the Veterinary School as part of a separate mycotoxin course offered by Ledoux. Rottinghaus also offers training and expertise to graduate students working in the mycotoxin research area under Oliveira and Professors Andrezza Fernandez and Carlos Corasin. He is a major contributor to a three-year grant led by Oliveira.



The Rottinghaus lab staff lunches together every Wednesday at a different eatery.

Their school system is different from ours,” Rottinghaus explains. “In the U.S. we go to school through high school for free, then we pay for college. At USP-Pirassununga, everyone there took a test after high school and came out in the top 5 percent of the country. The entire school is 5-percenters who go to school for free. To get that education, their parents had to pay for their kids to go to high school. Most of those students went to private school to get to that point.”

Another key difference between higher education in the U.S. and in Brazil paved the way for close collaboration between Rottinghaus and his peers in Pirassununga.

“Theirs is a five-year program. Built into that program are internships, usually three or six months, sometimes up to a year,” Rottinghaus says. “The students have to leave the academic world and go do an internship in order to get their degree. They’ll do one or two internship during their five-year program. So, they needed places to put a whole bunch of people.”

Some of the students go to Europe for internships, but many come to the U.S. Students in the Department of Food Engineering often find internships at food companies, but they can also work in a research lab to fulfill their requirement.

“With me being an analytical chemist, and analyzing food and feed stuffs, they could come here and get training on analyzing for compounds in food or feed,” Rottinghaus states. “There’s nothing magical about the mycotoxin. If you know how to analyze for it, you can analyze for something else very easily if you know how to use the equipment. A lot of our Brazilian visiting scholars get jobs because of the analytical training they received here. It may not be mycotoxins, but it’s the same methodology, the same equipment.”

During the past 10 years, Rottinghaus has worked with a total of 40 students from USP-Pirassununga. The most recent of the visiting scholars are graduate student Larissa Tuanny Franco and undergraduate Amanda Chan Cirelli. Franco first came here as an undergraduate for a six-month internship.

“In Brazil, I worked with mycotoxins and my teacher told me about George,” Franco says. “I came here and I loved it. Now, I am here doing my PhD with mycotoxins because I really liked the last experience I had here. Before I came here the first time, I imagined I would end up working in a factory. My first experience here changed my mind. Now, I’ll be working in a laboratory, and maybe be a professor someday. If I had the opportunity, I would come back here. I like living here.”

Cirelli is heading to the University of California-Davis for a research internship, then will return to Brazil in December to finish her degree. “My plan is to come back and do my grad school here,” she says.

When the inevitable question of “why mycotoxins?” comes up, Cirelli is succinct.

“We work with natural substances that can kill a human or animal,” she says. “We also work with natural materials that can absorb and neutralize deadly substances. That’s just so cool, and it’s really important when you think about it.”

Continued on next page....

Most people who work with chickens, pigs or cows know about mycotoxins,” Franco explains. “Most other people have no idea. In Brazil, I went to a lot of farms that plant corn. There are a lot of mycotoxins in corn, but many of the people who work on the farms have no idea about mycotoxins.

“We receive a lot of samples from all over,” Franco says. “We prepare the samples for high-performance liquid chromatography (HPLC) and we now work with mass spectrometry. In the HPLC, I see if the sample absorbs the mycotoxin.”

THE WORK

“Industry farms out a lot of work to the university,” Rottinghaus says. “Why have your own animal trials that run three months, and then have nothing to do for the facilities or the people who work there for the other nine months? So, they bring their project to the university. That’s what I do with my equipment. Other people here on campus, other campuses around the U.S., and other institutions around the world send samples here.

“We get publications out of their work because they could not have done that work without sending it here,” Rottinghaus continues. “We do odd stuff. Some of the stuff we do, virtually no one else does, just us. This is where the visiting scholars from Brazil come in – they run the samples.”

Rottinghaus advises that care must be taken with the internships.

EVEN THE PARENTS CALL HIM DAD

In return for their hard work, Rottinghaus gives the international students plenty of time off to explore their temporary home.

“I take them to the outlet mall at the Lake of the Ozarks,” Rottinghaus says. “We get down there at 9 a.m., and at 5 p.m. they’re still not ready to go. Those red benches become my home down there.

“They want to see New York, but I tell them they need to see the Jacks Fork and Current rivers. You need to put Eminence, Missouri, right up there with New York,” he says. “I take them all down there for three days, rafting on the river, seeing the big springs and all that stuff. I take them all over the place.”

“He’s your boss, he’s your friend, and he’s like your dad,” Franco adds.



Rottinghaus with visiting scholars Larissa Franco (left) and Amanda Chan Cirelli. The Brazilian students recently completed six-month internships in the Rottinghaus lab.

Continued on next page....

THE FINAL WORD

“The strong international program that Dr. Rottinghaus has developed between the University of Missouri and the University of Sao Paulo should be used as a model for developing international relations with other universities worldwide,” Zhang said in her nomination. “Dr. Rottinghaus’ sustained commitments to international work and his great achievements in training international students and scholars should be recognized by the entire MU system.”

USDA Grants MU \$460,000 to Develop Immunizations for Tick-Borne Disease

New study targets bovine anaplasmosis, a major disease in cattle

Anaplasmosis is an infectious blood disease in cattle caused by certain bacteria transmitted by ticks worldwide. The U.S. Department of Agriculture recently awarded \$460,000 to [Bill Stich](http://vpbio.missouri.edu/faculty/Roger_Stich.html) (link: http://vpbio.missouri.edu/faculty/Roger_Stich.html), professor of parasitology in the **University of Missouri College of Veterinary Medicine** (link: <http://cvm.missouri.edu/>), to study a new approach to interfering with this pathogen in the tick vector. Building on existing research, he and his team are working to develop immunizations with extracts from tick tissues to fight the disease.

It has been estimated that more than 80 percent of beef cattle are affected by ticks. Anaplasmosis, which is passed by ticks through their bite and saliva, infects the red blood cells and causes severe anemia, fever and weight loss; it is known to be fatal. Currently, prevention and control of this disease involves chemical pesticides and antibiotics to control ticks and infections, respectively; however, ticks are developing resistance to these methods.

“Ticks are important pests, but their main importance is in the transmission of germs that can cause life-threatening diseases,” Stich said. “Chemical pesticides, while effective, often leave residues in food products from cattle and cause contamination to the environment, so these methods aren’t sustainable. Therefore, we are examining other, more natural methods to control this disease that causes hundreds of millions of dollars in losses each year.”



Roger W. (Bill) Stich,
MS, PhD

The goal of this program is to develop sustainable approaches to prevent the spread of tick-transmitted germs by attacking the germs inside ticks before they can be transmitted to cattle. Stich’s strategy uses the immune response of cattle to interfere with tick molecules that are required for survival of disease-causing germs in the ticks.

“By targeting tick molecules, this work is expected to help develop sustainable approaches to intervene with tick acquisition, maintenance or transmission of pathogens,” Stich said. “In my opinion, the tick-pathogen-bovine interface is the best model system currently available for such work. Progress in this area is also expected to have a positive global impact in resource-restricted areas, because four of the five major vector-borne diseases of cattle are transmitted by ticks.”

To do this, the team is targeting the two main parts of the tick where tick-transmitted germs are found—the midgut and salivary glands.

“Understanding how pathogens are maintained in the ticks that transmit them, including the bacteria that cause anaplasmosis, is key,” Stich said. “Our lab and team will examine just how the tick molecules are involved with the development of bacteria and how we can create immunizations targeted at those tick molecules. The overall goal is to develop sustainable ways to treat the disease to keep cattle and herds healthy.”

Continued on next page...

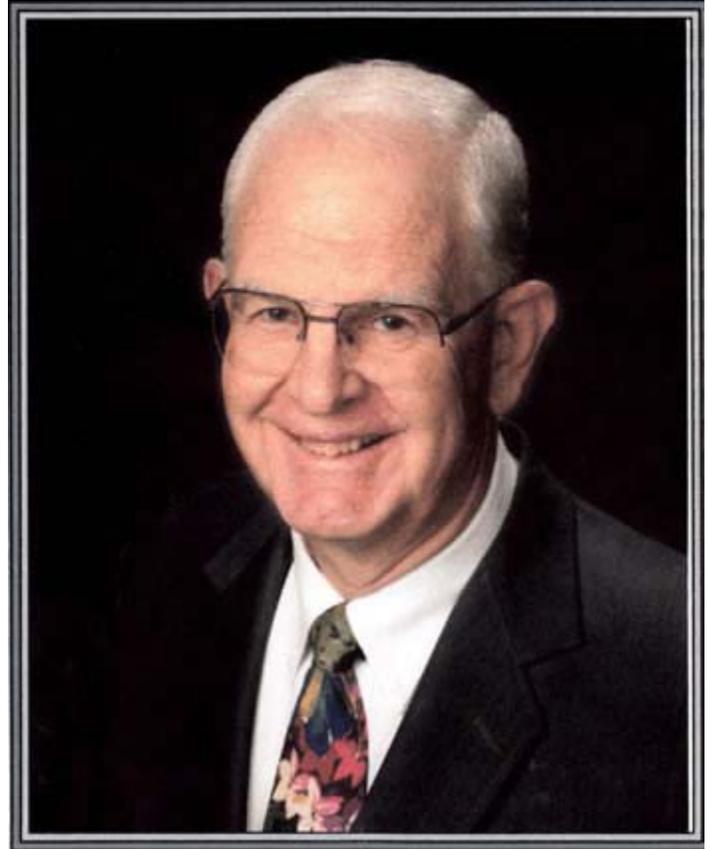
The project, "Targeting the tick-pathogen interface for tick-borne disease control," (Grant #2017-67015-26630) will be led by Stich and an international research team international including Sathaporn Jittapalapong, dean of veterinary technology at Kasetsart University in Bangkok, Thailand.

Published by Mizzou News, 329 Jesse Hall, Columbia, MO 65211

Former CVM Assistant Professor Wagstaff Passes

David Jesse Wagstaff, DVM, died Sept. 1, 2017, at his home in Pleasant Grove, Utah, at the age of 82. He was born Feb. 22, 1935, in Lehi, Utah, to David Edson and Ida Hayward Wagstaff.

He attended Utah State University in Logan for two years before fulfilling a mission call in Northern California. In 1957, he returned to Utah State to finish his studies as a pre-veterinary medicine student, graduating in 1959. He earned a doctor of veterinary medicine from Cornell University, graduating in 1962 among the top of his class. He then fulfilled Selective Service requirements in the U.S. Public Health Service as an epidemic intelligence officer assigned to work in Texas on rabies control along the Mexican border. His next assignment was to Frederick, Maryland, to study whether Q-fever in large dairy herds and the human population that worked with them. He then conducted research for the National Cancer Institute for one year in East Lansing, Michigan.



David Jesse Wagstaff, DVM

After completing a post-doctoral fellowship in toxicology at Utah State University and earning a doctorate in toxicology with an emphasis in poisonous plants that affect humans and animals, he joined the University of Missouri College of Veterinary Medicine as an assistant professor of poisonous plants and toxicology. After four years in Columbia, he took a job with the Food and Drug Administration in Beltsville, Maryland, and Washington, D.C., working in poisonous plants. He presented research reports at the International Poisonous Plants Symposiums in Utah and Scotland and was a visiting scientist at Kew Gardens in London.

He retired and returned to Utah in 1998.

He is survived by his wife, Ann, of Pleasant Grove; three sons, David (Ruth Ann) of Provo, Utah, Andrew (Stephanie) of Lehi, Utah and Terry (Jamie) of Marysville, Washington; one brother, Fred Wagstaff, of Hurricane, Utah; 12 grandchildren and one granddaughter-in law.

Services will be held at 11 a.m. on Sept. 9, in the Pleasant Grove 2nd Ward Chapel, 455 East 200 South, Pleasant Grove. Friends may call from 6-8 p.m. on Sept. 8, at Anderson and Sons Mortuary, 49 East 100 North, American Fork, Utah, and at the church prior to services from 9:45-10:45 a.m. Burial will be in the American Fork City Cemetery.

Raj and Liz: Lives Devoted to Serving Others

Raj is a greyhound who became a canine blood donor at MU's Veterinary Health Center. After serving and saving fellow pooches, he retired as a donor and was adopted by a College of Veterinary Medicine (CVM) student. Now, Raj, along with his pet parent, Liz, is helping humans as a P.A.L.S. therapy dog.

The Veterinary Health Center (VHC) at MU's College of Veterinary Medicine sees thousands of cases every year. The Small Animal Emergency and Critical Care Service (SAECC) operates 24 hours a day, every day of the year, and treats an average of 16 cases per night.

Just like humans, animals needing medical treatment sometimes require a blood transfusion. Donated blood is good for 30 to 42 days, so a blood bank is necessary to ensure that a sufficient supply and necessary types are always available, just like human medicine. To that end, the VHC maintains a blood donor unit of dogs and cats.

Not every dog is a model canine blood donor. The ideal donor has blood type designation DEA 4, the universal donor type for dogs; weighs 50 pounds or more, without being overweight; is between 1-9 years old; has a stable, friendly temperament; is able to sit or lie still; is in good health and free of any infectious disease transmissible by blood, such as heartworm.

Short-hair dogs are often preferable since their hair is easier to keep clean and less likely to pose a risk of bacterial contamination. Dogs with lean bodies and long necks with prominent jugular veins are also preferred. The canine jugular is the easiest collection point since this is the most accessible and least sensitive site in the dog's body. A greyhound like Raj checks every box on the donor list.



“One of the most important reasons to use greyhounds as donor dogs is that they naturally have more red blood cells than other breeds of dogs. That is part of why they are such good sprinters,” says Leah Cohn, DVM, PhD, DACVIM. Cohn, a professor and small animal internal medicine service chief, manages the VHC blood bank.

In addition to their athletic pedigree, greyhounds are highly likely to have the “universal” blood type. Their size allows them to donate a full unit of blood. They tend to have a calm, friendly demeanor. All of the canine blood donors at the VHC are greyhounds.

Continued on next page....

Liz Daugherty has always been a high achiever. She was a dean's list student who earned a bachelor of science in biology, graduating with a general honors certificate and a dean's certificate of achievement in biomedical sciences. She served as programming chair of Mizzou's Pre-Vet Club, as a member of the Raptor Rehabilitation Project, a tutor at the MU Writing Center, and as an after-hours clinic crew SAECC assistant. She is a certified master SCUBA diver, has job-shadowed at two Kansas City vet practices and completed a four-month externship at Cape Wildlife Center in Massachusetts.

Last summer, Daugherty participated in the Veterinary Research Scholars Program, in a mentorship with William Stich, PhD, MS, and a professor in the CVM Veterinary Pathobiology Department. Daugherty jumpstarted a project to create a universal tick-borne pathogen PCR diagnostic test for the Veterinary Medical Diagnostic Laboratory. This summer, she worked six weeks as a wildlife rehabilitation intern at WildCare Foundation of Oklahoma.

Individuals of extraordinary achievement, like Daugherty, are a common phenomenon at the College of Veterinary Medicine. Yet, she differs from many of her peers in that she never had a dog or a cat as a child. Her pets were restricted to a few fish and a gerbil.

"I joked during my Mizzou interview that the reason I wanted to be a veterinarian was to make up for the years of being denied pets," Daugherty says.

"It began in spring 2015," Daugherty continued. "I was a junior, getting my BS in biology. I was also working on a minor in animal science, as well as a certificate in biomedical sciences, so an animal sciences class called Companion Animals fit both requirements nicely. The class required a companion animal-related service learning experience, so I chose to walk the greyhounds at the VHC. The first pair I chose to walk was Raj and his brother, Sheldon.

"Raj had a very distinctive walking style," Daugherty says. "He would often plant his face on my hip while we were walking. When we greeted strangers, Raj would often approach and immediately rub his face on them, expecting attention. He would sometimes deviate toward strangers while we were walking, expecting everyone to show him affection. He would often rub up against people as we passed them. I enjoyed their surprised responses to that."

Matt Haight is the senior registered veterinary technician for internal medicine. He is also responsible for the day-to-day operation of the veterinary blood donor program: selecting all of the dog and cat donors, ensuring their health and care, and performing all blood collection. He mentioned to Daugherty that people could put their names on a waiting list to adopt the greyhounds when their donating days are over. Haight is in charge of finding great homes for donor cats and dogs when they retire from service.

"I put my name on Raj's list, more as a 'why not?' gesture than a true expectation of being chosen to adopt him," Daugherty says. "The adoption date was nearly 18 months away, and I had not even applied to veterinary school yet. A lot can happen in 18 months."

After her companion animal class ended, Daugherty continued to walk Raj and Sheldon as a volunteer. She would sometimes take them to Speaker's Circle or the Quadrangle on the MU campus and invite other students to interact with the greyhounds.

Continued on next page....

After her companion animal class ended, Daugherty continued to walk Raj and Sheldon as a volunteer. She would sometimes take them to Speaker's Circle or the Quadrangle on the MU campus and invite other students to interact with the greyhounds.

"Around midterms in fall 2015, among the tired students trudging out of exams or the library, one guy sat down next to Raj, who was stretched out on the concrete, and stayed there for 10 minutes," Daugherty recalled. "He had just come out of a biochemistry exam and was not very confident about his grade. Every time he tried to leave, Raj would swing his head upward and look him in the eyes, chattering his teeth, and every time this guy would succumb and continue to rub his belly. When Raj finally let him go, he turned to me and said, 'Thank you so much for letting me pet Raj. I really needed that.' This was long before I considered adopting Raj, let alone considering him as a therapy dog candidate, but that may have been a genesis of the idea."

National pet therapy programs abound, but Pet Assisted Love & Support — P.A.L.S. — is an organization whose focus and locus is local. Based at MU's CVM, P.A.L.S. is a no-cost club for students, faculty, and community members who want to take their personal pets to visit patients at Columbia-area hospitals and senior centers. P.A.L.S. provides free training classes during the school year to prepare dogs and owners to successfully complete a behavioral test and physical screening they must pass to be certified and to receive a P.A.L.S. pet ID. Dogs must also pass the American Kennel Club's (AKC) Canine Good Citizen® test. Once certified, the human/canine volunteer teams offer comfort, affection and understanding to patients, with the goal of increasing socialization and activity levels of patients, decreasing feelings of institutionalization, and providing the emotional support and unconditional friendship that pets impart.

Therapy dogs are generally not service animals, which are individually trained to assist specific individuals with a medical condition or life-limiting disability. Service dogs enjoy access and protection under the Americans with Disabilities Act. Service dogs are not pets and are not encouraged to interact with people other than their owner while they are on duty.

Therapy dogs provide psychological or physiological therapeutic benefits to people other than their handlers. Therapy dogs visit hospitals, nursing homes, hospice facilities, schools, child-care facilities, group homes and rehabilitation centers, but that access is at the discretion of the institution, and sometimes granted on a case-by-case basis. Therapy dogs do not have the same legal designation as service dogs; their owners do not have the right to be accompanied by their dogs in places where pets are not permitted.

During spring semester 2016, Daugherty had finished her bachelor's degree and was working to complete a minor in animal science. She lived on the east side of campus, so her daily walk to the Animal Science Research Center took her past the VHC.

Continued on next page....

Every morning, I would stop in and greet Sheldon and Raj,” Daugherty recalls. “Sometimes I took them out on my lunch break and they would sunbathe in the meadow west of the VHC while I ate. I did not have much time this semester to walk them, but I’m glad I got to continue to see them. At this point, I was waiting to hear from several veterinary schools as well as Mizzou. I was very nervous. My visits to Sheldon and Raj really helped keep me going to finish out my undergraduate years strong.”

In addition to her animal science minor, Daugherty had to complete a certificate in biomedical sciences. She took an online canine rehabilitation class under Stephanie Gilliam, a senior veterinary technician and adjunct clinical instructor.

“For my canine rehabilitation class, we had to do a project on a canine subject, evaluating their condition and conducting a full rehabilitation exam on them,” Daugherty says. “Of course, I chose Raj as my subject.

“I was beginning to seriously consider adopting Raj at this point,” Daugherty continued. “I started to plant the idea in my parents’ heads. My dad owned a dog as a child, but my mother had her doubts. She did not care for animals that much.”

In July 2016, her parents finally gave her the word: If she was selected to adopt Raj, they were fine with it.

“I asked Matt where I was on the adoption list,” Daugherty says. “I was second, but he had already contacted the person ahead of me about adopting Raj. That person had not replied yet, but they still had priority. I spent the majority of August alternating between being convinced I had lost him, or hoping that the person at the top of the list would never respond.

“During the first week of September, my dad asked if I had heard anything from Matt about Raj. I broke down crying; I had heard nothing, and the situation seemed hopeless. A few days later, I received a package in the mail. It contained a collar, a leash and a note from my mother that said, ‘Raj is yours. You can pick him up on Friday.’ I could not believe it!”

Daugherty thought the traits that made Raj an ideal donor candidate also gave him the potential to earn therapy dog certification. She began training him more rigorously in October 2016.

“He was not a brilliant student, but I was surprised how quickly he caught on to some of the most crucial commands,” Daugherty recalls. “On our regular hikes, I began to let him off leash. He rarely deviated from the trail and became responsive to my recall command. He never became quite proficient at tricks; he has not grasped ‘shake’ or ‘roll over.’ I like to think he does not see the utility in those commands. But, I didn’t need a dog who could entertain me; as long as he came when called and could stay when asked, he was perfect.”

In addition to their hikes, Liz and Raj practiced walking in a heel and responsive direction changes during excursions through Bass Pro Shop and Lowe’s.

In January 2017, Raj became a Canine Good Citizen®, a designation that became an official AKC title in 2013.

Continued on next page....

The trainer at Petco who conducted our exam said he was the best behaved dog he had passed in several years,” Daugherty says. “I know that is mostly due to his relaxed demeanor, but I could not help but feel proud of what we had accomplished.”

Daugherty and Raj now visit Candlelight Lodge Retirement Center.

“I think he enjoys visiting the older folks,” Daugherty says. “He often lays his head in their lap. He seems to be a good candidate for these types of visits; he is tall enough that they do not have to bend down to pet him and he is not particularly excitable.”

The special chemistry and evolutionary relationship between dogs and humans goes back tens of thousands of years. For most of those years, it was strictly a working relationship. Prior to the 1800s, dogs were functional accessories, used for tracking, hunting and guarding.

Around the time Louis Pasteur and Émile Roux developed the rabies vaccine in 1885, attitudes toward dogs began to change. Social and emotional bonds formed as humans domesticated dogs or, some say, dogs domesticated the human beast. Dogs became loyal companions, trusted family members and, famously, “man’s best friend.”

Not far from the CVM campus, just 100 miles west in Warrensburg, Missouri, a farmer sued for damages after his dog, Old Drum, was shot and killed in 1870. In his closing remarks, George Graham Vest — the attorney representing the farmer — said, “The one absolutely unselfish friend that a man can have in this selfish world, the one that never deserts him and the one that never proves ungrateful or treacherous is his dog.” In 1958, a statue of Old Drum was erected on the Johnson County Courthouse lawn. The inscription summarizes Vest’s closing speech as, “A man’s best friend is his dog.”

Raj has been a best friend to the canine patients who relied on his blood for their treatment and recovery. He was a calming friend to a young woman striving for excellence during rigorous academic demands. Now, he is a sympathetic friend to the seniors he visits at Candlelight Lodge. Raj has proved to be a friend indeed.

A Video Message from Dean Henry

Link:

<http://cvm.missouri.edu/a-video-message-from-dean-henry/>

Horses Working in Therapeutic Riding Programs Do

In the United States, therapeutic horseback riding offers equine-assisted therapy to diverse populations, including children and adults who have anxiety disorders. Veterans diagnosed with post-traumatic stress disorder often are prescribed this type of therapy in order to cope with anxiety, but little is known about how these programs affect the stress levels in horses. Now, a **University of Missouri** study has revealed that horses ridden by veterans with PTSD did not have undue physiological stress responses, nor did they exhibit behavioral stress while participating in a veterans' therapy program. This shows that therapeutic horseback riding, also known as THR, may provide a viable repurposing for retired or unwanted horses.

“Estimates have shown that approximately 6,300 horses globally work in therapeutic horseback riding programs at more than 800 centers,” said [Rebecca Johnson](#), a professor in the [MU College of Veterinary Medicine](#), and the Millsap Professor of Gerontological Nursing in the [Sinclair School of Nursing](#). “While there is a growing body of literature demonstrating the beneficial outcomes from THR programs for people with developmental, cognitive and psychosocial disabilities, such as veterans with PTSD; it is imperative that we consider horse stress levels to ensure their health and welfare. Our study was designed to assess the differences in both physiological stress levels and behavioral stress responses while being ridden by veterans in these programs or by experienced riders.”

Two groups were recruited for the study: veterans who were diagnosed with PTSD and healthy, experienced riders. Each individual horse was ridden in accordance with an approved program for approximately 60 minutes weekly at the same time of day for six weeks. Veterans learned basic horseback riding skills as well as how to apply riding tack to the horse, mounting and dismounting. Experienced riders were asked to go through the same actions as the veterans.

In order to measure physiological stressors on the horses, blood samples were collected 30 minutes before classes started, after the riding tack was applied to the horse, and after the riding class at the first, third and sixth weeks. Cortisol, which is a part of the central nervous system and a good indicator of stress in the body, was measured as well as glucose concentrations and other measurements.

Behavioral stress indicators were assessed by viewing videotapes of the horses obtained for two-minute periods during the first, third and sixth weeks. Using a stress scale, two researchers scored the videos involving different horses to determine restlessness, jumpiness and startle-reflexes, as well as how accepting and calm the horses were at other times.



Rebecca Johnson found that horses ridden by veterans with PTSD did not have undue physiological stress responses, nor did they exhibit behavioral stress while participating in a veterans' therapy program.

Continued on next page....

“Findings from our physiological and behavioral data indicated that the horses were not unduly stressed by the THR work; however, we found differences in the horses’ stress levels between rider groups,” Johnson said. “Equine cortisol levels were elevated after riding tack was applied by inexperienced riders, in this case the veterans. However, we think that might be because these riders were applying the tack and mounting the horses a little differently than the experienced riders. The horses also showed elevated physiological and behavioral responses with experienced riders, which could indicate that these riders expect a higher level of performance from the horses. Overall, horses involved in the THR program exhibited low stress responses, indicating no harm from doing the work of THR, which could give retired or unwanted horses a new lease on life.”

The interaction between horses and riders has been demonstrated to increase riders’ confidence, self-esteem, sensory sensitivity and social motivation while decreasing stress. THR programs could enhance their orientation times and curricula to include tacking classes and increasing introductory sessions between horses and riders to decrease stress to the horses, Johnson said. Future studies should include larger groups of participants as well as other measures of physiological stress.

The article, [“Horses Working in Therapeutic Riding Programs: Cortisol, Adrenocorticotrophic Hormone, Glucose, and Behavior Stress Indicators,”](#) was published in the *Journal of Equine Veterinary Science*. Funding was provided by the USDA National Institutes of Food and Agriculture, Animal Health (Grant: 1003417). The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

Published by the MU News Bureau, 329 Jesse Hall, Columbia, MO 65211

Bruce Whittle Named CVM 2017 Alumnus of the Year

Bruce Whittle, DVM '94, is the University of Missouri College of Veterinary Medicine 2017 Alumnus of the Year. He was honored during the college's Alumni Reunion Weekend held Sept. 15-16.

Whittle, who was born in Iowa and raised in southeast Missouri between the towns of Diamond and Joplin, attended Northeast Missouri State University in Kirksville for three years before being accepted at the CVM. Both he and his wife, Gayla, earned doctor of veterinary medicine in 1994. Two weeks after graduation, they moved to Trenton, Missouri, where they established Honey Creek Veterinary Hospital, a mixed animal veterinary practice.

In announcing the award, MU CVM Interim Dean Carolyn Henry, DVM, MS, DACVIM, commended Whittle for being a driving force for organized veterinary medicine in Missouri throughout his career. He is a member of the American Veterinary Medical Association and the Missouri Veterinary Medical Association, which he has served as vice president, president-elect, president, and board chair. He has also been a member and chair of the MVMA equine committee and a member and chair of the legislative committee. He is a member of the American Association of Equine Practitioners. He has served on the AAEP equine dentistry committee, the scope of practice task force, the welfare and public policy advisory council as a member and vice chair, and the state legislative issues subcommittee as chair. He also is a member of the American Veterinary Dental Society, the Foundation for Veterinary Dentistry, the Missouri Academy of Veterinary Practice and he is the vice president of the MVMA Academy.

As a practitioner, he is renowned for the scope of his expertise, which encompasses small animals, cattle, deer, sheep, goats and horses. He is considered the driving force behind the Missouri Veterinary Medical Association equine dental wet lab. The wet lab serves the dual purpose of advancing dental skills of veterinarians while providing pro bono care for horses on the Humane Society of Missouri rescue ranch. He helps to organize and execute the American Association of Equine Practitioners short course in dentistry for veterinary stu-



MU College of Veterinary Medicine Alumnus of the Year Bruce Whittle, DVM, is pictured with his wife, Gayla Whittle, DVM, and son Wyatt.



MU CVM Interim Dean Carolyn Henry, DVM, MS, DACVIM, presents the Alumnus of the Year Award to Bruce Whittle.

His volunteer work includes helping to teach five days of dental labs for veterinary students at the CVM each year. The Whittles also work with the CVM to provide externship opportunities at their practice to veterinary students seeking practical experience in veterinary medicine.

This is the second award the CVM has given to Whittle this year — in June he received the Dean’s Impact Award.

In accepting the honor, Whittle thanked his family for their support, which has allowed his extensive involvement in veterinary organizations. He and his wife have two sons.

He also thanked his colleagues.

“I’ve got a lot of mentors in this room and I appreciate everybody who has helped me along the way,” he said. “I just feel so blessed to be part of this profession because I don’t think I’ve ever had a time where I’ve called a veterinarian and asked them a question that they haven’t tried to help me.”



The MU College of Veterinary Medicine Mule Team was on hand at the Alumni Weekend breakfast to provide wagon rides around the CVM campus.

The announcement of the Alumnus of the Year Award was made during the reunion banquet held Sept. 15 at the Adams Conference Center. The following morning, alumni were invited to have breakfast with retired faculty members, enjoy rides with the CVM Mule Team, tour the CVM facilities, including the Veterinary Health Center’s three hospitals, and attend the football game versus the Purdue Boilermakers.

A photo album from the weekend can be found on our [Facebook](https://www.facebook.com/pg/MUCVM/photos/?tab=album&album_id=10156601014874128) (Link: https://www.facebook.com/pg/MUCVM/photos/?tab=album&album_id=10156601014874128) page.

Universities Rally Together at Mizzou-Auburn Game to Save Tigers

As the University of Missouri Tigers prepare to square off against the Auburn Tigers, the schools are collaborating to show that their Tiger pride extends beyond the field. The two schools, along with Clemson University and Louisiana State University, have joined together to form the U.S. Tiger University Consortium. Before the game, MU Provost Garnett Stokes and Auburn Provost Timothy Boosinger will discuss collaboration efforts with faculty committed to tiger conservation. They also will spend time with Truman and Aubie, the respective mascots for the universities.

“Saturday is going to be an exciting day, not just for football, but to come together with the common goal of saving tigers,” said Carolyn Henry, interim dean of the MU College of Veterinary Medicine. “Being involved in the consortium will allow Mizzou students and faculty to contribute significantly and save this amazing species.”

The wild tiger population has been dwindling due to habitat loss and poaching. The Global Tiger Forum estimates that only 3,900 tigers are left in the wild. The consortium has a goal of doubling that number by 2022. Plans to achieve this goal include applying technology to monitor wild tiger populations and funding research. Each university also has planned strategic communications to raise awareness of the worldwide problem.



Mizzou is where the student-led effort to protect wild tigers started. In 1999, Mizzou students formed the nation’s first tiger mascot conservation program, “Mizzou Tigers for Tigers,” which eventually led to a national coalition in 2007 recognized by the World Wildlife Fund.

“Mizzou is the perfect university to play a role in tiger conservation,” said Shibu Jose, director of the MU School of Natural Resources. “Researchers from multiple areas of expertise — wildlife, veterinary medicine, ecology and sociology — can contribute to the effort.”

Mizzou is where the student-led effort to protect wild tigers started. In 1999, Mizzou students formed the nation’s first tiger mascot conservation program, “Mizzou Tigers for Tigers,” which eventually led to a national coalition in 2007 recognized by the World Wildlife Fund. The chapter’s current president, Shannon McKinley, is organizing multiple fundraising events to support tiger habitats and engage more Mizzou students in the effort.

We can expect to see the number of tigers on campus or at least tiger mascots to double this coming Saturday. The Mizzou Tigers will be playing the final of four straight home games against the Auburn Tigers on Sept. 23.

Published by Mizzou News, 329 Jesse Hall, Columbia, MO 65211

New Research to Investigate the Effect of Shelter Cat Adoption on Stress and Anxiety in Children with Autism

Human Animal Bond Research Institute and Winn Feline Foundation Award Grants to University of Missouri

The Human Animal Bond Research Institute (HABRI) announced today it has awarded a \$52,204 grant to the University of Missouri for a new study, *Shelter Cat Adoption in Families of Children with Autism: Impact on Children's Social Skills and Anxiety as well as Cat Stress*. This study will examine the effect of the introduction of a shelter cat on social skills and anxiety in children with autism, and on stress levels for the cats themselves.

“Preliminary research demonstrates the effectiveness of companion animal interaction on alleviating social skills deficits and anxiety in children with autism spectrum disorder (ASD),” said the study’s Principal Investigator, Gretchen Carlisle, PhD, College of Veterinary Medicine, University of Missouri. “While many studies have focused on the impact of dogs on children with ASD, this study aims to determine the beneficial impacts of a pet cat on children with autism and their families, as the temperament and the ease of care for cats compared to other animals may increase the likelihood of a positive outcome for the children, the cats and the family as a whole.”

In addition to HABRI’s grant award, the PIs have also received funding from the Winn Feline Foundation in the amount of \$25,000. The combined funding from Winn Feline and HABRI have enabled the PIs to expand the sample size and add the support of a statistician, which will greatly enhance the power of the study and hopefully result in more definitive and robust findings.

“Winn Feline Foundation is thrilled to have initially supported this important study on the human-cat bond and to hear of HABRI’s grant award. Their additional support will strengthen the study’s findings”, commented Winn’s Executive Director Dr. Vicki Thayer. “This significant project evaluating the effects and benefits of adoption of cats by children and families with ASD fits our mission and values”.

Using a two-group, randomized, repeated measures design with a delayed treatment control group, this 18-month study will recruit participants through a Mid-western autism diagnostic and treatment center. Shelter cats from two local animal shelters will be screened for temperament and then enrolled. Dr. Carlisle, and co-PI Rebecca Johnson, PhD, Professor and Director, Research Center for Human Animal Interaction, College of Veterinary Medicine, and Co-Investigators Jessica Bibbo, PhD, Colleen Koch, DVM, Leslie Lyons, PhD, and Nancy Cheak-Zamora, PhD, will pre-screen the human participants and families will be randomized into the treatment or delayed treatment control groups. Cat stress will be measured through fecal cortisol. Caregivers will complete a 19-item demographic questionnaire and children’s social skills and ASD symptoms will be measured using several instruments. Families randomized into the treatment group will adopt a cat first while those in the control group will adopt a cat after 18 weeks. The investigators expect to find that children of families with an adopted shelter cat will have increased social skills, decreased anxiety and that they will become bonded with their cat. It is also expected that cats will adjust to their new homes without significant stress.

“This study has great potential to advance our knowledge of the benefits of the human-animal bond for children and families with ASD,” said HABRI Executive Director Steven Feldman. “Caregivers and parents should select the pet that is best suited for their family and for the well-being of the animal – maybe that’s a cat.”

The Human Animal Bond Research Institute (HABRI) maintains the world’s largest online library of human-animal bond research and information; funds innovative research projects to scientifically document the health benefits of companion animals; and informs the public about human-animal bond research and the beneficial role of companion animals in society. For more information about HABRI, visit www.habri.org.

The **University of Missouri** was founded in 1839 in Columbia as the first public university west of the Mississippi River. Today, with an enrollment of more than 33,000 students, 13,000 full-time employees and 305,000 alumni, Mizzou is a \$2.2 billion enterprise and an important investment for the state and nation.

Winn Feline Foundation is a nonprofit organization established in 1968 that supports studies to improve cat health. Since 1968, the Winn Feline Foundation has funded more than \$6 million in health research for cats at more than 30 partner institutions world-wide. This funding is made possible through the support of dedicated donors and partners. Research supported by Winn Feline Foundation helps veterinarians to improve treatment of common feline health problems and prevent many diseases. For further information, go to www.winnfelinefoundation.org.

MU Veterinary Medicine Resident Receives High Honors at European Conference

Aida Vientós-Plotts, a resident at MU's College of Veterinary Medicine (CVM), won the best oral short communication award for her presentation at the 27th European College of Veterinary Internal Medicine—Companion Animals Congress, held Sept. 14-16 in Malta.

Vientós-Plotts' presentation, "Development of respiratory dysbiosis as cats transition from healthy to asthmatic airways," was selected above 15 other oral abstracts presented at the conference hosted by the European Society for Veterinary Internal Medicine and the International Society for Companion Animal Diseases.

Dysbiosis refers to a microbial imbalance or maladaptation on or inside the body, a process that most people associate with gastrointestinal disease, not respiratory disease.

The European Society of Veterinary Internal Medicine—Companion Animals (ECVIM—CA) is an international group devoted to advancing and sharing knowledge in all aspects of companion animal internal medicine, but with a particular focus in respiratory medicine and infectious disease.

The International Society for Companion Animal Infectious Diseases was founded as a response to a growing interest in companion animal infectious diseases within the profession, and the increasing importance of zoonoses as emerging infectious diseases in humans. It is estimated that 75 percent of emerging infectious diseases in humans are zoonotic, or diseases that can be transmitted to humans from animals.

"We generally go to the American College of Veterinary Internal Medicine because it's in the (United) States, so it's easier for us to go. We have to go for our certification exams the last two years of our residency, but we don't have to present anything unless we want to," Vientós-Plotts said.

"Last year, pet food company Royal Canin announced they would sponsor a number of residents from the United States to go to ECVIM," Vientós-Plotts explained. "That sounded interesting and exciting, and we thought we should apply and see if we're selected to go."

More than 30 residents traveled to France, toured the Royal Canin campus, and then went to Malta for the conference. The Mediterranean island nation lies near Sicily, 50 miles from the southern coast of Italy.



Continued on next page....

About the presentation

“It is with great pleasure that we could award Dr. Aida Vientós-Plotts for best oral communication in the stream of internal medicine at the 27th ECVIM Congress in Malta,” said Frédéric Billen, president of the European Society of Veterinary Internal Medicine. “Besides being a hot topic, her study was well designed and very original. Her presentation style was also very much appreciated by the jury. Dr. Aida Vientós-Plotts was very professional and mastered perfectly her topic.” Billen, DVM, PhD, DECVIM-CA, is a professor of small animal internal medicine at Liège University in Belgium and a member of the European Society of Veterinary Nephrology and Urology.

The research

“The presentation at ECVIM was actually the third part of my ongoing research,” Vientós-Plotts says. “It was about evaluating how the composition of a cat’s lung microbiome changes as it transitions from being healthy to having asthma. The microbiome is the collection of bacteria and other elements that normally reside in a particular environment, whether that is the skin, the gastrointestinal tract or the lungs.”

“Until very recently, we have always thought the lungs were sterile, that there shouldn’t be any ‘bugs’ in there,” Vientós-Plotts continued. “In 2008, the National Institutes of Health started the human microbiome project. They took DNA and analyzed all the different ‘bugs’ that are in all the different parts of the body, but since the lungs were considered to be devoid of bacteria, they were largely ignored until recently. There just wasn’t much information about the lungs and airways, and whether or not we could characterize what ‘bugs’ were there in a healthy person or animal.

“We are interested in figuring out if a change in the amount or type of normal or good ‘bugs’ can lead to predispose to disease, or if diseases lead to that imbalance,” Vientós-Plotts explained.

“Everybody understands this in the gut; similar principles apply to the respiratory tract. So, for this particular project, we looked at what happens to the bacterial populations as cats transitioned from being healthy to having asthma, and the changes were impressive. Some of the types of bacteria that are usually found at 60 percent went all the way down to 5 percent or even 0.6 percent.

“Just as in human medicine, in veterinary medicine, little was known about the respiratory microbiome in dogs and cats. So, our lab — Dr. Carol Reinero and the Comparative Internal Medicine Lab — in conjunction with Dr. Aaron Ericsson, the director of the MU Metagenomics Center, published the first paper on the respiratory microbiome in healthy dogs. They also have looked at dogs with chronic bronchitis, which is the most common respiratory disease that dogs get.

“My first publication was the characterization of the healthy cat airway biome,” Vientós-Plotts said. “Then, I published a paper on the effects of giving oral probiotics in the lungs. There’s evidence that probiotics can affect other parts of your body, including the lungs, not just in the gut, which is the common assumption. We actually found some of the ‘bugs’ that we gave in the probiotic in the lungs; that was pretty cool. That second part was published just recently. The third part — how the composition of a cat’s microbiome changes as it transitions from being healthy to having asthma — was represented in the oral abstract presented at ECVIM in Malta.”

A medical residency can be quite challenging. Residents clock long clinical shifts, practicing medicine under the supervision of an attending faculty physician. At MU’s CVM, residents are also encouraged to complete a master’s degree in addition to performing their clinical work.

Continued on next page....

When I started my residency, I started a master's program," Vientós-Plotts says. "However, my research has evolved over time and I feel like there is much more to investigate, therefore I recently decided to stay and complete a PhD."

How you can help

To support research into asthma, aspiration pneumonia, infectious pneumonia, chronic bronchitis and other debilitating or fatal lung disorders in animals, please consider a gift to the [Small Animal Swallowing Disorders and Respiratory Research Fund](#).

Mann Receives Distinguished Service Award at International Symposium

Tony Mann, a professor at MU's College of Veterinary Medicine (CVM), received the Ira M. Zaslow Distinguished Service Award from the Veterinary Emergency and Critical Care Society (VECCS) on Sept. 14, at the society's international symposium in Nashville, Tennessee.

The award is the highest honor the VECCS bestows, and is given annually to an individual demonstrating extraordinary commitment and exceptional contribution, to both the specialty of emergency and critical care and to the VECCS. The award is named for Ira M. Zaslow, one of the founding fathers of the VECCS and the American College of Veterinary Emergency and Critical Care (ACVECC).

"This is the highest honor I have ever received in my professional life," Mann said. "I am both humbled and elated."

"Recipients of the Zaslow Distinguished Service Award are legends in veterinary emergency and critical care who have paved the path for others, like myself, to become better practitioners in ECC," says Ken Yagi, recording secretary of the VECCS Board of Directors. "Dr. Mann's involvement in VECCS centers on his dedication to the scientific abstracts session. The session focuses on creating a stage for veterinary ECC practitioners to present their newest research findings, which moves us forward in elevating our practices. These sessions nurture residents and future leaders in advancing and spreading the knowledge and evidence we incorporate into daily practice. Dr. Mann's efforts exemplify the commitment to steady work on the foundations of our field to better patient care."

"Dr. Mann is one of those people who I look up to, someone who continues to inspire many of us to reach new heights," said Yagi, a registered veterinary technician in California who earned a master's degree in biomedical sciences from the MU CVM. Yagi received Outstanding Technician of the Year recognition from the California Veterinary Medical Association in 2016 and Technician of the Year honors from the National Association of Veterinary Technicians in America this year.

"We at the VECCS love Tony Mann," says Bob Messenger, DVM, president of the organization. "He richly deserves our recognition, as well as that of his Mizzou colleagues, for his accomplishments."



Bob Messenger, DVM, president of the Veterinary Emergency and Critical Care Society, congratulates the CVM's Tony Mann on receiving the Ira M. Zaslow Distinguished Service Award.

Continued on next page....

Mann's influence in the field has a long reach. Last September, Konkuk University in South Korea launched a new emergency and critical care program. Doctors Hyun-Jung Han and Hun-Young Yoon enjoy a collegial relationship with Mann. They view his influence as so prevalent, they invited him to participate in the opening ceremonies, although his schedule limited his contribution to a congratulatory video.

Hun-Young Yoon, DVM, MS, PhD, is a co-author of Mann's formative 2011 book, *Fundamentals of Small Animal Surgery*, along with the CVM's Gheorghe M. Constantinescu, DVM, PhD, a professor emeritus of veterinary anatomy and medical illustrator in the Department of Biomedical Sciences.

Mann, DVM, MS, has served as president of the ACVECC and was the organization's ombudsman from 2009 to 2017. He is director of the Veterinary Health Center's Small Animal Emergency and Critical Care Service and works as both a critical care specialist and soft tissue surgeon. Mann is a diplomate of the American College of Veterinary Surgeons and the American College of Veterinary Emergency and Critical Care.

A native of Kentucky, Mann joined the CVM in 1988. He received a doctor of veterinary medicine from the Ohio State University in 1982 and completed a small animal medicine and surgery rotating internship at MU the following year. He then completed a small animal surgical residency and received a master of science degree in veterinary medicine and surgery at Texas A&M University. Mann also served as an assistant professor in small animal surgery at Auburn University from 1986 to 1988.

The IVECCS is known as an intense clinical symposium offering continuing education, including lectures, dry labs, workshops, wet labs and interactive training sessions. The symposium attracts clinical veterinarians, technicians and practice managers from around the world, and features information about the latest advances in equipment, instruments, pharmaceuticals, and information management tools in the field.

Mann has attended every IVECCS, except for the first one in 1988, and has served official duties at many of them. Examples of service that contributed to Mann's selection for the Zaslow Award include being a past member of the VECCS Board of Directors, coordinating the IVECCS Small Animal Abstracts program since 1998, and conducting a successful limited enrollment laboratory at the IVECCS since 2006.

The D.V.M. – The Dean’s Video Message (October 2017)

LINK:

<http://cvm.missouri.edu/the-d-v-m-the-deans-video-message-october-2017/>

Recipe for Success

Vet school student switches gears putting nutrition doctorate to good use

Lauren Panasevich always knew she wanted to advocate better dietary habits to her patients—it's just that now, instead of counseling two-legged clients, she's added their four-legged pets. Panasevich, a third-year vet student at the [MU College of Veterinary Medicine](#) completed her bachelor's degree in animal science and her doctorate in nutrition sciences at the University of Illinois; however, it was an opportunity "across the pond" that would lead her to Mizzou.

"Toward the end of my doctoral program at Illinois, I was selected for an internship at the Waltham Centre for Pet Nutrition in England," Panasevich said. "While at Waltham, I was able to see first-hand how they conduct companion animal diet research; I was hooked—my human and animal nutrition worlds collided. I came back from England and told my advisor that I wanted to go to vet school."

At first, Panasevich wasn't planning on Mizzou—she thought she'd stay in Illinois. She ended up applying because of proximity, what she found was that Mizzou was different.

"I came for my interview and found such a welcoming atmosphere," Panasevich said. "In the hallways, visitors are greeted by photos of students, staff and faculty with their pets—it was just so homey and not at all clinical. The people here are so nice, and I got really excited."



The information session was inviting and welcoming, but what sold it for Panasevich was that Mizzou has a clinical nutrition program, or as she puts it, "people who actually care about nutrition."

Panasevich's nutrition mentors include Robert Backus, associate professor of veterinary medicine and surgery, and Tabitha Hookey, a nutrition resident at the CVM. Together, they guided Panasevich on a competition she spearheaded: "Mizzou's Biggest Loser."

Students, staff and faculty at the Vet School volunteered nine cats and five dogs that participated in a six-month weight loss challenge hosted by Nestlé Purina. MU's clinical nutrition service and Panasevich provided guidelines and nutrition counseling for the pet owners as well as a special diet. Participants were weighed and health assessments were performed monthly to monitor progress.

All 14 participants lost weight during the challenge. The "top dog" lost 27.8 percent of his body weight while the top cat lost 24.1 percent.

"The challenge was a great way to see how clinical nutritionists help people and pets in their quest for better nutrition," Panasevich said. "I was able to apply my nutrition background to my counseling skills—it was just a good way to marry the two."

But it's not just about losing weight. Panasevich knows that nutrition affects so many different diseases, both in four-legged pets and their two-legged owners. She knows that in diseases such as cancer, good nutrition and responsible diet choices that she used to suggest to human patients directly translates to companion animals.

"There's a lot of information out there on the internet," Panasevich said. "As a future vet, it's my responsibility to know the different trends and how to relate those trends to good choices for pet owners."

Panasevich credits the caring faculty and staff for her success at Mizzou. She points to the open-door policies of faculty as well as the genuine caring nature of administrators for helping her to thrive. Following her clinical rotations and graduation, she plans on working at a veterinary practice and then perhaps a transfer to a role in the pet food industry.

"While going through the application process, I compared all other vet schools to Mizzou; I couldn't get it out of my head," Panasevich said. "What I found was that Mizzou feels like home."

Story by Jeff Sossamon

Life in the fast lane

Former Missouri state trooper trades in his badge for a stethoscope; family takes on vet and graduate school at Mizzou

For Sara and Travis Inman, a typical night might involve some anatomy and physiology, economics and Crayola markers for their 3-year-old, Gracie.

It's a far cry from the break-neck pace he kept during his six years as a Trooper with the Missouri State Highway Patrol, but Travis would have it no other way. In his first-year as a non-traditional student in the [MU College of Veterinary Medicine](#), he's traded in his campaign hat for the "slower" speed of a professional curriculum.

The Inmans are a family of learners. Sara, currently a business support specialist who arranges the hectic schedules of the trauma surgery unit at [the Missouri Orthopaedic Institute](#), is in her third semester of the [Executive Master of Health Administration](#) program in the MU School of Medicine. The program, which meets on weekends throughout the year, is designed for professionals who wish to further their educations. She currently is pursuing the two-year track.

One of the first things the couple has done to manage their work and school balance is to involve their daughter and to reassess their schedules.



"We had to make a few changes we first perceived as sacrifices, but now we recognize these changes as an investment in our family," Travis said. "The three of us spend most nights studying and doing homework knowing one day it will all be worth it."

Both from the Springfield, Missouri, area, Sara and Travis met during their undergraduate careers at the College of the Ozarks. Not unaccustomed to striking the work/life balance, the couple worked full-time while completing their respective undergraduate programs.

And Travis is not alone as a "more seasoned" learner in his first-year courses at the Vet School.

"In my class alone, five of us are over 29 years-old, four students are parents, and several of us are married," Travis said. "There can be a lot of anxiety for nontraditional students, but I'm here to say Mizzou offers a lot of support for us."

Both Travis and Sara credit staying organized and focused on each other as a good coping strategy. While in the veterinary curriculum, Travis is also taking advantage of the Master of Public Health program through the [School of Health Professions](#).

“I was drawn to vet med because of the diversification of the veterinarian’s role, especially in rural Missouri,” Travis said. “With my prior experiences and the great curriculum and support offered from the Vet Med family, I am confident I will be well prepared. With the dual doctorate of veterinary medicine and master of public health program, I may strongly consider a return to public service after graduation,” Travis said.

For now, though, this nontraditional family’s plans for success include studying together around the dinner table.



Story by Jeff Sossamon

New Faculty Join the Veterinary Health Center

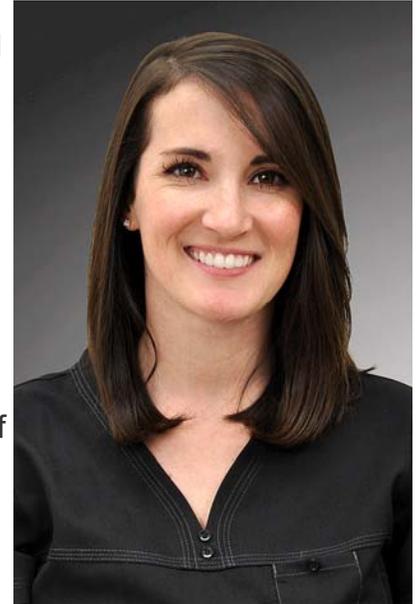
The University of Missouri Veterinary Health Center (VHC) recently welcomed several new faculty members:

Katie O'Brien

Katie O'Brien, DVM, returns to MU's VHC as a clinical instructor in small animal emergency and critical care. O'Brien received a bachelor's degree in animal science and a doctor of veterinary medicine from Mizzou.

What she will do

"My primary focus is emergency medicine. I will still manage critically ill patients in the hospital, but our residents in emergency and critical care tend to do that, so I will focus more on the emergency cases that come in. That's my passion; it's my favorite part of veterinary medicine. You never know what is going to walk in the door, and that is what keeps it exciting. I have been doing solely emergency medicine for six-and-a-half years now, and I love it! Giving up all the nights and holidays and weekends is never fun, but it is absolutely worth it. I can't imagine myself doing anything else."



On becoming a veterinarian

"When I was growing up, we always had a house full of animals — mostly dogs and occasionally a cat. I was always exposed to animals, and was raised with love and respect for them. I am sure it is typical to say, but this is absolutely where my love for animals began. I guess I figured out during my junior and senior years of high school that being a veterinarian was what I wanted to do; that guided me toward what path to take in college — I received my bachelor's degree in animal sciences. I always liked science, specifically biology; that's where I always excelled — that, combined with my love for animals, led me to veterinary medicine."

She is definitely a dog person

"Dogs are my passion. I think they are amazing companions. My own dog has been a constant in my life, and has gotten me through some very difficult times. I do like cats, but they can be a challenge when it comes to veterinary medicine. They do weird things, especially when they are sick, and figuring them out can be like attempting to piece together a challenging puzzle."

"I'm a crazy German shepherd lover. I think they are a special breed. I have two of them, Harley and Skylar, who are both older ladies — 8 and 12 years, respectively. They really are sweet, loyal, well-behaved girls and I cannot imagine my life without them. I will most definitely always have at least one German shepherd in the family."

When she is not at work

"I have a 9-month-old son, Jackson, who currently consumes all of my free time. Other than that, I love to go to wineries with friends and family, I love going to the zoo with Jackson, watching Mizzou football games, and I love grilling at home — more like watching my husband grill. My husband and I are homebodies. We both love hanging out with family and just relaxing. We also love trying new restaurants, going to the movies, and if we had it our way, we would go somewhere on vacation — probably Mexico — every few months!"

Continued on next page....

In her own words

“This is my dream job. I moved across the country for it. I’ve told my husband for years now, that if I could have my dream job it would be to teach veterinary students. I have never been at a job where, after six weeks or so, I can already tell I love it and it’s where I want to be forever. This is exactly what I wanted to do and I am already happier than I have ever been.

“I’m having so much fun, and the kicker is that I’m learning so much. With so many colleagues in a variety of specialties, I already feel that I have learned so much in the short time that I have been here. It is a wonderful support system and an amazing environment. I am proud to call this home.”

Brian Shoemake

Brian Shoemake, DVM, MS, joins the CVM as a clinical instructor in food animal medicine. He will primarily work with third-year and fourth-year students during their clinical training, along with some didactic lecture time. Shoemake earned his doctor of veterinary medicine from the University of Tennessee College of Veterinary Medicine at Knoxville. At Mizzou, he completed a residency in Food Animal Internal and Production Medicine and a master’s degree focusing on bovine respiratory disease.

What he will do

“I will work at the Veterinary Health Center (VHC) Food Animal Ambulatory Service. A big part of what the food animal section does is interact with our Missouri cattlemen.”

Shoemake is experienced in working with producers, having spent three years in mixed-animal private practice in Tennessee, Georgia, and Alabama before coming to the CVM for a residency.

On becoming a veterinarian

“I grew up on a farm near Franklin, Tennessee. I was originally terrified of cattle, but being around them and taking care of them, it became second nature. Eventually, I realized I wanted to become a veterinarian. I’m interested in all ruminants, but especially beef cattle. Small ruminants are becoming more interesting every day.”



In his own words

“I knew I wanted to work on animals and teach students. I work to make animal lives better, human lives better, and try to make sure that the students learn something new every time I have contact with them. Collaborating with other researchers, helping to get their projects done, is part of that ‘helping animals, helping clients, teaching students.’ I appreciate the opportunity to work with the primary investigators that need help getting samples collected or maybe need a different way of working with or handling animals.”

Continued on next page....

Leon Tu

Leon Tu, DVM, joins the CVM as a clinical instructor in community practice and shelter medicine. Tu grew up in Torrance, California. He earned a bachelor of arts in English from Amherst College in western Massachusetts, a doctor of veterinary medicine from the University of California at Davis, and he completed an internship in San Diego before moving to Columbia in 2016.

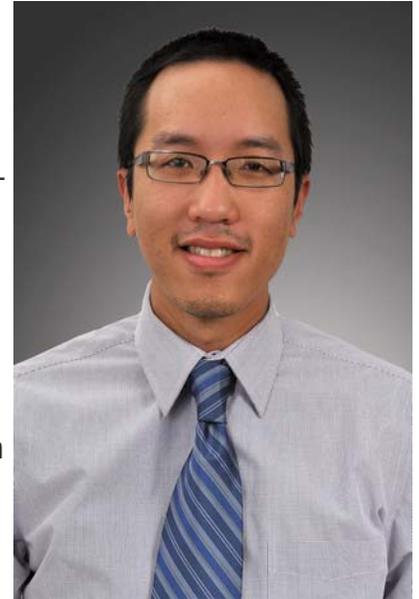
On becoming a veterinarian

“I did not know I wanted to be a veterinarian until relatively late. I always enjoyed writing, but ultimately decided I did not want to make it a career.

“I always wanted a dog as a kid, but was not permitted to have one. When I was 16, one of my friends’ dog had a litter and I decided to see what would happen if I just brought a puppy home. My mom screamed and slammed the door. It turns out she had a legitimate phobia of dogs. When I left for college, she found the courage to become the dog’s caretaker. Over time, they became inseparable. Seeing the joy that animal companionship brought to my mom helped guide me to a career with animals when I was figuring out what to do with my life.”

When he is not at work

“I ran a marathon a few years ago as a personal challenge, and I haven’t stopped. I have completed 15 now, and am aiming to run one in each state. I actually do not enjoy the running so much as using it as an excuse to visit new places. I’m also a big baseball fan and root for my hometown Dodgers, so it’s tough being alone in Cardinals territory. I really like Busch Stadium, however.”



In his own words

“I am excited and honored to be able to impact the education of new veterinarians. I worked hard to obtain skills that I will do my best to pass on, while looking forward to learning new skills from colleagues at Mizzou who are leaders in their fields.

“It is immensely humbling to share a department with Dr. Amie Burling, who inspires me every day with her dedication to student learning and improving the state of animal welfare here in Missouri.

“I am thrilled to be a part of the CVM. I was fortunate to have the guidance of skilled, patient and compassionate instructors along my journey. I aim to serve in that role as best as I can for our students. The challenge is finding enough hours in the day to match the many things I’d like to do. Between developing new course material, staying current on new research, and considering ways to grow and refine our program, I will never be lacking for a next step.”

Author and Inspirational Speaker Coming to Mizzou

In celebration of Homecoming 2017, the deans of the University of Missouri schools and colleges are bringing John O'Leary, best-selling author of *ON FIRE: The 7 Choices to Ignite a Radically Inspired Life* for a lecture and book-signing. O'Leary will speak beginning at 6 p.m., Oct. 19, at the Missouri Theatre in Columbia.

In 1987, John O'Leary was a curious 9-year-old boy. Playing with fire and gasoline, he created a massive explosion in his St. Louis home and was burned on 100 percent of his body. He was given 1 percent chance to live.

This epic story of survival was first showcased in John O'Leary's parents' book, *Overwhelming Odds*, in 2006. Originally printing 200 copies for friends and family, his parents have sold more than 60,000 copies, most in back-of-room sales at John's speaking events. It was this book that first invited John O'Leary to embrace his miraculous recovery and share it with the world.

O'Leary inspires 50,000-plus people at more than 100 events each year. He speaks to companies and organizations across industries, such as sales, healthcare, business, safety, marketing, financial services, faith, education and insurance. His schedule is a testament to the power of his message and who he is as an individual. His emotional story-telling, unexpected humor, and authenticity make his presentations truly transformational.

His first book *ON FIRE: The 7 Choices to Ignite a Radically Inspired Life* quickly became a national bestseller. More than 30,000 copies were sold in the first three weeks. He is a contributor for *The Huffington Post* and *Parade Magazine* website and has an online community of more than 75,000.

This event is free and open to the public.



John O'Leary

Retired VMDL Director Harvey Gosser Passes Away

Former director of the University of Missouri Veterinary Medical Diagnostic Laboratory Harvey S. Gosser, DVM, MS, PhD, of Auburn, Alabama, passed away Oct. 12, 2017. He was 79 years old. He was born Aug. 9, 1938, to Leo and Gladys Gosser in Auburn, Alabama.

Gosser received his doctorate of veterinary medicine in 1962 and a master of science degree in 1968 from Auburn University before earning his PhD at the University of Missouri in 1970. He embarked on an academic career that moved him to the University of Illinois at Urbana-Champaign, Louisiana State University, University of Georgia at Tifton, and back to Mizzou. He served as the second director of the Veterinary Medical Diagnostic Laboratory from 1988 until his retirement in 2001.



Professionally he served as vice president (1985-86), secretary-treasurer (1987-1996) and president (1997) of the American Association of Veterinary Laboratory Diagnosticians (AAVLD). In 1994 he received the Pope Memorial Award for distinguished service, the highest award given by the AAVLD. He was president of the Missouri Livestock and Poultry Health Council in 1997, and held a number of positions with the Missouri Veterinary Medical Association, including president in 1997.

He also served the CVM as advisor to the college's Mule Club for seven years.

Gosser met his wife, the former Barbara Daughtry, in the seventh grade at the only school in Auburn, and they were sweethearts growing up. Together they attended Auburn University and married in 1960. They were married for 55 years. She preceded him in death.

Upon retirement, the Gossers returned to Auburn where he resumed his avid following of Auburn sports. He was a Rotarian for more than 30 years and a member of the Presbyterian Church.

He is survived by his sons, Steve Gosser (Sara) Auburn, Alabama, and Allen Gosser (Tom Smith) Albany, New York; granddaughter, Bailey Gosser, Gainesville, Georgia; sister, Lora Samples (Frank) Bakersfield, California; sisters-in-law, Doris Newell (Joe, deceased) Bay Minette, Alabama, Mary Charles Norrell (Grady, deceased) Greenville, Alabama, Betty Jean Walton (Jack) Opelika, Alabama, and Inez Woodruff (Richard) Roswell, Georgia.

Memorial services were held Oct. 16, at First Presbyterian Church, Auburn, Alabama, with the Rev. Kathy Reed officiating.

Clinical Rotations Commence for CVM Class of 2019

Members of the University of Missouri College of Veterinary Medicine Class of 2019 celebrated the successful completion of two years of study of basic veterinary sciences and their move into clinical rotations during the annual White Coat Ceremony Oct. 15. The transition ceremony was held at the Missouri Theatre in Columbia.

The 110 members of the class selected a family member, friend or mentor to present and assist them in donning their laboratory coats. They will next spend 19 months working in the Veterinary Health Center's Small Animal, Food Animal and Equine hospitals and the Veterinary Medical Diagnostic Laboratory, as well as undertaking preceptorships in private practices or with public agencies on their way to completing their DVM degrees.

Associate Dean for Student Affairs Angela Tennison, DVM, who served as the master of ceremonies, noted that the students are closer to the end of their professional curriculum than the beginning.

The first two years of preclinical training provided them with a foundation in biomedical sciences and included courses in anatomy, physiology, cell and molecular biology, pathology, pharmacology, microbiology, virology and toxicology. They also learned fundamentals in clinical disciplines that they will need for the rest of their veterinary education including, anesthesiology, clinical pathology, radiology, public health and medicine and surgery.

CVM Interim Dean Carolyn Henry, DVM, MS, told the students that while she may not know of the individual obstacles they each faced to reach this milestone in their education, she was aware that they had made sacrifices, and there may have been times when they wanted to throw in the towel.

"You may have missed out on taking a trip with your family or friends in order instead to participate in the Veterinary Research Scholars Program," she said. "You may have turned down dinner and a movie with a date to stay home with reheated ramen and an anatomy textbook. You may have missed birthday parties, baptisms, bar mitzvahs, and Little League games."

John Dodam, DVM, MS, PhD, chairman of Veterinary Medicine and Surgery Department, told the students that as their education moves from classroom to clinics their exams may no longer be multiple choice tests, but instead they would be tested in the middle of the night as they work to save an animal's life.



Third-year CVM students gathered for a photo with their friends in front of the MU columns after receiving their white lab coats in a ceremony that cele-



Class of 2019 President Tanner May offered a response on behalf of his peers using a photo of puppies that had cheered the class through times of stress as a backdrop.



CVM Interim Dean Carolyn Henry congratulates Melissa Siegrist, who selected her mother, Deborah, to present her white coat.

Continued on next page....

Class President Tanner May provided the response on behalf of the class and thanked the professors and clinicians for making time in their busy schedules to help himself and his classmates beyond their normal teaching hours. During his remarks, a banner was lowered behind him imprinted with a litter of puppies that students would share on their class Facebook page whenever comment sections began to reflect students' stress.

"With only 12 blocks left, our journey is nowhere near over," May said. "As we take this next step, or should I say blind leap, into the hospital, we might finally begin to feel like veterinarians. Whether that comes with feelings of excitement or anticipation, I know that we have been prepared to successfully work alongside the clinicians of this hospital. Now I ask of you: classmates, faculty, family,



Cliff Miller, DVM, president of the Missouri Veterinary Medical Association, presents a name badge to Jaime Huff during the White Coat Ceremony for the CVM Class of 2019. The Missouri Veterinary Medical Foundation provided each third-year student with a name badge. The MVMA provided each student with a lapel pin for their white coat.

21st Veterinary Products Event Held

Fourteen companies and agencies participated in the 21st annual MU College of Veterinary Medicine Veterinary Products Day held Oct. 17 in the Adams Conference Center. The networking event brings together veterinary students with representatives from animal care and nutrition companies and veterinary interest businesses. The forum allows students to learn about animal nutrition and care products, careers opportunities and professional services.

Companies and agencies attending included, Addison Biological Laboratory, AVMA Life, Banfield Pet Hospital, Boehringer Ingelheim Animal Health, Dechra Veterinary Products, Hill's Pet Nutrition, iVet Professional Formulas, MWI Animal Health, Nestle Purina Pet Care, Norbrook Inc., NutraMax Laboratories, Royal Canin, Virbec, and Zoetis.

The evening included a food buffet featuring a variety of appetizers, as well as drawings for prizes and scholarships. Winning \$500 scholarships each were: Sydney Gooch, VM-1, Johanna Klein, VM-2, Stephanie Thole, VM-3, and Brittany Hedrick, VM-4. Other drawings included two \$50 gift cards, donated by Norbrook and won by Amber Stewart, VM-1, and Sarah Hencke, VM-1; \$30 gift cards, donated by Addison Biological Laboratories and won by Justin Schwarzlose, VM-1, and Kara Fulkerson, VM-1; a set of books, donated by Zoetis and won by Lauren Hamm, VM-3; stethoscopes, donated by AVMA Life and Boehringer Ingelheim Animal Health and won by Chenoa Schwenn, VM-1, Kelly Sandelin, VM-3, and Jordan Weintraub, VM-4; a Yeti tumbler, donated by AVMA Life and won by Jackie Storey, VM-1; gift baskets, donated by Hill's Pet Nutrition, NutraMax Laboratories and Virbac and won by Alexandra Frost, VM-4, Megan Claxton, VM-1, and Molly Churchill, VM-2; a vest, donated by MWI Animal Health and won by Kelly Sandelin, VM-3; and a variety of additional books, bags of pet food, t-shirts and utility keys.



The College of Veterinary Medicine's Veterinary Products Day brings together students and representatives from animal care and nutrition companies, allowing students to learn about the products the companies make and distribute.



Second-year veterinary student Pia Gomez picks up some samples of pet treats during the College of Veterinary Medicine's Veterinary Products Day.

MU Hosting Veterinary Educators World Symposium

The annual Primary Care Veterinary Educators World Symposium will begin Thursday at the University of Missouri College of Veterinary Medicine. The symposium brings together veterinarians who work in community practice education from 40 veterinary schools and colleges around the world, including Australia, Canada, England, Ireland, Mexico, New Zealand, Scotland and the United States. Presentations and networking opportunities help small animal primary care veterinary educators generate new ideas and develop more effective educational strategies.

Richard Meadows, DVM, who is a Curators Distinguished Teaching Professor and leads the Community Practice Section at the MU Veterinary Health Center, is one of the symposium organizers. He said Mizzou has a well-established and vibrant community medicine program.

“It is an honor for us to host this forward-looking, hard-working, international group of veterinary educators,” Meadows said. “The focus of this group, and this conference, is to prepare veterinary students to represent our proud profession to the small animal owning public.”

In addition to discussion about what is happening at colleges in small animal primary care veterinary education, there will be poster presentations highlighting pedagogical innovation and research in primary care veterinary education, and a swap shop designed for sharing best teaching practices, innovations and overcoming challenges.



Symposium attendees will have the opportunity to visit the Warm Springs Ranch Budweiser Clydesdale horses breeding facility in Boonville, Missouri, and the Katy Trail State Park as a preconference excursion.

Educational sessions begin Friday with a presentation entitled, “Diversity, Inclusion, and Wellness: It Takes a Village.” Other Friday activities include primary care program presentations by the University of Melbourne and Cornell University, poster presentations and a discussion of best practices on a variety of topics.

Saturday sessions include a panel of MU educators and administrators discussing, “Advancing and Inspiring Veterinary Primary Care Educators from Theory to Practice and Back Again,” a “Clinical Teaching Tools Carousel,” a presentation on “Developing Competency-Based Veterinary Education,” and a tour of the MU CVM.

The focus on Sunday will be “Enhancing Resilience in Clinical Education.”

The D.V.M. – The Dean’s Video Message (November 2017)

Link:

<http://cvm.missouri.edu/the-d-v-m-the-deans-video-message-november-2017/>

View the archive:

<http://cvm.missouri.edu/the-d-v-m-the-deans-video-message/>

Fighting disease and world hunger: New PET/CT scanner opens at the University of Missouri

The **University of Missouri** has a new weapon in the fight against disease. That same tool also will prove crucial to the fight against world hunger. Housed in a new imaging core in the College of Veterinary Medicine, the combination positron emission tomography (PET) scanner and computed tomography (CT) scanner—the PET/CT system—will improve accuracy and speed in the diagnosis and treatment of cancer, cardiovascular disorders and Lou Gehrig’s disease, as well as provide new capabilities for plant science research.

Fighting Cancer

“As one of only a handful of universities in the nation with a School of Medicine and a College of Veterinary Medicine on the same campus, as well as the most powerful university research reactor, Mizzou has the ability to bring together research and treatment capabilities in a multi-disciplinary setting,” said [Jeffrey N. Bryan](#), associate professor of [oncology](#) and director of the comparative oncology radiobiology and epigenetics laboratory in the [MU College of Veterinary Medicine](#).

Positron emission tomography is an imaging test that reveals how organs and tissues are functioning. Using nuclear medicine tracers developed at the MU Research Reactor (MURR), scientists can observe metabolic processes in the body in real time. Computed tomography is an imaging procedure used to create detailed anatomic pictures or scans inside the body.

When combined in the PET/CT scanner, these functional and structural scans will give Mizzou clinicians and scientists a powerful diagnostic picture, and allow them to track how diseases evolve and progress.

The equipment will allow Bryan, other oncologists, neurologists, internal medicine specialists, and surgeons to provide a new level of care to current patients. It also will provide a powerful tool in current animal clinical trials, including cancer and neurology trials that ultimately will lead to advancements in animals and humans.

Fauna and Flora

Developing corn varieties that are resistant to pests is vital to sustain the estimated 9 billion global population by 2050. Using the PET/CT scanner and advanced nuclear methods at Mizzou, researchers in the [Interdisciplinary Plant Group](#) at the [MU College of Agriculture, Food and Natural Resources](#) could help crop breeders develop new pest-resistant lines of corn and make significant strides toward solving global food shortages.

“Plant and nuclear scientists in interdisciplinary studies at Mizzou will be able to radioactively ‘tag’ plant nutrients and use the PET/CT scanner to essentially ‘watch’ their movement through metabolic pathways in plant structures,” Bryan said. “Plant scientists will be able to improve utilization of these plant cell nutrients to improve root growth and to stimulate pest resistance in plants.”

“The PET/CT scanner at Mizzou will open a whole host of research opportunities for human, animal and plant scientists,” said [Mark McIntosh](#), UM Vice President and MU Vice Chancellor of Research, Graduate Studies and Economic Development. “This imaging unit will set Mizzou apart as the go-to institution for life sciences research affecting citizens of the state and nation.”

CVM to Receive Shikles Distinguished Service Award

The Missouri Horse Shows Association (MHSA) will present the Jeff Shikles Distinguished Service Award to the Universi-

The award is named in honor of CVM alumnus, Jeff Shikles, DVM '88.

Shikles was well-known for his efforts on behalf of the welfare of animals, in particular horses. In 1999, after Shikles' untimely death, the MHSA created the Shikles Award to honor the contributions that select individuals and organizations have made to the betterment of the condition of the horse and to the horse industry. In honoring Shikles' alma mater, the MHSA again honors him and his chosen profession.

"The College of Veterinary Medicine provides direct clinical and surgical services, both on campus and in the form of ambulatory care; it trains veterinarians who will provide care to animals across the country; it provides continuing education and other support to practitioners throughout the region, and it is on the cutting edge of life-changing research projects that have global impact," MHSA officials said in a statement.

The CVM joins a select list of distinguished recipients of the Shikles Award, including CVM alumnus Donald Walsh, DVM '69; pioneer in the world of therapeutic riding Sandy Rafferty; Kansas City philanthropists Landon and Sarah Rowland; and last year's honorees Stephens College, William Woods University, Columbia College and Lindenwood University, which were the first institutions of higher learning in the country to establish equestrian science programs as part of their curriculum.

"We are honored to join this distinguished roster of past recipients of this award," said CVM Interim Dean Carolyn Henry, DVM, MS, DACVIM. "On behalf of everyone at the college, and in particular the faculty and staff in our Equine Hospital, I would like to thank the Missouri Horse Shows Association for this recognition and for our ongoing partnership in serving the equine community."

The awards ceremony will take place during the annual meeting of the Missouri Horse Shows Association, beginning at 5:30 p.m., Jan. 27, 2018, in the Kimball Ballroom of the Lela Raney Wood Hall, Stephens College, Columbia, Missouri.

For further information about the Missouri Horse Shows Association, the Jeff Shikles Award, or the awards ceremonies, contact Sue Webster (swebster31@yahoo.com) or Janet Thompson (janianfarm@aol.com).



Plan for Family and Pets in Case of Disaster

You have 15 minutes to evacuate your home due to a fire, flood, tornado, earthquake, chemical spill, transportation accident, disease outbreak, community disturbance, mass casualty or terrorism event.

Are you prepared? Do you have a plan to protect your loved ones — including your pets and other animals — from disaster? The burden of planning and preparation is on you, according to Catherine

“I was on a committee at the National Academies of Science, Engineering and Medicine,” Vogelweid says. “We did an 18-month study of what occurred at academic biomedical research institutions during some of our nation’s catastrophic events. It was kind of shocking to learn that in a big event that impacts an entire region — like a Superstorm Sandy or a Hurricane Katrina — you are on your own. The surge capacity of emergency services is exceeded really fast. Responders have to look at the big picture and go where the greatest potential safety risk lies. In these major disasters we looked at, people at research institutions and universities were calling for help, but it didn’t come.”



MU CVM’s Catherine Vogelweid and BCFPD Staff Chief Doug Westhoff co-teaching a lecture about successful rescue equipment and its use around large animals.

Vogelweid, DVM, PhD, MS, has devoted years of her life and an abundance of experience and expertise to these scenarios. She helped found the Boone County Large Animal Rescue Program, a unique partnership of the CVM and the Boone County Fire Protection District (BCFPD). Combining the knowledge and skills of firefighters and veterinarians facilitates safer and faster rescues of trapped animals and helps ensure the health and safety of those animals and the human responders.

The program recently conducted its third annual training weekend. During the weekend, students and faculty from the CVM and firefighters from BCFPD trained together. Veterinarians from the college and BCFPD firefighters can deploy as a single team to rehearse and conduct technical animal rescues.

“Mizzou is the fourth vet school in the nation to establish and offer this type of training,” Vogelweid says. “We train one day at the CVM’s Middlebush Farm, near the airport, and the following day at the BCFPD training center on Highway 63 North,” Vogelweid said. “We are really lucky to have access to the training center. I don’t think I could get approval to do some of the things we’ve done — like dig an 8-foot hole, then put 800 gallons of water and a 700-pound horse dummy in it — on our campus.”

Missouri Task Force One, which is managed by BCFPD, trains at the site as well. The Task Force is one of 28 Urban Search and Rescue teams in the United States. Their response efforts to events ranging from hurricanes and tornadoes, to floods and ice storms, and even 9/11 and a cyclone in American Samoa, have cemented its reputation as one of the nation’s elite disaster response units.

Continued on next page....

Vogelweid's role in founding the technical rescue program is just a recent installment in a career dedicated to caring for animals affected by emergencies. She is a member of the Missouri Volunteer Veterinary Corps. She deployed to Joplin in the aftermath of the EF5 multiple-vortex tornado that struck the community in 2011, providing veterinary care for dogs and cats in the mass care shelter.

Vogelweid emphasizes that every family needs a plan in case of a disaster. Having a pre-determined plan can help individuals remain calm and think clearly. A plan and emergency kits need to include care for pets, large animals and livestock in a variety of situations, from a house fire to the earthquake of the century.

“The best solution is for individual people to take responsibility and prepare themselves,” Vogelweid says. “Be prepared and know what your local resources are. Those are the very best things you can do, because if you're waiting for the state to come save you, if you're waiting for FEMA to come help, you're on a very long waiting list.

“Everybody has to have a plan to save themselves and their stuff,” she continues. “Everybody has to be self-reliant, as individuals and as a university community, in every research lab down to each principal investigator.



Vogelweid teaches a firefighter how to halter a horse during an exercise for firefighters about approaching and catching loose horses.

“For example, here in Connaway Hall, we could have a ride-out team. They would be the faculty and staff members who will get the proper clearances, who will do whatever they have to do to become certified as first responders so they can get access to Connaway following a disaster,” Vogelweid explains. “They will be the ones who will say, ‘Okay, here's where we can get dry ice so we can load the freezers so the research samples don't thaw,’ and they'll save all of the critical specimens in those freezers. The idea is that you create and train a local response team that can save the research animals, essential equipment and samples, and the research data.

“From what I see, the best solution is so simple, and it costs so little,” Vogelweid says. “I have disaster kits in my basement for my two dogs. We are stocked and ready to go. If I have to be out of my house in 15 minutes, I can take everything I need for my dogs and go and, honestly, it didn't cost much to put that stuff together.

Continued on next page....

“I have a two-horse trailer for my horses,” she continued. “I have vaccination records and Coggins Papers on my horses because those documents are going to be necessary to offload my horses at any shelter. I will need to have proof of vaccination, and proof that they’ve been tested for Equine Infectious Anemia, so I do that every year. Really, it’s simple stuff, and a lot of it is part of routine health care that you should be doing anyway, and keeping the records where you can access them.”

Sometimes, planning and preparation can be the difference between life and death. Sometimes, it will not make a difference.

“Look, it’s always going to be bad for the people who get hit really hard; there will always be an ‘Incredibly Terrible Impact Area’ where everything is gone,” Vogelweid says. “People in this area may have planned and prepared, but they still got taken out. There will be lives lost, and survivors will endure severe losses and hardships.

“Right outside of that area, is the ‘Really Bad Impact Area,’ where if you had undertaken preparation actions, you maybe saved your life,” Vogelweid continued. “Then, there is the ‘Kind of Bad Impact Area.’ Maybe utilities are out and cell phone service interrupted. If you are in this area and you have prepared, you are probably going to be all right. However, if you are out in this area and you did not prepare, you will have no resources; you will have needs. You’ll be looking for help and it’s probably not coming for a while.”



Instructors Keith Branson, DVM, and Battalion Chief Chuck Leake (on left) supervise the placement of rescue straps around a horse by using a pike pole to manipulate the strap from a safe working distance. VM-2 students Lyndsy Gieche and Jordan Rice (center) are assisting the firefighter with strap placement.

Vogelweid says you will have done a lot to help yourself simply by having water, two to three days of food, a weather radio, and auxiliary charging capability for your cell phone.

“There will always be casualties. There will always be tremendous destruction. Disasters are getting bigger and storms are getting more intense,” she said. “But, if you have undertaken some personal preparation and you’re in the right area, you’ll be able to make it through the disaster without requiring immediate outside assistance. That frees up the first responders for the people who really do need help.”

Since Sept. 11, 2001, the U.S. government has taken steps to encourage all citizens to make their own survival preparations. The tragedies of September 11 highlighted to the nation the importance of being prepared, and the month marks the peak of the Atlantic hurricane season, so the U.S. has observed National Preparedness Month every September since 2004.

The Federal Emergency Management Agency (FEMA) has found that a significant number of pet owners will not evacuate a life-threatening situation without their beloved animals. Yet, shelters will require your pets to be current on vaccinations. Clearly, it is important — perhaps, vitally important — to maintain an annual schedule of veterinary visits.

CVM Ophthalmology Resident's Research Receives ACVO Award

Todd Marlo, a recent resident at MU's College of Veterinary Medicine (CVM) received the Best Basic Science Manuscript award at the American College of Veterinary Ophthalmology conference, held in October in Baltimore.

Marlo's paper, "*Altering equine corneal fibroblast differentiation through Smad gene transfer,*" describes the use of gene transfer technology to silence profibrotic Smad, overexpress antifibrotic Smad, or a combination of therapies to control TGF- β 1-mediated fibrosis in equine fibroblasts.

"Basically, we were trying to identify and utilize gene therapy to heal corneal scarring in horses," Marlo says. "This approach had been done in human medicine before, but never in veterinary equine medicine. The most common causes of eye injuries to horses are the result of various types of trauma: being struck with a tree branch, or a racehorse getting sand in its eyes. There are also incidents of immune mediated ulcers, so therapies such as this could be used in the future to diminish corneal scarring."

Marlo now works for Veterinary Ophthalmology Services (VOS) in Chattanooga, Tennessee, where he lives with his wife, Jessica, who is also a veterinarian. The couple met at a pre-Vet Club dog wash during their undergraduate days at Southern Illinois University. Todd Marlo received a doctor of veterinary medicine from the University of Illinois, and then completed a small animal rotating internship at MU's CVM. Following the internship, he stayed at Mizzou to complete a comparative ophthalmology residency in 2017.



Todd Marlo

Marlo began work at VOS in September 2017, so he did not attend the conference where his research was honored.

"I did receive a very nice crystal plaque and a check for \$500, so it was still pretty cool," Marlo said. The ACVO awards are presented to residents at the end of their residencies, so there are no research stipends.

"When I was at Mizzou, I was not a very research-focused guy," Marlo says. "As much as I sometimes hated having to do the research, it really improved my residency. I understood the basic science of veterinary ophthalmology, but doing this research really pushed the boundaries of what I was doing and what I understood. I greatly appreciate the work I did with Dr. (Rajiv) Mohan and Dr. (Elizabeth) Giuliano.

"I do clinical ophthalmology now. I am not involved in research," Marlo says. "Still, every week of my working life, I am doing things I learned how to do at Mizzou."

Continued on next page....

Marlo is the CVM's most recent Ophthalmology Service resident to be honored for his research. During the past several years, ophthalmology residents have received six ACVO awards, a national Phi Zeta research award and a Missouri Foundation for Veterans' Medical Research award.

"That speaks very highly of our resident training program," says section leader Elizabeth Giuliano, DVM, MS. "I've had the great fortune to work with some very, very talented young minds."

Giuliano, a professor and board-certified specialist in veterinary ophthalmology, also served as president of the ACVO Board of Regents from 2015-2016 and currently serves as chair of the ACVO Board of Regents Nominating Committee.

"We work as a team here, so every resident who comes on board is part of a bigger picture," Giuliano says. "They play instrumental roles in helping us answer the larger question. The larger question, over the past several years since Rajiv Mohan has been our endowed chair, is scarring in the eye."

Mohan is the Ruth M. Kraeuchi Missouri Endowed Chair Professor of Ophthalmology. Mohan, MSc, PhD, teaches ophthalmology and molecular medicine. A Fellow of the Association for Research in Vision and Ophthalmology, Mohan serves as director of the Ophthalmology One Health, One Medicine Research Program, director of resident research at the MU's Mason Eye Institute, and as a health research scientist in ophthalmology at the Harry S. Truman Veterans' Memorial Hospital.

"Both Dr. Mohan and I have a strong interest in corneal work — that's the clear front part of the eye, which is the greatest refractive structure of the eye in any terrestrial animal," Giuliano explains. "A lot of our research has been geared toward looking at those processes that result in scar formation in the eye. This is very important in regards to our veterans coming home from military service, who may have sustained injury, chemical burns, or a variety of infectious keratitises, which we deal with a lot on the veterinary side of things. For many years now, we've been looking at different strategies to decrease scar and, therefore, improve vision."

The study, "[Altering equine corneal fibroblast differentiation through Smad gene transfer](#)," recently was published in the journal *Veterinary Ophthalmology*. Co-authors on the study include Todd L. Marlo, Elizabeth A. Giuliano, Ratnakar Tripathy, Ajay Sharma and Rajiv R. Mohan.

MU Veterinary Team Walks in the Footsteps of Darwin

The Voyage of the Beagle, published in 1839, recounted the global, five-year scientific expedition of HMS *Beagle*, during which Charles Darwin famously spent five weeks in the Galápagos.

Amid his observations and collections, Darwin noted that mockingbirds, finches and tortoises differed from island to island. These facts contributed to the development of his groundbreaking theory of evolution by natural selection, presented in his 1859 book, *On the Origin of Species*.

Throughout history, humans have been captivated and fascinated by the radical, big-picture theories that stake a signpost in the infinite wonder of existence.

The true nature of scientific advancement, however, is grounded in the tiny steps of evidence-based research. Researchers use a method of inquiry based on systematic observation and measurable evidence, subject to specific principles of reasoning. From that platform, they formulate, test, and modify their hypotheses. That is how reality ultimately receives a jolt.



Research specialist Abel Vega approaches a giant tortoise during a visit to the Galápagos Islands.

It was in the interest of fundamental, boots-on-the-ground science that a team of Missouri scientists and veterinarians dispatched to the Galápagos in October 2016.

“The ABG (Agencia de Regulación y Control de la Bioseguridad y Cuarentena para Galápagos, or Agency for Biosafety and Quarantine Regulation and Control for the Galápagos) is interested in developing diagnostic testing capacity for livestock at their facility there on the island,” said John Middleton, a professor of food animal medicine and surgery at MU’s College of Veterinary Medicine (CVM). “When they send test samples off the island, the time lag in getting results is significant. In one instance, it took a month to get diagnostic results back from the mainland. For timely response to a problem, that doesn’t work out very well.”

The visit was conceived based on a conversation with Patricia Parker, PhD, at the University of Missouri–St. Louis. Parker, an evolutionary biologist and endowed professor in zoological studies, is a notable Galápagos investigator. Her avian research in the Galápagos has resulted in nearly 100 scientific papers and 15 book chapters. Parker also serves as senior scientist at the St. Louis Zoo.

“Dr. Parker has been conducting research in the Galápagos for years,” Middleton says. “She is a friend of Dr. Marilyn Cruz, executive director of the ABG. Some work they had been doing on disease surveillance in their cattle population led Dr. Cruz to ask Dr. Parker if she knew somebody in the U.S., possibly affiliated with the university, who could help with these livestock diseases.” The Galápagos archipelago consists of 16 islands with a population of 20,000 people and 30,000 cattle. The islands have prohibited the importation of livestock since 1989, so the health of native livestock herds is essential. The humans are citizens of Ecuador; the cattle tend to be Brown Swiss, Holsteins, and Jerseys.

“So, there were actually two aspects to our visit: to have our team work with their diagnostic lab to look at how they can improve diagnostic testing capacity, and to understand the livestock population and how the livestock are managed,” according to Middleton.

Middleton, DVM, PhD, DACVIM; Michael Zhang, associate clinical professor of biomedical sciences and leader of the serology section of the Veterinary Medical Diagnostic Laboratory (VMDL); and Abel Vega, MS, a research specialist in the avian section of the VMDL, made up the Mizzou contingent to the island of Santa Cruz in the Galápagos.

Parker’s PhD candidate, Samoa Asigau, represented the University of Missouri–St. Louis. Asigau was making her fourth trip to the Galápagos.



CVM Professor John Middleton served as a liaison between the farms and research under way in the lab.

“Really, what we are trying to do is optimize their testing capacity so that they can get a better turnaround on tests,” Middleton explained. “In order to understand how you test for disease, you have to understand how diseases are potentially transmitted, which is why you go out and look at the population and see how farms are managed. It brings the hands-on approach and the laboratory approach together.”

The natural division of labor found Middleton working mainly in the field, while the remainder of the team primarily utilized their expertise in the lab.

“When we first got there, we bled some cows so we had some samples to work with, then we brought those back to the lab,” Middleton said. “While Mike, Samoa and Abel were working in the lab, I’d continue to go out and do various farm visits and go to their slaughter facilities. That was really my role: to interact between what goes on in the lab — which is Mike, Abel and Samoa — versus what actually happens on the farm, and then come together as a group to understand the best methods for ABG to diagnose and control disease on the islands.”

Abel Vega filled several roles for the team. A native of Bolivia, he speaks Spanish fluently.

“Dr. Parker didn’t have anyone available at the time who was a fluent Spanish speaker,” Middleton says. “Dr. Shuping Zhang, director of the VMDL, graciously offered that we could take Abel with us as an interpreter. Abel has first-hand experience working in the diagnostic lab, so he was a great asset to the team. He could interpret language for us, but he also knows how the diagnostic lab works. That was critical since we were trying to develop diagnostic capacity. As a native of South America, he could provide cultural context as well. He helped us on multiple fronts that week.”

The two diseases the team specifically focused on were infectious bovine rhinotracheitis (IBR) and bovine viral diarrhea (BVD).

Continued on next page....

IBR is a respiratory disease of cattle caused by bovine herpesvirus 1. It is characterized by acute inflammation of the upper respiratory tract. Disease outbreaks can result in severe production losses, abortion and mortality, so a BoHV-1 infection can cause significant economic losses to cattle producers.

BVD can cause a number of different disease manifestations from inapparent persistent infection to fulminant enteritis and thus has a significant impact on animal health and the farm economy.

“They’ve been trying to develop PCR (polymerase chain reaction) testing capacity for those two diseases,” Middleton said. “Dr. Michael Zhang really helped them try to develop those assays further. Since we have come back, he has sent control strain DNA for IBR and BVD back to the ABG for them to use in assay development.”



“Really, this first trip was an exploratory visit to gain an understanding of what we were dealing with so we can provide more informative advice,” Middleton said. “Our real hope is that we can bring a team from the Galápagos to Missouri and introduce them to what we do here. We would like to bring their veterinarian and show him how livestock operations work in the United States, not necessarily to say, ‘This is the way it should be done,’ but just, ‘This is our approach.’ Then, at the very least, we have a framework moving forward by which he understands our perspective, and we understand his perspective. Maybe we can improve things on farming operations. Maybe we can help there.”

(From left) MU Veterinary Medical Diagnostic Laboratory (VMDL) research specialist LaToya Sly, UMSL grad student and translator Patricia Mendoza Becerra, ABG microbiologist Paulina Castillo, VMDL serology section head Michael Zhang, ABG biologist Erika Guerrero Vásquez, ABG lab team leader Alberto Vélez, and serology research specialist Amber Mann at the VMDL.

The hope and the help came to fruition in March. A team of five Ecuadorian scientists and veterinarians left their sunny, equatorial clime to visit cold, snowy Missouri. The group spent several days on the UMSL campus with Parker and Asigau, and then braved I-70 to Columbia.

Patricia Mendoza Becerra, one of Parker’s UMSL PhD candidates and a native of Peru, introduced the ABG team at an informal meeting at the CVM’s VMDL:

- **Alberto Vélez**, “He is the team leader for the Galápagos laboratory. He has a biology degree and a master’s degree in biotechnology with a focus on molecular techniques. His professional experience has been mostly doing molecular diagnostics.”
- **Rita Criollo**, “She is a small animal veterinarian, so she’s been working in small animal medicine over at the VHC, in addition to working here (in the VMDL). Back in the Galápagos, she also works outreach with the population about nutrition, disease control and health care of animals, in addition to her duties as a small-animal vet.”
- **Fabricio Vásquez**, “He is a veterinarian with a lot of experience out in the fields, with chemical diagnostics as well as husbandry and management techniques for cattle and other large animals. He will mainly be out at the farms working with cattle.”
- **Paulina Castillo**, “She has a degree in chemical analysis. She’s been working in the laboratory on pharmacological and microbiological aspects, and also in molecular biology.”

- **Erika Guerrero Vásquez**, “She’s a biologist who has been working mostly with entomology identification, to see if the insects, arachnids and any other arthropods that are coming into the Galápagos can be introduced and if they can carry any diseases.”

“We are very happy with our takeaway from this week,” Vélez said, with Mendoza serving as his interpreter. “Our visit to the Columbia facilities have two main purposes. One has been to get to know the place and its infrastructure. In the future, that is going to be very helpful for the improvement of the buildings we have back in the Galápagos.

“The second part is to get to know the people who work here on all the different assays that they are running,” Vélez continued. “That part has been a very pleasant surprise for us. What a great resource all the people have been! Everyone we have met has been so helpful and so patient with explanations to our questions. That has probably been the most important part of our visit to Columbia. So many nice people showing such hospitality in allowing us to come here to learn and teaching us as much as they can. We are so happy that people here have been so open. This has been one of the best educational experiences we have ever had.”