

## **University of Missouri, College of Veterinary Medicine News: July - December 2020**

Veterinary Health Center Acquires New Linear Accelerator

CVM Rolls Out Improvements to Classrooms

Mizzou's Laboratory for Infectious Disease Research Turns Focus to COVID-19

Mizzou College of Veterinary Medicine Pioneers Healer's Art Online

The D.V.M. – The Dean's Video Message (July 2020)

Retired CVM Faculty Member William Wolff Passes Away

Veterinary Medical Diagnostic Laboratory Collaborates with MU Health Care to Expand COVID Testing

Detecting Pancreatic Cancer at Treatable Stages

Placenta Can Indicate How Body Responds to Opioids During Pregnancy

AVMA President Honors MU CVM Alumnus Fobian

The D.V.M. – The Dean's Video Message—(August 2020)

Our Time to Lead: VHC Makes an Impact on Jefferson City Attorney

The D.V.M. – The Dean's Video Message—(September 2020)

Leading the Way

Painting a Clearer Picture of COVID-19

A retrospective view of COVID-19

Residents, Postdocs Take on New Roles

Mizzou Researchers Obtain Funding for COVID Related Animal Modeling Projects

Fales Named E.B. Pope Award Recipient by AAVLD

Little Dog, Big Heart

CVM Community's Efforts Assist Veterans

Retired CVM Professor and Hospital Administrator James Creed Passes Away

MU Research Project to Study COVID-19 Immunity

The D.V.M. – The Dean's Video Message—(November 2020)

CVM Welcomes New Faculty

Equine Medicine Pioneer Jerry Johnson Has Passed Away

VHC's Medical Oncology Team Gives Service Dog a Second Chance

FDA Alert: Certain Lots of Sportmix Pet Food Recalled for Potentially Fatal Levels of Aflatoxin

# Veterinary Health Center Acquires New Linear Accelerator

The University of Missouri College of Veterinary Medicine has installed a new linear accelerator in the [Veterinary Health Center](http://vhc.missouri.edu/) (Link: <http://vhc.missouri.edu/>). A linear accelerator creates high energy x-rays, which are used to treat patients with certain types of cancer. The new linear accelerator was purchased after the previous linear accelerator, which had been used at the CVM for approximately seven years, began to break down. According to Assistant Professor of Radiation Oncology Charles Maitz, DVM, PhD, DACVR-Radiation Oncology, the previous machine was around 8 years old when it was purchased, and the average life span is usually around 15 years of functionality before needing large-scale repairs or replacement.

“Toward the end of its life-cycle the wave-guide, or the part that accelerates the electrons up to high energy, just started failing,” said Maitz. “Of course, that was a part that wasn’t covered by our service contract, and it would have been pretty expensive to replace.”

The process of obtaining a new machine began back in January of 2019. The breakdown of the old linear accelerator was complete by June 2019, so the CVM has been without this important machine for a year. During the interim, a number of patients went to the [Veterinary Health Center at Wentzville](http://vhc.missouri.edu/wentzville/) (Link: <http://vhc.missouri.edu/wentzville/>) for treatment or used alternative therapies. “We’ve had other options available where we’ve done electrochemotherapy or having our surgical oncologist give us another option for some of these patients, but we’ve certainly felt we’ve missed the radiation side of things with the linear accelerator,” Maitz said.

The new linear accelerator is not just a replacement for the previous machine, but a step up in terms of capabilities. The VHC will now be able to comfortably double the number of patients treated with the new machine. Previously the VHC had been able to treat approximately five patients per day. The expectation is that 10 patients per day can now easily be accommodated.

“It’s a huge jump forward,” said Maitz. “The accelerator we’re getting has the most advanced collimator, or beam shaping device, on the market. So, the precision of our treatments based on that alone has improved. It also has the ability to have better image guidance. So what that means is we are able to take a CT scan using the linear accelerator, and we can use that to perfectly align our patients to make sure that we are treating exactly what we are supposed to be treating and missing what we are supposed to be missing, which is even more important.”



**Hayley Ashworth, BVSc, radiation oncology resident at the Veterinary Health Center, Whitney Fahrendorf, RVT, radiation therapy technician, Jeff March, VT, radiation therapy technician, and Assistant Professor Charlie Maitz, DVM, PhD, DACVR-Radiation Oncology, pose with CJ Grant, who is being treated for a mast cell tumor using the VHC’s new linear accelerator.**

Continued on next page →

With the new linear accelerator, some changes needed to be made to the linear accelerator vault located on the first floor of the VHC. Maitz detailed some of these renovations: “They don’t make accelerators as small and bare-bones as the one we had previously, so if we wanted to keep the same capabilities, we had to have a little bit larger of an accelerator. We didn’t actually expand our linear accelerator vault, but we did have to extend shielding for the new linear accelerator. Our room became a little bit smaller because of that, but in the process, we also used the opportunity to make it much more space efficient so we can really be focused on our patients when they’re down there.”

Mizzou is the first veterinary facility to purchase a new machine from Elekta, a manufacturer of linear accelerators. Maitz says the college is working toward becoming a show site. “If other veterinary or even human clinics are interested in this type of machine they can come and view ours. It’s another thing that’s really going to put the university out there.”

*By Nick Childress*



**VHC Radiation therapy technicians Fahrendorf and March prepare CJ Grant for treatment of her tumor.**



**Members of the Veterinary Health Center radiation oncology team (from left) Assistant Clinical Professor of Radiation Oncology Tara Ehling, DVM, DACVR-Radiation Oncology, Ashworth, Maitz, Fahrendorf and March monitor CJ Grant as her tumor is treated in the VHC’s newly operational linear accelerator.**

# CVM Rolls Out Improvements to Classrooms

When the University of Missouri College of Veterinary Medicine resumes the didactic curriculum this fall, new and returning students will be greeted by renovations to two of the classrooms in the Veterinary Medicine Building. In preparing for an American Veterinary Medical Association Council on Education reaccreditation site visit, which will take place later this year, college administrators identified classrooms W-233 and W-235 as needing repairs and seating options more conducive to contemporary teaching methods and study styles, explained Executive Administrative Dean Rusty Crawford. He said the overall goal is to improve the learning opportunities for students.



“We took a look at what we’re doing as a college to create a longstanding experience for our students, with a focus on safety,” he said. “We want to provide a safe environment physically, but also provide learning facilities that promote positive mental health and encourage social interactions among our students.”

**Associate Professor of Veterinary Anesthesiology Alex Bukoski, DVM, PhD, DACVAA, conducts rounds in one of the renovated classrooms in the Veterinary Medicine Building with CVM students who are in the clinical portion of their veterinary training.**

The college replaced the 1970s-era tablet arm style desks with ergonomic tables and booth seating to allow small group interactions. In addition to upgrading the furniture, the floors were stripped and polished, ceiling tiles were repaired and replaced, walls were patched and painted, and lighting was enhanced. Additional monitors were installed to also accommodate when the rooms are used for clinical rounds.

The work was funded by donor’s gift to the Dean’s Fund for Excellence.

# Mizzou's Laboratory for Infectious Disease Research Turns Focus to COVID-19

The Laboratory for Infectious Disease Research (LIDR) (LINK; <http://lidr.missouri.edu/>) at the University of Missouri is a regional biocontainment laboratory located on the Columbia campus. The LIDR is critical for collaborating scientists who perform research on infectious diseases and is part of our nation's effort to protect public health. In recent months, COVID-19 has become an important topic of research for the scientists who work in the LIDR.



Jeffrey Adamovicz, PhD, is the LIDR's director. He is responsible for the safe operation of the facility and providing support for users, ensuring they can complete their intended research.

"The LIDR facilitates regional research on what we call 'high-consequence pathogens'," says Adamovicz. "These high-consequence pathogens can be toxins, viruses, bacteria or fungi."

As part of that effort, LIDR researchers procured a sample of the virus that causes COVID-19.

"We foresaw the need to conduct research on campus to help understand the basic virus biology and help work toward the creation of therapeutic treatments, diagnostics, medical devices and vaccines," Adamovicz says.

Guidelines for the safe handling and research of SARS-CoV-2 were published by the Center for Disease Control and Prevention. They state that work beyond routine specimen testing should be conducted only under biosafety level 3 (BSL3) conditions and practices. The LIDR is the only facility on the MU campus that operates under BSL3. Researchers conduct studies for model development, vaccine creation and analysis, therapeutics testing, vector-borne disease prevention, host-pathogen interaction and host immune response. The LIDR also houses specialists in aerobiology and immunology who facilitate and support research, which furthers the capacity for research on COVID-19.

Professor of Veterinary Pathobiology and Associate Dean for Research Christian Lorson, PhD, detailed the importance of this kind of facility. "This is very important work that can really only be accomplished in a handful of locations across the country and to have this facility within the CVM presents an outstanding opportunity to help animals and humans," said Lorson. "Perhaps now more than ever it has become increasingly clear that having a strong infectious disease program is critical for a research institution like MU, as the LIDR was able to quickly pivot and is now able to assist in the multi-pronged research effort to understand and stop the COVID-19 pandemic."

The LIDR currently has a multitude of collaborations in discussion for product efficacy testing, model development, and vaccine and therapeutics research. Associate Director for the LIDR and Assistant Research Professor in Veterinary Pathobiology Paul Anderson, PhD, explained this process. "We have been contacted by dozens of investigators who want to collaborate with us to test everything from antiviral therapeutics, vaccinations, host-immunomodulating compounds and different products that claim to have antiviral properties," said Anderson. "All these things need to be verified so we've been spending a lot of time over the last couple of months working with people to submit grant applications and other nondisclosure agreements to try to get all this moving."

According to Adamovicz, the overarching goal of the LIDR's COVID-19 research and testing is to generate knowledge that will help alleviate the current pandemic, as well as provide a better foundation of knowledge for future coronavirus outbreaks. While knowledge is the main goal, Adamovicz says the LIDR's research may be able to provide a solution. "It is likely that we may deliver new drugs or a novel vaccine candidate for the disease," says Adamovicz. "The University of Missouri has talented faculty that are up to the challenge and can work alongside the best researchers in the country. When Mizzou agreed with the National Institutes of Allergy and Infectious Disease to host the LIDR over 10 years ago, it was with the possibility of a pandemic disease in mind. So, hats off to that foresight and kudos to MU to have a facility of this type to help serve the citizens of Missouri."

*By Nick Childress*



# Mizzou College of Veterinary Medicine Pioneers Healer's Art Online

The University of Missouri College of Veterinary Medicine's Healer's Art course was moved online for the first time. This is a course that focuses on addressing the growing loss of meaning and commitment that veterinarians may experience while under the stress of today's world. Through this course, by the way of open dialogue, students recognize and find the true value of their work, while also learning how to preserve the human dimension. With open dialogue, it has always been important to have personal, face-to-face connection, but due to COVID-19, the course was moved to remote meetings.

Assistant Teaching Professor of Small Animal Surgery and codirector of The Healer's Art course, Jill K. Luther, DVM, MS, DACVS-SA, detailed the course further. "It's a course where students and faculty come together in a community to discuss nontraditional issues in veterinary medicine," said Luther. "There's no black and white science, there's no teaching, it's an all discussion-based course."

According to Evangeline Andarsio, MD, director of the national Healer's Art course at the Remen Institute for the Study of Health and Illness, Mizzou was the first institution to offer the entire course virtually. The Healer's Art is a course that is taught across all medical professions nationwide. Some medical schools switched to the virtual format midway when universities began the move to remote instruction, but the Mizzou CVM was the first to offer the entire course online throughout all medical professions across the country.

With the course moving to an online format, some basic changes were made to ensure the course remains as effective as it would be in person. "Essentially, we took everything that is in person and have moved it to the Zoom format," said Luther. "There have been some things we looked at to maintain the basic principles of the course. We use generous listening, which means no interruptions. Strict confidentiality is another, which is easier when you're in a room and you can close the door. Now everybody has to keep their video on so that you know that there aren't people listening in and people walking back and forth."

Codirector of the CVM course and Veterinary Social Worker Francesca Tocco, MSW, LCSW, said minimizing distractions was key with students learning remotely, while also highlighting a nice surprise of the virtual meetings. "Looking at your phone is obviously a distraction that we want to avoid," said Tocco. "One of my favorite parts this year was being able to see some of the pets that joined The Healer's Art because everyone was working from home. That was a nice touch in my opinion, but I guess some could consider that a distraction," she said laughing.

The third codirector of the course is Associate Teaching Professor of Equine Ambulatory Medicine Alison LaCarrubba, DVM, DABVP-Equine. She is a longtime faculty participant in the course, who joined as a codirector this year.

With the course beginning in June, the decision was made to move the course online. Luther says this didn't affect the course negatively, but actually improved it at Mizzou. "I would say that it's been enhanced actually," said Luther. "We've been able to include clinical students this year, and we've never been able to include them before. Attendance is mandatory and clinical students never know what time they're going to get out of clinics, and they have after-hours duties, so this year they were able to attend. Another way it has been enhanced is that everyone was in their own comfortable environment. We were able to dive deeper into these serious discussions because we were all more comfortable on a certain level."



**Jill K. Luther**



**Francesca Tocco**



**Alison LaCarrubba**

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Tocco mentioned that they were able to have guest speakers because of the online format. “The fact that we had guest DVMs that were practicing in other parts of the state, such as Springfield and St. Louis, who were able to contribute, was lovely.”

As far as challenges go, there were few. “There were some connectivity issues,” says Luther. “I think one issue was being at home. Being able to step away from the family, for people who have children, because during this time we haven’t been able to get away from those children very much. So that provided a bit of a challenge, but overall, I thought administering this course was easier.”

Even though the course was forced to move to the online format, Tocco says The Healer’s Art course went smoothly. “Sometimes in the traditional format students are in back-to-back classes or laboratory exercises and they would come to The Healer’s Art from a day full. This format allowed them to eat some food beforehand and let their dogs out beforehand. They were able to attend to the balance of life and be very present during our course, which was nice,” she said.

*By Nick Childress*



# The D.V.M. – The Dean’s Video Message (July 2020)

Link: <https://vimeo.com/441312788>

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

# Retired CVM Faculty Member William Wolff Passes Away

Former College of Veterinary Medicine faculty member William “Bill” Allmond Wolff, 90, of Columbia, Missouri, passed away on Thursday, Aug. 6, 2020, at Solstice Senior Living of Columbia.

Services will be held from 2 p.m. to 5 p.m., Sunday, Aug. 30, 2020, at the VFW Post 5520, 609 Edgebrook Drive, Champaign, Illinois 61820.

A sympathy card is available in the CVM Office of the Dean for members of the CVM community to sign.

He was born on Feb. 11, 1930, in Denver, Colorado, to Hiram and Stella (Allmond) Wolff. He graduated from East Denver High School in 1948. Immediately following graduation, he served in the United States Army Reserves as a meat and dairy inspector during the Korean War. Following his military experience, he began general agriculture courses and worked at Painter Herford Ranch. A veterinarian who worked at the ranch assisted him in applying to Colorado State University College of Veterinary Medicine and Biomedical Sciences in Fort Collins, Colorado. He received a master of science degree, and went on to earn his doctorate of veterinary medicine in June of 1954.

He built a small animal clinic in Montrose, Colorado. He also served in the Army Veterinary Corps. Wolff and his family traveled during his veterinary medicine years. He and his family first lived in Bogota, Colombia, for two years. They moved to Columbia, Missouri, then Arvada, Colorado. They then left the United States for a sabbatical in Nairobi, Kenya, for four years. They returned to Champaign, Illinois, where Wolff worked at the University of Illinois, before returning to Columbia, where he worked at the University of Missouri College of Veterinary Medicine. After settling in Columbia, he made four trips to El Salvador to work primarily with dairy cattle and to train students. He also served as an instructor and extension specialist.

He was a past chairman of the Missouri Veterinary Medical Association Emergency Management and Public Health Committee and past director of the Missouri Volunteer Veterinary Corps. He helped build the MOVVC into a group of 300 veterinarians, ready to assist the state and federal governments during natural disasters and animal disease outbreaks in Missouri. The MVMA honored him as Veterinarian of the Year in 2015.

He was a member of the Pachyderm Club, the VFW, and enjoyed attending and performing at the Baptist Church in Ashland, Missouri. He was fluent in Spanish and Swahili. He enjoyed bike riding on the Katy Trail, fishing, hunting, and performing for nursing home residents. He loved playing guitar and singing. His most memorable performance was surprising his granddaughter at her wedding reception by playing and singing for her.

He is survived by his wife, Eileen Wolff. Other survivors include his daughter, Krissa (Bill) Slade; son, Kevin (Maureen) Wolff; Eileen’s three children, David (Nancy), Tom and Linda; grandchildren, Meagan (Kyle), Kolton, Skylar, David and Abigail; and great grandson, Casen William.

Arrangements are under the direction of Parker-Millard Funeral Service and Crematory; 12 East Ash St. Columbia, Missouri, 65203; (573) 449-4153. Condolences may be left online for the family at [www.ParkerMillard.com](http://www.ParkerMillard.com)

# Veterinary Medical Diagnostic Laboratory

## Collaborates with MU Health Care to Expand COVID Testing

The University of Missouri Veterinary Medical Diagnostic Laboratory (Link: <http://vmdl.missouri.edu/>) recently began working with MU Health Care to provide COVID-19 testing. With the MU Health Care testing site exceeding its capacity due to an increasing number of coronavirus cases, Shuping Zhang, BVS, PhD, DACVM, director of the VMDL, said it was time for the veterinary lab to start providing this service. “MU Health reached out to us for collaboration,” said Zhang. “With our participation, projected testing capacity is up to about 1,500 more tests per day, or around 8,500 per week.”

There were many steps taken to make this possible for the VMDL. Equipment had to be moved to MU Health Care’s Mizzou North facility and calibrated, multiple software systems had to be downloaded to interpret results, and assets had to be validated and checked to make sure the COVID testing site would be up to par. Zhang said the lab tested multiple COVID samples to make sure they were providing correct results. “We used samples that have tested either positive or negative by another testing system. Then we had our staff test these samples blindly, and make sure that our results are exactly the same or similar to the previous investigative results from other testing systems. If not, we had to figure out why, and this is called test validation,” said Zhang. “We also had to figure out what the detection limit is for our testing system, which means how sensitive our test is. We had to find what is the lowest viral level we can detect.”

The faculty and staff members who will conduct the tests have taken proficiency tests to make sure they are able to conduct the tests safely and as accurately as possible. The VMDL will be pulling one faculty and three staff from three of its individual sections to actually conduct the tests.

Zhang says the Molecular Diagnostic Section of the VMDL has played an instrumental role in validating the PCR test. Section head, Solomon “Wole” Odemuyiwa, DVM, MSC, PhD, DACVM, helped with interpreting results, troubleshooting, and making sure that the test validation meets lab accreditation requirements, Zhang said. “Normally the test validation would take at least four weeks, but we have finished everything in a week and a half,” Zhang said. “Dr. Odemuyiwa and the staff worked day and night for this past week to get this going.”

Zhang said many people may not understand that the VMDL does a lot of work in public health and is fully equipped to manage this task. “We not only protect animal health, animal agriculture and food security, but we also do a lot of work in public health. The VMDL is fully accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD), certified by the Food and Drug Administration (FDA), as well as certified by the National Animal Health Laboratory Network (NAHLN) as a level one lab, which is the highest level,” said Zhang. “We actually have a lot of strength and capabilities in testing samples. We have experience in dealing with and responding to a large-scale disease outbreak.”

*By Nick Childress*

# Placenta Can Indicate How Body Responds to Opioids During Pregnancy

MU scientists discover possible biological markers for identifying opioid use disorder

Scientists at the University of Missouri have discovered possible biological markers that they hope could one day help identify the presence of an opioid use disorder during human pregnancy.

Cheryl S. Rosenfeld, an author on the study, said women often take opioids for pain regulation during pregnancy, including oxycodone, so it's important to understand the effects of these drugs on the fetal placenta, a temporary organ that is essential in providing nutrients from a mother to her unborn child. Rosenfeld is a professor of biomedical sciences in the College of Veterinary Medicine, investigator in the Christopher S. Bond Life Sciences Center and research faculty member in the Thompson Center for Autism and Neurodevelopmental Disorders.

According to the Centers for Disease Control and Prevention, the number of pregnant women diagnosed with an opioid use disorder has quadrupled between 1999 and 2014.

"Many pregnant women are being prescribed opioids — in particular OxyContin, or oxycodone — to help with the pain they can experience during pregnancy, and this can lead to opioid use disorders," Rosenfeld said. "Many women also don't want to admit to taking these drugs, and we know that children born from mothers who have taken opioids during pregnancy experience post-birth conditions, such as low-birth weight. But, so far no one has studied the potential ramifications of opioid use during fetal life. Thus, we focused on the placenta because it is the main communication organ between the mother and her unborn child."

Previous studies examining these effects have used human cell cultures, but this is one of the first studies to use an animal model to examine how developmental exposure to these drugs affect the conceptus. In the study, Rosenfeld and her colleagues focused on how a mother's use of oxycodone during her pregnancy can affect a mouse's placenta. Mouse and human placentas are similar in many ways, including having placenta-specific cells in direct contact with a mother's blood. They found the use of this drug during pregnancy can negatively affect the placenta's structure, such as reducing and killing cells that produce by-products needed for normal brain development. In addition, Rosenfeld said their findings show specific differences in genetic expressions between female and male placentas in response to maternal oxycodone exposure.



**Cheryl S. Rosenfeld is a professor of biomedical sciences in the College of Veterinary Medicine, investigator in the Christopher S. Bond Life Sciences Center and research faculty member in the Thompson Center for Autism and Neurodevelopmental Disorders.**

“Our results show when mothers take oxycodone during pregnancy, it causes severe placental disruptions, including elevation of certain gene expressions,” Rosenfeld said. “We know what the normal levels should be and if there are any changes, then we know something might have triggered such effects. For instance, in response to maternal oxycodone exposure, female placentas start increasing production of key genes essential in regulating maternal physiology. However, in male placentas, we see some of these same genes are reduced in expression. These expression patterns could be potential biomarkers for detecting exposure to oxycodone use.”

Rosenfeld said by studying this in an animal model, it allows scientists to see these changes quicker than if they were completing a comparable study in people, because a pregnant mouse can give birth in 21 days compared to about nine months in people.

“This also allows us to easily study other regions of the body, especially the brain of exposed offspring, that would be affected by taking these opioids,” Rosenfeld said. “We can then use this information to help epidemiologists identify behaviors that people should be looking at in children whose mothers have taken these opioids.”

Rosenfeld suggests that opioids should be added to other widely discussed warning factors during pregnancy, such as smoking and drinking alcohol. She said short-term use of opioids by pregnant women, such as someone who has kidney stones, might not cause much of an effect on their pregnancy, but that likely depends on when the mother is taking the drug while pregnant. Future plans for this study include analyzing how offspring are affected once they are born.

Rosenfeld’s research is an example of an early step in translational medicine, or research that aims to improve human health by determining the relevance of animal science discoveries to people. This research can provide the foundation for precision medicine, or personalized human health care. Precision medicine will be a key component of the NextGen Precision Health Initiative — the University of Missouri System’s top priority — by helping to accelerate medical breakthroughs for both patients in Missouri and beyond.

The study, “Maternal oxycodone treatment causes pathophysiological changes in the mouse placenta,” was published in *Placenta*, the official journal of the International Federation of Placenta Associations. Other authors include Madison T. Green, Rachel E. Martin, Jessica A. Kinkade, Robert R. Schmidt, Nathan J. Bivens and Jiude Mao at MU; and Geetu Tuteja at Iowa State University.

Funding was provided by grants from the National Institute of Environmental Health Sciences and the Eunice Kennedy Shriver National Institute of Child Health and Human Development. The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

Story courtesy of [Show Me Mizzou](https://showme.missouri.edu/) (Link: <https://showme.missouri.edu/>)  
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# AVMA President Honors MU CVM Alumnus Fobian

Clark Kenneth Fobian, DVM, a 1977 graduate of the University of Missouri College of Veterinary Medicine was among those honored recently by John Howe, DVM, 2019-2020 president of the American Veterinary Medical Association. Howe named Fobian, along with Minnesota veterinarian William Maher, and the AVMA staff, recipients of the AVMA President's Award.

The award recognizes those who have made a positive impact on health, veterinary organizations and the profession.

Fobian received the award in recognition and gratitude for his commitment to leadership by example and his encouragement for individual involvement in organized veterinary medicine.

"Because of his stability, consistency and dedication, his actions have led to a stronger AVMA and have influenced many current and up-and-coming veterinarians," Howe said.

Fobian, of Sedalia, Missouri, has more than 40 years of experience as a veterinarian. He earned both a bachelor of science in wildlife biology and his DVM at MU.

He worked as an associate veterinarian in a mixed animal practice in Nevada and Marshall, Missouri. From 1972 to 1978, he also served in the U.S. Army Reserve as a medic for the 5503rd Army Hospital. He started his own small animal practice in Sedalia in 1981. Owning, operating and staffing Thompson Hills Animal Clinic for 35 years was his ongoing passion.

He began his volunteer leadership within the profession by serving on the Missouri Veterinary Medical Association for many years and was the association's president in 2003. He went on to serve a six-year term as District VII representative on the AVMA Executive Board before being elected president of the AVMA, holding that position in 2013-2014. In addition, he served as chair of the American Veterinary Medical Foundation Board of Directors for two years.

Earlier this year, he was presented with the Distinguished Legislative Leadership Award from the Missouri Veterinary Medical Association. That honor recognizes legislative leadership consistent with the MVMA mission; protecting the health and welfare of animals and relieving their suffering; advancement of public health; and the conservation of animal resources.

The AVMA, founded in 1863, is one of the oldest and largest veterinary medical organizations in the world, with more than 95,000 member veterinarians worldwide engaged in a wide variety of professional activities and dedicated to the art and science of veterinary medicine.



**Clark Kenneth Fobian**



# The D.V.M. – The Dean’s Video Message (August 2020)

Link: <https://vimeo.com/451234130>

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

# Our Time to Lead: VHC Makes an Impact on Jefferson City Attorney

Gina Boxberger has been an advocate for the University of Missouri College of Veterinary Medicine for a decade. Originally from Southwest Missouri, Boxberger attended law school at Mizzou and now resides in Jefferson City. In 2010, Boxberger, a lover and long-time owner of dachshunds, brought her dog, Schnitzel, to the MU Veterinary Health Center, as he was experiencing paralysis. This initial experience with the VHC made Boxberger a patron for life. Boxberger says she won't take her dogs anywhere else. "I've often said that I hope nobody has to go through what I had to go through that week, but if you do, you need to be at MU," she said.

Boxberger's experience with Shinichi Kanazono, who at the time was a resident in the VHC's Neurology and Neurosurgery Service, left her impressed. It was Kanazono's first surgery as a resident at the VHC, and Boxberger says he was extremely attentive and developed a bond with Schnitzel. "Dr. Kanazono arrived at the VHC shortly after I did at 8:45 a.m. They sent me home that day, and I received two phone calls from him before the surgery and two after the surgery, the last being at 8 p.m.," she said. "I asked him if he had been home and he said no."

From that point, Boxberger received two phone calls a day from the students who were working with Kanazono, which helped her feel completely comfortable with the care Schnitzel was receiving. After surgery, Schnitzel also went through physical therapy and acupuncture. "Schnitzel walked the first day out of acupuncture," Boxberger said.

Boxberger has now found a way to give back to the CVM through volunteering to help with the Gentle Doctor Benefit, an annual event for student scholarship.

Boxberger has reached out and found multiple businesses, artists, and other resources to get items donated for the benefit. She said she didn't have any trouble getting donations, as people that have had contact with the CVM are more than willing to donate. To date, Boxberger believes she has been able to gather approximately \$3,000 worth of donations for the GDB. "I was so humbled by all the people who wanted to donate, but every single one of them who did, wanted to because they feel the exact same way that I do about the university," she said.



Gina Boxberger adopted another dachshund named Raina last September and also began fostering the breed.

Continued on next page →

Boxberger has even decided to include the CVM in her estate plans. Specifically, she has decided to leave an endowment for the Barkley House, a project focusing on providing temporary housing for families and their pets while they are receiving treatment at Mizzou. “I just decided that the CVM is where my heart has been for the last 10 years, so I knew I wanted to set up an endowment and be specific towards Barkley House,” she said. “I was so lucky that I was able to visit Schnitzel every night, and I knew that there were others that would not have that opportunity. That’s why I wanted my fund to go to Barkley House.”

All of these factors have contributed to Boxberger being such a strong advocate of the CVM. She expressed what made the CVM special to her. “It was the absolute caring and dedication to the patients. It was above and beyond anything that I had experienced before. It was way beyond professional care and schooling.”

*By Nick Childress*

# The D.V.M. – The Dean’s Video Message (September 2020)

Link:

<https://vimeo.com/458264796>

View the archive:

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

# Leading the Way

MU researcher Salman Hyder has spent a career battling breast cancer and mentoring the next generation of researchers.



## **Researcher Salman Hyder in his lab at the Dalton Cardiovascular Research Center at the University of Missouri.**

Salman Hyder has spent nearly two decades at the University of Missouri researching ways to stop the spread of breast cancer.

Among his greatest discoveries was that combined hormone replacement therapy (estrogen + progestin) — once thought to be a panacea for women struggling with loss of estrogen during menopause — increases the risk of breast cancer in some women. The discovery was later affirmed by a Women's Health Initiative study, which led to dramatic changes in how doctors treat menopausal women.

While 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, is passionate about his research, he remains humble about his discoveries — characteristics that have endeared him to many graduate students over the years.

Mentoring up-and-coming researchers has not only been a chance for Hyder to inspire young minds, but an opportunity to continuously challenge his own ideas and invigorate his work with new perspectives.

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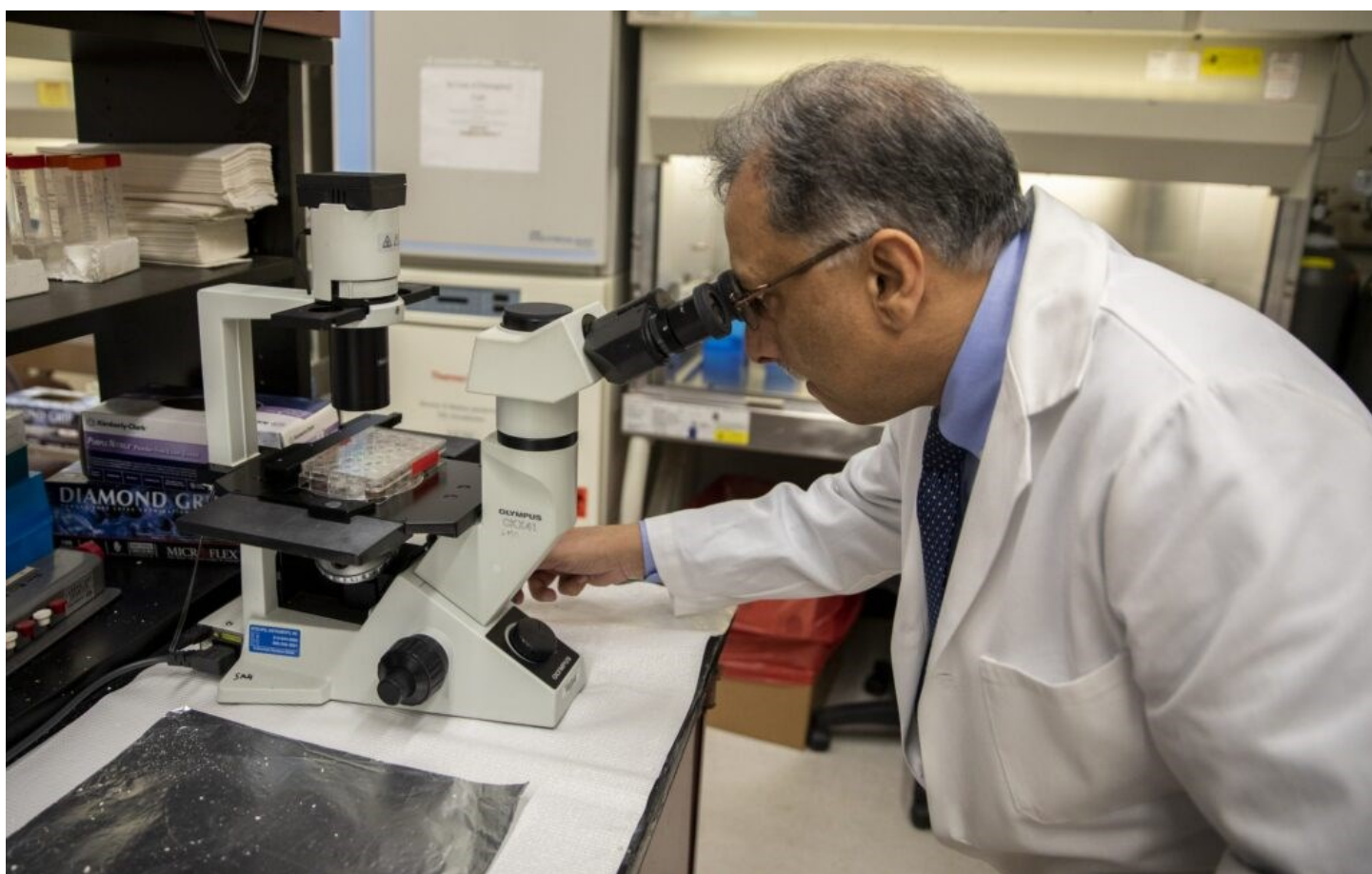
“Of course it takes a very long time to find new therapeutics,” he said. “But what has kept me going — looking for something new every day — are the wonderful students I have had over the years. It’s not just my own interest in research, but training the next generation of researchers that keeps me going.”

Hyder’s work ethic has left an indelible mark on the graduate students who have come through his lab, including Benford Mafuvadze, who came to Mizzou in 2008 from Zimbabwe.

For five years, Mafuvadze was involved in many research projects, including a published study that found luteolin, a natural compound found in herbs, such as thyme and parsley, as well as vegetables, such as celery and broccoli, could reduce the risk of breast cancer for some women who have taken hormone replacement therapy.

Mafuvadze said Hyder’s mentorship put him at ease and allowed him to take risks, make mistakes and, eventually, do his best work.

“Dr. Hyder was concerned about my success as a person, not just the results of our research,” said Mafuvadze, who today is an assistant teaching professor in the department of molecular biosciences at the University of Kansas, where he also runs a lab. “That was very important to me.”



**Hyder examines a sample under a microscope in his lab where he has spent years researching drugs and natural compounds to stop breast cancer.**



## Dr. Hyder's research over the years

2008 [MU researcher links hormone replacement therapy to breast](https://munewsarchives.missouri.edu/news-releases/2008/040108-hyder-hormone-cancer.php.html) (Link: <https://munewsarchives.missouri.edu/news-releases/2008/040108-hyder-hormone-cancer.php.html>)

2009 [Breast cancer drug shows promise for treating, preventing progesterin-dependent tumors](https://munewsarchives.missouri.edu/news-releases/2009/0128-hyder-breast-cancer.php.html) (Link: <https://munewsarchives.missouri.edu/news-releases/2009/0128-hyder-breast-cancer.php.html>)

2010 [Estrogen and progesterin hormone therapies in post-menopausal women increases the chances for breast cancer metastasis](https://munewsarchives.missouri.edu/news-releases/2010/0506-estrogen-and-progesterin-hormone-therapies-in-post-menopausal-women-increase-the-chances-of-breast-cancer-metastasis-mu-study-finds/) (https://munewsarchives.missouri.edu/news-releases/2010/0506-estrogen-and-progesterin-hormone-therapies-in-post-menopausal-women-increase-the-chances-of-breast-cancer-metastasis-mu-study-finds/)

2011 [Parsley, celery carry crucial component for fight against breast cancer](https://munewsarchives.missouri.edu/news-releases/2011/0509-parsley-celery-carry-crucial-component-for-fight-against-breast-cancer-mu-researcher-finds/) (Link: <https://munewsarchives.missouri.edu/news-releases/2011/0509-parsley-celery-carry-crucial-component-for-fight-against-breast-cancer-mu-researcher-finds/>)

2013 [Certain breast cancers have a trait that could be attacked by new therapies](https://munewsarchives.missouri.edu/news-releases/2013/0327-certain-breast-cancers-have-a-trait-that-could-be-attacked-by-new-therapies-says-mu-researcher/) (Link: <https://munewsarchives.missouri.edu/news-releases/2013/0327-certain-breast-cancers-have-a-trait-that-could-be-attacked-by-new-therapies-says-mu-researcher/>)

2014 [Potential cholesterol lowering drug has breast cancer fighting capabilities](https://munewsarchives.missouri.edu/news-releases/2014/0617-potential-cholesterol-lowering-drug-has-breast-cancer-fighting-capabilities-mu-researcher-finds/) (Link: <https://munewsarchives.missouri.edu/news-releases/2014/0617-potential-cholesterol-lowering-drug-has-breast-cancer-fighting-capabilities-mu-researcher-finds/>)

2015 [Natural compound found in herbs, vegetables could reduce breast cancer risk in some women](https://munewsarchives.missouri.edu/news-releases/2015/0908-natural-compound-found-in-herbs-vegetables-could-reduce-breast-cancer-risk-in-some-women/) (Link: <https://munewsarchives.missouri.edu/news-releases/2015/0908-natural-compound-found-in-herbs-vegetables-could-reduce-breast-cancer-risk-in-some-women/>)

2016 [Potential cholesterol-lowering drug molecule has prostate cancer fighting capabilities](https://munewsarchives.missouri.edu/news-releases/2016/0414-potential-cholesterol-lowering-drug-molecule-has-prostate-cancer-fighting-capabilities/) (Link: <https://munewsarchives.missouri.edu/news-releases/2016/0414-potential-cholesterol-lowering-drug-molecule-has-prostate-cancer-fighting-capabilities/>)

2017 [Fighting cancer: Natural and synthetic progesterin therapies in post-menopausal women help breast cancer grow and spread](https://munewsarchives.missouri.edu/news-releases/2017/0712-fighting-cancer-natural-and-synthetic-progesterin-therapies-in-post-menopausal-women-help-breast-cancer-grow-and-spread/) (Link: <https://munewsarchives.missouri.edu/news-releases/2017/0712-fighting-cancer-natural-and-synthetic-progesterin-therapies-in-post-menopausal-women-help-breast-cancer-grow-and-spread/>)

2018 [Combination breast cancer therapy targets both tumor cells and the blood vessels that supply them](https://munewsarchives.missouri.edu/news-releases/2018/0326-combination-breast-cancer-therapy-targets-both-tumor-cells-and-the-blood-vessels-that-supply-them-mu-researchers-find/) (Link: <https://munewsarchives.missouri.edu/news-releases/2018/0326-combination-breast-cancer-therapy-targets-both-tumor-cells-and-the-blood-vessels-that-supply-them-mu-researchers-find/>)

2019 [Stopping triple-negative breast cancer in its tracks](https://precisionhealth.umsystem.edu/news-events/stopping-triple-negative-breast-cancer.html) (Link: <https://precisionhealth.umsystem.edu/news-events/stopping-triple-negative-breast-cancer.html>)

Contact: Sara Diedrich, 573-882-3243, [diedrichs@missouri.edu](mailto:diedrichs@missouri.edu)

# Painting a Clearer Picture of COVID-19

MU researchers team up with 8th grader, MU undergrad to identify mutations in virus that may be causing its high infectivity.

When Saathvik Kannan's father, a faculty member at the University of Missouri, saw his friend, Kamendra Singh, a research professor at MU, on television being interviewed for his research identifying possible treatments for COVID-19, he called Singh to congratulate him on his work. After learning that his friend's son, Saathvik, had experience with and a passion for computer programming, Singh invited the 8th grader, who was a student at West Middle School in Columbia, Missouri, at the time, to collaborate with researchers at MU to identify mutations in the virus causing COVID-19.

Kannan teamed up with Singh and Austin Spratt, an MU undergraduate student studying mathematics, and together they analyzed protein sequences for COVID-19 samples from all over the world. They identified 3 specific mutations, D614G, P323L and C241U, that were co-existing in every single case of COVID-19 in the United States, which could suggest why the virus seems to be so infectious in the United States. Their newest unpublished research indicates that resurgent COVID-19 viruses in European countries also have all three of the identified mutations in nearly all European cases. The findings define the dynamics of COVID-19 evolution, and they can be useful for developers of COVID-19 treatments or vaccines to help them consider which mutations in the virus are necessary to target.

"By painting a more complete picture of what mutations are occurring in the virus, we can provide specific information to assist those developing treatments and vaccines for the disease," said Singh, the project supervisor, professor in the MU College of Veterinary Medicine, Bond Life Sciences Center investigator, and assistant director of the Molecular Interactions Core. "Our overall objective is to better understand what is causing the virus to be spreading so rapidly and efficiently, and our research has shown there may be multiple mutations involved that need to be considered when developing antiviral drugs or vaccines."

Singh mentored Kannan and Spratt by allowing these students to use their computer programming skills to advance scientific research aimed at addressing the challenges of the COVID-19 pandemic. By identifying patterns in the various sequences of COVID-19 virus samples from all over the world, the students were able to paint a clearer picture of co-evolving mutations occurring inside the virus that is causing it to spread.



**Kamendra Singh is a research professor in the MU College of Veterinary Medicine.**



**Saathvik Kannan is now a freshman at Hickman High School.**

“The antiviral drugs that are currently being made to treat COVID-19 are developed based off the current model for the virus,” said Spratt. “But as these mutations are co-evolving and causing the virus’ structure to change, the model becomes less accurate and so the current antiviral drugs may become less effective on the mutated versions of the virus. Therefore, by getting a clearer picture of how the virus’ structure is evolving, we can create better models of the virus so better antiviral drugs and vaccines can be developed.”



**Austin Spratt is an undergraduate student at the University of Missouri.**

Now a freshman at Hickman High School, Kannan is proud of the team’s work and grateful for the opportunity to be involved in such impactful research.

“I have always had a passion for computer science and data analytics,” Kannan said. “It also feels good to provide my community with information that might help the situation in the future.”

“Infectivity of SARS-CoV-2: There is something more than D614G?” was recently published in the *Journal of Neuroimmune Pharmacology*. Funding for this research was provided by the Bond Life Sciences Center’s Early Concept Grant and the Swedish Research Council at the Karolinska Institute in Stockholm, Sweden.

*Story courtesy of Show Me Mizzou*

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# A retrospective view of COVID-19

MU researchers are collecting survey data and voluntary blood samples from a randomized sample population of MU students, faculty and staff to examine the prevalence of COVID-19 antibodies in the Tiger community.

*September 29, 2020*

Contact: Brian Consiglio, 573-882-9144, [consigliob@missouri.edu](mailto:consigliob@missouri.edu)

A multidisciplinary research project at the University of Missouri is collecting survey data and voluntary blood samples from a randomized sample population of MU students, faculty and staff to examine the prevalence of COVID-19 antibodies in the MU community. The goal is to better understand how well the MU community is responding to risk mitigation strategies already in place, as well as provide researchers with valuable information regarding individuals' immune system responses to the coronavirus after exposure.

"The risk survey asks individuals about behaviors and activities they have engaged in during the past few months, as well as their perceptions about COVID-19 and its impact on various age groups," said Enid Schatz, professor and chair of the Department of Public Health in the MU School of Health Professions. "The second part of the study involves a blood draw to test for COVID-19 antibodies, so we are trying to see if we can make any connections between behaviors and antibody prevalence. This could potentially help inform us what things we are doing that seem to be working well or if there are any additional risk mitigation strategies we can think of to continue to make MU a safe place for our community to be."

To ensure the research study is a randomized sample that accurately reflects the MU community, the main form of recruitment is through individuals being invited by email to participate in the project. Blood draws will take place throughout the fall 2020 semester on MU's campus to assess antibody prevalence in the campus population over time. MU is collaborating with Siemens Healthineers, which provided funding and equipment for the study.

"Those who test positive for the antibodies will now presumably have some degree of protection from the disease, however the strength and length of that protection is still unknown at this time," said John Middleton, a professor in the MU College of Veterinary Medicine who specializes in epidemiology. "By looking at how an individual's immune system responds to the infection over time, we can gather a lot of data that will help inform us about how to protect people going forward."

Middleton adds that if a vaccine were to become widely available in the future, this antibody project might help inform researchers how long the immunity from a vaccine is expected to last or how often people should get vaccinated.

"The data collected from this research could help inform us of what type of immunity a vaccine will need to stimulate," Middleton said. "Understanding the immune response to natural infection will help inform us whether vaccines are expected to be effective. However, in the absence of a vaccine we are not currently defenseless, as social distancing, hand hygiene and face coverings continue to be effective strategies for reducing the spread of COVID-19."

The project involves MU experts in areas such as public health, medicine, molecular immunology, veterinary medicine, sociology, psychology and health informatics.

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“This research shows MU’s strength in interdisciplinary collaboration,” Schatz said. “This is a really great example of how important it is to look at these problems from multiple perspectives and bring various experts together rather than everyone working separately in their own silos.”

Schatz added that individuals who choose to participate in the study will be notified if their antibody results are positive or negative. However, MU will only be made aware of the overall percentage of antibody prevalence and will not learn the identity of the individuals participating. The research team will aim to share its findings with both Siemens and MU administrators at the end of the fall semester to discuss the results and determine if any additional pandemic-related interventions are needed.

“If we can better understand people’s perceptions and behaviors, we can design future intervention strategies based on those behaviors,” Schatz said. “Our goal is to not only better understand disease exposure and transmission in our community, but also to provide resources to those that need it. The pandemic has shined a light on the importance of physical health, but also the very real impacts on mental health, particularly amongst student populations, and we want to gather data that will help us address those issues as well.”

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## Students, faculty and staff needed for a research study on COVID-19

The Department of Public Health in the School of Health Professions is seeking MU faculty, staff and students to participate in a study examining people's perceptions and behaviors in the context of COVID-19. Participants will learn if they have COVID-19 antibodies and will assist MU in acquiring valuable information regarding immune system responses to COVID-19 after exposures. These data will help inform MU campus planning. The study is expected to last throughout the Fall semester. If you're interested in participating, please go to <https://is.gd/MUcovidresearch>. For questions, email [mucovidresearch@missouri.edu](mailto:mucovidresearch@missouri.edu).

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# Residents, Postdocs Take on New Roles

Several house officers with the University of Missouri College of Veterinary Medicine have transitioned to new roles within the college. Aida Vientos-Plotts DVM, DACVIM, Lynn Martin DVM, MPH, DACVIM, Shirley Chu, DVM, PhD, DACVIM, and James Karnia, DVM, will be moving into different positions.

Vientós-Plotts, previously a postdoctoral fellow in the Small Animal Internal Medicine Service, will now serve the college as an assistant professor in small animal internal medicine. Originally from Puerto Rico, Vientós-Plotts arrived at Mizzou in 2015 for a residency, which she completed in 2018. In her new role she is overseeing third- and fourth-year students on clinics, interns and residents, as well as conducting research and providing service to the CVM through addressing diversity-related issues. When she's not working, Vientós-Plotts enjoys spending time with her family. She also co-founded a nonprofit organization called Veterinarians for Puerto Rico. "The aim of the organization is to improve the stray animal overpopulation on the island, as well as help to create stronger bonds between local veterinarians and the community," Vientós-Plotts said.



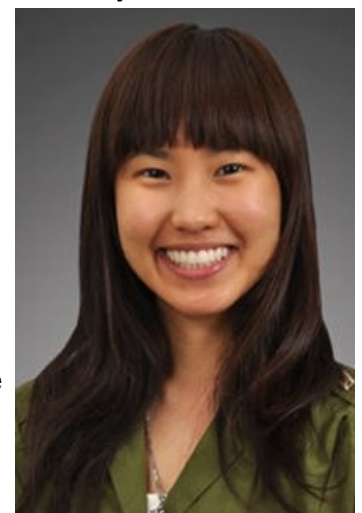
**Aida Vientos-Plotts**

Martin has transitioned into an assistant teaching professor of equine internal medicine. Martin's previous role at the CVM was as a resident in equine medicine and ophthalmology. Martin is from a small rural town in Minnesota called Tracy and came to Mizzou for her DVM. In her new role, she will be interacting with veterinary students, interns, residents, to staff, clients and patients. Martin also lectures and provides lab instruction to non-clinical veterinary students, while also conducting research. Outside of the CVM, Martin is involved with other equine related activities and enjoys spending time with her husband. "In an effort to be more centrally involved in Missouri's equine industry, I presently serve as vice chair for the Missouri Horse Council, and I'm an active member of the Missouri Veterinary Medical Association serving on the Equine and Legislative committees," said Martin. "I enjoy spending free time with my husband traveling, cooking or shooting clays. I also assist in our row crop operation."



**Lynn Martin**

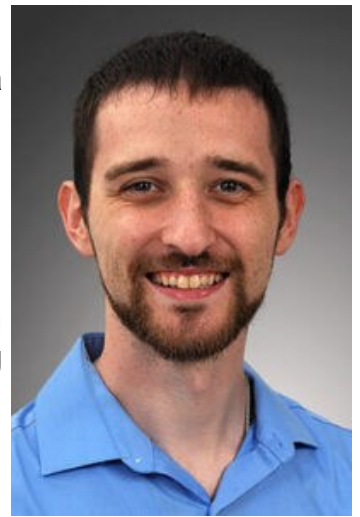
Chu has moved into the role of assistant clinical professor of oncology, transitioning from her previous role as a postdoctoral fellow in oncology. Chu, a self-proclaimed golden retriever lover, is based at the Veterinary Health Center at Wentzville. Originally from Vancouver, Canada, Chu serves as a medical oncologist and conducts research in comparative oncology, specifically with increasing collaborations between Washington University and Mizzou. "My research projects have included epigenetics in canine lymphoma, risk factors for feline oral squamous cell carcinoma, viral metagenomics in various canine and feline cancers, and comprehensive sequencing in canine and feline cancers," she says.



**Shirley Chu**

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Karnia, until recently a radiology resident, has transitioned into the role of clinical instructor of radiology. Originally from the suburbs of Chicago, Karnia attended the University of Illinois to earn both his undergraduate and DVM degrees. He then completed a rotating internship at Veterinary Specialty Center in Buffalo Grove, Illinois, and returned to Mizzou for his radiology residency. As a clinical instructor of radiology, Karnia's specific specialties lie in fluoroscopy, interventional radiology and PET/CT, but he says he is involved with all facets of radiology. In his free time, Karnia also enjoys spending time with his family and his main interests revolve around watching and playing sports, as well as running. He is also in the process of becoming board certified by the American College of Veterinary Radiology. "I am a DVM and ACVR eligible, only needing to pass the certifying exam to become board certified, which has been delayed to December due to COVID," he said. "Once I take the exam and if I pass, I will be a diplomate of the American College of Veterinary Radiology."



**James Karnia**

# Mizzou Researchers Obtain Funding for COVID Related Animal Modeling Projects

A team of researchers at the MU College of Veterinary Medicine Department of Veterinary Pathobiology recently obtained two grants from the National Institutes of Health that focus on finding more effective animal models for COVID-19 research. The team includes members of several of the MU's unique resources including Elizabeth Bryda, PhD, director of the MU Animal Modeling Core and the NIH-funded Rat Resource and Research Center, Craig Franklin, DVM, PhD, DACLAM and Jim Amos-Landgraf, PhD, co-directors of the NIH-funded Mutant Mouse Resource and Research Center, Aaron Ericsson, DVM, PhD, director of the MU Metagenomics Center, Daniel Davis, PhD, assistant director of the MU Animal Modeling Core, and Deborah Anderson, PhD, and Paul Anderson, PhD, of the Laboratory for Infectious Disease Research.

Franklin and Amos-Landgraf's project is titled "Optimization of Murine Models of COVID-19 through Gut Microbiota Manipulation." The goal of this project is to refine the pre-eminent mouse model for COVID research, the K18-hACE2 transgenic mouse so that it is optimally translatable to the human condition. Unlike humans, research mice are raised in pristine environmental conditions and this results in the mouse's immune system being more similar to a neonatal human than an adult. This is likely because mice are rarely exposed to viral and bacterial diseases that most humans experience as they grow up (e.g. the common cold). To promote the development of an adult immune system in mice, one can expose mice to similar disease-causing agents as well as modify the gut microbiota, the complex communities of thousands of bacteria that inhabit the intestinal tract. Briefly, this project is asking if different microbial communities and previous disease exposures can change the severity of COVID-19 infection in this mouse model. "We're interested in knowing if it's the best model it can be," said Franklin. "Can we refine it to the point where what we see in a mouse is identical to what we see in people?"

The project Bryda is leading, titled, "Generation of Novel Rat Models for the Study of SARS-CoV-2 and COVID-19," focuses on rats, which may be able to recapitulate human disease better than mice. She is using state-of-the-art genetic engineering technology, including the use of CRISPR-Cas9, to create models that have the human ACE2 receptor, the receptor to which SARS-CoV-2 binds. Several new rat strains will be developed that will allow questions about the impact of sex, age, genetic background and levels of expression of the viral receptor on disease symptoms and severity to be explored. "We're going to use a different strategy, make these genetically engineered rats in a different way than the existing mouse models and hope that they will be a more improved animal model for studying COVID-19," said Bryda.

Both models rely on being able to infect mice and rats with SARS-CoV-2, the virus that causes COVID-19. To do so requires highly specialized facilities such as the Laboratory of Infectious Disease Research, (LIDR), one of 12 regional biocontainment laboratories funded in part by NIH's National Institute of Allergy and Infectious Diseases (NIAID) to perform biosafety level three research on infectious agents such as nCoV2-SARS.

The mouse model grant comes in the form of \$378,922 and the rat model grant is \$203,950. According to the group, they were approached by the NIH to submit applications because of the unique resources here on the MU campus and these played a critical role in ultimately obtaining funding. Franklin summarized this effort saying, "Very few places in the country have the expertise we have here."

*By Nick Childress*

# Fales Named E.B. Pope Award Recipient by AAVLD

University of Missouri College of Veterinary Medicine Professor Emeritus William Fales, PhD, has received the 2020 American Association of Veterinary Laboratory Diagnosticians E.P. Pope Award. The award is the highest recognition for significant contributions to the organization and the field of veterinary diagnostic laboratory medicine.

Fales began serving the CVM in 1974 as a research associate in the Department of Veterinary Microbiology. From 1975 to 1981 he was an assistant professor in the Department of Microbiology and served as a clinical microbiologist for the Veterinary Medical Diagnostic Laboratory and what was then the Veterinary Medical Teaching Hospital. In 1981 he became a tenured associate professor, and in 1986 was named a full professor. He was elected as an honorary diplomate of the American College of Veterinary Microbiologists in 1992. In August of 2015 he retired from MU and accepted an adjunct appointment and was named professor emeritus.



**William Fales**

This award is the latest of many honors bestowed on Fales. He previously received the Missouri Veterinary Medical Association President's Award, as well as induction into the Missouri Veterinary Medical Foundation's Veterinary Honor Roll. At the time of induction to the Honor Roll, Fales was the only non-DVM to be admitted.

In his E.P. Pope Award acceptance speech, Fales said, "Prior recipients of the E.B. Pope Award were giants that allowed me to stand on their shoulders and gain insight into the future. This award is truly the capstone of my career and I am delighted to accept the E.B. Pope Award. It is truly an honor to be recognized for work that I thoroughly enjoyed doing."

# Little Dog, Big Heart

## VHC Cardiologists Treat Puppy for Rare Defect

Jessica Bascus, a native of Marceline, Missouri, adopted a Jack Russell terrier puppy in December of 2019. The puppy, whom she named Ruby, was surrendered to a local veterinarian with a known heart murmur. Bascus heard about Ruby from a friend and decided she was going to foster the puppy, but during their first meeting she knew it wasn't going to be a temporary relationship. "I absolutely fell in love with her the moment I saw her," said Bascus. "I just knew she was going to be a part of our family."

Bascus had recently adopted another puppy before Ruby came along. She noticed that Ruby was sluggish, not running with the other puppy and struggling to keep up. This prompted her to visit a local veterinarian in Kansas City, who uncovered that she had a more serious problem than just a heart murmur. Bascus brought Ruby to the Veterinary Health Center at Mizzou, where Kelly Wiggen, DVM, says they diagnosed the puppy with two congenital heart defects, a double chambered right ventricle (DCRV), which is very rare, and a ventricular septal defect (VSD). "When she came in for evaluation, her physical exam was a little unusual in that her heart murmur wasn't as loud as I would have expected for the most common types of congenital heart diseases, especially if it was truly causing exercise intolerance," said Wiggen. "To determine what was happening to cause the murmur and her exercise intolerance, we performed an echocardiogram, where we diagnosed her with the two congenital heart defects."

Unfortunately, the VSD was not treatable due to potential complications with surgery and its location, but the DCRV could be improved through a high-risk procedure called combined cutting balloon and high-pressure balloon membranoplasty. "We had a long discussion about this procedure," said Wiggen. "DCRV is a very rare congenital heart disease so there aren't very many reports of this in the literature, and of the reports that do exist, some dogs responded favorably to surgery and some dogs did not. The procedure can have serious complications such as damage to a nearby valve, abnormal heart rhythms, perforation of the heart, and death. It was also hard to predict how her heart would respond to treatment and whether her VSD would cause any issues over the long term."

The surgical process is intense and risky. "The procedure involved first inflating a cutting balloon, a balloon with very sharp razor blades on it, across the narrowing to create tiny cuts, and then replacing it with a much larger and higher pressure balloon to expand the initial cuts and widen the narrowing in a controlled manner," said Wiggen.

Wiggen says that the surgery was successful and Ruby has made noticeable improvements. "We were able to successfully widen the narrowing to the point where the pressure in the upper chamber of her right ventricle was lower than the left ventricle, this meant that the direction of her VSD was reversed back to the "normal" direction and she no longer had deoxygenated blood being sent out to her body," she said. "After surgery appeared an initial success, the next big question was whether the improvement would be maintained over a longer period of time. We just saw Ruby for her three-month recheck and she had been doing great at home with no exercise intolerance."



**Ruby has more than 1,000 followers on Instagram. She often wears a red hoodie and a backpack, where she carries treats.**

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We are very happy to report that her echocardiogram showed that the improvements that we made with surgery have persisted and that she has had further improvement to her heart size as well. We are hopeful that the improvements that we made to her DCRV will persist and that her VSD won't cause her any problems; we will be periodically keeping an eye on Ruby's heart with recheck echocardiograms to monitor her progress."

Bascus says that Ruby is now doing great at home and is showing no signs of slowing down. "I take Ruby running all the time with my other dog, and she is so close to catching him even though he has longer legs. It's pretty amazing," she said.

Ruby, who just turned 1-year-old, is now a bit of a celebrity. She has more than 1,000 followers on her Instagram account, which is @ruby.therussell and managed by Bascus. She is often seen wearing a red hoodie and backpack, in where she carries her treats in case someone wants to interact with her in public. Bascus says she is also looking into therapy training for Ruby because of her friendly demeanor. "It doesn't matter where I go, Ruby is so welcomed by everybody."

*By Nick Childress*



**VHC Clinical Instructor Kelly Wiggen, DVM, performs an echocardiogram during Ruby's three-month recheck. She is assisted by Amanda Alviso (center), a veterinary assistant, and Nekesa Morey, DVM, a resident in the Cardiology Service.**

# CVM Community's Efforts Assist Veterans

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## CVM Provides Free Eye-Exams for Military Service Dogs

The University of Missouri College of Veterinary Medicine Comparative Ophthalmology program has done its part to assist military service dogs. Elizabeth Giuliano, DVM, MS, DACVO, professor and section chief of the Comparative Ophthalmology Service at the MU Veterinary Health Center, has diligently worked with both clinical and basic science faculty for more than a decade to provide specialist services through her collaborations with both clinicians and vision-science researchers.

"The ophthalmology section has provided free exams to military service dogs through a program organized by the American College of Veterinary Ophthalmologists since 2011," explains Giuliano.

These dogs serve an important purpose, helping those who are blind or need assistance for other disabilities. This means it is crucial for veterinarians to be able to catch and treat afflictions such as cataracts, glaucoma, and other conditions that may affect eyesight. Through this program, check-ups are complimentary for dogs that are certified as guide dogs, detection dogs, search-and-rescue dogs, as well as dogs that are currently enrolled in formal service-training programs through national, regional or local organizations.

Kevin Donnelly, DVM, MS, DACVO, an assistant teaching professor of veterinary ophthalmology, said the ACVO service dog exam was canceled this year due to COVID-19, but in 2019, Donnelly examined 43 military working dogs from local military bases as part of the yearly ACVO service dog event. He noted that the service from that event goes beyond active service dogs. "In addition to active military working dogs, we often see veterans and their service animals as part of the program," said Donnelly.

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## CVM Provides Support for Students Interested in the Veterinary Corps

The CVM also provides support for students who decide they are interested in entering the Veterinary Corps. Through the Office for Student Affairs and United States Army representatives, veterinary students are informed of the Army's Health Professions Scholarship Program. In this program, students can pursue different avenues of veterinary medicine within the U.S. Army, from disease research to caring for dogs that actively serve. Angela Tennison, DVM, associate dean for the Office of Student Affairs and interim associate dean for Academic Affairs, said that the CVM works with students to help with any necessary paperwork to support their applications, as well as assisting with scheduling so they can meet the requirements of their training.

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## Rajiv Mohan Aims to Help Veterans with Eye Injuries

Rajiv R. Mohan, MSc, PhD, FARVO, endowed chair and professor of ophthalmology and molecular medicine at the MU CVM, is conducting research that he hopes will provide insight into therapies that may help soldiers who have experienced eye injury. Mohan, whose translational research program is funded through several VA and NIH grants, explained his goal.

"My research helps our veterans and active military personnel to preserve their eyesight and extend the opportunity to see and enjoy the beauty of the world," said Mohan. "The primary goal of my research is to help veterans and civilians experience the least amount of vision problems, regardless if they are originating from genetic defects, physical or chemical injury, diabetes, or aging. Chemical warfare, projectiles and shrapnel, smoke, and dust are known to cause blindness in our soldiers. My research lab is developing various eye drops for veterans, soldiers, and active duty personnel to use to protect their corneal transparency and vision while on or off the battlefield."

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Mohan says this research means a lot to him because of his family ties to the military.

“I am both the grandson and nephew of active duty military personnel who sacrificed their lives for their country while serving,” he said. “Also, most of my mother’s side of my family are active duty or veterans. My passion for vision research started with the stories told by my grandfather, uncles, and cousins while serving. Watching their struggles with vision loss and hearing similar tales from other servicemen and women motivated me to become an eye researcher and discover novel therapies. I want to give back to veterans who so bravely serve our country by improving their sight and quality of life.”

*By Nick Childress*

# Retired CVM Professor and Hospital Administrator James Creed Passes Away

James Creed, DVM, 87, of St. George, Utah, died peacefully at his home on Nov. 8, 2020. He was a retired MU College of Veterinary Medicine professor and former chairman of the Department of Veterinary Medicine and Surgery.

Dr. Creed was born Dec. 10, 1932, to William Henry and Frances Willard Judy Creed at their farm in Atchison County, Missouri. He graduated from Fairfax High School in 1950 and met the love of his life, Jayne Headley, at a high school basketball tournament that same year. They were married on Aug. 16, 1953, at the Methodist Church in Oregon, Missouri.

He was in the Air Force ROTC for four years and graduated from the University of Missouri with a bachelor of science degree in agriculture in 1954, planning to be a farmer. Shortly after graduation, he was commissioned as a lieutenant in the Air Force and stationed at Lockbourne AFB, Ohio. While he was in the Air Force, the Creeds welcomed two little girls, Joan, and Joy. After two years in Ohio, the family returned to Missouri.

He attended the University of Missouri College of Veterinary Medicine, earning a doctor of veterinary medicine degree in 1961. While in vet school, the Creeds welcomed a third little girl to their family, Julie. He then began a long, successful career in veterinary academia as a faculty member and administrator. While at Colorado State University, the Creeds welcomed a fourth little girl to their family, Janet. He completed his master's degree in veterinary surgery from CSU in 1967 and his American College of Veterinary Surgeons board certification in 1974.

He served as a professor and chairman of the Department of Veterinary Medicine and Surgery at MU. He also served as assistant dean for service and director of the Veterinary Teaching Hospital at Oklahoma State University. He had a special love for teaching the many students he mentored. Following his retirement in 1999, the Creeds returned to the home they loved in Columbia. In 2013, they moved to St. George, Utah, to be closer to family.

As a member of the Optimist International organization for many years, he served as a club president, lieutenant governor and governor of the Colorado-Wyoming District, and as president of Optimist International in 1979-80. He also served for many years on multiple veterinary association boards and as president of the Western Veterinary Conference.

He was a devoted member of the Church of Jesus Christ of Latter-day Saints and held many church callings over the years, including that of Bishop of a student ward in Columbia when he was 70.

He was preceded in death by his parents, as well as his brother, William Charles Creed, and two granddaughters, Megan Elizabeth Harry, and Laura Beth Beckstrand. He is survived by his wife, Jayne; daughters Joan (Ron) Harry, Joy (Dave) Beckstrand, Julie (Paul) Arslanian, and Janet (Van) Crawford, as well as 24 grandchildren, 53 great grandchildren and two great-great grandchildren.

Due to the pandemic and recent spike in corona virus cases, services will be held at a later date.

In lieu of flowers or gifts, please consider donating in his memory to the University of Missouri College of Veterinary Medicine [online](https://securelb.imodules.com/s/1002/giving/index.aspx?sid=1002&gid=165&pgid=5006&cid=9137) (Link: <https://securelb.imodules.com/s/1002/giving/index.aspx?sid=1002&gid=165&pgid=5006&cid=9137>) or by submitting checks to the University of Missouri in memory of Dr. James Creed, and mailed to 407 Reynolds Alumni Center, University of Missouri, Columbia, Missouri, 65211.

# MU Research Project to Study COVID-19 Immunity

## Blood draws will detect COVID-19 antibody presence over time

Scientists conducting an interdisciplinary research project at the **University of Missouri** are taking blood draws of MU students, faculty and staff who have previously tested positive for COVID-19 to examine their antibody levels over a period of time. The project is designed to better understand how the human body's immune system responds to COVID-19 post-infection.

“We have learned a lot about this disease over the past several months, but there is more that needs to be understood – for instance, how do different members of the population – particularly the younger, college-age demographic who are relatively highly socially active, develop immunity to this disease, and how long can that immunity be expected to last against possible reinfection,” said Ram Raghavan, the project's primary investigator and a professor in both the MU College of Veterinary Medicine and MU School of Health Professions. “We can track this by looking at the body's immune response from a diverse group of individuals at various intervals to see if the COVID-19 antibodies remain present in the body's immune system over an extended period of time.”



**A member of the research team draws a blood sample from a participant.**

Participants in the study will have their blood drawn at least four separate times, and personal information about the participants will not be made publicly available to protect their privacy.

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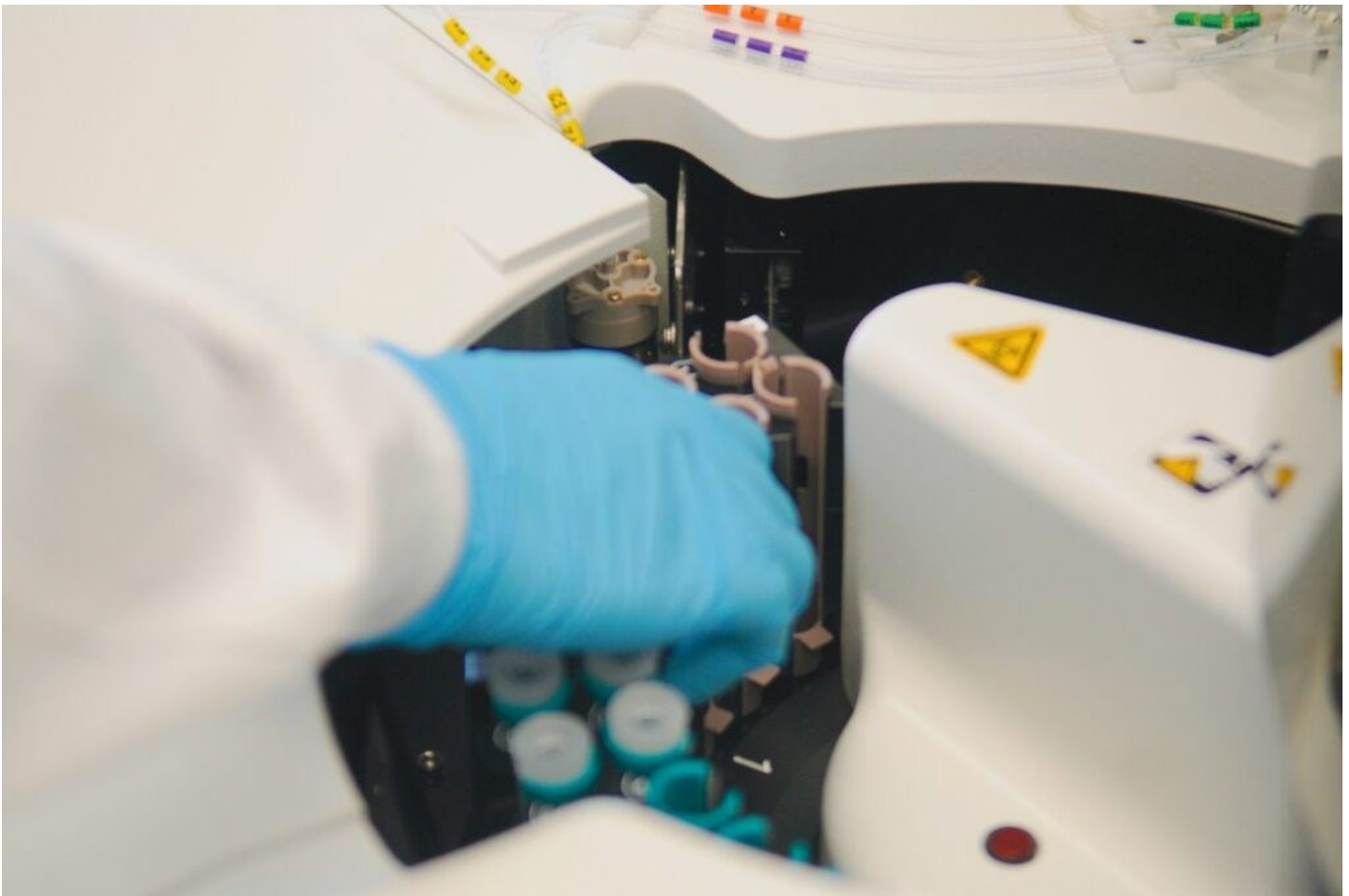


Participants in the study will have their blood drawn at least four separate times, and personal information about the participants will not be made publicly available to protect their privacy.

Mark Daniels, an associate professor in the MU School of Medicine, is leading a team of immunologists in analyzing the blood samples. He says getting a better understanding of how the human body's immune system responds to the disease can help researchers identify how long-term protection against infection is both generated and maintained.

"We are investigating which components of the immune system, in addition to antibodies, contribute to long-term protection," Daniels said. "The data will inform us about how we can develop and improve treatments and vaccines against COVID-19 that are safe and effective, with special consideration for those in susceptible age groups or with co-morbidities."

Daniels' lab, using analyzing equipment and antibody tests provided by Siemens Healthineers, can process nearly 125 blood samples an hour, and participants can expect to receive their results in as early as 24 hours. One test aims to detect both Immunoglobulin M, the first antibody generated by the body when fighting an infection, as well as Immunoglobulin G, which can take longer to form but plays a bigger role in durable, long-lasting immunity. An additional test aims to solely detect Immunoglobulin G.



**The blood samples are placed into the testing equipment, where they are analyzed to determine whether COVID-19 antibodies are present.**

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While the participants of the study are limited to MU students, faculty and staff who have already been diagnosed with COVID-19, the research findings can provide helpful insights about the immune response for the scientific community at large.

“While we currently do not know how long COVID-19 immunity lasts for those who have previously been infected, our overall goal is to control the spread of the disease and protect the health and safety of the MU community,” said Lynelle Phillips, a professor in the MU School of Health Professions who is collaborating with Raghavan on the project. “If as a society we were to eventually start considering public health policies for people who have previously been infected, we need to gather data by which to make these decisions, and this research can help play a part in that process.”

The project involves MU experts in areas such as public health, emergency medicine, veterinary medicine, nursing, epidemiology, infectious disease and immunology, as well as equipment, tests and funding from Siemens Healthineers.

Those interested in participating are invited to email [mucvmcovidstudy@umsystem.edu](mailto:mucvmcovidstudy@umsystem.edu) to learn more.

**Note:** This project is part of a series of two studies being conducted in partnership with Siemens Healthineers. This project differs from the other MU research study being conducted, which is taking blood draws of MU students, faculty and staff to determine if COVID-19 antibodies are present in a single sample, regardless of whether the individual has previously tested positive for COVID-19.

*Story contact: Brian Consiglio, 573-882-9144, [consigliob@missouri.edu](mailto:consigliob@missouri.edu)*



**Ram Raghavan is a professor in the MU College of Veterinary Medicine and the MU School of Health Professions.**

# The D.V.M. – The Dean’s Video Message (November 2020)

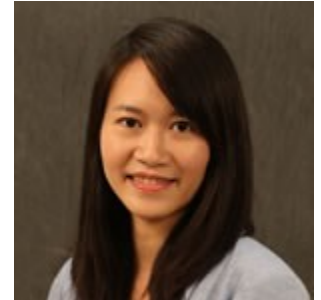
Link: <http://cvm.missouri.edu/the-d-v-m-the-deans-video-message-november-2020/>

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

# CVM Welcomes New Faculty

Four new faculty members recently joined the University of Missouri College of Veterinary Medicine. Sissy (Hsuan-Ping) Hong, DVM, MVM, MS, Kelley Varner, DVM, DACVAA, Felipe Martins, DVM, MSC, Megan Mickelson, DVM, DACVS-SA, AVCS Fellow – Surgical Oncology and are serving in a variety of roles at the Veterinary Health Center.

Hong, who recently served as a neurology and neurosurgery resident at Purdue University, has moved into the role of clinical instructor of neurology and neurosurgery for the MU VHC. Originally from Taipei, Taiwan, Hong came to the United States in 2015. She spent a year at Louisiana State University for clinical training, then went to Prince Edward Island, Canada, for a rotating internship. Hong then moved back to the United States in 2017 for a residency and to pursue a master's degree at Purdue. Outside of work, Hong says playing piano, painting, reading mystery novels, and going on hikes with her husband with their English Labrador, Stix, is how she enjoys her free time. When asked why she came to Mizzou, she responded, "The amazing people and teamwork."



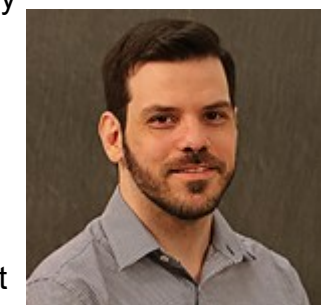
**Sissy Hong**

Varner, who is a clinical instructor of anesthesiology, came to Mizzou from the University of Pennsylvania, where she completed her residency in veterinary anesthesia and analgesia, as well as internships at Summit Equine Hospital and Penn Vet's New Bolton Center. A daughter of two retired Air Force master sergeants, Varner has lived in many different places, but considers Phoenix, Arizona, home. Varner says she is an all-around equine enthusiast, and often spends her weekends at horse races. She recently married her partner of 13 years, and they have two Boston terriers named Titus and Quinn. Varner said the environment is what brought her to Mizzou. "Upon completing my residency, I needed a break from Philadelphia city life," said Varner. "I felt Mizzou offered a tight-knit, friendly, family atmosphere that excited me. The essential quality of a workplace for me is the team. Mizzou offered a better team than any other place I visited. I am excited to be a part of the growth of the anesthesia department and the CVM. Plus, Dr. (John) Dodam told me he would teach me how to drive the mules, so that sealed the deal."



**Kelley Varner**

Martins, a native of Brazil, came to the CVM from the University of Illinois, where he completed his residency in anesthesiology. He now holds the title of clinical instructor of veterinary anesthesiology. Martins says it was the friendly atmosphere, the great sense of teamwork at the CVM and the calm city life that helped him choose Mizzou as his next step. When asked what he enjoys doing outside of work he said, "I enjoy listening to music and taking my French bulldog, Lucy, on walks."



**Felipe Martins**

Mickelson, from Carmel, Indiana, now serves as an assistant professor of small animal surgical oncology. This new endeavor follows working at Iowa State University as an assistant professor of small animal soft tissue surgery for the past two years. She completed her surgical oncology fellowship at Colorado State University and surgical residency at University of Wisconsin-Madison. Mickelson has a large number of hobbies that she and her husband enjoy in their free time, including hiking, playing soccer and sand volleyball, attending sporting events, and spending time with friends and family. "I came to Mizzou because of the exciting opportunities to join a growing oncology service and work towards integration," she said. "It is allowing me to focus on my training in the subspecialty of surgical oncology."



**Megan Mickelson**

# Equine Medicine Pioneer Jerry Johnson Has Passed Away

Jerry H. Johnson, DVM, MS, DACVS, CVA, of Lexington, Kentucky, and Hollywood, Florida, died Nov. 9, 2020, at 81. A memorial service will be held in 2021.

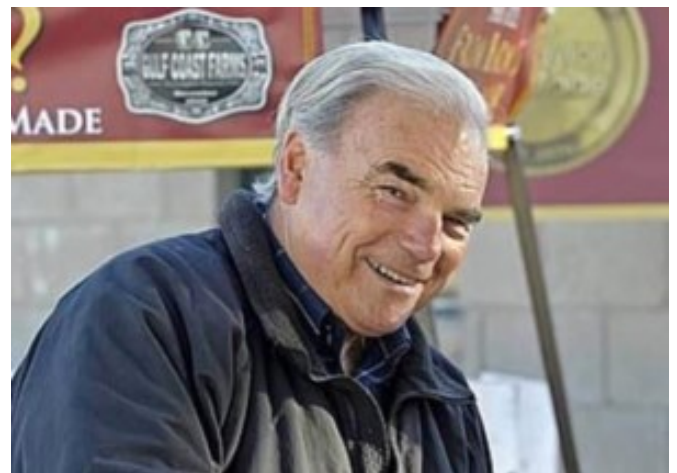
A former faculty member at the University of Missouri College of Veterinary Medicine, he was known as a pioneer in the field of equine veterinary medicine.

He is survived by his wife and partner of 30 years, Patricia White Johnson, daughters Julee Johnson and Kaitlyn Hildenbrand (Maury), adopted daughter Elizabeth Connolly (Jim), longtime friend Jo Ann Johnson, sister-in-law Barbara White Crockett, nieces Jennifer Knight (Mark) and Elizabeth Erickson (Nils), nephew Maj. Roy B. Crockett (Anais), and grandchildren Juel Johnson; Ty, Alexa, and Ashley Hildenbrand; and Christopher and John Connolly.

Johnson was born March 7, 1939, in Gough, Georgia, to Julian and Martha Kitchens Johnson. Raised on his parents' expansive working farm, he attended the University of Georgia, where he earned his undergraduate and veterinary degrees. A veteran of seven years in the U.S. Army Reserves, he was honorably discharged in 1963, with the rank of staff sergeant.

Upon graduation, he entered academia and became a diplomate of the American College of Veterinary Surgeons. As a boarded surgeon, he taught equine surgery for 16 years at the University of Pennsylvania New Bolton Center, Iowa State University, Kansas State University, Auburn University, and MU.

Johnson entered private practice in 1979 in Lexington. Always equipped with the latest state-of-the-art equipment, it has been noted that Johnson was the first veterinarian to use an endoscope at thoroughbred horse auctions. He was rarely seen without one draped around his neck. In his practice, he focused on thoroughbred racehorses and related surgeries, including arthroscopic and laser procedures. He built an equine surgery on his farm, and his expertise in equine laser surgery of the throat is recognized throughout North America. His practice included many Kentucky Derby and Breeders' Cup contenders. Johnson has been credited with introducing what is now known as Lasix (furosemide) to prevent pulmonary bleeding in thoroughbred racehorses. Johnson was a fierce defender of the horse.



Always the professor, he would take the time to explain a diagnosis with a picture, video, or X-ray to anyone who would listen.

He conducted field trial studies for pharmaceutical companies including Merck, Merial, and Schering-Plough, and served on the Kentucky Equine Drug Research Council. He performed endoscopic examinations on the stomachs of 2,500 racehorses along the East Coast to test the results of a new treatment for ulcers now known as Merial's GastroGard. Licensed in numerous states, he served on arbitration panels for thoroughbred auction companies Keeneland, Fasig-Tipton, Ocala Breeders' Sales, Barretts, and New York Breeders. For 40 years, he also practiced in Jamaica and advised its thoroughbred industry.

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In 2001, Johnson spent a month in Dubai and led the veterinary team in charge of quarantine for the Dubai World Cup.

Johnson also became certified in equine acupuncture. He lectured nationally and internationally on equine respiratory diseases and lameness. He authored chapters in veterinary textbooks and had articles published in the *American Association of Equine Practitioners Proceedings*, *Journal of the American Veterinary Medical Association*, and *Journal of Equine Medicine and Surgery*. He also traveled internationally to perform veterinary procedures. He was a member of the AVMA, AAEP, ACVS, NAARV, KVMA, KAEP, FAEP, The Thoroughbred Club, and The Keeneland Club.



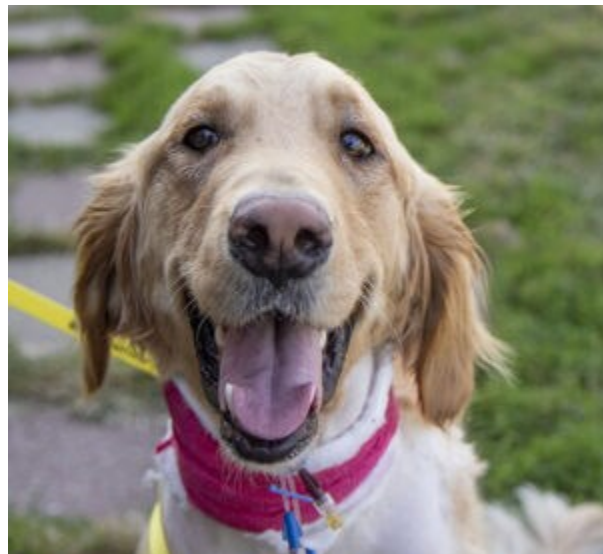
# VHC's Medical Oncology Team Gives Service Dog a Second Chance

In 2008, the Fiorelli family of Columbia, Illinois, made a trip to China to adopt a 1-year-old girl into their family. Their daughter, whom they named Natalie, was abandoned on the doorstep of a hospital as a baby and left as an orphan. When they decided to adopt, they knew they wanted to adopt a child with special needs, and they sought options to do so. Before they made the trip to China, parents Julie and Bernie Fiorelli received information that Natalie had a heart condition and pneumonia. Upon their arrival at the orphanage, it was clear that she was dealing with a different condition. When they returned to the United States with their new baby, they took her to doctors to uncover the issue and discovered that Natalie had been poisoned with carbon monoxide. The poisoning resulted in damage to the interior of Natalie's brain and was classified as cerebral palsy. This was quite different from most cases of cerebral palsy, which normally affects the outer portions of the brain, and the doctors considered it a miracle that Natalie had survived. "The doctors were baffled and said she shouldn't be alive," said Julie Fiorelli.

Now 13, Natalie has made incredible progress. She is unable to speak and has some issues with fine motor skills, but she can use a keyboard and communication device to communicate with her friends and family, as well as drive a power wheelchair. "She's just a normal kid with normal friends who gets in trouble a lot for being too sassy," said Julie Fiorelli. "You get through life and you start getting used to stuff, so I just have to remind myself that she's amazing."

Because of his experiences with Natalie, her older brother, Mitch Batschelett, has begun pursuing neurology/neurosurgery at Rhodes College in Memphis.

Along the way, Natalie has had the help of service dogs to help her progress. Her current helper is a 2-year-old golden retriever named Brady, — named for NFL quarterback and Natalie's favorite football player, Tom Brady. Brady helps Natalie in a variety of ways, such as helping her keep her balance when she is standing, running to her for emotional support when she is upset and even alerting her parents when she is in need.



**Brady was all smiles after being released to his family from the VHC.**



**The surgical oncology team prepares Brady for his procedure.**



**Owen Skinner, BVSc, DECVS, DACVS-SA, MRCVS, performing the chest wall resection on Brady.**



Brady is the Fiorellis second golden retriever and service dog. Their first service dog, Bentley, passed away only 36 hours after he was diagnosed with cancer at age 5. The Fiorellis, especially Natalie, were devastated. In the wake of this, the family was contacted by multiple organizations who heard about their story and offered the opportunity of in-home training if they wanted to adopt a puppy. The Fiorellis then found a breeder and their current dog Brady when he was 4 weeks old. For nearly Brady's whole life, he has been at Natalie's side.



**Emily Thompson, RVT, checks on Brady after changing his bandage.**

Unfortunately, Brady was also recently diagnosed with cancer by his veterinarian after the family noticed he was sleeping more and had a lump in his side. Based on the recommendation of their veterinarian, they came to the University of Missouri Veterinary Health Center for their next steps.

Owen Skinner, BVSc, DECVS, DACVS-SA, MRCVS, an assistant professor of small animal surgical oncology, and Jason Couto, DVM, MS, a medical oncology resident, were tasked with finding the best way possible to deal with Brady's condition. "When he first came in, we didn't know exactly what was going on with the mass in his side," said Skinner. "The medical oncology team got things started with a CT scan, and discovered that the tumor was actually more within his chest rather than outside of his chest."

A biopsy with the medical oncology team was suggestive of chondrosarcoma, a cartilage tumor, although the tumor did look unusual and osteosarcoma couldn't be ruled out.

Julie Fiorelli said once they realized surgery was an option, there was no doubt that they were going to do everything they could for Brady. "We were sitting in the CVM, and they were telling us how much it would cost," said Julie. "My husband said there wasn't any question. We decided we were going to go through with it."



**Brady even won an award for good behavior during his time in the VHC.**

The VHC clinicians planned the surgery, which was a chest wall resection. The surgery was planned to allow removal of the mass with wide margins. This required taking not just the mass but part of five of Brady's ribs. During surgery, the mass was also, unusually, found to be stuck to Brady's right lung and the pericardium, a sac that surrounds the heart. Part of Brady's lung and pericardium were resected to allow the tumor to be removed while minimizing the risk of leaving disease behind at the surgery site. Brady's mass appeared to have been completely removed when examined by a pathologist. Unfortunately, it was determined that the tumor was osteosarcoma, a tumor of bone, which is more aggressive than chondrosarcoma.

After surgery, both the Fiorellis and Skinner say Brady is doing well. Julie Fiorelli says rather than being sluggish, he has been running around and constantly ringing his bell, which he uses to ask to go outdoors. Brady did have some discolored urine for a short time after his surgery, but that issue has since resolved itself.



**Julie and Natalie Fiorelli were overjoyed to be reunited with Brady after his surgery.**

Brady is now going through chemotherapy and recently revisited the VHC. He had restaging chest radiographs, which didn't reveal any sign of metastasis to his lungs, the main concern with osteosarcoma.

Though he is not out of the woods just yet, Julie Fiorelli says the family is just happy to still have Natalie's helper around. "The point is that Brady is himself right now, and Natalie is just as happy as can be," she said. "She has happy times now. It was so tragic with Bentley. It's less of a shock and we are giving Brady every opportunity to fight for everything he could and be happy at the same time."

*By Nick Childress*



**From back left: Max Latifi, DVM, Owen Skinner, BVSc, DECVS, DACVS-SA, MRCVS, and the Fiorelli family photographed with Brady after he was released.**

# FDA Alert: Certain Lots of Sportmix Pet Food Recalled for Potentially Fatal Levels of Aflatoxin

The U.S. Food and Drug Administration, in cooperation with the Missouri Department of Agriculture, is investigating certain Sportmix pet food products manufactured by Midwestern Pet Food, Inc. that may contain fatal levels of aflatoxins.

Link: <https://www.fda.gov/animal-veterinary/outbreaks-and-advisories/fda-alert-certain-lots-sportmix-pet-food-recalled-potentially-fatal-levels-aflatoxin>