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

Former Faculty Member Clifton Murphy Passes Away

Clifton Neal Murphy, DVM, PhD, 93, a former faculty member in the MU College of Veterinary Medicine, passed away after a brief battle with cancer on Jan. 3, 2020, at Boone Hospital Center in Columbia, Missouri, at the age of 93. A celebration of life will be held in the spring at a date to be determined. There will be a private ceremony of interment at Jefferson Barracks in St. Louis.

He was born July 9, 1926, on the family farm in Bourbon, Missouri, a son of Clifton Murphy and Betty R. (Page) Murphy. He was raised with his older brother, Dean, and his twin brother, Dale. His uncles were veterinarians and he would follow in their career path. During WWII, at age 17, Murphy enlisted in the U.S. Navy, serving as a medic on the U.S.S. LST 378, U.S.S. LST 733, and the U.S.S. LST 702. He received an honorable discharge from the Navy on July 26, 1946.

Following his military service, he attended the University of Missouri, receiving his doctorate of veterinary medicine in 1952. From 1952-1954 he was employed as an assistant professor at the Oklahoma College of Veterinary Medicine in Stillwater in the Large Animal Clinic. He received a training degree in tropical veterinary medicine in 1956 from the Royal Dick Veterinary College in Scotland and his master's degree from Colorado State University, Fort Collins, in 1961. From 1954-1982 he was employed in various veterinary positions, serving as a consultant while living in Ethiopia and India, in private practice in Oklahoma, and working for the Oklahoma Department of Agriculture.

From 1982-1983, he traveled to the Philippines, performing and teaching embryo transfer in cattle. After marrying Billie Chapman in 1982, they traveled to Argentina and lived on a private ranch from 1983-1984, where he established an embryo transfer center and trained six veterinarians in the process. He served as technical director for a private embryo transfer company, American Embryos, in Michigan in 1984-1985. In 1985 the Murphys returned to Columbia. He served as associate professor and director of MU's embryo transfer program. From 1995 until his death he served as assistant research professor for MU's College of Agriculture, Food and Natural Resources, continuing his love of teaching and research in the embryo transfer field.

Murphy received numerous honors and awards during his lifetime, including 1992 Honor Roll Member; AVMA and Honorary Life Membership in the International Embryo Transfer Society; 2002 Honorary Life Membership in the American Embryo Transfer Association; and 2006 Livestock Person of the Year, University of Missouri.

He was preceded in death by his parents, his older brother, his twin brother, and his son, Clifton Charles Murphy.

He is survived by his wife of 37 years, Billie; sister-in-law, Emma Murphy; a niece, Debra (Larry) Young; a nephew, Doug (Kelly) Murphy; stepchildren, Jeanine (Dave) Bequette, Kent (Marti) Chapman, Rene Barton, and Michelle (Greg) Kueck; seven step-grandchildren, two great-nephews, and one great-niece.

University of Missouri Launches Certificate Program to Allow Veterinarians and Technicians the Opportunity to Advance their Education

The University of Missouri College of Veterinary Medicine is now accepting applications for a new online graduate certificate in veterinary science. The first classes begin in August, 2020.

The 15-credit hour graduate certificate program offers veterinarians and veterinary technicians the opportunity to earn a graduate-level education without the need to relocate or miss work to attend classes. Students who earn credits for certificate completion may apply those credits toward the online master of biomedical sciences with an emphasis in veterinary sciences degree.

“Our goal is to help students better understand the intersection of veterinary and biomedical sciences as a whole, so they can combine their technical knowledge and real-world experience to become more effective in their professions,” said Laurie Wallace, DVM, MVSc, DACVIM, director of veterinary online programs at Mizzou’s veterinary college.

The curriculum is flexible to accommodate students with diverse goals. The online courses are taught by MU College of Veterinary Medicine faculty.

Graduate students enrolled in MU’s online program pay in-state tuition regardless of where they live.

For more information contact: WallaceLa@missouri.edu

‘Live PD’ German Shepherd Dog Receives Successful Surgery at MU

Veterinary Health Center performs emergency surgery on small intestine

Dogs are not only a man’s best friend. They can also be a man’ best co-worker as well.

James Craigmyle served as a Deputy Sheriff for the Greene County Sheriff’s Office from 2004 until 2019. During his last eight years of service, Craigmyle was joined by Lor, a four-legged German shepherd dog from the Czech Republic who had been identified as a suitable police dog due to his keen sense of smell and fearless demeanor.

“Lor was a fantastic police dog due to his courage, heart and relentless drive,” Craigmyle said. “Whether it was sniffing out illegal narcotics or apprehending suspects who had fled from the police, he was a phenomenal asset to our team.”

Link to Video: http://cvm.missouri.edu/live-pd-german-shepherd-dog-receives-successful-surgery-at-mu/

Viewers around the world connected with Craigmyle and Lor through “Live PD,” a television show that gives a bird’s eye view into police officers responding to 9-1-1 calls in real time. The dog would help locate evidence or detain suspects in dangerous situations where the environment would not be safe for human officers.

Lor and his owner both retired from the police force in November 2019. In January 2020, Craigmyle noticed his dog heavily panting one night and knew something was wrong. After taking Lor’s temperature and seeing a 104 degree fever, Craigmyle took him to a vet in Springfield. He was told that Lor may have had a tumor rupture in his small intestine and that MU’s College of Veterinary Medicine Veterinary Health Center is the only facility in mid-Missouri with the resources and equipment needed to treat the dog quickly.

“When I took him to the emergency vet hospital in Columbia, there was a 50-50 chance in terms of whether or not he would make it,” Craigmyle said. “After hours of surgery, flushing out his abdomen and putting him on antibiotics, he started recovering very well. I’m just thankful because it’s a blessing.”

After a successful surgery and a week under the care of veterinarians and technicians, Lor was healthy enough to return home to Springfield with his owner. Craigmyle still serves as a reserve deputy, but now his main duties include wrapping Lor’s daily medicine in cheese slices and monitoring his dog on the road to recovery.

“After working together for so many years, we have developed an inseparable bond,” Craigmyle said. “We relied on each other all the time, and having a dog can teach you a lot about compassion and companionship.”

Project K9 Hero, an organization that helps with vet bills of retired military and working dogs, was able to cover the cost of the medical bills. Craigmyle said he has received cards and well-wishes from fans all over the world who watched the pair on ‘Live PD.’

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“All the doctors and technicians at MU that helped him recover were incredible, and I have been receiving messages of support from people in Japan, Germany, South Africa, you name it,” Craigmyle said. “Lor helped bridge the gap between law enforcement and the community. He is nothing short of a hero.”

Story courtesy of Mizzou News Bureau
Contact: Brian Consiglio, 573-882-9144, consigliob@missouri.edu

CVM Dean Carolyn Henry Joins Honor Roll

The Missouri Veterinary Medical Foundation recognized University of Missouri College of Veterinary Medicine Dean Carolyn J. Henry with her induction into the organization's Honor Roll. The Veterinary Honor Roll recognizes veterinarians who are nominated for inclusion by those whose lives they have touched, or who have touched the lives of others. Their names and photographs are presented in a display within the foundation's museum at the Missouri Veterinary Medical Association (MVMA) offices in Jefferson City.

Henry, DVM, MS, DACVIM (Oncology) was welcomed into the Honor Roll Jan. 25, 2020, during the MVMA's annual convention.

MVMA President-elect Marcy Hammerle, DVM, a member of the MU CVM Class of 2003, nominated Henry for the honor, which was announced during the MVMA Academy luncheon.

"There were a lot of reasons that I nominated her," Hammerle said. "In school she was just such a huge mentor and provided great support to the students.

"And as dean of the vet school she's done so much," Hammerle continued. "Her transparency and her advocacy for veterinary students — I'm just so proud of her — and she's someone who I really admire."

Henry thanked the members of the audience. "Thank you of giving me that honor of serving not just this college, but also the state of Missouri and representing all the great people here at this convention and all those out there working," she said.

She also took a moment to introduce and thank her mother, Billie Henry, who accompanied her to the luncheon. "I owe it all to her," Henry said. "She is 90 years old, full of stories, and all of the ones about me are untrue," she joked.

The Missouri Veterinary Medical Foundation supports the charitable and educational activities of the MVMA. The foundation focuses on public education and animal welfare issues to further the health of animals in Missouri.

CVM Dean Carolyn Henry was inducted into the Missouri Veterinary Medical Foundation Hall of Fame on Jan. 25 during the Missouri Veterinary Medical Association annual convention.

MVMA President-elect Marcy Hammerle (left) nominated Dean Carolyn Henry for the Missouri Veterinary Medical Foundation Hall of Fame.

CVM Dean Carolyn Henry thanked her mother, Billie Henry, during the MVMA Academy luncheon.

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

Link: https://vimeo.com/387820967

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

Gene Hunting: The Power of Precision Medicine

MU researchers improve animal welfare by discovering genetic mutations that cause disease

Humans and animals are made up of trillions of cells, and each cell contains DNA specific to that individual. Therefore, identifying DNA that causes genetic disorders gives researchers and clinicians a better understanding of how to treat inherited diseases and possibly prevent the diseases from being passed down to future generations.

Now, researchers at the **University of Missouri** have located a specific mutation in the gene responsible for causing Chédiak-Higashi syndrome, a rare condition that weakens the immune system and leaves the body more vulnerable to infections. In their new study, Leslie Lyons, a professor of comparative medicine at the MU College of Veterinary Medicine, and Reuben Buckley, a postdoctoral fellow, found the answer by creating a DNA map of a domestic cat with the syndrome.

“Different treatment options target different parts of the gene, so we needed to know which part of the gene was messed up in order to target therapies to the appropriate place,” Lyons said. “Similar to finding a specific address, we knew we had the right street but we needed to find the exact house, and modern DNA sequencing helped us find it.”

Collaborating with reproduction specialists at the Cincinnati Zoo and Botanical Gardens, Lyons worked with Smokey, a 16-year-old male cat who served as the last biomedical cat model for Chédiak-Higashi syndrome before passing away. Through in vitro fertilization, Lyons was able to use semen from Smokey to resurrect the previously extinct feline disease model. Learning if cats are genetic carriers of a certain disease can be useful so that breeders are aware of which cats to avoid breeding together in order to prevent their offspring from being affected.

Lyons’ research team is also studying genetic mutations that cause other diseases, such as polycystic kidney disease, a common inherited disorder that affects hundreds of thousands of people each year and can lead to kidney failure. She highlights the value of translational medicine in her research.

“All mammals tend to have very similar genes, so if we find out what causes a disease in cats, then whatever therapies can be used to help cats can potentially be translated to help humans suffering with the same disease,” Lyons said. “Likewise, human research can potentially be translated to help animals as well.”

In addition to translational medicine, Lyons’ research is also an example of precision medicine, or tailoring specific treatments for a patient according to their individual genetic makeup. Precision medicine will be a key component of the NextGen Precision Health Initiative by helping to accelerate medical breakthroughs for both patients in Missouri and beyond.

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“Assisted reproduction mediated resurrection of a feline model for Chédiak-Higashi syndrome caused by a large duplication in *LYST*” was published in *Scientific Reports.* Funding for this project was provided by the Office of Research Infrastructure Programs/OD R24OD01092, the Winn Feline Foundation (W16-030), University of Missouri Gilbreath McLorn Endowment and donors to the 99 Lives Cat Genome Sequencing Project. The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

Editor’s note: Chédiak-Higashi Syndrome is pronounced “shed-EE-ack heh-GA-shee syndrome”

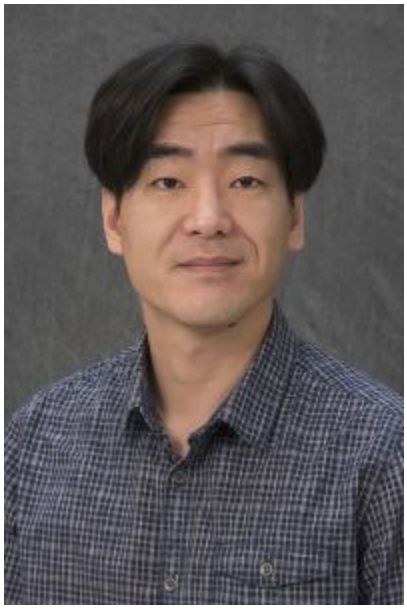
Story courtesy of Mizzou News Bureau
Contact: *Brian Consiglio, 573-882-9144, consigliob@missouri.edu*

State of the College

Link: https://spark.adobe.com/page/OtJAyCWBYWzs2/

Sehwon Koh, MSc, PhD joins Mizzou CVM as Assistant Professor of Neuroscience

by Nick Childress



The University of Missouri College of Veterinary Medicine welcomes Assistant Professor of Neuroscience Sehwon Koh, MSc, PhD. Koh is from South Korea, and after earning his bachelor's degree from Seoul National University, came to the United States for his master's degree at Purdue University, PhD at North Carolina State University, and Duke University for his postdoctoral training.

Koh found his way to Mizzou at the start of January and will be conducting research in neuroscience, especially focusing on glia-neuron interaction in health and disease. "In the central nervous system there are two different cell types, neurons and glia," Koh said. "My major research interests are in understanding cellular and molecular mechanisms of how the glia, the non-neuronal cell type in the central nervous system, regulates neuronal activity. Many previous studies on neurological disorders, including neurodegenerative diseases, have focused on neuronal malfunction or neuronal cell death. It's the neurons that communicate with each other through synapses, and when the neurons break down, that's when we see all the symptoms coming from diseases. However, recent studies have actually shown that the glial cells such as astrocytes, microglia and oligodendrocytes, surrounding the neurons may be a big contributor in diseases. It's the glia that may be messed up first, then as a result, neurons are having a problem that leads to disease. Glial dysfunction can initiate the diseases by inducing impaired neuronal functions and failing to support neuronal health. So I think it is critical to understand how glial cells modulate neuronal activity to develop treatments that can precisely fix the problems."

Koh joins his wife, Ji-Hey Lim, DVM, PhD, at Mizzou. Lim is a clinical instructor of neurology and neurosurgery.

Outside of work, Koh enjoys skiing and snowboarding. "I love snow sports. I'm glad that the Columbia Regional Airport has a direct flight to Denver. I'd really like to use that flight one day," said Koh.

Koh is also in search of motivated undergraduate, graduate and veterinary students interested in research. You can contact him at his email, sehwon.koh@missouri.edu, for more information.

Mizzou CVM Welcomes Clinical Pathologist Saundra Sample, DVM, DACVP

by Nick Childress

The University of Missouri College of Veterinary Medicine welcomes Clinical Pathologist Saundra Sample DVM, DACVP. Sample is originally from La Grange, Illinois, and has traveled the United States and beyond to learn, teach and practice veterinary medicine. She attended the University of Illinois College of Veterinary Medicine and went to the University of Wisconsin for her residency, with a few other stops along the way. She eventually arrived at Ross University, St. Kitts in the Caribbean. She remained there for five years until returning to the United States to join the MU CVM.

“I really loved the university down there, but I was looking to get back into a place with a busy hospital, lots of cases, a reputation for being student friendly, a strong residency program, and a place that the Ross students were happy,” said Sample.

Ross, another AVMA-accredited school, has an accelerated program that requires students to do clinical rotations at another veterinary program for their final year. Sample used those students’ experiences as a way to find a new landing place at Mizzou. “They are kind of little markers for how well students are being treated, and that was really important to me,” she said.

As a clinical pathologist, part of Sample’s duties will include lab work. “We work with diagnostic medicine. So looking at blood work, urinalysis, aspirates, and helping keep the lab up and running,” she said. On top of that, she will be teaching a clinical pathology class to second-year students. “That’s a big part of it, we teach on the clinical rotations and we also do service for the hospital. It’s about 50/50 between the two, they keep us pretty busy.”

She stated that she enjoys teaching, but apart from her role at MU, Sample has some interesting hobbies. She has compiled a large number of underwater photographs that she captured while snorkeling during her time in the Caribbean. She also enjoys musical theater and the role playing game Dungeons and Dragons. “It’s a lot of fun and I have a game that I play on a weekly basis with friends over the internet. I’m a big nerd,” she said.

Think all BPA-free Products are Safe? Not so Fast, Scientists Warn

MU scientists find BPA alternative, bisphenol S, could negatively affect both a mother's placenta and potentially a developing baby's brain

As adverse health effects of BPA have become more widely known, companies have turned to using alternative chemicals to develop plastic products — namely water bottles and food containers — and often labeling them "BPA-free."

Using "BPA-free" plastic products could be as harmful to human health — including a developing brain — as those products that contain the controversial chemical, suggest scientists in a new study (Link: https://www.pnas.org/content/117/9/4642) led by the **University of Missouri** and published in the *Proceedings of the National Academy of Sciences*.

For decades, scientists have studied BPA extensively in animal models with results indicating the chemical plays a role in early pregnancy loss, placental diseases and various negative health outcomes after birth. As these adverse health effects have become more widely known, companies have turned to using alternative chemicals to develop plastic products — namely water bottles and food containers — and often labeling them "BPA-free." However, MU scientist Cheryl Rosenfeld warns these chemical alternatives, such as bisphenol S (BPS), still aren't safe for people to use.

n the study, Rosenfeld and her colleagues focused on examining the effects of BPS on a mouse's placenta. She said the placenta serves as a historical record of what an unborn child faces while in the womb; the placenta also can transfer whatever the mother might be exposed to in her blood, such as harmful chemicals, into the developing child.

"Synthetic chemicals like BPS can penetrate through the maternal placenta, so whatever is circulating in the mother's blood can easily be transferred to the developing child," said Rosenfeld, a professor of biomedical sciences in the College of Veterinary Medicine, investigator in the Bond Life Sciences Center, and research faculty member for the Thompson Center for Autism and Neurobehavioral Disorders at MU. "This mouse model is the best model we have now to simulate the possible effects of BPS during human pregnancy, because the placenta has a similar structure in both mice and humans."

Rosenfeld adds that the placenta serves as a primary source of serotonin for fetal brain development in both mice and humans. Serotonin, while commonly associated with the feeling of happiness, is a natural chemical that can impact a person's functions, including their emotions and physical activities such as sleeping, eating and digesting food.

"The placenta responds to both natural chemicals as well as synthetic chemicals that the body misinterprets as natural chemicals, but the body doesn't have the ability to mitigate the detrimental effects of such industrial-made chemicals," Rosenfeld said. "More importantly, these chemicals have the ability to lower the placenta's serotonin production. Lower levels of serotonin can compromise fetal brain development because during this critical time in development the brain relies on the placenta to produce serotonin. Thus, developmental exposure to BPA or even its substitute, BPS, can lead to longstanding health consequences."

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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.

Cheryl Rosenfeld

The study, "Bisphenol A and bisphenol S disruptions of the mouse placenta and potential effects on the placenta-brain axis," (Link: https://www.pnas.org/content/117/9/4642) was published in the journal *Proceedings of the National Academy of Sciences*. Co-corresponding authors include R. Michael Roberts at MU and Geetu Tuteja at Iowa State University. Other authors include Jiude Mao, Saurav Sarma, Barbara Sumner, Zhentian Lei, Lloyd Sumner and Nathan Bivens at MU; Ashish Jain at Iowa State University; and Nancy Denslow, Mohammad Zaman Nouri, Sixue Chen, Tingting Wang, Ning Zhu and Jin Koh at University of Florida.

Funding was provided by grants from the National Institutes of Health, 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 Mizzou News Bureau
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2020 Boehringer Ingelheim Animal Health MU Dental CE Weekend

Link:

https://web.cvent.com/event/32cd2143-9779-4726-a20f-963da913000d/summary?rp=00000000-0000-0000-0000-000000000000

Ben Olthoff, DVM, Studies Disease that Hits Close to

Spinal Muscular Atrophy is a devastating genetic disease that affects the central nervous system as well as other parts of the body. According to the Muscular Dystrophy Association, the primary symptom of SMA is weakness of voluntary muscles, with the muscles most affected located in the shoulders, hips, thighs, and upper back. Other complications caused by SMA can occur when muscles used in breathing and swallowing are affected. While there are several treatments available for SMA that halt progression of the disease, there is no cure at this time. Many researchers are actively searching for new breakthroughs and treatments. One of those researchers can be found in the University of Missouri Comparative Medicine Program.

Ben Olthoff, DVM, his wife Michelle, and their son 2-year-old son Isaac.

Benjamin Olthoff, DVM, is a third-year resident from Sioux Center, Iowa. Olthoff attended Dordt University for his undergraduate studies and went on to attend the Michigan State University College of Veterinary Medicine. In 2017, Olthoff and his wife, Michelle, found their way to Mizzou, where he began a residency in the MU Comparative Medicine Program.

In the middle of that first year, Olthoff's wife found out that she was pregnant. "We were very excited," he said. "My son, Isaac, was born August 2018."

It was a few months after Isaac's birth that the Olthoffs received difficult news. "At Isaac's four-month appointment our pediatrician mentioned that they were concerned about low muscle tone," said Olthoff. "After several referrals and several months of waiting, we received a diagnosis of spinal muscular atrophy. We sort of knew it was coming, but that didn't make it any easier."

At this point the family went to a specialist in Kansas City and began applying for different treatments.

While working in the Comparative Medicine Program, Olthoff had joined a lab with his research mentors, Craig Franklin, DVM, PhD, DACLAM, and Aaron Ericsson, DVM, PhD. In this lab they study the gut microbiome, and Olthoff began to wonder if there was any microbiome research that focused on his son's disease. "Once we received Isaac's SMA diagnosis, I wondered if anybody had looked into a potential relationship between SMA and the gut microbiome," he said. "I saw a potential need that I could fill. Maybe the gut microbiome could influence SMA progression or response to treatment."

Shortly after Isaac's diagnosis, Olthoff spoke with his research mentors about what he could do. They referred him to a Chris Lorson, PhD, a professor in the CVM's Department of Veterinary Pathobiology and the Bond Life Sciences Center at Mizzou and associate dean for Research and Graduate Studies in the CVM. Lorson, operates a lab focused on SMA and leads a drug development company called Shift Pharmaceuticals, working to develop treatments for SMA. "He's been extremely informative and supportive. It has been a comfort to know that there is somebody on campus that knows about SMA," Olthoff said.

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With the help of his mentors and Lorson, Olthoff's research focuses on identifying gut microbiome changes in a mouse model of spinal muscular atrophy. "Identifying differences in the gut microbiome of those with SMA could be the launching point for additional research. For example, we could investigate how the gut microbiome influences disease progression or how the gut microbiome influences response to treatment."

With his residency coming to an end this coming summer, Olthoff hopes to stimulate interest in somebody else about the interaction between SMA and the gut microbiome, so that they might continue his research.

Olthoff couldn't help but express his gratitude toward the Comparative Medicine Program and the possibilities that it has given him. "You get so many opportunities to make a huge difference in the lives of people that are affected by SMA or any other disease that you get to work on," he said. "The program here is pretty unique because of the wide range of resources and expertise available. When we find something we are passionate about, we are encouraged to pursue it and begin to solve important issues in the world."

by Nick Childress

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

Link: https://vimeo.com/393793124

Mizzou Offering New Therapy with Prismaflex Machine

The University of Missouri Veterinary Health Center is now able to perform therapeutic plasma exchanges (TPE) and continuous renal replacement therapy (CRRT) using the Baxter Prismaflex machine. The Baxter website defines the Prismaflex machine as an innovative system that is designed to support the recovery of critically ill patients with acute kidney injury.

This machine has already been used to assist a VHC patient named Beau. Beau is a 6-month-old hound dog, Labrador mix who was severely anemic on arrival. He was considered to be in critical condition and needed a blood transfusion right away. “Beau had a condition called immune-mediated hemolytic anemia (IMHA) where his body was destroying its own red blood cells by creating antibodies against them,” said Colin Reich, DVM, DACVECC, an assistant teaching professor and board-certified specialist in veterinary emergency and critical care at MU. “Since a lot of the body’s antibodies can be found in the plasma, we removed them with a therapeutic plasma exchange to stop the progression of his disease.”

Beau made a quick turnaround after the procedure, with his plasma returning to a normal color and his anemia stabilizing within 24 hours. This indicated that the procedure was effective. “We are definitely not the first to perform TPE for dogs with IMHA, but we are excited to offer this therapy for dogs in a more convenient way at the University of Missouri using the Baxter Prismaflex machine,” said Reich.

The Prismaflex machine also allows veterinarians at Mizzou to perform continuous renal replacement therapy. CRRT is a form of dialysis used for animals with acute kidney injury. Both dogs and cats can develop acute kidney injury, which is caused by infections, urinary obstructions and toxicities. “Not all animals with acute kidney injury will need CRRT, but it can be a life-saving therapy for those animals in which it is indicated,” said Reich. “It is important to recognize that we are unable to provide long-term dialysis for patients with chronic kidney disease.”

by Nick Childress

Careful Use of Cleaning Products and Medications Around Pets

To help slow the spread of COVID-19, many people have started working from home, and schools and colleges have transitioned to distance learning. With heightened awareness that the virus can be transmitted by touching contaminated objects, some individuals have also started sanitizing their homes as a preventive measure.

Link to Enlarge Photo: http://cvm.missouri.edu/wp-content/uploads/2020/03/Preventing-Pet-Poisonings-Infographic3.jpg

However, some of these sanitary products can be harmful to the pets that share our houses. Tim Evans, DVM, PhD, associate professor of toxicology in the College of Veterinary Medicine's Veterinary Medical Diagnostic Laboratory, says we need to be more aware of and careful with these products.

"Certainly, as we're using more disinfectants we need to be more aware that some of these can contain a caustic or corrosive agent," he said. "It's extremely important to read the product label and to follow directions exactly as they are written."

Household cleaners and disinfectants are particularly dangerous for birds due to birds' extremely efficient respiratory system. It is important to keep birds in well-ventilated areas and away from these chemicals. Exposure to chemicals used for cleaning and disinfecting pose a special risk to cats because of their curiosity and tendency to taste things. Cats also do not detoxify many toxic compounds as well as dogs. Dogs are at increased risk for exposure to these chemicals because of their indiscriminate eating and drinking behaviors. In addition, many dogs and, especially cats, lick their paws, so that after they walk on recently cleaned surfaces, in particular those that are still wet, they may ingest potential toxicants.

Making sure that household cleaning and disinfecting products are stored and used properly are important first steps in keeping them safe. Early signs that our pets may have inhaled or ingested these products are depression and acting withdrawn in birds, as well as salivation and vomiting in dogs and cats. It is always a good idea to keep a close eye on your pets to make sure they aren't exhibiting these clinical signs and are still eating and drinking normally.

Given the increased use of cleaning products because of COVID-19 concerns, the proper dilution of these products can also make them less dangerous to our pets, while being just as effective in cleaning and disinfecting. "Many of these products can be used relatively dilutely," said Evans. "With people justifiably concerned about potential exposure to COVID-19, they may think that if a little is good, a lot is going to be better. That is not necessarily true, and it can be dangerous for pets."

Other relevant hazards for our pets during this time are common human medications, such as ibuprofen, naproxen, and acetaminophen. While we may take these medications to reduce pain and discomfort, and lower elevated body temperatures with relatively little risk, such is definitely not the case for our pets. Just as with household cleaners and disinfectants, it is important to safely store over-the-counter and prescription medications away from pets and small children. Even if a container is childproof, that doesn't necessarily mean it is pet proof. These common household dangers can be found in almost every room in the house.

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While we are all doing our best to keep our families healthy, we may be unknowingly putting our pets at risk. If you think your pet may have been exposed to a household cleaner, disinfectant or something else potentially toxic, you should contact your veterinarian. You can also visit the Animal Poison Control Center (Link: https://www.aspca.org/pet-care/animal-poison-control) or Pet Poison Helpline (Link: https://www.petpoisonhelpline.com/pet-owners/) websites for immediate information or call their 24/7 number at (888) 426-4435 or (855) 764-7661.

These are some other resources that can be used to help people stay informed about pets and COVID-19, as well as the everyday dangers to our pets:

Coronavirus: Keeping Your Pets Safe During the COVID-19 Crisis (Link: https://www.aspca.org/newscoronavirus-keeping-your-pets-safe-during-covid-19-crisis)

Coronavirus and Your Pet (COVID-19) (Link:https://www.petpoisonhelpline.com/blog/coronavirus-and-your-pet/)

This Just In: Announcing the Top 10 Toxins of 2018 (Link:https://www.aspca.org/news/just-announcing-top-10-toxins-2018)

Coronavirus: Disease in Horses is Different to Humans

Some in the equine industry may be familiar with coronavirus infections in horses. Amid the current COVID-19 (coronavirus disease 2019) pandemic, you might be wondering if your horse can be affected by this novel (new) coronavirus causing respiratory disease in humans, or can your horse infect you? The short answer is no.

"Coronavirus" is the overarching name for a *family* of viruses. There are many other coronaviruses that cause respiratory disease in humans, including SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome). Other members of the coronavirus family are known to cause disease in domestic animals including TGE (transmissible gastroenteritis) and PED (porcine epidemic diarrhea) in pigs, FIP (feline infectious peritonitis) in cats, and equine coronavirus infection in horses, all of which cause gastrointestinal disease. These mentioned coronaviruses are not known to be zoonotic, and therefore, humans are not at risk.

Coronavirus infections are highly contagious and in horses, at risk populations include horses in breeding facilities, ranch work/farming environments, the Midwest, and draft breeds. Based on cases seen at the University of Missouri, boarding facilities are also at higher risk where there are large groups of horses. Infections most commonly occur during late fall and winter months.

The most common clinical signs of equine coronavirus infections include a decreased appetite, fever (101.5-106.0°F), and lethargy. Other signs include those associated with mild colic (lying down frequently, flank watching) or changes in fecal consistency (soft or watery). A veterinary examination and diagnostic tests such as routine bloodwork (complete blood count and biochemical profile) often reveal abnormalities consistent with dehydration, decreased white blood cell count, and decreased blood protein status. Rarely, horses will display neurological abnormalities such as a wobbly gait (ataxia) or head pressing.

The virus is shed in feces and is passed from horse to horse via a fecal-oral route. Coronavirus infections in horses are definitely diagnosed by submitting feces for quantitative polymerase chain reaction (qPCR) to identify the implicated viral nucleic acids.

Treatments are highly dependent upon what is discovered during the veterinary examination and initial diagnostic tests. Often, supportive care in the way of anti-inflammatory drugs and gastroprotectants are prescribed. Occasionally, severely affected patients require hospitalization with additional supportive care such as intravenous fluid therapy and plasma transfusions.

Equine coronavirus infections result in high morbidity and low mortality, meaning many horses may be affected but few will die. Horses generally recover from the infection within three to seven days, but some develop complications and deterioration that warrant euthanasia.

Precautions to employ if you have an affected horse include isolation for no less than 21 days, handling the affected horse last, and keeping tack and barn supplies separate between healthy and affected horses. Affected waste materials should not be disposed of near the healthy horses. All surfaces should have organic debris (feces, soil, wood chips, etc.) removed prior to disinfection with sodium hypochlorite (bleach), povidone iodine, chlorhexidine gluconate, phenols, quarternary ammonium compounds, and peroxygen compounds.

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As you have read, coronavirus infection in horses is very different to COVID-19 in humans. At this time, there is no evidence that domestic animals, including horses, dogs and cats, can spread COVID-19 to humans. For this reason, diagnostic testing of animals for COVID-19 is not recommended, and additionally, we need to save diagnostic test supplies for humans. Routine hygiene and health practices should be employed including:

- Washing hands after handling animals, feed, waste or supplies;
- Maintaining clean housing conditions, including routine stall or paddock cleaning with appropriate waste disposal; and
- Having your veterinarian perform an annual physical examination, administer core vaccines (at minimum) and deworm based on fecal egg count results.

Proactively protecting your horse's immune system with the above practices will ensure your equine partner is in peak health and able to better fight infections and perform.

For more information on the equine coronavirus, see these veterinarian-verified resources:

What Is Equine Coronavirus? (Link: https://thehorse.com/165259/what-is-equine-coronavirus/)

AAEP and EDCC: Disease Factsheet on Coronavirus (Link: https://aaep.org/sites/default/files/Documents/Outside%20Linked%20Documents/DiseaseFactsheet_CoronavirusFINAL%20Cobranded%20.pdf)

By *Lynn M. Martin, DVM, MPH, DACVIM (LAIM)* | *University of Missouri Veterinary Health Center*

VHC Transitions to Emergency and Essential Only Cases

As COVID19 has become more established in the state, cases have been identified in Columbia, and the University of Missouri is closed to all but essential personnel. The Veterinary Health Center will move to emergency and selected essential cases only effective 8 a.m., Monday, March 23.

VHC Phases of Operation

- There will be a significant reduction in the number of students in the hospitals. However, we are hiring some of our third- and fourth-year students to assist us in providing care for animal patients, under the direct supervision of licensed clinicians.
- The VHC Pharmacy will be open daily 8 to 10 a.m. Clients who need prescription refills for their pets should call the VHC Pharmacy at (573–882–7634). A staff member of the pharmacy will take the medication out to the client's car and payment will be made via telephone.
- Clinical Pathology will be available from 8 a.m. to 5 p.m.
- All sections will be staffed, but with a skeleton crew
- Our office staff will be reduced by at least 50 percent.
- The Veterinary Health Center at Wentzville will operate with similar protocols to those in place in Columbia.

All main doors into the Veterinary Health Center will remain locked around the clock. We are asking that clients call the hospital upon arrival. Please use the following numbers to call when you arrive. (The main hospital numbers should continue to be used to schedule appointments and for follow-up calls. Those numbers can be found at the end of this message.)

For the Equine Hospital: call 573-882-7871

For Food Animal and Theriogenology: call 573-882-7870

For the Small Animal Hospital between 7 a.m. and 5 p.m., call: 573-882-1836 or 573-882-2521

For the Small Animal Hospital between 5 p.m. and midnight, call: 573-882-1570

For the Small Animal Hospital between midnight and 7 a.m. Monday through Friday and 7:30 a.m. during weekends, call: 573-999-1027

All clients will be screened for potential exposure to coronavirus that causes COVID-19 by being asked to respond to the following questions:

- Has client or any family member exhibited flu-like symptoms including fatigue, aches, fever or cough at any time during the past 14 days?
- Has client tested positive for the COVID-19 virus?

If a client is determined to be at no increased risk of COVID-19, then the appropriate service will send someone to the client's car to pick up the animal. The VHC will not take personal items, such as leashes, collars, etc., with the animal. Cats in carriers may be brought into the building to be moved to a cage or hospital carrier, with the personal carrier returned to the cat's owner as soon as possible.

If a client is at increased risk of COVID-19, they will be directed to drive into the large animal receiving area to Ambulatory Building garage. There, a team will collect the animal to be wiped down with a safe decontamination solution. The animal will then be brought into the hospital.

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The VHC's main hospital numbers are as follows:

Small Animal Hospital
573-882-7821; After Hours: 573-882-4589

Equine Hospital
573-882-3513; After Hours: 573-882-4589

Food Animal Hospital
573-882-6857; After Hours: 573-882-4589

We thank our clients for their patience as we make this transition to respond to the COVID-19 challenge while we care for your four-legged friends, and we apologize any inconvenience.

De’Shonna Jones Named Dolores Goller Scholarship Recipient

De’Shonna Jones, a Louisiana resident and Southern University and A&M College graduate, has been named the first Dolores Goller Scholarship recipient. Jones, who was accepted by three veterinary schools, has committed to the University of Missouri and will be a member of the incoming College of Veterinary Medicine Class of 2024.

The Goller Scholarship comes in the form of $25,000 per academic year, which means when Jones qualifies for in-state residency, the scholarship will provide her with full tuition funding for her veterinary education.

The video captures the moment when Jones learned she had been awarded the scholarship.

Video Link: https://vimeo.com/407165939

In her scholarship application, Jones wrote about the importance of diversity and connecting people with different backgrounds. While pursuing her bachelor’s degree in animal sciences, Jones had experiences that helped her further her knowledge of diversity. Studying the veterinary profession overseas in Belize, Jones said she learned about the differences in culture, as well as the community diversity. She also assisted people in need during the 2016 flooding of Baton Rouge through her university-organized Animal Disaster Relief Wellness Clinic. “Volunteering there opened my eyes to the diversity of the community and how many individuals were not financially able to take care of their dogs the way they would like to,” wrote Jones.

It was these experiences, and her demonstrated knowledge of diversity in veterinary medicine, that led CVM Dean Carolyn Henry and Associate Dean for Student Affairs and interim Associate Dean for Academic Affairs Angela Tennison to choose De’Shonna Jones as the Dolores Goller Scholarship recipient for the MUCVM Class of 2024.

Ida Dolores Goller was born Dec. 6, 1926, in St. Louis, Missouri. She passed away Oct. 29, 2015. She was a resident of St. Charles, Missouri. The scholarship in her name was funded through an estate gift she established.

Faculty Expert Comment: Highly Unlikely for COVID-19 to Transmit to Humans From Pets, Livestock

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Leah Cohn is a professor of small animal internal medicine in the MU College of Veterinary Medicine.

John Middleton is a professor of large animal internal medicine at the MU College of Veterinary Medicine.

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Unravelling the Genetic Mysteries of Infectious Disease

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At the Arizona Department of Health Services, Yaglom worked largely with tribal communities to combat the public health threat of Rocky Mountain spotted fever, a disease spread by a tick bite.

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Outside of the COVID-19 response, Yaglom serves as TGen's One Health genomics epidemiologist. New technologies can be used to address problems at the human, animal, and environmental intersection through detection of emerging pathogens, tracking of disease outbreaks and antimicrobial resistance in microbial populations.

"Our vision is to have the research we conduct be translational for clinical medicine and public health," Yaglom said.

Yaglom is also an active adjunct faculty member with the MU Master of Public Health program.

"What I will always carry with me from Mizzou is that it takes a team of dedicated people from diverse backgrounds to make great science and response work happen," Yaglom said. "When it comes to emerging pathogens, such as COVID-19, there are new things to learn every day. By working with people from public health, health care, nonprofit, governmental, academic, environmental and animal health agencies, we can accomplish something truly impactful."

The Translational Genomics Research Institute has already tested more than 1,000 patients for COVID-19 since March.

Story courtesy of Mizzou News Bureau
Contact: Brian Consiglio, 573-882-9144, consigliob@missouri.edu

Stress in Parents of Children with Autism: Pets May Help

MU researcher examines impact of pet dogs, cats on families with autism

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Gretchen Carlisle, a research scientist with the Research Center for Human-Animal Interaction in the MU College of Veterinary Medicine, and Mira.

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

Link:

http://cvm.missouri.edu/the-d-v-m-the-deans-video-message-april-2020/

Three Mizzou CVM Students Receive Grants for Summer Research Projects

Emily Lemoine, Carley Allen and Milan Piva have been awarded grants for research they will be conducting this summer. The three MU College of Veterinary Medicine students will pursue their research projects through the Veterinary Research Scholars Program, which exposes veterinary students to research career opportunities through mentored research experiences and creates a community of veterinary research scientists.

Emily Lemoine

Emily Lemoine, who will be a third-year CVM student, is from Oklahoma and attended Oklahoma State University for her bachelor's degree in animal science and a minor in microbiology. She has been named the recipient of the American Veterinary Medical Foundation's Second Opportunity Research Scholarship. This grant is awarded to students who participated in the VRSP program in the past and are interested in participating again. "This is my second year in the program and I really wanted to focus on something that would be furthering my career," said Lemoine. "I've been interested in the field of oncology, so I thought I should try to pursue an oncology related research project."

Specifically, Lemoine's research will focus on the changes that occur to the microbiome during the course of chemotherapy. Lemoine's mentors, Lindsay Donnelly, DVM, MS, DACVIM -Oncology, assistant professor of oncology, and Aaron Ericsson, DVM, PhD, assistant professor and director of the University of Missouri Metagenomics Center, will be assisting her throughout. Donnelly detailed the project. "Specifically, we are evaluating how the microbiome changes in dogs that have been diagnosed with lymphoblastic lymphoma as they receive a multiagent chemotherapy protocol called CHOP," said Donnelly. "Some dogs experience side effects of chemotherapy like vomiting and diarrhea, and it is currently unknown if there is any association between these bacteria and the severity of these symptoms."

While gaining more knowledge, they hope to eventually be able to manipulate a cancer patient's gut microbiome so that it lessens the severity of side effects and increases the effectiveness of chemotherapy. "There is also some evidence that the gut microbiome of an individual may alter how effective a therapy is for the cancer," said Donnelly. "With more knowledge of how the gut microbiome and cancer treatment interact, we may be able to manipulate a cancer patient's gut microbiome to both make chemotherapy more tolerable and more effective."

As of now, COVID-19 hasn't had much of an effect on the plan for Lemoine's project. "I'm lucky because I think the lab where we're doing the analysis of the samples we have obtained is going to be exempt from shutting down," said Lemoine. "I think it should be fine, because if they open up that lab, then I can still get my samples analyzed. I may not be the one to extract the DNA, but I should be able to get the analysis from the lab and do all of my computer work."

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Carley Allen will be a second-year CVM student. She is from northwest Arkansas and went to Arkansas Tech University, where she earned her bachelor's degree in agricultural business with a concentration in pre-veterinary medicine and a minor in biology. Allen has been named the recipient of a Morris Animal Foundation grant for her research project. Her project will focus on finding a better understanding of cell growth signaling pathways in canine osteosarcoma. "Canine osteosarcoma is one of the more common bone tumors in dogs," said Allen. "It's actually a pretty aggressive cancer that can cause a lot of pain and bone destruction. We're hoping that this is a potential target for treatment and mitigation of some of the symptoms associated with it."

Carley Allen

Allen's mentors, assistant professors of oncology Brian Flesner, DVM, MS, DACVIM-Oncology, and Angela McCleary-Wheeler, DVM, PhD, DACVIM-Oncology, will be working with her through the process of this project. McCleary-Wheeler added more detail about Allen's project. "The study was conceived and designed based upon some data in human cancers, including human osteosarcoma, looking at the contribution of SHIP (src homology domain containing inositol polyphosphate) enzymes to cancer," said McCleary-Wheeler. "Because comparative oncology, the study of cancers that occur in both animals and humans, can help accelerate our understanding of the biology and potentially the development of new therapies, we wanted to investigate the role of SHIP in canine osteosarcoma. Canine osteosarcoma is remarkably similar to human osteosarcoma. Carley will be investigating how SHIP contributes to canine osteosarcoma cell growth and survival mechanisms *in vitro* by evaluating the effect of novel SHIP inhibitors on established canine osteosarcoma cell lines."

As of now, Allen's team is still planning on moving forward, despite uncertainty caused by COVID-19. However, they have a back-up plan in case they are unable to get in the lab this summer. "Currently, the plan is still to go, but we have decided on a plan B that is a retrospective study to look at pain mechanisms with canine osteosarcoma," said Allen.

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Milan Piva will also be a second-year CVM student. She is from Parsons, Kansas, and went to Baker University for her bachelor's degree and attended Emporia State University, where she earned her master's degree in biology, ecology and biodiversity. Piva has been awarded a grant by the International Union for Conservation of Nature Species Survival Commission Crocodile Specialist Group (CSG), a group that supports the advancement of research for crocodiles, alligators and other crocodilian species. Piva's project will focus on American alligator anatomy and morphology. "I'll be 3-D reconstructing the phallus and the cloaca from MRI imaging. We will identify where different tissue types lie and how those function together to allow male and female alligator copulation" said Piva.

Milan Piva

Piva's project mentor is Brandon Moore Ph.D., assistant teaching professor in the Department of Biomedical Sciences. "Milan and I will better describe the anatomical structures and functions of the male American alligator cloaca," said Moore. "We will focus on the male alligator genitals found in the outer chamber of the cloaca and how muscles in the cloacal wall contract to evert the phallus during copulation. Adult male alligators are doing this right now throughout the country, as it is breeding season, and anatomically we do not know how the mechanism works in full detail."

Piva will be constructing her 3-D modeling remotely because of COVID-19, and the grant will go toward making her remote project possible. "The money from the grant will essentially allow us to be socially distanced. It will provide a computer and the software for me to work from home, rather than me having to go on campus and use a keyboard and mouse that everyone else has touched," said Piva. "It's a big change from what my original project was going to be. I was going to spend a lot of time on campus doing 3-D reconstructions, but also in the anatomy lab dissecting cloacae, making the histological sections, and analyzing the MRI scans. It has definitely changed, and now it will just be at home."

Piva is excited about the discoveries that can be made through her project. "Little is known about a lot of the crocodilian species and how their phallus functions during copulation. There is a lot to be discovered and it's an exciting project to be working on with Dr. Moore, who has extensive knowledge in crocodilian reproductive biology."

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MU Researcher Identifies Four Possible Treatments for COVID-19

While COVID-19 has infected millions of people worldwide and killed hundreds of thousands, there is currently no vaccine. In response, researchers have been evaluating the effectiveness of various antiviral drugs as possible COVID-19 treatments.

Kamlendra Singh is an associate professor in the MU College of Veterinary Medicine.

Now, a researcher at the **University of Missouri** has found that four antiviral drugs, including remdesivir, a drug originally developed to treat Ebola, are effective in inhibiting the replication of the coronavirus causing COVID-19.

Kamlendra Singh, an associate professor in the College of Veterinary Medicine, and his team used computer-aided drug design to examine the effectiveness of remdesivir, 5-fluorouracil, ribavirin and favipiravir in treating COVID-19. Singh found that all four drugs were effective in inhibiting, or blocking, the coronavirus' RNA proteins from making genomic copies of the virus.

"As researchers, we have an obligation to search for possible treatments given that so many people are dying from this virus," Singh said. "These antiviral drugs, if they turn out to be effective, all have some limitations. But in the midst of a global pandemic, they are worth taking a deeper look at because based on our research, we have reason to believe that all of these drugs could potentially be effective in treating COVID-19."

The coronavirus (SARS-CoV-2) that causes COVID-19, like all viruses, can mutate and develop resistance to antiviral drugs. Therefore, further testing in a laboratory setting and in patients is needed to better evaluate how the proposed treatments interact with the virus' RNA polymerase.

"Our goal is to help doctors by providing options for possible treatments of COVID-19, and to ultimately contribute in improving the health outcomes of patients suffering from the infectious disease," Singh said. "As researchers, we are simply playing our part in the fight against the pandemic."

Singh's research is an example of translational medicine, a key component of the University of Missouri System's NextGen Precision Health Initiative. The NextGen initiative aims to improve large-scale interdisciplinary collaboration in pursuit of life-changing precision health advancements and research.

"Feasibility of Known RNA Polymerase Inhibitors as Anti-SARS-CoV-2 Drugs," was recently published in *Pathogens.*

Story courtesy of Mizzou News Bureau
Contact: Brian Consiglio, 573-882-9144, consigliob@missouri.edu

MU offering online COVID-19 summer course to students of all majors

The eight-week course is open to all MU and UM System students and will be taught by faculty from all of MU's academic schools and colleges.

May 12, 2020
Contact: Brian Consiglio, 573-882-9144, consigliob@missouri.edu

COLUMBIA, Mo. – While the coronavirus pandemic is mainly a public health crisis, it has affected nearly every aspect of society. In response, the MU Department of Public Health, jointly administered by the MU School of Health Professions and the MU College of Veterinary Medicine, has created a new online class for the upcoming summer, *Interdisciplinary perspectives on COVID-19: The effect of epidemics on our health and social worlds.*

The eight week course is open to all MU and UM System students. The course will be taught by faculty from all of MU's academic schools and colleges, including the School of Medicine; Sinclair School of Nursing; Trulaske College of Business; Missouri School of Journalism; College of Engineering; College of Education; College of Veterinary Medicine; College of Agriculture, Food and Natural Resources; College of Arts and Science; School of Health Professions; College of Human Environmental Sciences; and the School of Law.

"It's not often we have a chance to respond to something in the moment as it is unfolding," said Enid Schatz, Department of Public Health chair and organizer of the new course. "This is an opportunity to not only showcase the diverse wealth of knowledge and expertise from faculty at Missouri's flagship institution, but also to remind students that hearing multidisciplinary perspectives enriches learning more than just looking at a problem from one point of view."

The course will cover the impact of the pandemic on areas such as the hospitality and travel industry, agriculture, schools, incarceration, homelessness, domestic violence, and the health care workforce. Additional topics will include humanities, social science, legal, medical and public health perspectives on the impacts of COVID-19 on people's lives.

"A crisis like this really impacts all of our social worlds," Schatz said. "For example, the meat packing industry has been disrupted, which in turn impacts the supply chain to grocery stores, which in turn might impact consumer purchasing decisions and the availability of certain goods. This is an issue that impacts so many different factors in our lives; being able to talk about it with experts from different fields can help us make sense of the environment we are in and what our place in it is."

Students interested in the course can search for *P_HLTH 4001-03/7001-03 Interdisciplinary perspectives on COVID19: The effect of epidemics on our health and social worlds* in myZou or contact mubphprogram@health.missouri.edu to get more information.

Enid Schatz, professor and chair of the Department of Public Health.

Uncovering Alzheimer's Disease

MU researchers examine impact of menopause on cognitive function

Characterized by a buildup of amyloid plaques in the brain, Alzheimer's is an irreversible disease that leads to memory loss and a decrease in cognitive function. More than 5 million Americans suffer with the brain condition, which is the sixth leading cause of death in the United States. While the causes of Alzheimer's are not fully understood, scientists believe genetic, lifestyle and environmental factors are involved in the disease's development.

Yuksel Agca is an associate professor in the MU College of Veterinary Medicine.

Now, researchers at the **University of Missouri** have found that the decline of reproductive hormones due to ovary removal, which is a model of menopause, can reduce cognitive function and potentially play a role in the development of Alzheimer's disease in women. The findings could help explain why women make up nearly two-thirds of people in the United States with Alzheimer's disease, although gender is just one of many contributing factors.

Yuksel and Cansu Agca, researchers at the MU College of Veterinary Medicine, Mutant Mouse Resource and Research Center (Link: http://www.mu-mmrrc.com/) and Comparative Medicine Program (Link: http://cmp.missouri.edu/?page_id=59), used rats experiencing surgically induced menopause to serve as Alzheimer's models at Discovery Ridge Research Park. After placing the rats in a special maze designed to test their behavior, they found that the rats with induced menopause displayed poor memory and learning, indicating a decline in cognitive function.

"We wanted to see what impact various interventions, such as hormone depletion from menopause, had on the potential development of Alzheimer's," said Yuksel Agca (Link: http://vpbio.missouri.edu/faculty/Yuksel_Agca.html), associate professor of veterinary pathology. "These animal models can be useful for future testing to examine the impact of a variety of other factors, such as alcohol, smoking, diet, exercise, hypertension or previous traumatic brain injuries."

Although there is no cure for Alzheimer's currently, studying how the age-related disease progresses over time in animals can help better inform the development of therapeutic drugs for humans, such as hormone replacement therapy. Lifestyle choices can also be made to decrease the risk of developing Alzheimer's disease.

"While some people are genetically predisposed, or more likely, to develop Alzheimer's, avoiding bad habits like an unhealthy diet or lack of exercise can help reduce the risks," lead author Cansu Agca said. "It's a complicated disease to understand because we all have variations in our genes, and we each respond to lifestyle choices and environmental factors differently, but this research can help us learn which factors are potentially contributing to or increasing the risk of Alzheimer's."

The research is an example of translational medicine, a major component of the NextGen Precision Health Institute. By partnering with government and industry leaders, the institute will empower interdisciplinary collaborations and life-changing precision health advancements targeting individual genetic, environmental and lifestyle factors.

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Mizzou CVM Student Learns from Summer Experiences Abroad

Tess Van Kan with a puppy in Thailand

Tess Van Kan, a native of Cleveland, Ohio, is a third-year student who had the opportunity to travel overseas to study and practice veterinary medicine. Last summer, Van Kan visited Thailand to study arboviral diseases, which are diseases that are spread by arthropods, but it became more than that. “The expedition turned out to really be an international effort, with scientists from many different countries coming together to gather data for a variety of different projects,” said Van Kan. “I was lucky to have the opportunity to help out with most of them, and have a very unique experience in versatility.”

Van Kan earned this opportunity through her connections within the CVM. Through her first summer at Mizzou she was involved in the Veterinary Research Scholars Program and began her own project studying tick-borne diseases. When she was in parasitology, her professor, Bill Stich (http://vpbio.missouri.edu/faculty/Roger_Stich.html), MS, PhD, mentioned knowledge gaps around ticks and their associated pathogens. This sparked Van Kan’s interest and she decided to inquire about opportunities to help. “I approached him one day after class to see if I could get involved with any of the work he was doing, or if he had any ideas that I could look into for next summer,” she said. “I expressed my interest in traveling abroad, and he just happened to have a colleague in Thailand who was organizing a field expedition for arthropod-borne disease research the next summer. The rest of the pieces came together from there.”

Van Kan working with a young Asian elephant in Thailand

In Thailand, Van Kan traveled widely, living in Bankok, Pattaya, Phuket, and the rural, mountainous Nan province. While there, she assisted in a variety of different studies with different teams. “The first team I helped with was researching how human behavior affected the prevalence of arboviruses in these rural villages by interviewing villagers and exploring their homes for standing water sources and mosquito larvae. I helped look for and collect the larvae while our team leader talked to the homeowners,” she said. “This was an amazing experience for me in learning how these villagers lived and they never let us go without an armful of fresh mango or dragon fruit, even after disrupting their day.”

The second team focused on mosquitos and testing them for disease. “We set traps in the morning and evening around places like rubber plantations, backyards, domestic animal enclosures, and tropical rainforests. We also collected mosquitos by hand in the evenings with a net and mouth tube, where I was more often the bait than not,” said Van Kan. “These mosquitos were then either frozen and identified to the species level or kept in containers for later testing and colony establishment.”

Some of the other teams focused on surveying soil nematodes in flooded rice fields. “We got to tromp out along precarious terrain and play in the mud. We collected GI parasites from local fish and amphibians, which were bought from local villagers who were experts at catching them,” said Van Kan.

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Not only did Van Kan conduct research, she was able to serve at a mixed animal practice. While she worked with more familiar small animals like dogs, cats, and rabbits, she also spent time with some more exotic species. “We made calls to botanical gardens and wildlife areas where I got to be involved with Asian elephants, Indian hog deer, Bengal tigers, junglefowl, southern cassowary, greater emus, hyacinth macaws, sun conures, southern river terrapins, and a variety of snakes.”

While hard at work, there was time for some personal adventures. Van Kan was able to visit Melbourne and Cairns, Australia, where she went diving on the Great Barrier Reef.

Through this experience, Van Kan says a big takeaway was the knowledge she gained about the different spectrum of public health challenges in these rural communities. “I think the lessons I learned have really encouraged me to keep an open mind and consider all angles of a problem before trying to find a solution.”

by Nick Childress

Van Kan being lifted by an adult Asian elephant

"Ovariectomy Influences Cognition and Markers of Alzheimer's Disease" (Link: http://vpbio.missouri.edu/VPBIO_docs/jad-73-jad190935.pdf) was recently published in *Journal of Alzheimer's Disease* (DOI 10.3233/JAD-190935). The research was supported by a University of Missouri-Research Incentive Fund. The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

Story courtesy of Mizzou News Bureau
Contact: Brian Consiglio, 573-882-9144, consigliob@missouri.edu

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

Link:

http://cvm.missouri.edu/the-d-v-m-the-deans-video-message-may-2020/

View the archive:

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

Second-Year CVM Student Earns “Life-Changing” Scholarship

When Ashley Silvey married her husband, John, a fourth-generation farmer, she became a part of his family’s diversified farming operation. Shortly before their wedding, they purchased several cows that were pregnant. Unfortunately, the cows experienced numerous birthing difficulties, which resulted in several cow and calf deaths.

“It was financially devastating,” Silvey recalled.

Silvey, a second-year veterinary student, drew upon that personal experience when discussing her goals for a career as a large animal veterinarian.

“There is a lot we can offer to farmers and ranchers,” she said. “I know I won’t have all of the answers, but by carefully listening to what clients are saying, and pulling up the history of their herd, we can come up with creative ideas to help develop sustainable practices with the goal of raising healthy animals using minimal resources.”

Ashley Silvey said she always dreamed of living and working on a farm and raising her family in a rural environment. She is seen here with husband, John, and sons Brodie and Briggs.

Silvey’s passion for farming and helping fellow producers and the animals they are raising is evident when she speaks. And when she writes.

“Upon completion of veterinary school, my long-term goals will be to create a safe environment for assisting farmers and ranchers with the healthcare of their livestock, protect the health and safety of consumers, while cultivating sustainable agricultural practices,” she explained in her essay for the Glenn J. and Mary K. James Veterinary College Scholarship.

She recently learned that she was chosen as the first recipient of the scholarship, which will fully fund all four years of her veterinary education. Glenn and Mary James provided for the scholarship in their estate plan. Married for 65 years, the Jameses worked together to run and maintain their Sarcoxie, Missouri, family farm. They directed that the scholarships help veterinary students who wish to study with an emphasis of providing care to large and farm animals.

“This is a life-changing blessing,” Silvey said. “It’s going to change everything for my family.”

Silvey has enjoyed spending time around animals since childhood. She is shown here at age 4 or 5 with a horse belonging to her uncle’s neighbor.

While the scholarship changed her family’s financial situation, it didn’t alter Silvey’s goals. “I still plan to work for my mentor, Dr. (Austin) Story, and I still plan to serve our community as a large animal veterinarian.” Story is a 1983 CVM alumnus.

Silvey spent most of her childhood in Colorado, where her extended family operated a ranch in Fort Collins. “I grew up riding. It was always something I enjoyed doing. My family also had cattle, and that is where my love for animals began,” she said.

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When she was 11, her family relocated to Hamilton. She participated in FFA throughout high school, holding offices as the chapter treasurer in 2006-2007 and vice president from 2007-2008. She graduated from Penney High School in 2008 and married her husband that same year.

Although she spent time during her high school junior and senior years shadowing Story, circumstances led her to pursue a career in nursing. She graduated from Missouri Western State University in St. Joseph in 2013 as a registered nurse.

Her first job was at Hedrick Medical Center in Chillicothe, Missouri, as a medical-surgical RN. After almost two years there, she accepted a position with the Clinton County Health Department in Plattsburg. She was with the health department for almost three years, and she and her husband were expecting their second child, when she realized, “Yes, I really want to go back to school and pursue veterinary medicine.”

Silvey with a bottle calf, one of a pair of twins, born on the family farm this past spring.

She requested permission to work part time so that she could resume job shadowing a veterinarian. “My boss was wonderful,” she recalled. “He was shocked, but very supportive.”

She continued part time work for eight months while accruing job-shadowing experience before returning to Missouri Western to complete prerequisite courses for the CVM’s veterinary curriculum. She earned a bachelor’s degree in biology in 2019. During that time, she sold her new truck and they paid off the loan on her car to help minimize expenses while she attended veterinary school.

“It wasn’t a spur-of-the-moment plan,” she said.

The CVM accepted Silvey and she joined the Class of 2023. She rents an apartment in Columbia and returns to the family farm in Hamilton as many weekends possible. When her academic schedule prevents her from going home, her husband or mother-in-law brings sons Brodie, 5, and Briggs, 3, to Columbia.

In her essay she stated, “Providing practical solutions that fall within a client’s financial means will greatly influence a client’s ability to make strategic, well-informed management decisions regarding their operation. Most importantly, first-hand experience regarding a producer’s livelihood struggles, and successes, will aid our client-doctor relationship when difficult decisions need to be made, in order to maintain fiscal responsibility and animal welfare during times of hardship and uncertainty.”

Silvey said her priorities were inspired in part after hearing Temple Grandin speak. Grandin is a professor, author and speaker on autism and animal behavior, and an advocate for the humane treatment of livestock.

Silvey said after she enters practice with Story, he intends to build a large central clinic, as addressed in her scholarship essay.

“Expanding our veterinary services will involve a safe working facility incorporating Temple Grandin philosophies, utilizing up-to-date technology and equipment (i.e. recently purchased hydraulic chute/table) that will efficiently meet the demands for large animal care. This facility will ensure the optimal standards for disease prevention and management, while also supporting producers by minimizing their costs in the long-term. By establishing a haul in facility, it is expected to decrease the risk of injuries, often associated with utilizing inadequate, and sometimes hazardous facilities on clientele farms.”

Grandin, who has autism, also encouraged Silvey to try to better understand people whose minds and abilities work differently.

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“Temple said a lot of things that made me stop and think about how to present myself to clients, so that they feel free to call me, not just when they have a problem, but when they want to discuss genetics of their herd or ways to enhance their operation. Not every operation is one size fits all, but I can say to them, ‘this is what we’re doing, and these are the results we’re seeing’,” she said.

Faculty Members Honored with Zoetis, Dadd Awards

University of Missouri College of Veterinary Medicine Dean Carolyn Henry recently announced the recipients of three faculty awards. The awards are usually presented during the CVM's annual Honors Banquet. However, because the 2020 banquet could not be held in person, Henry revealed the award winners during one of the college's weekly Town Hall meetings.

Christian Lorson

Faculty members nominate the recipient of the Zoetis Award for Veterinary Research Excellence, which is presented to a faculty member or graduate student whose research related to veterinary medicine has promise of national recognition. This year's winner is Department of Veterinary Pathobiology Professor and Associate Dean for Research and Graduate Studies Christian Lorson, PhD.

Lorson's lab comprises several research teams, whose investigations focus largely on translational medicine and neurodegenerative diseases, such as spinal muscular atrophy (SMA), spinal muscular atrophy with respiratory distress, Huntington's Disease, and others. Lorson is also the co-founder of Shift Pharmaceuticals, which is researching treatments for SMA.

Henry called Lorson a true leader for the college in research.

Patrick Hunt

She said he is, "Someone who understands translational research from basic ideas in a laboratory through models and into commercialization of products that not only help animals, but help people." She noted that Lorson a prime example of what the CVM can bring to efforts such as MU's Precision Health Initiative.

In accepting the honor, Lorson credited his team.

"I think what you really realize is that it's a team effort, all the time," he said. "Whether it's the administrative component or whether it's in the lab, it's never all about one person, it's always about the team. And I've been incredibly fortunate to have had a great team for a long time so special shout out to everybody in the lab, past and present. Thank you very much."

Henry then presented the Zoetis Distinguished Veterinary Teacher Award. The student body selects an outstanding teacher who, through ability, dedication, character and leadership, contributes to the advancement of the profession. The 2020 recipient is Patrick Hunt**,** DVM, MS. Until recently, Hunt was a clinical instructor in the Veterinary Health Center working in the Small Animal Emergency and Critical Care Service. He recently relocated to Cincinnati, Ohio.

The CVM Class of 2021 nominated Hunt for the award.

"Though many exemplary faculty members were nominated and voted for this individual stands out for his faciliatory teaching style teaching style and willingness to allow students to assume leadership on clinical cases," Henry read from Hunt's nomination letter. "This unconventional method results in clinical instruction which encourages mutual and respectful contributions from all students."

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The final award Henry presented was the Dadd Award, which honors excellence in veterinary medicine teaching as judged by peers.

“When you make enough of a difference in teaching that your peers in teaching recognize that, I think that’s a very special thing,” Henry said.

Leah Cohn

George Dadd was a veterinarian and physician born and trained in England. He promoted the earliest formal veterinary medical education in the United States. Dadd equated veterinary medicine to human medicine, sought the best students for veterinary medicine, and pioneered the use of anesthesia for clinical use in animals.

Henry announced that the recipient of the 2020 Dadd Award is Leah Cohn, DVM, PhD, DACVIM, a professor of small animal internal medicine.

John Middleton, DVM, PhD, DACVIM, a professor of food animal medicine, nominated Cohn for the honor. Middleton noted in his nomination letter that he had worked with Cohn for nearly 19 years and interacted with her not only at the college, but also in the American College of Internal Medicine.

“I have observed her teach students, mentor and teach house officers and graduate students, deliver continuing education, and speak to the public and news media,” Middleton wrote. “In all facets of these teaching activities, she is articulate and extremely well-versed in the subject matter. Most importantly, she is a skilled orator who delivers information to her audiences with clarity of thought and at a level of complexity suited to the particular group she is educating. As a teacher she sets high standards, while also understanding people, and she is conscientious about being inclusive and understanding of other’s perspectives.”

“Thank you so much,” Cohn responded. “I’m really really honored.”

Elizabeth Bryda Receives Faculty-Alumni Award

The Mizzou Alumni Association has named Elizabeth Bryda, PhD, the recipient of a Faculty-Alumni Award. A professor in veterinary pathobiology at the MU College of Veterinary Medicine, Bryda has been with MU since 2003.

Elizabeth Bryda

The Faculty-Alumni Awards recognize the achievements of faculty and alumni for their service to higher education. The awards focus not only on the individuals' achievements, but also on their role in promoting the best interests of the university.

During her 17 years of service to the CVM, Bryda has served as the director of the NIH-funded Rat Resource and Research Center (RRRC). "It's basically a one-stop shop for rat-related materials and services. Anyone who makes a rat model that is used for biomedical research can safely store and preserve their model," said Bryda. "We also distribute those rats around the world. We're one of only two of these types of repositories around the world, and the other is in Japan. We provide all kinds of services to assist investigators who use rats in their research.

Other accomplishments for Bryda include directing the MU Animal Modeling Core, where researchers can request the generation of mice and rats that have genetic alterations that can be used to study biology and diseases. She also teaches human genetics to undergraduate students; a grant and manuscript writing class to graduate students and gives a variety of genetic-related lectures and presentations. She is the co-Principal Investigator of a NIH-funded program for veterinarians seeking training in biomedical research and she co-directs the Comparative Medicine Program at MU.

Bryda says she is proud to receive the award. "It's really nice to know that I have colleagues and students who value what I do, and that what I do matters."

Daniel Davis, PhD, who was Bryda's nominator for the award and the assistant director of the MU Animal Modeling Core, says Bryda is more than deserving to be a recipient. "Dr. Bryda has been a pivotal part of my scientific career and I would not be where I am today without her mentorship and inspiration," he said. "She has a phenomenal track record of scientific accomplishments and provides an invaluable service to the university. Overall, Dr. Bryda is an exceptionally dedicated, generous, and intelligent scholar who represents the core values of Mizzou."

By Nicholas Childress

CVM Department of Veterinary Pathobiology Welcomes New Faculty Members

Wenjun Ma

The University of Missouri College of Veterinary Medicine welcomes Associate Professor of Virology Wenjun Ma, B.Vsc, M.Vsc, PhD. Ma will be working in the Department of Veterinary Pathobiology in the CVM, while also serving in the Department of Molecular Microbiology and Immunology in the MU School of Medicine. Ma, who is from China, earned bachelor's and master's degrees at the College of Veterinary Medicine at Northeast Agricultural University and the Graduate School of the Chinese Academy of Agricultural Sciences. He went on to earn a PhD at the Justus-Liebig-University in Germany, where he focused on molecular virology and biology. He then came to the United States in 2004 for his postdoctoral trainings, studying at Iowa State University and the National Animal Disease Center, USDA/ ARS.

Ma's professional experience began in 2008, where he worked as a research professor for Kansas State University. In 2011 he became a tenure-track assistant professor at Kansas State University. He remained there until May 2020, while also serving as an adjunct professor at the University of Nebraska-Lincoln. That is when he joined Mizzou.

Ma's expertise is in studying different viral and zoonotic diseases and development of vaccines and antivirals for different pathogens, including Rift Valley fever virus and several forms of the influenza virus, such as those that cause swine flu and bird flu. He is currently working on novel bat flu virus supported by the NIH and seeking a grant to support research of North American bats and coronavirus.

Outside of work, Ma enjoys participating in sports as a hobby. He also enjoys fishing, but struggles to find free time because of his work. "I love to play tennis, table tennis, soccer, swimming and basketball. I've tried playing against some young guys and gotten hurt, but I love the competitiveness of sports," he said.

Ma is ready to get started with his research at MU. "I'm very excited. I believe MU will provide a good infrastructure and will be a good opportunity for me," he said. "Of course, we will have some challenges, but I think this will be good for my career development. I believe I will have more and more opportunities for different collaborations. I'm very excited to be at MU and move forward with my new colleagues."

The CVM also welcomes Associate Research Professor for Veterinary Pathobiology Kamlendra Singh, PhD. Singh is from India, where he graduated from Banaras Hindu University in the state of Uttar Pradesh. He then came to the United States for his postdoctoral degree at the Rutgers New Jersey Medical School, where he began his professional career as an instructor and adjunct assistant professor.

Continued on next page ——->

Kamlendra Singh

Singh came to Mizzou in 2009, and has been in the Bond Life Science Center, working as an assistant research professor and then associate research professor in the Department of Molecular Microbiology and Immunology. “I have been at Mizzou for 11 years, and have been working in the same office,” said Singh. “I like Mizzou for research. It’s a very nice working environment here at the BLSC, and there has been a lot of support from my peers. There are not enough words to say about how supportive they have been.”

Singh says the reason he decided to switch departments is because he wants to teach. “I always liked teaching. My father was a teacher, so that is in my genes,” he said. “I approached Dr. George Stewart, the former chairman of veterinary pathobiology, and asked him if there was an opportunity for me to join his department.”

When asked by the chairman why he wanted to join, he mentioned his desire to teach. “I like teaching and I wanted to interact with the students,” he said. “That’s what I was missing. I also think there are better opportunities in the College of Veterinary Medicine.” After Stewart stepped down as the chair of the Department of Veterinary Pathobiology, interim Chair Brenda Beerntsen, PhD, completed the process of bringing Singh to the CVM.

Singh earned a PhD in physics. He has a bachelor’s degree in physics, mathematics and chemistry, and a master’s degree in physics with specialization in electronics. He is also a trained biochemist and virologist. He has been involved with computer-aided drug design, and has three patents through MU. “The idea now to transfer to the CVM is to work on viruses that are veterinary related,” said Singh. “I’ve done a lot of research on HIV and I have been involved with coronavirus research ever since I moved to MU.”

Singh’s research paper on coronavirus research was recently picked by the journal *Pathogens* for the cover. “In the beginning when I heard about this coronavirus I didn’t pay that much attention. In my experience many coronaviruses have emerged and disappeared,” he said. “I myself thought, this will probably go away.”

When it started getting worse in February, he and his collaborators at the Karolinska Institute in Stockholm, Sweden (Singh has an associate faculty appointment in the Karolinska Institute), began looking into it. Singh began using his knowledge of computer-aided drug design and coronavirus to search for existing drugs that may be able to be used against coronaviruses. “We found four inhibitors that were very promising,” he said. “We submitted the paper and proposed that people should use these drugs in clinics. One was already being used, but three of these drugs went to the clinics and are giving good results.”

“It makes me proud, it makes my school proud, it makes my workplace proud, and it makes my department proud,” he said of the cover selection by *Pathogens.*

Outside of work, Singh enjoys playing tennis and is a former professional cricket player. “I played for a British league in 1980 and 1981. Sometimes I think of my career and think I should have kept it up,” he laughed. “Everything happens for a reason and I’m happy with what I’m doing.”

He said he is excited to join the CVM. “Every faculty member and Dean Henry have been very helpful, as well as Associate Dean Chris Lorson, and the chair Dr. Beerntsen,” he said. “I am looking forward to teaching on top of my research.”

By Nick Childress

MU Announces $1 Million Gift from Alumnus to College of Veterinary Medicine

Unrestricted gift will direct resources to the college's greatest needs

MU alumnus Reuben Merideth has pledged a $1 million contribution to the MU College of Veterinary Medicine. The gift, designated for the Dean's Fund for Excellence, will allow the college to direct financial resources to meet any of the college's needs.

Reuben Merideth

"Dr. Merideth is not only a respected leader in his profession of animal ophthalmology, but also a special friend here at Mizzou and in this college," said Carolyn Henry, dean of the MU College of Veterinary Medicine. "He continues to be invested in the education that our students receive and although he is known worldwide for his expertise in ophthalmology, he has never forgotten his Missouri roots and his alma mater."

Merideth earned a bachelor's degree in business administration in 1970 and a doctoral degree in veterinary medicine in 1978, both from MU. Merideth was a National Institutes of Health Fellow in comparative ophthalmology at the University of Florida before founding Eye Care for Animals, the world's largest veterinary ophthalmology organization, in 1981.

"Dr. Merideth's gift of unrestricted support will help Mizzou achieve excellence by allowing the College of Veterinary Medicine to respond immediately to its most critical needs," said Mun Choi, UM System president and interim MU chancellor. "We want to thank Dr. Merideth for his incredible generosity and we are inspired by his leadership."

Video Link: https://vimeo.com/428610115

Merideth is the author of more than 30 scientific articles and a contributing author of five veterinary textbooks. His clinical interests include glaucoma, a condition where a buildup of pressure in the eye causes damage to the optic nerve, and cataracts, which are cloudy areas in the lens of the eye causing blurry vision. A former president of the Arizona Veterinary Medical Association Counsel, Merideth is board certified by the American College of Veterinary Ophthalmologists, the highest medical designation for veterinarians.

"I could not list all the people at Mizzou who showed great acts of kindness in my education, as my classmates, professors and the staff were all an integral part of my training to become a veterinarian," Merideth said. "Nothing makes me prouder than to say I am a graduate of the MU College of Veterinary Medicine, which is training the next generation of veterinarians to provide services to livestock and pet owners throughout the state. This gift illustrates my confidence in the college as it has adapted to keep students, faculty, staff and clients safe while advancing its mission during the pandemic."

Story courtesy of Mizzou News Bureau
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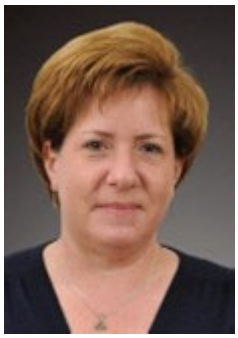
Annual Dean's Impact Award Winners Announced

David Wilson, Vicki Miller and Bobby Colley have been named the recipients of the 2020 Dean's Impact Awards. The annual awards, established in 1993, honor faculty, staff or individuals from outside of the college for sustained and significant positive impact on CVM programs.

David Wilson

David Wilson, DVM, MS, DACVS, was named the recipient of the faculty Impact Award for his service to the CVM since 1988. Wilson has spent his entire 32-year veterinary career at Mizzou since completing a residency in equine surgery at the University of Illinois in 1988. He began as a clinical instructor of equine surgery, became a full professor in 2006, and has served as service leader for Equine Medicine and Surgery, director of equine research at Middlebush Farm, and associate chair of the Department of Veterinary Medicine and Surgery. Since 2008 he has led the Veterinary Health Center as the director. A nomination letter for Wilson reads, "Dr. Wilson is a tireless, dedicated individual who is always up for a new challenge. In addition to the primary VHC in Columbia, he has been instrumental in the development of our specialty satellite hospital in Wentzville and our emergency satellite in Kansas City, and continues to provide directorship to both of those hospitals as well. His commitment and continual efforts and attention to these satellites, and to the doctors and staff within, contribute mightily to their success. I would be hard-pressed to find another faculty member who has demonstrated a more enduring love and passion for the University of Missouri's CVM and the VHC than Dr. David Wilson."



Vicki Miller

Vicki Miller was named the recipient of a staff Impact Award for her service to the CVM since 1992. Miller began as an administrative associate, and now serves as a fiscal officer and business administration manager in the CVM. Miller has been touted as the "Dog Whisperer" of the CVM, as she personally trains dogs in agility. In 2019, Schatzi, a dog trained and owned by Miller, won the Master Agility Champion title and was ranked the top German Shepherd dog in the American Kennel Club Agility Invitational competition in Orlando, Florida. One of many nomination letters for Miller reads, "The magnitude of Vicki's knowledge, skills, integrity, commitment, achievements, clarity of thought, and attributes are the reasons for my nomination of Vicki Miller for the Dean's Impact Award. I whole-heartedly and without reservation recommend Vicki for the award based on her extraordinary credentials, commitments, and accomplishments."

Bobby Colley

Bobby Colley was also named the recipient of a staff Impact Award to recognize his service of more than 30 years in the Department of Biomedical Sciences. Colley serves that department as a gross anatomy teaching support specialist. Colley is known for his attention to detail, outstanding organizational skills and for how well he works with the anatomists in the department. A nomination letter for Colley reads, "Since Bobby was hired, Anatomy Teaching faculty have received over 20 Teaching Awards. Bobby, as an integral part of the Anatomy Teaching Team, deserves part of the credit for each of these awards. It would be a fitting reward for his loyalty and outstanding service that he now be recognized by our college as the 2020 recipient of the Dean's Impact Award."

Precision medicine treatment saves family pet

Canine bone cancer successfully treated with vaccine made from dog's own tumor

June 18, 2020

Ruby had always been an active dog.

So when Kristen Constable and her family returned home from vacation and discovered their beloved greyhound limping, they assumed Ruby had simply injured herself while playing. Nothing too serious.

But a trip to the family veterinarian led to a referral to the University of Missouri College of Veterinary Medicine, which resulted in a devastating diagnosis — Ruby had osteosarcoma, a common type of bone cancer in dogs. The prognosis was grim, probably less than a year to live after amputation of the cancerous limb and several rounds of chemotherapy, not to mention all the side effects that go with it.

Video Link: https://youtu.be/97YOm2MNIBQ

The Constables were crestfallen.

But Brian Flesner, an assistant professor of oncology, and Jeffrey Bryan, a professor of oncology, at the MU College of Veterinary Medicine and their team offered the family an alternative. Ruby could enroll in a first-of-its-kind study to help advance a patient-specific, precision medicine treatment for bone cancer in dogs.

That was more than three years ago.

Today, 12-year-old Ruby is living proof that Bryan and his research team have advanced an exciting new method for treating osteosarcoma in dogs that can significantly prolong the life of some patients without the use of chemotherapy. By creating a vaccine from a dog's own tumor, MU scientists worked with ELIAS Animal Health, the developers, to target specific cancer cells and avoid the toxic side effects of chemotherapy, while also opening the door to future human clinical trials. The U.S. Food and Drug Administration recently placed the process on the fast track for treatment of a form of cancer in humans called glioblastoma multiforme or GBM.

Jeffrey Bryan, a professor of oncology at the MU College of Veterinary Medicine, with one of the many dogs his team has treated.

"What we learned in this dog study — the successes and failures — is already informing what is being done in human studies," Bryan said. "We hope to expand the types of cancer that we treat using this method."

Precision medicine — or treatments tailored to the patient like the vaccine and cell treatment Ruby received — will be a key component of the NextGen Precision Health Initiative by helping accelerate medical breakthroughs for both patients in Missouri and beyond. Precision medicine can be based on someone's own DNA or – in Ruby's case – based on specific tumors growing in one's body.

Bryan will serve as the Cancer Faculty Research Lead at the NextGen Precision Health Institute slated to open in Fall 2021. Today marked a topping-off ceremony for the facility.

Osteosarcoma is not common in humans, representing only about 800-900 new cases a year in the U.S. About half of those cases are reported in children and teens. The disease is much more common in dogs — especially big dogs — with more than 10,000 cases a year in the U.S.

Bryan examines a dog at the MU College of Veterinary Medicine, where students are members of his research team.

In Bryan's study, researchers used the dog's own tumor to create a vaccine that was then injected into the patient to stimulate anti-tumor lymphocytes. The lymphocytes were then collected and expanded outside the body by ELIAS to create a transfusion of the patient's immune cells.

"Essentially, the lymphocytes are exposed to chemicals that make them very angry and ready to attack the targeted cells," Bryan said. "Then, we transfuse them back into the patient's blood like we would a blood transfusion."

The result: angry lymphocytes hunt down the cancer cells and kill them. The whole process is over in about seven to eight weeks. Overall, the dogs like Ruby who received the vaccine had more than 400 days of remission compared to about 270 days for dogs receiving chemotherapy in a separate study by the National Cancer Institute.In the near future, Bryan said researchers plan to launch a similar patient-specific, precision medicine study aimed at treating melanoma in dogs.

For Constable, the gratitude of still having Ruby is eclipsed only by the joy of watching her race across the yard and leap into the air for a toy.

"Honestly," she said, "you couldn't ask for a better dog than Ruby."

Bryan is a member of the ELIAS Animal Health scientific advisory board.

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

Video Link:

http://cvm.missouri.edu/the-d-v-m-the-deans-video-message-june-2020/

View the Archive:

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