



Spotlight on Research

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University of Missouri College of Veterinary Medicine

Office of the Associate Dean for Research and Postgraduate Studies

Carolyn Henry, DVM, is the CVM associate dean for research and graduate studies.

This office provides information regarding research programs available to the faculty of the College, details on postgraduate programs, and assistance with grant proposal development and preparation for submission to funding agencies.

The Spotlight newsletter highlights CVM research in the news, featured research programs, awards, publications and research events.

News from funding agencies and the MU Office of Sponsored Programs Administration will be frequently updated and available on the CVM [website](#).

Please send suggestions and material for inclusion in the next newsletter to this office. Your input and suggestions are greatly appreciated!

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The Association of American Universities (AAU) metrics play a prominent role in MU's strategic plan. Read about the [indicators](#) that are used to assess current and potential new AAU members.

Are you considering publication, but wondering about the impact of a particular journal? Check out the [Journal Citation Reports](#) and click the link that says *establish a new session*.

Featured Faculty

Deborah Anderson, PhD, is an associate professor of veterinary pathobiology.



Deborah Anderson, PhD

Anderson's research is focused on *Yersinia pestis*, the causative agent of the plague. In particular, she is working to understand the host-pathogen interactions whereby virulence factors allow evasion and manipulation of the host innate immune system.

Continued on page 2

Featured Faculty continued from page 1

Anderson completed her PhD at UCLA and her postdoctoral training at the Howard Hughes Medical Institute in the UCSD School of Medicine. A focus on disease was a natural career progression as she continued to develop her own research program. Early on, she had an opportunity to study anthrax, but she chose instead to study *Yersinia pestis* because the organism is much easier to contain, the DNA is easier to manipulate and existing tools available for other gram negative bacteria can be readily adapted. Most importantly, the many unanswered questions about the *Y. pestis* lifecycle and how the organism survives between outbreaks of the plague are what intrigue Anderson.

Transmission of *Y. pestis* can occur through the bite of infected fleas or through inhalation of contaminated material. The host is asymptomatic at first and typically unaware that infection has taken place. Virulence factors suppress inflammation initially by an unknown mechanism, but within 48 hours, the bacteria begin to multiply rapidly and cause a large pro-inflammatory response. Death of the host is caused by pneumonia, sepsis and ultimately heart failure. Anderson's goal is to better understand the rapid progression of *Y. pestis* infection and develop a therapeutic treatment for the resulting clinical state.



Deborah Anderson, PhD

Anderson says that *Y. pestis* provides a useful model system to understand how organisms can become vector-borne. DNA manipulation is relatively easy in *Y. pestis* and Anderson uses various *Y. pestis* strains to tease out the mechanisms of the infection process. Strains that lack virulence can be cultured in a regular laboratory setting whereas virulent strains must be studied in a biocontainment facility such as the MU Laboratory for Infectious Disease Research (LIDR). Dr. Anderson uses mice, rats and fleas to monitor and map the disease progression, understand how the bacteria grow, analyze the pathology of the host and measure the clinical response to potential treatments.

NIH is particularly interested in the development of broad spectrum therapeutics for biodefense applications related to infectious diseases that emerge naturally or are deliberately introduced as an act of bioterrorism. Anderson has received funding from the National Institute of Allergy and Infectious Diseases to test potential therapeutics against inhalational *Y. pestis*. Although antibiotics are available, the infection still kills 2,000 people per year worldwide.

In addition to NIH, Anderson was recently invited to present her work to the Department of Defense. There is a need for effective therapeutics to be available if and when military soldiers are exposed to the plague, and it is possible that a terrorist could try to engineer a more virulent strain of *Y. pestis*. Anderson hopes that her meeting with the agency will open the door for additional funding opportunities.

To fully understand the complex nature of *Y. pestis* infection and develop an effective treatment or prevention, Anderson recognizes the need for interdisciplinary collaboration. She collaborates regularly with immunologists and pathologists and mathematical modeling is increasingly being used to visualize the progression of sepsis in relation to the decline of the immune system. Since the *Y. pestis* pathogen continuously evolves, there is also a need for collaboration in genomics, bioinformatics and ecology. Most recently, archeologists have also joined the field, as bacterial DNA from 14th century black death skeletons is being analyzed to understand how the plague has evolved over centuries.

According to Anderson, the plague will continue to evolve and exist for many years into the future and it is important to understand how this organism is able to survive both inside and outside of the host.

In the News

The past few months have found many College of Veterinary Medicine faculty and researchers in national and international news venues. Here is a sampling:

ScienceNewsline

Potential Cholesterol Lowering Drug Has Breast Cancer Fighting Capabilities

Published June 17, 2014

Researchers at the University of Missouri have proven that a compound initially developed as a cholesterol-fighting molecule not only halts the progression of breast cancer, but also can kill the cancerous cells.

“Cholesterol is a molecule found in all animal cells and serves as a structural component of cell membranes,” said Salman Hyder, the Zalk Endowed Professor in Tumor Angiogenesis and professor of biomedical sciences in the College of Veterinary Medicine and the Dalton Cardiovascular Research Center at MU. “Because tumor cells grow rapidly they need to synthesize more cholesterol. Scientists working to cure breast cancer often seek out alternative targets that might slow or stop the progression of the disease, including the elimination of the cancerous cells. In our study, we targeted the production of cholesterol in cancer cells leading to death of breast cancer cells.”

Previous studies suggest that 70 percent of breast cancers found in women are hormone dependent and can be treated with anti-hormone medicines such as tamoxifen. Although tumor cells may initially respond to therapies, most eventually develop resistance which causes breast cancer cells to grow and spread. Cholesterol also can contribute to the development of anti-hormone resistance because cholesterol is converted into hormones in tumor cells. Therefore, these cholesterol-forming pathways are attractive therapeutic targets for the treatment of breast cancer.

Using compounds initially developed by Roche Pharmaceuticals for the treatment of high cholesterol, which reduces cholesterol in a different manner than the widely used statins, Hyder and his team administered the molecule to human breast cancer cells. They found that the compound was effective in reducing human breast cancer cell growth and often caused cancer cell death. Most interestingly they found that the cholesterol lowering drug they tested destroyed an estrogen receptor, a protein which encourages the tumor cells to grow.

Equipped with this information, Hyder and the team tested the results in mice with breast cancer. Following injection of the compound, Hyder found that the molecule was effective at killing breast cancer cells by reducing the presence of estrogen receptors in tumor cells, Hyder said.

“The compound exhibited anti-tumor properties in both human samples, which were outside the body, and in samples that were administered by injection into the mice,” Hyder said. “In both cases, the proteins that cause tumors to grow were eliminated, leading to more aggressive cell death.”

Hyder believes that further clinical testing can lead to a drug that fights both cholesterol and cancer.



Salman Hyder, PhD

Exercise motivation might be in the genes, scientist says

Published March 13, 2014

Studies showing that most Americans are inactive — engaging in less than an hour’s worth of moderate exercise a week — are so commonplace that they have lost their shock value. Unlike cigarette smoking, for which there are strong anti-smoking campaigns, being inactive carries with it little stigma. Couch potatoes even engage in some witty gallows humor about their lifestyle.

But Frank Booth isn’t laughing.

Booth, an MU professor of biomedical sciences, claims that inactivity can be lethal. Just as smoking is linked to more than 400,000 deaths in the United States each year, inactivity places tens of millions of Americans at risk for major chronic ailments (coronary heart disease, various cancers, Type 2 diabetes, hypertension, obesity) and early death.

“Relative risk of death correlates to how active you are during life,” Booth said at his March 8 lecture on genetics and exercise in Monsanto Auditorium, part of MU’s Saturday Morning Science lecture series. “There is one U.S. death every 43 seconds due to lack of exercise,” he said.

But telling people to exercise hasn’t done much for people’s motivation, despite researchers’ documenting the health consequences, Booth said.

Perhaps science can offer another approach.

Booth’s lecture focused on why some people seem more motivated to exercise than others. Researchers have attributed the reasons to culture, geography, psychology, hormones and — the point of Booth’s lecture — genes. Booth is leading research to develop a way to tweak certain genes in sedentary people to overexpress exercise motivation.

But this assumes that genes have something to do with motivating people to spend their leisure hours on a couch or a treadmill. Since 2009, Booth has examined this question in his research. He and colleagues have interbred two sets of lab rats — one group to become couch potatoes and the other exercise fanatics. Then, through MU’s DNA Core Facility, they examine gene differences between the groups.

Through selective breeding of nine generations, Booth created indolent rats motivated to run on the wheel for 10 minutes a day, and Olympian rats who ran six to eight hours. “There was a 10-fold difference of animals wanting to run on their own,” he said.

He and colleagues discovered that exercise motivation appeared to have a genetic component. In the Olympian rodents, researchers isolated genes high in dopamine, the pleasure molecule. These animals apparently got a rush from exercise. The couch-potato rodents did not, findings suggest.

Booth hopes to help develop a non-addictive drug that stimulates genes in inactive people to get them to exercise.

Read the *MIZZOU* magazine [feature](#) on Frank Booth and the biology of exercise.



Frank Booth, PhD

Local farmers beef up knowledge on calf reproduction

Published March 9, 2014

The University of Missouri Extension Center hosted its first ever beef reproduction field day Saturday.

Heather Smith, livestock specialist with Callaway County’s extension office, met with livestock producers in the county and asked what they wanted to explore more within their field. She said there was a special interest in fetal aging and sexing. From there, she went to veterinarians and specialists, asking to participate.

“My mind ran with it,” Smith said.

Smith said she hoped livestock producers would be able to develop the new techniques they’ve learned at the field day on their own farms.

“It’s important to their operation and their bottom line,” she said.

Participating livestock producers were able to dive into four different topics all relating to beef reproduction: fetal aging and sexing, artificial insemination, calving assistance and estrus synchronization.

While many people feel artificial insemination is a difficult task, Dan Busch, a specialist with Select Sires, said it’s more manageable than people’s preconceived notions.

Busch had the reproductive tracts of cows available for livestock producers to practice artificial insemination and was available for questions.

He told participants that sperm counts depend on the individual bull and some can produce more than 300 counts at once.

Busch added there isn’t much of a quality difference in fresh and frozen semen, but frozen sperm is transportable and is more easily collected year round.

Dawna Voelkl, DVM, veterinarian and assistant professor at the university’s veterinary school, led the session on calving assistance.

“I want to give them criteria for when to intervene (with calving) and when they need a vet,” Voelkl said.



Dawna Voelkl, DVM, assistant professor with the University of Missouri’s College of Veterinary Medicine, demonstrates calving techniques during the university’s Beef Reproduction Field Day 2014 at Linnenbringer Farms. Photo by Brittany Ruess.

Dog Ownership Benefits Families of Children with Autism

Published April 14, 2014

Many families face the decision of whether to get a dog. For families of children with autism, the decision can be even more challenging. Now, a University of Missouri researcher has studied dog ownership decisions in families of children with autism and found, regardless of whether they owned dogs, the parents reported the benefits of dog ownership included companionship, stress relief and opportunities for their children to learn responsibility.

“Children with autism spectrum disorders often struggle with interacting with others, which can make it difficult for them to form friendships,” said Gretchen Carlisle, a research fellow at the Research Center for Human-Animal Interaction (ReCHAI) in the MU College of Veterinary Medicine. “Children with autism may especially benefit from interacting with dogs, which can provide unconditional, nonjudgmental love and companionship to the children.”

Carlisle interviewed 70 parents of children with autism. Nearly two-thirds of the parents in the study owned dogs, and of those parents, 94 percent reported their children with autism were bonded to their dogs. Even in families without dogs, 70 percent of parents said their children with autism liked dogs. Many dog-owning parents said they specifically chose to get dogs because of the perceived benefits to their children with autism, Carlisle said.

“Dogs can help children with autism by acting as a social lubricant,” Carlisle said. “For example, children with autism may find it difficult to interact with other neighborhood children. If the children with autism invite their peers to play with their dogs, then the dogs can serve as bridges that help the children with autism communicate with their peers.”

Parents of children with autism should consider their children’s sensitivities carefully when choosing a dog in order to ensure a good match between pet and child, Carlisle said.

“Bringing a dog into any family is a big step, but for families of children with autism, getting a dog should be a decision that’s taken very seriously,” Carlisle said. “If a child with autism is sensitive to loud noises, choosing a dog that is likely to bark will not provide the best match for the child and the family. If the child has touch sensitivities, perhaps a dog with a softer coat, such as a poodle, would be better than a dog with a wiry or rough coat, such as a terrier.”

Carlisle recommends parents involve their children with autism when choosing a dog.

“Many children with autism know the qualities they want in a dog,” Carlisle said. “If parents could involve their kids in choosing dogs for their families, it may be more likely the children will have positive experiences with the animals when they are brought home.”

Although her study only addressed dog ownership among families affected by autism, Carlisle said dogs might not be the best pet for every child with autism.

“If you know one child with autism, you know one child with autism,” Carlisle said. “Dogs may be best for some families, although other pets such as cats, horses or rabbits might be better suited to other children with autism and their particular sensitivities and interests.”

The study, “Pet Dog Ownership Decisions for Parents of Children with Autism Spectrum Disorder,” was published in the *Journal of Pediatric Nursing* earlier this year.



Gretchen Carlisle, PhD, MEd, RN

Toxic Fungus Appears in Missouri Pastures

Published June 30, 2014

The first two weeks of July are prime time for ergot to appear in common pasture grasses, said University of Missouri Extension forage specialist Craig Roberts.

Wet, cool weather, followed by heat and humidity, creates favorable conditions for the disease. “With the amount of moisture in the ground and in the plants, the state turns into an incubator when it gets hot,” Roberts said.

Ergot, a fungus, produces toxic alkaloid compounds. “It will be another ergot year,” said Tim Evans, toxicologist in the MU College of Veterinary Medicine. Ergot appeared in pockets of Missouri in 2013.

Callaway County residents Robert and Linda Schaefer reported ergot in fescue pastures on Wednesday. It was spotted by a USDA staff member who was making a farm visit.

They have cattle grazing on the pasture and needed know what to do. Roberts and Evans told them to cut the pasture to a 4-inch height and bale later. “This removes toxic seed heads and low quality stems,” he said. “It also stimulates regrowth, which we might see with this year's rainfall.”

Roberts advises against feeding infected seed heads to livestock. If hay is made, producers should be aware that at least half of the alkaloid concentration remains, even if the hay is field cured and stored for more than a year.

Time is critical, Evans said, because ergot infestation can potentially kill cattle and, even, horses, especially when it hot and humid. The toxins constrict blood vessels, increase respiration rates, raise core body temperatures and limit blood supplies to the extremities of animals. Ergot poisoning sometimes is confused with fescue toxicosis, which is commonly referred to as “fescue foot” in the winter and “summer slump” during the hotter times of the year.

Evans said ergot poisoning can look like fescue toxicosis on steroids.

Cattle poisoned by ergot, like those with “summer slump,” often have elevated body temperatures and seek relief in the shade or stand in water to cool off. Other symptoms can include overall malaise characterized by rapid breathing, decreased appetite and milk production.

However, ergot can also cause abortion in pregnant cows, possible sloughing of the switches of tails and tips of ears, even during the summer, severe lameness and potentially death.



Tim J. Evans, PhD, DVM



Ergot bodies on seed heads look like mouse droppings. The ergot bodies are easily visible in the seed head of cereal grains such as barley, oats, wheat, triticale and rye as well as many common grasses such as timothy and tall fescue.

Ergot may give a slight black cast to an infected field. “Once you start to look for it, it's really evident,” said Mrs. Schaefer.

Ergot also can be toxic to humans and other ruminants, llamas and alpacas, swine and, even, dogs.

Watch [video](#) of the story.

Chemical found in plastics – and now in our water – makes male turtles develop more like females

Published June 30, 2014

The turtles are in trouble. A chemical found in Missouri’s rivers and streams can influence the sex organs of developing turtles, making males more like females, researchers say.

A pilot study conducted at the University of Missouri showed that the synthetic chemical bisphenol A — or BPA, which is known to mimic estrogen and disrupt hormone levels in animals — can alter a turtle’s reproductive system after exposure in the egg. Turtles are perfect creatures for this type of study, because their sex is determined by the temperature of the environment during their development in the egg.



Cheryl S. Rosenfeld, PhD, DVM

The researchers dropped a liquid form of the chemical onto hundreds of eggs that were incubated at cooler temperatures required to produce male turtles. A few months after they hatched, the turtles’ sex organs were removed and studied. The male turtles had developed gonads that were closer to ovaries than testicles.

The BPA essentially overrides the temperature in determining the sex of the turtle, creating an animal that is probably unable to reproduce, Deem said.

The researchers used the same levels of BPA that were found in samples from Missouri waterways including Perouque Creek in St. Charles County, James River in Nixa and Perche Creek in Columbia. The estrogen-like chemical is found in plastics and is thought to contaminate more than 40 percent of U.S. rivers. Estrogen also enters the waterways through the urine of men and women, especially pregnant women and those taking birth control pills. Waste water treatment plants cannot fully remove hormones, sending them back into the natural water system.

The study on turtles is a good indicator of the overall health of the ecosystem because the reptiles live in oceans, rivers and on land, scavenging food from decaying plants and animals.

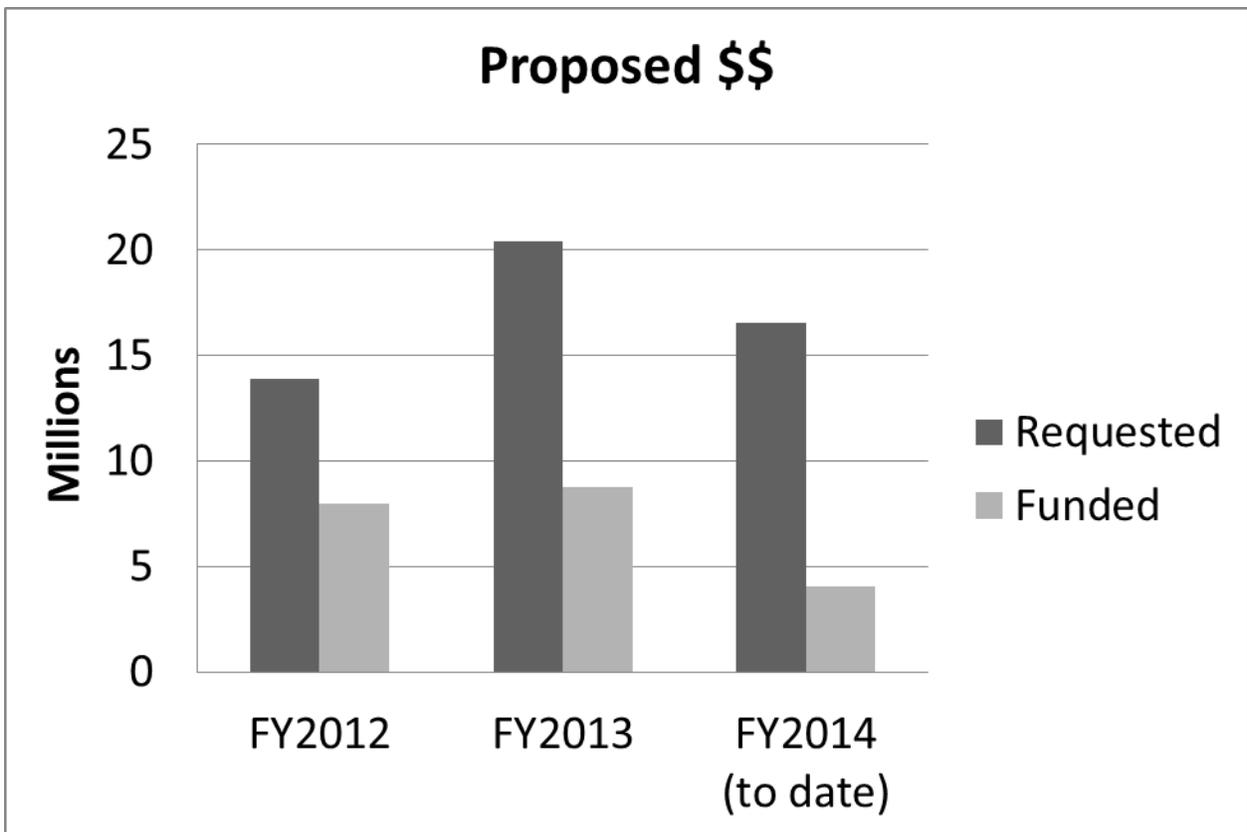
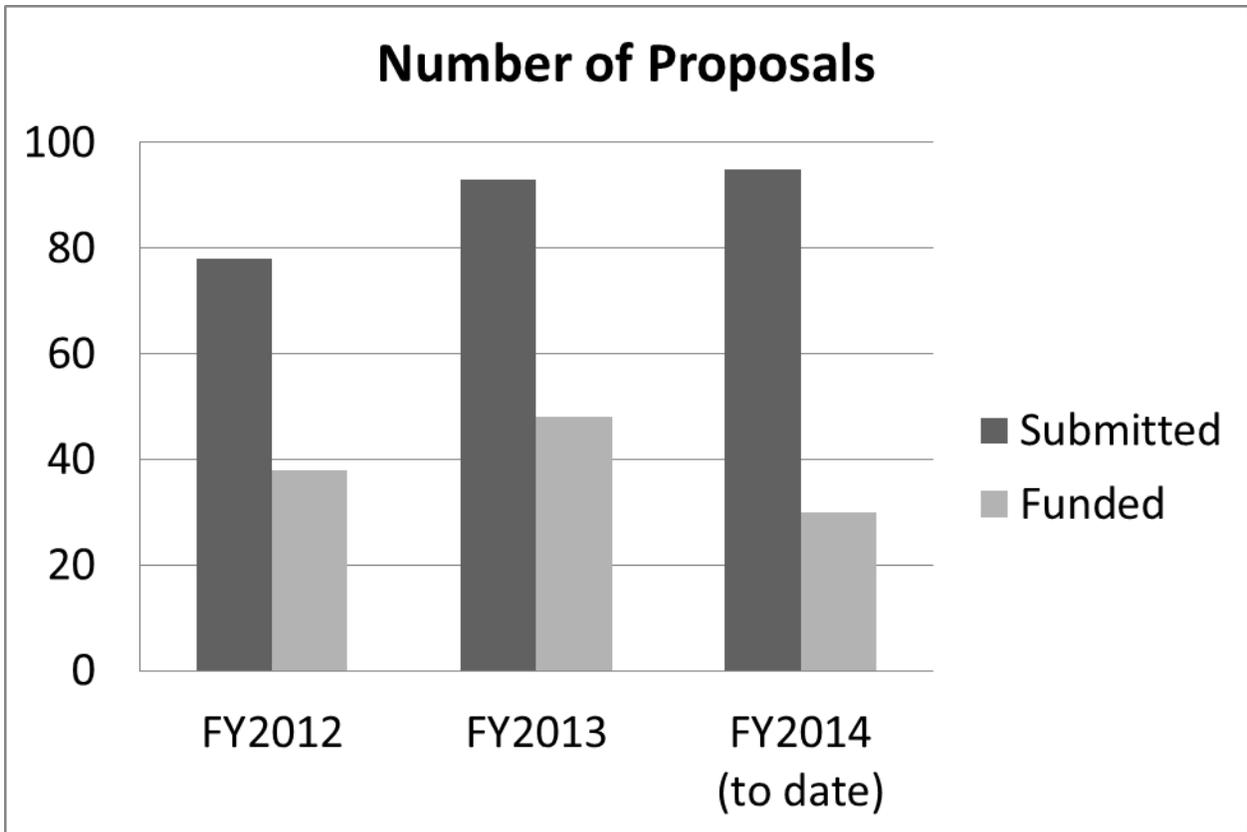
“We have some environmental issues that are impacting wildlife,” Deem said.

The researchers from the university, the zoo, Westminster College and the U.S. Geological Survey recently received a \$250,000 grant from the Mizzou Advantage research project to continue the study and compare results among fish, mice and turtles. They also hope to learn whether the introduction of synthetic and natural hormones alters the animals’ DNA, which could create problems in future generations.

The changes already seen in animals’ reproductive systems indicate the potential for the same effects in humans, the researchers said. Urinalysis has shown that 93 percent of people have detectable BPA levels in their bodies from exposures to plastics or industrial fumes, according to the Centers for Disease Control and Prevention.

“If that’s happening in (animals), that would suggest it could be happening in humans and babies as well,” said Cheryl Rosenfeld, associate professor of biomedical sciences at the University of Missouri.

The [full story](#) is available online.



External Grants Awarded 2014 - Totaling \$5,140,528

PI/Co-Investigator(s)	Project Title	Amount	Sponsor
Craig Emter	Coronary Dysfunction, BK Channels, & Exercise in Heart Failure	\$1,813,890	NIH
Elizabeth Bryda	Rat Resource and Research Center	\$1,370,338	NIH
Craig Franklin	Mutant Mouse Resource and Research Center	\$601,646	NIH
Kevin Cummings	The role of serotonin in cardiovascular recovery from severe hypoxia	\$308,000	Amer Heart Assn
Rajiv Mohan	IPA agreements	\$242,580	Harry S Truman Mem Veterans Hosp
Craig Franklin	Postdoctoral Training in Comparative Medicine	\$184,514	NIH
Leslie Lyons	Genetic Resources for Common Mammalian Diseases	\$169,419	NIH
Carol Reiner	Metabolomic detection of biomarkers of early asthma in exhaled breath condensate of experimentally asthmatic cats	\$133,765	Morris Animal Fndtn
Craig Franklin	Veterinarian Training in Laboratory Animal Medicine	\$108,099	NIH
Shuping Zhang	2014 USDA Member Lab 14-9419-0159	\$55,000	Dept of Ag
Stan Casteel	MDNR Small Mammal Study	\$54,647	MO Dept of Natural Res
Carol Reiner	Effects of neurokinin-1 (NK1) receptor antagonism on acute and chronic airway inflammation and airflow limitation in experimental feline asthma	\$29,597	Winn Feline Fndtn Inc
Keiichi Kuroki	Health Enhancement Products, Inc., in vitro canine osteoarthritis study: Supplemental study of MMP analyses	\$27,739	Health Enhancement Products Inc
Craig Franklin	2014 Merial Veterinary Research Scholars Program	\$20,000	Merial Limited Merial Limited
Jeffrey Bryan	Preclinical Comparison of Three Indenoisoquinolines Candidates in Tumor-Bearing Dogs	\$16,294	Leidos Inc
Kristina Gronkiewicz	Ocular Safety and Efficacy of Suberoylanilide Hydroxamic Acid (SAHA) For the Treatment of Canine Corneal Fibrosis: An In Vivo Pilot Study	\$5,000	Amer College Of Vet Ophthalmologists



Internal Grants Awarded 2014 Totaling \$944,231

PI/Co-Investigator(s)	Project Title	Amount	Sponsor
Faculty Research Grants			
James Amos-Landgraf	Development of an in vivo rat model of fetal microchimerism to investigate the susceptibility to early colorectal cancer.	\$18,000	CVM COR
Deborah Anderson	Regulation of cell death by Yersinia pestis YopK during pneumonic plague	\$18,000	CVM COR
Brenda Beerntsen	Filarial worm surface proteins and melanotic encapsulation in mosquitoes	\$18,000	CVM COR
Frank Booth	Rescue of low motivation for voluntary running in rats selectively bred for short running distances	\$18,000	CVM COR
Doug Bowles	Role of KCa3.1 in plaque and vascular remodeling during atherosclerosis	\$18,000	CVM COR
Michael Calcutt	Establishing Genetic Tools for Fusobacterium necrophorum	\$18,000	CVM COR
Lane Clarke	Abnormal goblet cell biology in the cystic fibrosis intestine	\$18,000	CVM COR
Kevin Cummings	Role of brainstem serotonin neurons in the hypertension associated with sleep apnea	\$17,967	CVM COR
Aaron Ericsson	The Impact of Gut Microbiota and Segmented Filamentous Bacteria on Colitis-associated Colorectal Cancer	\$18,000	CVM COR
Catherine Hagan	Toll-like Receptor 4 Signaling in Animal Models of Depression	\$18,000	CVM COR
Eileen Hasser	Contribution of Nucleus Tractus Solitarii ROS to Acute Intermittent Hypoxia-induced Long Term Facilitation	\$18,000	CVM COR
Salman Hyder	Targeting drug-resistant ovarian cancer cells using cholesterol synthesis inhibitors	\$18,000	CVM COR
Senthil Kumar	Testis specific Y-like gene-5 a potential biomarker for aggressive prostate cancer	\$15,166	CVM COR
Michael Lewis	Lutetium-177 Nanoparticles for Targeted Antisense Radiotherapy Blackfooted Cat (Felis Nigripes)	\$17,996	CVM COR
Monique Lorson	Sequential targeting of human SMN2 to the pig SMN loci to generate SMA pigs	\$18,000	CVM COR
Monir Shababi	Development of a Gene Replacement Therapy for SMARD1	\$18,000	CVM COR
George C. Stewart	Development of an Animal Model of Cutaneous Anthrax	\$18,000	CVM COR
Hsiaotung Yang	Role of PVN in hyper sympathexcitation in rats with femoral artery ligation	\$18,000	CVM COR
Clinician Scientist Grants			
Joan Coates	Potassium channel function in hereditary canine models of neurologic disease.	\$6,550	CVM COR
Jacqueline Pearce	Genetic investigation of progressive retinal atrophy in the African black-footed cat (Felis nigripes).	\$8,000	CVM COR
Carol Reinero	Heliox for the emergency treatment of feline allergic asthma: a pilot study.	\$7,980	CVM COR

Mizzou Advantage Grants			
Aaron Ericsson	MU Metagenomics Center- Enterotyping Center and Fecal Repository	\$76,693	Mizzou Advantage
Cheryl Rosenfeld	Endocrine Disruption of the Epigenome Across Taxa	\$249,996	Mizzou Advantage
Christian Lorson	Development of an Ad AAV Chimera: Piggy Backing Vectors thru Camelids	\$109,533	Mizzou Advantage
Lane Clarke	Targeting Cell pH/Volume to Minimize Chemotherapy/Radiation Induced Intestinal Damage	\$58,000	Mizzou Advantage
George Stewart	A Novel Spore Display System for Bioremediation of Dioxins	\$50,000	Mizzou Advantage
Patrick Pithua	Interdisciplinary Zoonoses Research Symposium	\$50,000	Mizzou Advantage
Phi Zeta Presentation Awards			
Pamela Zgoda	Chronic cyclosporine treatment does not reduce total lv collagen and fibrosis in mini-swine with heart failure	\$300	CVM COR
Leanne Mathew	Preservation of unaffected cartilage during open surgical procedures.	\$200	CVM COR
Marcella Springstead	Utilizing antisense oligonucleotides in spinal muscular atrophy gene therapy	\$100	CVM COR
Celia Friedman Cowan	Effects of gm-csf on the function of pmns from healthy dogs and dogs with neoplasia	\$50	CVM COR
Christopher Kennedy	In vitro effects of oxidized low density lipoprotein on canine joint tissues.	\$50	CVM COR
Shanna Nelson	Objective detection and quantification of compensatory lameness in horses with induced foot pain.	\$50	CVM COR
Rowena Woode	Evaluation of the in vitro dose-dependent effects of resveratrol on innate immune function in dogs.	\$300	CVM COR
Stacy Krumme	The trpv1 agonist capsaicin is an ineffective bronchoprovocant in an experimental model of feline asthma.	\$200	CVM COR
Erica Creighton	Genome-wide association of congenital hydrocephalus in the oriental shorthair cat.	\$300	CVM COR
Daniel Davis	Microbiota-induced lymphocyte electrotaxis	\$300	CVM COR
Charles Washington	Optimization of morpholino modified aso variants targeting intronic repressor element 1 in a mouse model of sma.	\$100	CVM COR
Michael Fink	The role of fetal microchimerism in maternal corneal wound healing.	\$300	CVM COR
Christa Bernhard	Decreasing morbidity associated with diagnostic airway lavage in cats.	\$200	CVM COR
Megan Grobman	Acute neurokinin-1 receptor antagonism fails to dampen airflow limitation or airway eosinophilia in asthmatic cats	\$100	CVM COR
Kurt Marshall	The mitochondrial protein fastkd1 protects cells from oxidative stress induced death independently of the mitochondrial permeability transition pore.	\$300	CVM COR

Marcia Hart	Impact of rederivation associated microbiome changes on a mouse model of inflammatory bowel disease.	\$200	CVM COR
Marina McCoy	A novel method for targeted cell ablation in multiple species utilizing human cd59 and intermedilysin	\$100	CVM COR
Julie Trzil	Longitudinal evaluation of effects of intravenous mesenchymal stem cells in a feline model after establishment of chronic asthma.	\$300	CVM COR
Jessica Hiemstra	Chronic cyclosporine treatment preserves mitochondrial energetics but does not improve cardiomyocyte contractile function or calcium handling in a translational mini-swine model of heart failure with preserved ejection fraction.	\$200	CVM COR
Carmella Pratt	Characterization of biphenotypic b/macrophage cells in pneumonic francisella and acute lung injury (ali).	\$100	CVM COR
Manuel Gutierrez-Aguilar	Genetic manipulation of cardiac mitochondrial phosphate carrier does not affect permeability transition.	\$300	CVM COR
Miqdad Dhariwala	Tlr7- mediated induction of type i interferon by intracellular yersinia pestis enhances plague pathogenesis.	\$200	CVM COR
Allison Ostdiek	Characterization of porcine vascular tissue and gold nanoparticles as a vascular repair.	\$100	CVM COR
Casandra Jacobs	Epigenetic analysis of the slc64a serotonin transporter in bottlenose dolphins (tursiops truncates).	\$1,000	CVM COR
Rachel Olson	5-lipoxygenase metabolites and innate immune cell function.	\$1,000	CVM COR

Recent High Impact Publications

Mesner, L.D., Ray, B., Hsu, Y.-H., Manichaikul, A., Lum, E., Bryda, E.C., Rich, S.S., Rosen, C.J., Criqui, M.H., Allison, M., Budoff, M.J., Clemens, T.L., Farber, C.R. Bicc1 is a genetic determinant of osteoblastogenesis and bone mineral density, *Journal of Clinical Investigation*, Volume 124, Issue 6, 2 June 2014, Pages 2736-2749

Agler, C., Nielsen, D.M., Urkasemsin, G., Singleton, A., Tonomura, N., Sigurdsson, S., Tang, R., Linder, K., Arepalli, S., Hernandez, D., Lindblad-Toh, K., van de Leemput, J., Motsinger-Reif, A., O'Brien, D.P., Bell, J., Harris, T., Steinberg, S., Olby, N.J. Canine Hereditary Ataxia in Old English Sheepdogs and Gordon Setters Is Associated with a Defect in the Autophagy Gene Encoding RAB24, *PLoS Genetics*, Volume 10, Issue 2, February 2014, Article number e1003991

Jiang, Z.-Z., Hu, M.-W., Wang, Z.-B., Huang, L., Lin, F., Qi, S.-T., Ouyang, Y.-C., Fan, H.-Y., Schatten, H., Mak, T.W., Sun, Q.-Y. Survivin is essential for fertile egg production and female fertility in mice, *Cell Death and Disease*, Volume 5, Issue 3, March 2014, Article number e1154

Bamman, M.M., Cooper, D.M., Booth, F.W., Chin, E.R., Neuffer, P.D., Trappe, S., Lightfoot, J.T., Kraus, W.E., Joyner, M.J. Exercise biology and medicine: Innovative research to improve global health, *Mayo Clinic Proceedings*, Volume 89, Issue 2, February 2014, Pages 148-153

- Gutiérrez-Aguilar, M., Douglas, D.L., Gibson, A.K., Domeier, T.L., Molkenin, J.D., Baines, C.P. Genetic manipulation of the cardiac mitochondrial phosphate carrier does not affect permeability transition, *Journal of Molecular and Cellular Cardiology*, Volume 72, July 2014, Pages 316-325
- Franz, A.W.E., Sanchez-Vargas, I., Raban, R.R., Black IV, W.C., James, A.A., Olson, K.E. Fitness Impact and Stability of a Transgene Conferring Resistance to Dengue-2 Virus following Introgression into a Genetically Diverse *Aedes aegypti* Strain, *PLoS Neglected Tropical Diseases*, Volume 8, Issue 5, MAY 2014, Article number e2833
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Special Recognition and Honors, 2014

Dr. Neil Olson, dean of the MU College of Veterinary Medicine, was one of eight individuals appointed to serve on the National Agricultural Research, Extension, Education, and Economics (NAREEE) Advisory Board.

Dr. Carolyn Henry was appointed CVM Associate Dean for Research and Graduate Studies.

Dr. Ron Cott, associate dean of Student and Alumni Affairs and director of Advancement, has been named a Veterinary Leadership Experience Hall of Fame member.

Dr. Craig Franklin, professor of Veterinary Pathobiology received the 2014 ACLAM (American College of Laboratory and Animal Medicine) Comparative Medicine Scientist Award.

Dr. John Middleton, professor of food animal medicine and surgery at the MU College of Veterinary Medicine, has been named the 2014 president of the National Mastitis Council.

Dr. Rob Daniel and Dr. Meredith Sherrill, MU CVM residents, were awarded two of 10 awards presented during the American College of Veterinary Internal Medicine Forum.

Dr. Kevin Donnelly, MU CVM resident, received a national Phi Zeta award for outstanding research in the basic science category.

Dr. Gary Johnson, Irene Ganjam and Stephanie Bossaller received Dean Olson's 2014 Impact Awards.

NIH News

Updated Policy for Application Submission

Revised NIH policy now allows investigators to submit a new (A0) application in the same scientific vein as an unsuccessful resubmission (A1) application. Previously, to be considered, the A0 application had to reflect substantial changes in scientific direction or scope.

The rule prohibiting submission of overlapping applications is still in place. A new application that overlaps the direction and scope of a previous submission is ineligible until NIH releases a summary statement for the earlier application.

NIH's updated policy on application submission is already in effect.

Piloting Modified NIH Biosketches

The NIH has initiated a second round of pilots to assess a planned modification of the NIH Biographical Sketch (Biosketch). The new Biosketch format being piloted will extend the page limit from four to five pages and it will allow researchers to describe up to five of their most significant contributions to science along with the historical background that framed their research. This description can outline the central finding(s) of their work, the influence of those finding(s) on their field and how those findings may have contributed to improvements in health or technology. For those involved in team science, it will allow the investigator to describe their specific role in the described work. Each of these descriptions can be supported by listing up to four, relevant peer-reviewed publications. In addition to the descriptions of their contributions, researchers will be able to include a link to a full list of their published work as found in a publicly available digital database such as MyBibliography or SciENcv. Please note that the use of the enhanced biosketch format is restricted to those RFAs included in the pilot.

USDA News

FY2015 Budget Highlights

Agriculture and Food Research Initiative (AFRI) Funding will support the following high priority issues: Food Security, Water for Agriculture, Climate Variability and Change, Sustainable Bioenergy Production, Food Safety, Childhood Obesity Prevention, Foundational Science; Food, Agricultural, Natural Resources, and Human Sciences Education and Literacy Initiative. Read [full budget proposal](#).

NSF News

New NSF [Proposal and Award Policies and Procedures Guide](#) – effective February 24, 2014

OSPA News

Limited Submission Announcements

Limited submission programs are those for which the sponsor limits the number of applications or nominations that a given institution may submit. The guidelines for these programs generally allow only one or two applications and always require the institution to determine which applications will be submitted. Please follow the [internal procedures](#) to be considered for a limited submission program.

Pivot

The University of Missouri now has a subscription to [Pivot](#). You can use Pivot to search for funding opportunities and collaborators. If you are affiliated with MU, you may create an account at no charge.

Sponsored Programs CVM Satellite Office

*The OSPA satellite office has moved to Mizzou North and is staffed by Senior Grants and Contracts Administrator **Amy Welch**. The satellite office phone number is 573-882-1290.*

*Senior Accountant for CVM is **Marvin William**, also at Mizzou North, office phone number 573-882-9586.*

Veterinary Medicine & Surgery and Discovery Ridge Preaward Grants and Contracts Support

***Sharon King**, Business Support Specialist II, provides preaward grants and contracts support for the Veterinary Medicine & Surgery and Discovery Ridge. **Sharon's office has moved** to Room E115 in the Veterinary Medicine Building. Phone 573-882-8243; Email KingShar@Missouri.edu*

Grant Information and Tips

Locate NIH Funding Opportunities:

<http://grants.nih.gov/grants/guide/index.html>

Locate NIFA (formerly CSREES) Funding Opportunities:

<http://www.csrees.usda.gov/fo/funding.cfm>

Locate NSF Funding Opportunities:

<http://www.nsf.gov/funding/>

Fringe Benefit Rates (Campus)

Personnel employed \geq 75% FTE

FY15 – 35.37% FY16 – 36.43%

FY17 - 37.52%

FY15 Fringe Benefit Rates for Federal Funding are 35.02% (Medical School rate is 27.34%)

Personnel employed < 75% FTE

7.65% (MU undergraduate students – exempt)

MU Graduate Students

Tuition - \$347.30/credit hour (2014 – 2015)

Medical Insurance:

25% FTE (12 mos):

\$1,524.50 (domestic, voluntary)

\$1,434.00 (international, mandated)

50% FTE (12 mos)

\$3,049.00 (domestic, voluntary)

\$1,434.00 (international, mandated)

Changes to Grant Fact Sheet Information:

New mileage reimbursement rate – \$.53/mile (1/1/2014)

DHHS F&A Rate Agreement Date – 03/17/2014;

effective 7/01/2013 to 6/30/2016

For industry funds, F&A rates are 5% higher than the federally negotiated rate when the university waives IP rights.

Per diem allowance for domestic overnight travel outside of the state of Missouri

Specific rates by location can be found at

<http://www.defensetravel.dod.mil/site/perdiemCalc.cfm>

Institutional Minimum Graduate Research and Teaching Assistant Stipends were updated for 2014-2015.

<http://research.missouri.edu/ogwp/files/grantfactsheet.pdf>

Upcoming Proposal Deadlines

Anticipated August, 2014

Faculty International Travel

Anticipated October, 2014

Research Council

Phi Zeta Student Research

October 5, 2014

NIH New R01

October 7, 2014

Research Board

October 12, 2014

NIH New “K” Series Grants

October 16, 2014

NIH New R03, R21

October 17, 2014

Richard Wallace Faculty Grants

Anticipated November, 2014

CVM COR Grants

November 5, 2014

NIH R01 Resubmissions

November 12, 2014

NIH “K” Series Resubmissions

November 16, 2014

NIH Resubmissions R03, R21

December 5, 2014

NIH “R41/R42” Series Grants

December 13, 2014

NIH “F” Series Grants

January 25, 2015

NIH “T” & “P” Series Grants

May 1, 2015

AAEP Foundation

AKC ACORN Opportunities

<http://www.akcchf.org/research/application-process/acorn-grant-program/>

Mizzou Advantage Opportunities

<http://mizzouadvantage.missouri.edu/opportunities/>

Additional Opportunities

<http://www.cvm.missouri.edu/ResearchForms/FUNDING OPPORTUNITIES 2014.pdf>