



## Cats a Step Closer to FIP treatment A clinical trial yields promising applications of antiviral compound

The numbers are looking good for treating a disease in cats that — up to now — has been 100 percent fatal. A field trial is having encouraging results from a treatment involving an antiviral compound developed at Kansas State University and Wichita State University.

Drs. Yunjeong Kim and KC Chang, virologists in the College of Veterinary Medicine, and Dr. William Groutas, a medicinal chemist at Wichita State University, have been collaborating since 2010 on the development of antiviral drugs for important human and animal viruses.

“Over the course of the last several years, we have generated antiviral compounds that potentially

inhibit the virus responsible for feline infectious peritonitis (FIP),” Dr. Kim said. “This finding led to a collaboration with Dr. Niels C. Pedersen at the University of California, Davis, for testing one of the compounds in a clinical trial with cats with naturally occurring FIP for the last three years.”

FIP is a leading cause of death in kittens and young cats and is most common in indoor, multicat environments such as shelters and catteries. The researchers have just published findings in the *Journal of Feline Medicine and Surgery*: “Efficacy of a 3C-like protease inhibitor in treating various forms of acquired feline infectious peritonitis,” which is a follow-up publication of [http://](http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1005531)

[journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1005531](http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1005531), published in *PLOS Pathogens* in 2016.

“The field trial of GC376 was the first antiviral treatment for naturally occurring FIP, and it was designed to address several questions,” Dr. Kim explained. “One of the questions was to find out whether antiviral treatment holds promise in FIP treatment.”

Dr. Kim said the study looked at patients with different forms



*Peanut, a cat that had wet FIP, has been in remission for a full year.*

of FIP: wet form, dry form and dry-to-wet form.

“They were at different stages with various clinical signs and were recruited into the trial,” Dr. Kim said. “A total of 20 cats received antiviral treatment and seven of those cats are currently in long-term remission.”

## NIFA research awards total more than \$1.7M

The USDA’s National Institute of Food and Agriculture (NIFA) recently announced 39 new research awards totaling \$14.3 million to help maintain healthy agricultural animals.

Five awards worth more than \$1.7 million in total have been designated to CVM researchers. Funding is provided through NIFA’s Agriculture and Food Research Initiative program, authorized by the 2014 Farm Bill.

The awards are:

- \$500,000 for “Optimizing an Immunocastration Vaccine Ear Implant to Prevent Pain Associated with Bovine Castration,” No. 2017-67015-27124 to Dr. Hans Coetzee.

“Our project will specifically work to optimize a long-lasting vaccine implanted under the skin of the ear to direct the calf’s immune response to disrupt the development of the male reproductive organs,” Dr. Coetzee said. “This proposal will address current animal welfare concerns and will have an immediate and

significant impact on the sustainability of U.S. beef production systems.”

- \$460,000 for “A Broadly Protective Vaccine Against Porcine Post-Weaning Diarrhea (PWD),” No. 2017-67015-26632 to Dr. Weiping Zhang.

“No effective PWD vaccines have been developed due to technical challenges at inducing broad immunity against different strains of diarrhea caused by enterotoxigenic *E. coli* (ETEC),” Dr. Zhang explained. “We propose to innovatively produce multiepitope fusion antigen (MEFA) and a live vaccine inducing broadly protective local mucosal immunity, and then, unambiguously assess efficacy of this vaccine in piglet challenge studies. With strongly supportive data from preliminary studies, in conjugation with years of combined experience of two investigators in ETEC research and vaccine development, we believe our

proposed research will be completed.”

Dr. Zhang added that an effective PWD vaccine would save hundreds of millions of dollars each year for US swine producers, while also reducing antibiotic use. Innovation applied in this study could potentially be applied toward vaccine development against other diseases.

- \$495,000 for “Improved Vaccine Platforms for Safe and Effective Control of Bovine Viral Diarrhea Virus (BVDV),” No. 2017-67015-26802 to Dr. Waithaka Mwangi.

“We are addressing a critical need for improved broadly protective BVDV vaccines that are free of negative effects and are affordable,” Dr. Mwangi said. “The expected outcome will thereby increase productivity and profitability of U.S. cattle industry. Just as importantly, the technology will allow rapid vaccine upgrade to incorporate protective components from new BVDV

strains that will emerge in future.

According to USDA statistics and others, the cattle industry accounts for roughly 40 percent of the total market value of U.S. agriculture. Because infections represent a major economic loss, BVDV is categorized as a “High Priority Disease” of economic importance to U.S. animal agriculture, which Dr. Mwangi said creates a need for developing better vaccines.

- \$331,450 for “Preventing Porcine Reproductive and Respiratory Syndrome (PRRS) Through Modifications in the Virus Receptor, Cd163” No. 2017-67015-26774 to Dr. Bob Rowland, which was in the October Lifelines.
- \$15,000 for “The XIVth International Nidovirus Symposium” No. 2017-67015-26805 to Dr. Ying Fang. The Symposium was held in Kansas City, Missouri, in June 2017, which was reported in the July Lifelines.

## Dr. Brian Lubbers to chair standards committee

Dr. Brian Lubbers, DVM, PhD, DACVCP, director of clinical microbiology in the College of Veterinary Medicine at Kansas State University, will begin his appointment as the chairholder of the Clinical Laboratory Standards Institute's (CLSI) Subcommittee on Veterinary Antimicrobial Susceptibility Testing (VAST) in January.

CLSI members and volunteers represent three sectors of the health care field: industry, government, and the health care professions. Representation of the three constituencies is balanced in order to support an open consensus process.

VAST Subcommittee volunteers represent all three sectors, including microbiology laboratories, government agencies, and pharmaceutical and diagnostic microbiology industries. Health care providers and educators are also represented, and current members are from the US, Canada, Europe, and Australia.

"The CLSI – VAST committee is central in moving international antimicrobial stewardship efforts forward," Dr. Lubbers said. "This

committee is responsible for developing the breakpoints used by diagnostic laboratories for susceptibility testing of veterinary pathogens. It is a tremendous honor to be appointed subcommittee chairholder, and I look forward to continuing the efforts initiated by the previous VAST leadership."

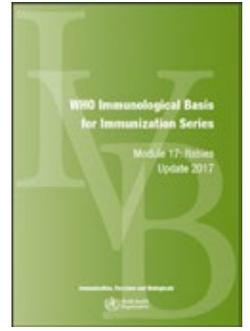
Glen Fine, CLSI's CEO said, "Dr. Lubbers has a vital leadership role in the creation of essential standards used to combat a top global public health problem in the world today — resistance to available antibiotics. CLSI has long recognized the value of the 'One Health' approach to this issue and has been developing laboratory standards for antimicrobial susceptibility testing in veterinary medicine for over 25 years. Dr. Lubbers' experience and expertise as a veterinary clinician, diagnostician and pharmacologist will allow us to continue advancing these antibiotic stewardship efforts."



## Dr. Susan Moore revises rabies immunology module for WHO

The World Health Organization (WHO) has just published a revised version of its module on rabies immunization, thanks to the work of Dr. Susan Moore, director of the Rabies Laboratory at Kansas State University, and Dr. Deborah Briggs, adjunct professor in the College of Veterinary Medicine and former executive director and current board member of the Global Alliance for Rabies Control (GARC).

"The Immunological Basis for Immunization Series: Module 17: Rabies" is part of a series of modules, on general immunology devoted to one of the vaccines recommended for the "Expanded Programme on Immunization," i.e. vaccines against diphtheria, measles, pertussis, polio, tetanus, tuberculosis and yellow fever. Dr. Moore and Dr. Briggs served as the sole editorial team for this publication.



## CVM News Ticker



The Beef Cattle Institute has announced the appointment of Patti Dollarhide as its new director of beef value chain alliances. Prior to joining the BCI, Dollarhide was employed as the director of food and nutrition services for the Newton (Kansas) Medical Center.



Veterinary student Laura Constance (far right) is among 10 K-State graduate students to earn honors at Research and the State. These winning research presentations by K-State grad students will represent the university at the 15th Capitol Graduate Research Summit, Feb. 20, 2018, at the State Capitol in Topeka.

Laura is a doctoral student in veterinary pathobiology and a second-year student in veterinary medicine, from Clyde, North Carolina. Her project is "Role of the gut microbiome in response to vaccination and viral respiratory infection in growing pigs," and her faculty adviser is Dr. Megan Niederwerder, assistant professor of diagnostic medicine and pathobiology.

## Fab Five Faculty join KSVDL



Drs. Sarah Schneider, Cindy Bell, Brian Herrin, Nora Springer and Diana Schwartz.

The Kansas State Veterinary Diagnostic Laboratory hired a "Fab Five" to its diagnostic team.

Four pathologists and one parasitologist have been hired in recent months to help expand the services provided by the lab.

Dr. Sarah Schneider, an anatomic pathologist, who attended veterinary college at the University of Tennessee.

Dr. Cindy Bell, an anatomic pathologist who augments her credentials as a poultry pathologist and has distinguished herself in veterinary oral/dental pathology. She is currently faculty supervisor of the KSVDL histology

and immunohistochemistry laboratory.

Dr. Brian Herrin, a parasitologist, is originally from Lindsay, Oklahoma, and has completed both his DVM and Ph.D. at Oklahoma State University. His current research focus is on the epidemiology of Lyme borreliosis in humans and dogs in North America.

Dr. Nora Springer, a clinical pathologist, is a 2008 graduate of the Kansas State University College of Veterinary Medicine.

Dr. Diana Schwartz, a clinical pathologist, earned her Doctor of Veterinary Medicine from the University of Minnesota in 2013.

*lifelines* is published monthly by Marketing and Communications in the College of Veterinary Medicine, edited by Joe Montgomery, [jmontgom@vet.k-state.edu](mailto:jmontgom@vet.k-state.edu). More stories at: [www.vet.k-state.edu/lifelines/1712.html](http://www.vet.k-state.edu/lifelines/1712.html)

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