



lifelines

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College of Veterinary Medicine
at Kansas State University

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NBAF Transition Fund supports heartwater study CEVBD receives \$200,000 grant to investigate novel tick-transmitted livestock disease

Researchers in the heartland are leading the way in efforts to contain and control a foreign animal disease called heartwater. It is caused by a tick-transmitted pathogen *Ehrlichia ruminantium* that is deadly to cattle, sheep and goats.

Kansas State University's Center of Excellence for Vector Borne-Diseases (CEVBD) has obtained \$200,000 from the state of Kansas through its National Bio and Agro-defense Facility (NBAF) Transition Fund to study the novel pathogen and work on developing a vaccine against the disease.

The center's director, Dr. Roman Ganta, professor of diagnostic medicine and pathobiology in the College of Veterinary Medicine, explained how a corporate gift was used as a matching-fund component for obtaining the transitional-funding grant.

"We have been quite fortunate to have strong annual support from Abaxis, a cutting-edge medical and veterinary technology company, who provided us with a \$250,000 gift earlier this year," Dr. Ganta said. "Our expertise in vector-borne disease research and the availability of a high containment facility at Kansas State University [Biosecurity Research Institute], and the future establishment of the NBAF in Manhattan give us a unique ability to study a pathogen that has not been studied before in the U.S."

The name "heartwater" is derived from the hydropericardium symptoms that are commonly seen with this disease. While it has originally been identified as a Sub-Saharan African disease, it is

also established in several Caribbean islands. The disease is also characterized by fever, neurological signs, hydrothorax, ascites, edema of the lungs and high mortality rates.

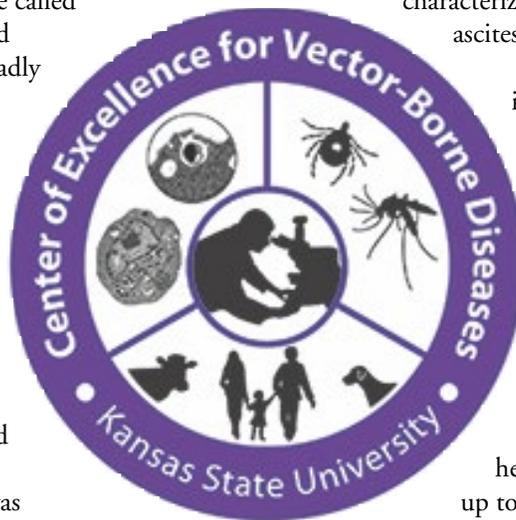
Two tick species in the US have been identified as vectors for the pathogen. The cattle egret, a migratory bird, has also been identified through its migratory patterns, as a potential vehicle for infected ticks to enter the American mainland. The possible introduction of the disease from the Caribbean and through imported exotic foreign animals from Africa is a major concern for heartwater establishment in the USA.

Dr. Ganta said the USDA estimated that if heartwater disease is introduced, it could cause up to \$2.3 billion losses to the US economy.

"The long-term goal of our proposed research is to develop live-attenuated vaccines and to improve any inactivated vaccines to protect ruminants against heartwater in the US and abroad," Dr. Ganta said. "Currently, there are no approved drugs or vaccines against heartwater disease in the US."

Dr. Ganta and Dr. Jodi McGill, an assistant professor in the college, will serve as the principal investigator and co-principal investigator, respectively, for the project. They will be assisted by Dr. Kathryn Reif, an assistant professor in the same department.

The CEVBD is an interdisciplinary research center focused on pathogenesis, surveillance and prevention of tick-borne diseases and other vector-borne diseases of significant importance to animal and human health.



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CVM faculty help develop new treatment for deadly cat disease

Work by two researchers in the CVM is showing promise in stopping a deadly cat disease.

Feline infectious peritonitis, also known as FIP, is a viral infection of cats that is nearly 100 percent fatal. But in a study that was funded in part with a grant from the Morris Animal Foundation, the CVM researchers and researchers at two other universities successfully blocked progression of the disease.

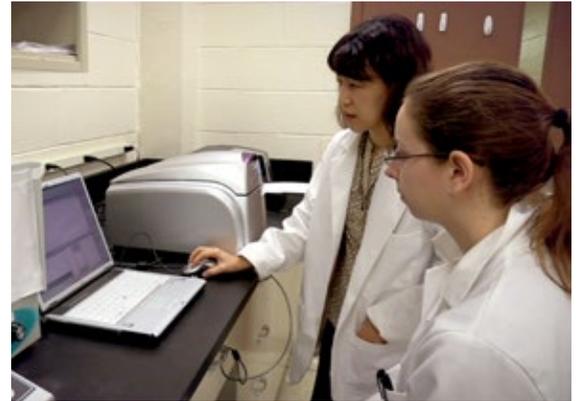
Drs. Yunjeong Kim, associate professor, and Kyeong-Ok Chang, professor, both of diagnostic medicine and pathobiology, and Dr. William Groutas, a distinguished professor of chemistry at Wichita State University, developed the antiviral compounds used in the study. In a collaboration and demonstration with Dr. Niels Pedersen, professor emeritus of medicine and epidemiology at the University of California, Davis, one of the research compounds stopped progression of FIP and led to clinical recovery to cats with the disease.

“These findings showed that inhibiting growth of the virus is the critical

component of treatment for FIP,” Dr. Kim said. “This will help us and other researchers find a way to effectively manage or treat FIP in the future. Also, these findings have broader implications for other important coronavirus infections, since no antiviral drugs exist for human or animal coronaviruses.”

Coronaviruses are the causative agents of many important diseases in both humans and animals, including severe acute respiratory syndrome and Middle East respiratory syndrome, and can cause diarrhea in dogs and other animals such as cattle, sheep, deer, giraffes and more.

“This is an exciting development in FIP research with the potential to have a major impact on feline health worldwide,” said Barbara Wolfe, chief scientific officer at Morris Animal Foundation. “FIP is a significant problem for kittens and cats under 2 years of age, particularly in shelter environments or catteries. If we continue



Dr. Yunjeong Kim works on an FIP project with third-year student Amanda Honeyfield.

to be successful in this research, it will represent a major breakthrough in treating this terrible disease.”

Morris Animal Foundation recently committed \$1.2 million to fund research that will advance knowledge of FIP. After a rigorous selection process, Kim and her team received an additional grant to conduct a clinical trial investigating the effect of the newly identified compound in client-owned cats with FIP.

KSVDL trains grad-level veterinarians through diagnostic medicine internship

In 2013, the Kansas State Veterinary Diagnostic Laboratory (KSVDL) began offering a program for advanced training in diagnostic medicine to graduate-level veterinarians. As an added bonus, participants can tailor the internship to match their individual career goals.

Selected for this year’s internship is Dr. Natalia Strandberg, a 2014 graduate of the University of Wisconsin and Dr. Yvonne Wikander, a 1989 graduate of Oregon State University.

Drs. Strandberg and Wikander will receive extensive training in clinical pathology methods and interpretation. Additionally, to gain experience concerning laboratory techniques and results interpretation in other diagnostic medicine specialties, they will rotate through each KSVDL laboratory area including anatomic pathology, clinical

microbiology, histopathology, molecular diagnostics, next-generation sequencing, rabies, serology and virology.

“Laboratory rotations allow one to see the latest and greatest in the diagnostic world as well as learning about the coolest up-and-coming technologies,” Dr. Wikander said.

After completion of the specialty rotations, both interns have the option to focus on any diagnostic area outside the clinical pathology specialty as a possible career path during the course of the year, if so desired. Both daytime training and after-hours emergency on-call duties are required of the interns. Emergency after-hours duties include interacting with clinicians and completing clinical pathology testing



Drs. Yvonne Wikander and Natalia Strandberg.

for cases that are hospitalized within the Veterinary Health Center.

The program is open to applicants who have a DVM. If you would like more information about this program, please contact Dr. Gregg Hanzlicek at 785-532-4853 or gahanz@vet.k-state.edu and/or Dr. Lisa Pohlman at 785-532-4882 lpohlman@vet.k-state.edu.

Cochran Fellowship Program partners with Frontier program to train agri-food systems workers from different countries in Africa

The Frontier program at Kansas State University recently hosted six visitors from Malawi, Kenya and Uganda, who were sponsored through the USDA's Cochran Fellowship program.

The Frontier team provided training on campus at K-State and then took the fellows on a field trip to the Port of New Orleans to see how coffee and other products are handled for import and export. The group also met with food system leaders, scientists and other industry professionals in Kansas City and at K-State Olathe.

Dr. Justin Kastner, is co-director of the Frontier program, which focuses on border security, food security and trade policy. Training for the Cochran Fellows was led by principal investigators Dr. Kastner, assistant professor in DM/P, and Dr. Sara Gragg, assistant professor of food science in the animal sciences and industry department at K-State Olathe. Teaching and logistics support was provided by Danny Unruh, a doctoral student in food science at K-State Olathe, Sarah Jones, senior in food science and industry, and Steve Toburen, Frontier field trip coordinator.

Dr. Kastner said the training is built on similar Frontier training programs conducted in 2008 and 2009 with Cochran Fellows from Thailand and Egypt.

"We consider it a privilege to work with the Cochran program," Dr. Kastner said. "We remain committed to helping other countries build capacity in the important areas of food safety, food security and trade-policy development."

The six fellows who visited Manhattan were: Charles Mukama, senior veterinary inspector for Uganda's Ministry of Agriculture, Animal Industry and Fisheries; Betty Namwagala, executive director of the Uganda Coffee Federation; Lucy Ikonya, manager of Trade Affairs for the Kenya Bureau of Standards; Patrick Njeru, an analytical chemist for the Kenya



Dr. Justin Kastner, (right, standing) co-director of Kansas State University's Frontier program, and Danny Unruh, (standing) doctoral student in food science from K-State Olathe, welcome a visiting group in the USDA's Cochran Fellowship program to the K-State Alumni Center.

Plant Health Inspection Service; Philis Githaiga, senior inspector for the Kenya Plant Health Inspection Service; and Hastings Ngoma, principal economist for the Malawi Ministry of Agriculture.

The Frontier researchers provided instruction from Aug. 22 – Sept. 2 through lectures, workshops and tours related to global training systems, animal health, plant health and food safety. The sessions covered topics such as international regulations, import-export controls, the World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures, and public-private partnerships.

The U.S. Department of Agriculture's Foreign Agricultural Service administers the Cochran Fellowship Program. It is U.S.-based and provides agricultural training opportunities for senior and mid-level specialists and administrators. Countries must be classified as middle-income, an emerging democracy or an emerging market to be eligible.

Meet Dr. Lina Mur

Watch this month's researcher profile at the KSUCVM YouTube channel and in our online edition of Lifelines:

https://youtu.be/_JIYgbtnWDQ
www.vet.k-state.edu/lifelines/1609.html



CEEZAD welcomes visiting scholars from MVSU, Langston



The Center of Excellence for Zoonotic and Animal Diseases (CEEZAD) faculty/student welcomed a pair of teams from Mississippi Valley State University and Langston University for summer projects.

The participants included Kayla Bailey, a student at Mississippi Valley State University in Itta Bena, Mississippi, and Dr. Matthewos Eshete, an associate professor of chemistry at Mississippi Valley State, who examined the binding interactions between proteins and biodegradable nanoparticles. The other participants were Magnus Scott Jr., a senior-to-be at Langston, and Dr. Steve Zeng, an assistant professor in dairy production at the school, who tested for the presence of E.coli in goat byproducts on Kansas farms.

Dr. Juergen Richt, Regents Distinguished Professor of Pathobiology at Kansas State and director of CEEZAD, said Scott's experience illustrated the value of the summer program as a means of exploring one's career paths. "Magnus wanted to study social work, but Dr. Zeng talked him into doing this summer program," Richt said. "Now he is 'hooked' on science and wants to use his skills to work with disadvantaged kids and young adults to introduce them to the world of science."

Student horseshoes in the heartland



Second-year student Avery Loyd attends a summer horseshoeing course in Lamar, Missouri. She shares some of what she learned in *Lifelines* online: www.vet.k-state.edu/lifelines/1609.html

CVM News Ticker



At the Helping Hands Society in Topeka, **Dr. Kyla Krissek**, shelter medicine intern, performed the 1,500th surgery since May and the 5,000th surgery since the shelter rotation began.

Dr. Rick Lanuza, recent ophthalmology resident, (July 2015 completion) successfully passed the American College of Veterinary Ophthalmologist boards and is the newest ACVO Diplomate.

DCS received an Ethicon educational grant for CS 729 Junior Surgery course taught to third year veterinary students in the amount of \$9451.00. Bayer, IDEXX, Purina and Zoetis are supporting the course by donating medications, dog food and other medical supplies for the Junior Surgery course.

Dr. James Carpenter presented at the AAV Annual Conference in Portland, Oregon on the topic: Pharmacokinetics of Oral and Subcutaneous Enrofloxacin in Caribbean Flamingos (*Phoenicopterus ruber ruber*). He also chaired a three hour session on "Hot-Topics in Avian Medicine." As editor-in chief of the *Journal of Avian Medicine and Surgery*, Dr. Carpenter also chaired the Annual Editorial Board.

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