



Patented vaccine technology offers options for cattle care



CVM researchers are hoping to lead cattle producers to a path of least resistance. Their latest work points to new options for controlling beef cattle liver infections through vaccine-based technology in order to circumvent antibiotic use and potential public health concerns associated with antibiotic resistance.

Drs. T.G. Nagaraja, M.M. Chengappa, Sanjeev Narayanan and Amit Kumar recently received a new divisional patent for “Composition and Methods for Detecting, Treating, and Protecting Against Fusobacterium Infection.” Fusobacterium causes liver abscesses in cattle and sheep, which is of significant economic concern to the feedlot industry.

“We have improved on a previous patent based on a novel approach for preventing fusobacterial infections,” said Dr. Nagaraja, university

distinguished professor of microbiology. “We have identified a protein and learned the mechanisms of how the protein attaches to cells, so we created compositions and methods to use the protein to prevent the attachment of Fusobacterium to the cells in the rumen (first compartment of cow stomach) and liver. If bacteria do not attach to cells, they are highly unlikely to cause infection.”

“Our ‘invention’ helps induce an immunologic response in the host, which would prevent attachment and establishment of Fusobacterium in cattle, thus providing protection against the infection,” said Dr. Chengappa, university distinguished professor of microbiology. “The original patent covers the use of our invention within expression systems, adjuvants, injectable solutions, oral compounds

and vaccines. The new patent broadens the scope of how the invention can be utilized.”

According to Dr. Ty Lawrence, professor of animal science and director of the Beef Carcass Research Center at West Texas A&M University, fusobacterium infections are a significant problem for cattle producers.

“Liver abscesses cost the beef industry in excess of \$200,000 a day, or \$56 million annually,” said Dr. Lawrence.

The new Veterinary Feed Directive was enacted by the FDA in January 2017, affecting options for treating cattle.

“Alternative methods to antibiotics for prevention, control and treatment of disease in animals are of great value as we move into a time of increased focus on antibiotic stewardship,” said Dr. Mike Apley, Frick Professor of Clinical Sciences.

Phi Zeta showcases young researchers



New members: Drs. Vinay Shivanna, Amanda Trimble and Megan Wilson receive certificates from Drs. Nora Springer and Raelene Wouda.

Phi Zeta Research Day shines a spotlight on the research efforts of graduate students working toward Doctor of Veterinary Medicine (DVM), Master of Science (MS), Master of Public Health (MPH) and/or doctoral (Ph.D.) degrees at Kansas State University’s (K-State) College of Veterinary Medicine. The annual event is organized by the Sigma Chapter of the Society of Phi Zeta, the professional honor society of veterinary medicine whose name is based on the Latin word *philozoi*, meaning “love for animals,” and whose mission is to promote scholarship and research to improve the health and welfare of animals.

Held the first Tuesday in March, the day’s events include a keynote address given by an invited speaker, followed by both oral and poster presentations, describing basic or applied science investigations, as well as case reports and case series.



Dr. Dori Borjesson, professor and department chair of Pathology, Microbiology and Immunology at UC Davis, presents, “My pathway from bighorn sheep and helicopter safety to stem cell research and leadership.” See video of her speech plus a full list of award winners: <http://www.vet.k-state.edu/education/students/organizations/phi-zeta-sigma/>

NIH grants \$1.3 million to cancer-research team

Researchers from the Colleges of Engineering and Veterinary Medicine are tackling lung cancer through a minimally invasive treatment option.

The project, funded by a \$1.3 million grant from the NIH’s National Cancer Institute, would utilize a bronchoscopic microwave ablation system for treating lung tumors.

Punit Prakash (pictured top left) assistant professor of electrical and computer

engineering, is principal investigator for the five-year study “Bronchoscope-Guided Microwave Ablation of Early-Stage Lung Tumors,” awarded under the NIH’s Academic-Industrial Partnerships to Translate and Validate In Vivo Cancer Imaging Systems program.

Co-investigators on the project are from the CVM: Dr. David Biller (top right), Dr. Warren Beard (bottom left) and Dr. Chanran Ganta.



Some very fine Fellows meet at the BRI



BRI tour with (left to right): Christian Cook, Hannah White, MaRyka Smith, President Richard Meyers, Dr. Dana Vanlandingham, Dr. Matthew Olcha, Dr. Rachel Palinski and Victoria Ayers.

The lines of policy and science recently intersected between a select group of CVM graduate students and the university president, Richard B. Myers.

A video crew had been recording some remarks by President Myers at the Biosecurity Research Institute (BRI) to address the importance of strong food security to provide support for the upcoming U.S. Farm Bill. After wrapping up, President Myers was invited to take an impromptu tour of the teaching laboratory, where he met with the Transboundary Animal Disease (TAD) Fellows.

“The TAD program leverages the expertise and resources of the BRI to train next-generation M.S., Ph.D., DVM and post-doctoral researchers to work in high and maximum-containment environments on TADs,” said Dr. Dana Vanlandingham, associate professor of virology in the Department of Diagnostic Medicine/Pathobiology (DMP). “We were very excited to show off some of what our students have been doing at the BRI.”

President Myers and Dr. Vanlandingham were joined by Christian Cook, a Ph.D. student in pathobiology; Hannah White, a master’s degree student in biomedical sciences; MaRyka Smith, a DVM/Ph.D. student in pathobiology; Dr. Matthew Olcha, a 2017 DVM graduate and current Ph.D. student in pathobiology; Dr. Rachel Palinski, a postdoctoral fellow in DMP; and Victoria Ayers, a Ph.D. student in pathobiology.

Some of the classes required for the TAD Fellows include “DMP 690 Essential Practices for BSL-3 Research Settings,” “DMP 895-B Select Agent Studies,” and “DMP 893 Principles of Biosafety and Biocontainment.” The TAD Fellows donned personal protective equipment and simulated BSL-3 laboratory work for President Myers, before taking a break for a group photo.

The experience available through the TAD Fellows could help address the critical need for a skilled workforce that will be required when the National Bio and Agro-Defense Facility (NBAF) opens in Manhattan.

TAD Fellow earns postdoctoral fellowship at Plum Island

Kudos to Dr. Rachel Palinski on being selected for a postdoctoral position at the Plum Island Animal Disease Center (PIADC) in New York.

“Working at PIADC requires an in-depth knowledge of BSL-3 animal and laboratory practices along with knowledge of the agents themselves,” Dr. Palinski explained. “The information of the agents can be learned easily through research of published papers, however, learning BSL-3 animal and laboratory practices requires a more hands-on approach. I am extremely grateful to the TAD fellowship for teaching me to be an experienced BSL-3 laboratory scientist.”



Dr. Rachel Palinski

Dr. Palinski said in addition to the BSL-3 practices provided by the fellowship, she was able to benefit from networking opportunities.

“I think this was a key to my successful acceptance of the postdoctoral fellow position,” Dr. Palinski said.

“There were numerous times throughout the TAD fellowship in which you meet prominent and powerful scientists. It was one of these meetings during which I met and interacted with my PIADC advisers. I cannot say enough good things about the TAD fellowship and I would like to thank the members of the search committee and DHS for providing me with this experience.”

Dr. Justin Kastner in SPOTLIGHT K-State



Dr. Justin Kastner

A purple spotlight recently shone on one of our own as Dr. Justin Kastner joined a cast of teaching faculty for a special event highlighting excellence in innovative, creative and unique teaching on our K-State campus.

Dr. Kastner was the lead-off presenter during “SPOTLIGHT K-State,” held March 6 at the K-State Student Union.

The event was billed as a fast-paced, informative format featuring several speakers representing different academic colleges and curricula. Each presenter was asked to provide a visual portrayal illustrating their topic which is presented in a very short time frame – similar in style to a TED talk format.

Dr. Kastner’s program was titled, “Biography, the brain and belief,” where he talked about the educational power of stories. He emphasized how he likes to find emotionally compelling stories from art, and uses them in his teaching.

CVM News Ticker



Dr. Chris Blevins (right) and fourth year veterinary students, Donald Toland, Mary Davis and Kylie Reitcheck (not pictured) provided community outreach services at EquiFest in Topeka the weekend of Feb. 23-25 at the Kansas Expocentre.

Congratulations to **Susan Rose** who is being featured as part of a documentary film about “Engaging Women of the Flint Hills” in Kansas. A showing of the film will be held at the Wareham Opera House in downtown Manhattan on Sunday, March 25. It will also be aired on Wednesday, March 14 at 4p.m. on WIBW-TV (channel 13), Topeka; and on Thursday, March 22, at 8 p.m. on KCPT-TV, (channel 11) in Kansas City. More information is posted about the project online at: <https://www.prairiehollow.net/projects-bedford/>



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