

Staff Council hands out High Five and more!

By Piper Brandt

The CVM Staff Council announced its annual staff awards at a luncheon held Jan. 31.

Gina Scott, chair of the Staff Council, said the council launched the awards program in 2018.

“The purpose of the staff awards is for us to take the opportunity to recognize the hard work of our CVM staff,”

Scott said. “It gives us a chance to say thank you and that we appreciate their contributions to the college. Recognizing the accomplishments of others brings a sense of family to our college. Part of the awards include a cash prize to confirm our commitment to supporting our people.”

“As we enter our second year of Staff Council Awards, it is evident this initiative will become



Nominees and recipients gather at the Staff Council awards luncheon. See more pics at Lifelines online.

a time-honored tradition,” said Dr. Bonnie Rush, dean of the veterinary college. “It is a pleasure to honor our hard-working and committed staff, and we intend to continue the Staff Council awards for many years.”

The recipients are as follows:

High Five Award: Randy Juracek, radiation therapy technologist. Presented to an employee who has gone above

and beyond in enhancing one or more components of the college’s mission.

Culture, Collegiality and Compassion Award: Sun Johnson, custodial specialist. Presented to an employee who enhances a feeling of belonging for all of the CVM.

Commitment to Excellence Award: Presented to six employees who have gone beyond in enhancing the CVM’s mission. Recipients: Nick Hemphill, radiologic technologist; Dave Hoffman, recruitment coordinator; Joel Sanneman, confocal facility manager; Xiaorong Shi, research assistant; Rhonda Steele, project assistant; and Gina Jensen, junior surgery laboratory manager.

New function discovered in protein biology of *E. Coli*



(From left) Congrui Zhu, Kamrul Hasan, Dr. Philip Hardwidge, Dr. Samir El Qaidi and Kristina Eichhorst publish new findings.

The conventional wisdom behind the biological activity of a group of *E. coli* bacterial proteins has been upturned due to new research at the CVM.

Dr. Philip Hardwidge, a microbiologist and biochemist, and postdoctoral associate Dr. Samir El Qaidi published the results of their newest investigations in the article “An intra-bacterial activity for a T3SS effector” in *Scientific Reports*.

“Bacterial pathogens interact with cells in their infected mammalian hosts by using what microbiologists call a type III secretion system, or T3SS, to inject virulence proteins into host cells,” Dr. Hardwidge said. “In some strains of *E. coli*, the proteins that are secreted by the T3SS help the pathogen combat the host’s immune system and contribute to diarrheal disease. Previously, the T3SS effectors were thought to be inactive within bacterium and only function in the host cells. While performing mass spectrometry experiments, we unexpectedly obtained data suggesting that one of these T3SS effectors might actually be active within the bacterium.”

“I’m really proud of the work performed by Dr. El Qaidi,” Dr. Hardwidge said. “He took advantage of an unexpected observation, designed several clever experiments to test hypotheses and designed experiments to confirm this new activity.”

Dr. Hardwidge said he and Dr. El Qaidi also investigated the same effects in *Salmonella* and *C. rodentium*, which are other bacteria that cause intestinal infections and diarrhea.

Diagnostic team develops new method to improve food safety

By Piper Brandt

Researchers recently developed a faster, more efficient method of detecting Shiga toxin-producing *E. coli*, or STEC, in ground beef, which often causes recalls of ground beef and vegetables.

“The traditional gold standard STEC detection, which requires bacterial isolation and characterization, is not amenable to high-throughput settings and often requires a week to obtain a definitive result,” said Dr. Jianfa Bai, section head of molecular research and development in the Kansas State Veterinary Diagnostic Laboratory (KSVDL).

The new method developed requires only a day to obtain confirmatory results using a new system called the partition-based, multi-channel digital polymerase chain reaction system, or dPCR.

“We believe the new digital PCR detection method developed in this study will be widely used in food safety and inspection services for the rapid detection and confirmation of STEC and

other foodborne pathogens,” said Dr. Jamie Henningson, director of the KSVDL.

When ingested through foods such as ground beef and vegetables, STEC can cause illnesses with symptoms including abdominal pain and diarrhea. Some illnesses caused by STEC may lead to kidney failure and can be life-threatening.

“Some *E. coli* strains do not produce Shiga toxins and thus do not affect human health as much,” said Dr. Xuming Liu,

research assistant professor.

“Because cattle feces and ground beef can contain harmless or less pathogenic *E. coli* along with STEC, the most commonly used PCR cannot identify pathogenic *E. coli* strains in a complex sample matrix.”

The new dPCR test was developed for research and food safety inspections that require shorter turnaround and high throughput, without sacrificing detection accuracy.



(Left to right) The research team included Colin Stoy, technician; Dr. Lance Noll, senior scientist; Elizabeth Porter, lab manager; Dr. Jianfa Bai; Ying Wang, Ph.D. candidate; Junsheng Dong, visiting scholar; Nanyan Lu, bioinformatician; and Cong Zhu, pre-DVM student; Dr. Xuming Liu, research assistant professor.

Study develops new vaccine method to fight cattle disease

By Piper Brandt

Researchers at the CVM, in collaboration with Iowa State University, have developed a new vaccine delivery platform to produce long lasting protection against anaplasmosis infections.

Bovine anaplasmosis, caused by the blood-borne parasite, *Anaplasma marginale*, is the most prevalent tick-transmitted disease of cattle worldwide and causes significant disease loss to beef producers in the United States.

“Currently, a common strategy to control anaplasmosis is to provide mineral or feed containing the antibiotic chlortetracycline to cattle on pasture,” said Andrew Curtis, doctoral graduate research assistant in the laboratory of Dr. Hans Coetzee, professor and head of the anatomy and physiology department. “This practice has raised concerns about the potential emergence of antimicrobial resistance in bacteria that may pose a risk to human and animal health. Although there is an experimental vaccine available to control



Andrew Curtis and Dr. Hans Coetzee co-develop a vaccination method via an ear implant.

anaplasmosis, this has not been evaluated in published research studies and requires multiple injections.”

The objective of the study was to develop a single-dose implant platform that provides long term immunity against anaplasmosis infections by releasing vaccine contents over an extended period of time.

This new single-dose vaccine, which is administered in the back of the ear, has been shown to provide protection against clinical anaplasmosis for up to two years and could potentially help make anaplasmosis control more accessible and convenient to livestock producers.

Research exposes risks for spread of classical swine fever and pseudorabies through feed

Newly published research from the CVM provides the first investigation into how feed and feed ingredients may be playing a role in the spread of two swine viruses of global significance.

“Classical swine fever virus (CSFV) and pseudorabies virus (PRV) are two of the top four transboundary animal diseases of importance to swine,” said Dr. Megan Niederwerder, lead researcher and assistant professor in diagnostic medicine and pathobiology. “Both viruses are endemic to areas of the world where feed ingredients are manufactured and imported into the US each year.”

Currently, US commercial swine are negative for both CSFV and PRV after costly eradication programs were completed in 1978 and 2004, respectively. Dr. Niederwerder said reintroduction of these viruses into US swine herds would be devastating and that there are concerns that feed ingredients incorporated into swine diets may serve as new “fomites,” or sources, for the spread of animal diseases



CSFV and PRV in imported feed are a possible threat to US pork production. (Photo by Vidar Nordli-Mathisen on Unsplash)

of economic and welfare significance. Recent changes in PRV strain virulence and CSFV geographic distribution are of great concern for these trade-limiting diseases.

“The emerging threat of CSFV and PRV being reintroduced into US commercial swine is significant and preventing entry is critical for the US pork industry,” Dr. Niederwerder explained. “The route of introducing and transmitting swine viruses through feed has been recognized since the 2013-2014 outbreak of porcine epidemic diarrhea virus. However, the stability of CSFV and PRV in imported feed ingredients had yet to be investigated.”

Spring commencement moves to Bramlage



The 2020 spring commencement for veterinary medicine, which has traditionally been held in McCain auditorium, has been moved to Bramlage Coliseum. The ceremony will take place on Friday, May 15 at 4:00 pm.

CVM News Ticker



Drs. Chris Blevins and Dylan Lutter, with the assistance of Ashley VanMeter and Alison Brunner, presented Barn Night at High Horse Stables on Jan. 15. Dr. Lutter presented on equine performance medicine and demonstrated stretches that clients can do with their horses. Dr. Blevins discussed preventative medicine, biosecurity, nutrition and more.

Dr. Kate Kukanich was awarded a \$15,000 grant from the 2020 Boehringer Ingelheim Veterinary Scholars Program, which will support student stipends for the program.

Ron Orchard, second-year student in veterinary medicine and public health graduate student, will be a keynote speaker at the KSU 2020 Community Engagement Symposium on March 23.

Drs. Mike Apley and Matt Miesner along with other K-State faculty members, **Drs. Daniel Thomson, Fadi Aramouni, Dale Blasi, Steve Ensley, Mark Haub, KC Olson, Travis O'Quinn, and Anthony Tarpoff** received \$48,500 in funding from the Kansas Beef Council for their research study, “A comparison of chemical composition, toxicology screening, estrogenic activity, taste panel evaluation and price of meat substitutes compared to ground beef.”

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