



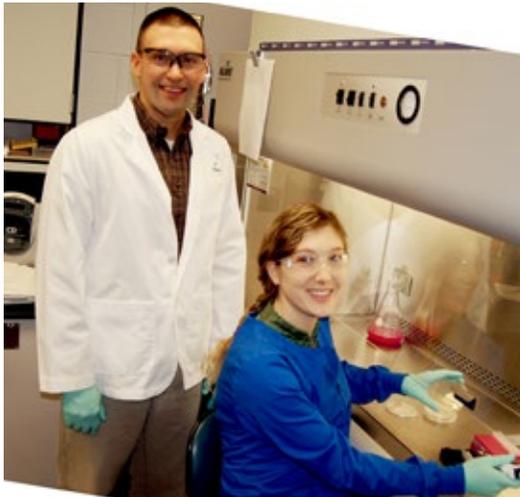
lifelines

News from the
College of Veterinary Medicine
at Kansas State University

January 2016

Vol. 11 No. 1

KSVDL team publishes first U.S. characterization of parainfluenza virus formerly identified in Asia



Dr. Benjamin Hause works with Rachel Palinski, a graduate student, on a set of samples being examined for porcine parainfluenza virus 1.

Palinski, worked with a team of scientists that published its findings in the Nov. 17 issue of the *Journal of General Virology* in an article titled, “Widespread detection and characterization of porcine parainfluenza virus 1 in pigs in the United States.”

“The KSVDL received diagnostic samples from pigs that showed signs of acute respiratory disease, sent to us from multiple states,” Dr. Hause said. “The common agents are usually influenza or porcine reproductive and respiratory syndrome virus however these samples were negative for both of these viruses. To identify other possible viruses present in the samples, we utilized advanced DNA sequencing methods, and the common finding

was porcine parainfluenza virus 1. It’s the first formal identification of this relatively newly described virus in the U.S. We were also surprised to find there is considerable genetic variability for porcine parainfluenza virus 1 between the different samples. They’re not all identical viruses. There are mutants and probably different subtypes in the U.S., so there is genetic variation no one knew about before.”

Dr. Hause said the Veterinary Diagnostic Laboratory developed PCR (polymerase chain reaction) tests and diagnostic assays specifically for this parainfluenza virus.

“We screened 300 random samples including nasal swabs, lung tissue or oral fluids, and found that 6 percent tested positive for the parainfluenza virus,” Dr. Hause said. “We were also able show that the virus replicates in the upper respiratory tract. We then developed a serology assay to look for antibodies to see how common it is for pigs to have been exposed to this, and about 50-60 percent of the samples were positive. This suggests the virus did not just arrive here or that it is in just one area of the country.”

Dr. Hause said demand is building for the development of a vaccine.

“Talking to swine veterinarians, this virus is something that likely causes respiratory disease in pigs,” Dr. Hause said. “It does not typically cause severe disease, but it’s the kind of disease that causes an infected pig to fall behind. A pig will get a mild cold, won’t eat as well, wean as fast or take off like its litter mates, so there is likely economic significance with the disease.”

The usual suspects are not to blame for recent cases of respiratory disease in domestic pigs. Researchers in the Kansas State Veterinary Diagnostic Laboratory (KSVDL) have successfully published the first formal identification and characterization of porcine parainfluenza virus 1 from U.S. pigs, which had previously only been detected in Asia.

Dr. Benjamin Hause, an assistant professor, and graduate student Rachel

Inside this issue of *lifelines*



New vaccine for avian influenza.

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Faculty video: Dr. Yunjeong Kim.

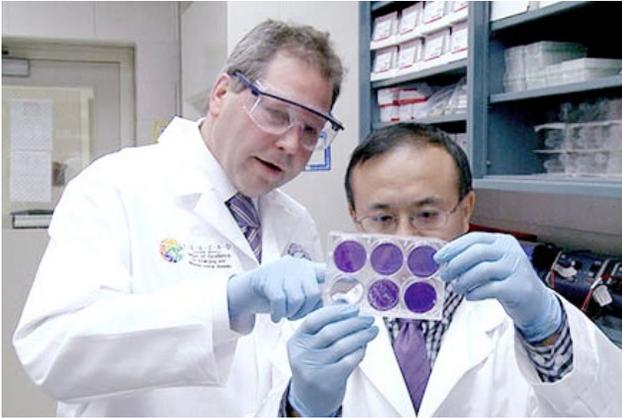
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KSVDL launches new mobile app.

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New NDV-H5Nx avian influenza vaccine has potential for mass vaccination of poultry



Drs. Jürgen Richt and Wenjun Ma lead a Kansas State University research team that developed a vaccine for three deadly strains of avian influenza.

A team of researchers in collaboration with Garcia-Sastre of the Icahn School of Medicine at Mount Sinai, has developed a vaccine that protects poultry from multiple strains of avian influenza found in the U.S., including H5N1, H5N2 and H5N8. The vaccine has the potential to be administered through water or into embryonated eggs, making it easier for poultry producers to vaccinate flocks.

The vaccine, called NDV-H5Nx, protects chickens and likely other poultry

against the three recently introduced U.S. avian influenza strains H5N1, H5N2 and H5N8, as well as against Newcastle disease virus — a virus that naturally affects poultry. Avian influenza killed millions of chickens and turkeys in the U.S. in spring and summer 2015, leading to billions in lost revenue for the U.S. poultry industry.

The NDV-H5Nx vaccine also has the potential to be administered to millions of birds at a time through water, said Dr. Jürgen Richt, Regents distinguished professor of veterinary medicine, director of the U.S. Department of Homeland Security's Center of Excellence for Emerging and Zoonotic Animal Diseases at Kansas State University and one of the researchers involved in the discovery.

“The vaccine we produced is a live vaccine, which means it replicates in birds,” Dr. Richt said. “Because it’s live,

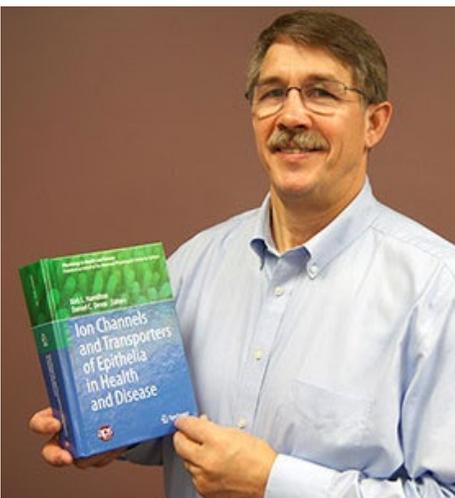
we believe that the vaccine could be sprayed into the air or put in the water supply so that when the chickens need a drink, they could be vaccinated. A poultry farm could vaccinate all of its birds in a single day because all living creatures need water to live.”

The vaccine also has potential to be administered to developing chicks in eggs, resulting in offspring being automatically vaccinated for the diseases, said Dr. Wenjun Ma, assistant professor of diagnostic medicine and pathobiology and one of the researchers involved.

H5 vaccines currently on the market require that each chicken be injected by hand. Many poultry operations have millions of birds and it would take many hours to vaccinate every chicken, Dr. Richt said.

Additionally, the NDV-H5Nx vaccine has the ability to differentiate infected from vaccinated animals, or DIVA. This compatibility is critical for the U.S. poultry industry because it provides evidence to trade partners that poultry have been vaccinated and is free of H5, Dr. Richt said.

Dr. Bruce Schultz writes lead chapter of new book on function of epithelial cells



The tiniest things have the potential to make a big difference in human and animal health. For Dr. Bruce Schultz, a physiology professor at Kansas State University, it starts with how proteins transport chloride through body cells.

Because of his expertise, Dr. Schultz was selected to write the first chapter in a new book called, “Ion channels and transporters of epithelia in health and disease.” The book compiles a wealth

of detailed information from multiple authors at research universities and institutions around the world who are all recognized as experts.

lifelines is published monthly by Marketing and Communications in the College of Veterinary Medicine, edited by Joe Montgomery, jmontgom@vet.k-state.edu. Read online at www.vet.k-state.edu/lifelines/1601.html

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KSVDL launches new mobile device app so clients can track progress on diagnostic samples for animal patients

Diagnostic results are now within touch at the Kansas State Veterinary Diagnostic Laboratory — thanks to the launch of a brand new app for mobile devices. The KSVDL anticipates the new app will improve customer service and efficiency at delivering results to veterinarians across the country.

Dr. Gary Anderson, director of the KSVDL, said the new app is a significant step forward in helping to deliver results.

“This is a major advancement in being able to provide diagnostics to practicing veterinarians out in the field,” Dr. Anderson explained. “Traditionally, we have used a variety of methods of delivery from snail mail, telephone, fax and e-mail. This app will give veterinarians a way to track the results as soon as they are received here in the lab. It will save time for everyone involved and is a real win-win for veterinarians and their clients who are seeking the best in medical care for their animals.”

Dr. Gregg Hanzlicek, director of Production Animal Field Investigations said the app was specifically designed to meet client needs.

“We meet with so many of our veterinarians at conferences and events, and they have really prompted the demand to get results quicker and more easily,” Dr. Hanzlicek said. “We’re very excited we were able to figure out a way to merge the technology in our lab with the

type of programming needed to create this type of an app for mobile devices. We’re breaking new ground because there wasn’t really anything else like this for us to emulate. We’re fortunate to have the right people in our college to develop the application and test it for reliability.”

Justin Wiebers (WEE-burrs) is the director of client connections in the College of Veterinary Medicine.

“Nobody else on campus was building apps with this level of complexity,” Wiebers said. “We studied what our veterinarians needed and looked at how the best mobile apps in other areas delivered on those types of needs. Then our programmers here in the college went to work. Our team learned how to send push notifications to veterinarians when their samples arrive in the lab and when their test results are ready. They can view and share those results wherever they happen to be working. It’s a very intricate system to get information from our diagnostic lab database to the individual



Drs. Brady Luke and Charles Luke access diagnostic results in the field on a cell phone using a new app developed by the Kansas State Veterinary Diagnostic Laboratory.

clients who are using a variety of Android, iPhone, and iPad devices. We’re very excited to be helping our veterinarians be more productive while breaking new ground in the field of mobile apps for K-State.”

The app is available on the App Store and at Google Play; just search for “KSVDL Mobile.” Clients can get more information about the app by contacting the KSVDL at clientcare@vet.k-state.edu, 866-512-5650 or <http://www.ksvdl.org>.

Meet our researcher of the month: Dr. Yunjeong Kim

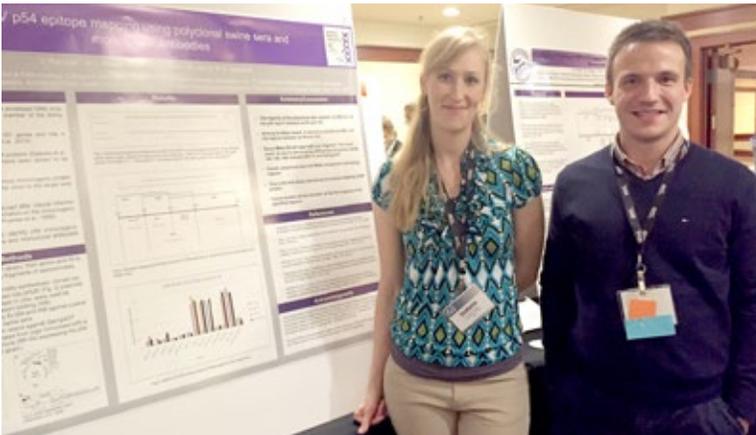
Watch this month’s video profile about our featured researcher of the month at the KSUCVM YouTube channel and in our online edition of Lifelines:

www.YouTube.com/watch?v=wbDj7h9hqw

www.vet.k-state.edu/lifelines/1601.html



Dr. Bob Rowland hosts PRRS Symposium



Dr. Bob Rowland, a leading expert on swine disease in the CVM recently hosted an international symposium in Chicago: the North American PRRS Symposium held Dec. 5 and 6 at the InterContinental Hotel. The symposium was planned in conjunction with the annual Conference of Research Workers in Animal Disease or CRWAD, which is regularly held in Chicago. Becky Eaves, project manager in the department of diagnostic medicine/pathobiology, was the proceedings editor and staff member for the symposium. Above: Graduate students Izabela Ragan and Vlad Petrovan present their research at the poster session. Read more about the conference in Lifelines online.

CVM News Ticker



Dr. Laxmi Uma Maheswar Rao Jakkula, accepts congratulations from Dr. Bill Stich at the 2015 Conference of Research Workers in Animal Diseases for getting 1st place for his presentation on "Sequence Determinants Spanning -35 motif and Spacer Sequences Impacting Ehrlichia chaffeensis Sigma 70-Dependent Promoter Activity of Two p28 Outer Membrane Protein Genes."

Antibiotic Use and Regulation:

Will producers have what they need to raise livestock?

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Limited seating available.
RSVP to lovingk@vet.ksu.edu
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Lunch provided by:

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