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Partnering on a Patent

Dr. Annelise Nguyen helps develop cancer-fighting compounds

A patent has been issued for a series of synthetic compounds developed at Kansas State University that have applications for treating cancer and other diseases that affect cell communication.

The compounds, called quinolines, can restart communication between adjacent cells in the body if those communication channels have become closed from a disease.

U.S. Patent 8,809,368, "Compounds Affecting Gap Junction Activity," was recently awarded to the Kansas State University Research Foundation, a nonprofit corporation responsible for managing technology transfer activities at the university. The patent is for research conducted by Dr. Duy Hua, university distinguished professor of chemistry; Dr. Thu "Annelise" Nguyen, associate professor of toxicology; and Dr. Dolores Takemoto, professor emeritus of biochemistry.

In 2007, Dr. Hua developed several new quinolines — colorless, pungent, oily liquids that are naturally found in coal tar.

Based on computational modeling with the quinolines, Dr. Hua believed the compounds could affect gap junction activity in cells. Gap junctions are "doorways" or channels between adjacent cells that allow small molecules, ions and the body's electrical signals to move from one cell to a neighboring cell.

Dr. Hua turned the quinolines over to Dr. Nguyen and Dr. Takemoto to study their effectiveness in real cells. The researchers looked at whether the quinolines could restore gap junction activity, and thus communication, in cell clusters that no longer had gap junction activity.

Researchers found that the quinolines developed by Hua reopened the closed channels in the cells.

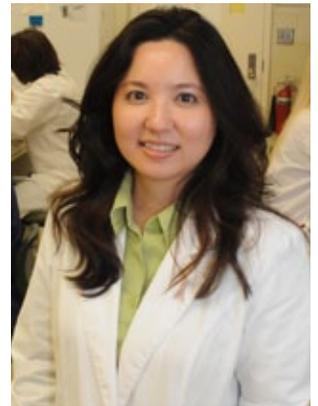
"By reopening these channels, we can once again have cells functioning normally," Dr. Nguyen said. "The cells are able to regulate themselves

once again with biological markers that tell cells when to die. This function is necessary for the body to function normally."

The quinolines' ability to restore lost gap junction activity may make the synthetic compounds a new resource in the fight against cancer, Dr. Nguyen said.

"In cancer cells, gap junction activity is low compared to normal cells because cancer cells have a low expression of the protein that makes up the gap junction channels," Dr. Nguyen said. "The protein is either not able to make gap junctions or the gap junctions are made closed. Here we have compounds that can restore that gap junction activity to normal."

The Kansas State University developed quinolines are currently the only gap junction enhancer in existence.



Dr. Annelise Nguyen helps to synthesize quinoline compounds, which could be a resource for fighting cancer.

CVM hosts international symposium in China; Signs agreement with Zoetis Animal Health and Chinese Veterinary Medical Association

A mutual interest in improving animal health and veterinary education is helping the CVM bring new global partners together in China. The college's U.S.-China Center for Animal Health partnered with the Chinese Veterinary Medical Association and Zoetis, a global animal health company, to host an International Symposium of Veterinary Education in Qingdao, China, in late October.

The symposium was attended by senior executives of the Chinese Veterinary Medical Association, American Veterinary Medical Association, China Scholarship Council, Zoetis, and deans from more than 25 Chinese, American, and European veterinary colleges. The meeting provided insights into the education systems of China, U.S. and Europe, invited discussions of the directions and strategies to improve China's veterinary education, and unveiled the achievements made so far in the U.S.-China Joint DVM Program lead by K-State's U.S.-China Center for Animal Health since its launch in 2012. The symposium also gave an opportunity for the AVMA to

present how it regulates the veterinary profession in the U.S. and how regulation impacts veterinary education.

"The comparison between the U.S. and China will help Chinese senior administrators learn how to improve veterinary education and meet the increased demand for advanced animal health care in China," said Dr. Ralph Richardson, dean of the College of Veterinary Medicine. "From our perspective, we have learned about the challenges and opportunities facing our international colleagues."

The meeting concluded with the signing of a Memorandum of Understanding (MOU) between Zoetis, Kansas State University, and the Chinese Veterinary Medical Association to pave the way for future cooperation. Thus far, Zoetis has provided more than \$260,000 as the Phase I funding to the U.S.-China Center for Animal Health to support the joint DVM program for Chinese students. Based on this MOU, Zoetis will continue to support the program with a Phase II funding of \$600,000 in 2014.



On October 27, the U.S.-China Center for Animal Health co-hosts an International Symposium for Veterinary Education in Qingdao, China, with Zoetis and the Chinese Veterinary Medical Association. Senior executives of the Chinese Veterinary Medical Association, American Veterinary Medical Association, China Scholarship Council, and Zoetis, and deans from more than 25 Chinese, American, and European veterinary colleges attended.

Video report: Students pick top teachers for fall awards



Congratulations to Drs. Judy Klimek, Sanjeev Narayanan and Justin Thomason, picked respectively for the top teaching awards in the first, second and third years. The secret to creating a successful new veterinarian is a quality teacher. As a way to recognize the importance of pre-clinical education, the Kansas State University College of Veterinary presented the fall teaching

awards on Nov. 17. What drives the faculty members to be the best teachers they can be? Find out in this month's Lifelines video feature, "Annual Teaching Awards Honor Pre-Clinical Instructors," which can be found on the KSUCVM YouTube channel at:

<https://www.youtube.com/watch?v=0XibKVrazaw>.

Study models impact of potential FMD outbreaks

A research project in the CVM presents the largest model to date for evaluating the impact and control of a potential outbreak of foot and mouth disease (FMD) in livestock. Dr. Mike Sanderson and his former graduate student, Dr. Sara McReynolds, published their results in the December issue of the journal, Preventive Veterinary Medicine.

The researchers developed simulation models to assess the impact of livestock herd types and vaccination on FMD outbreaks using the North American Animal Disease Spread Model. In this study, potential FMD virus outbreaks in the central region of the U.S. were simulated to compare different vaccination strategies to a depopulation-only scenario. Based on data from the USDA National Agricultural Statistics Service, a simulated population of 151,620 livestock operations characterized by latitude and longitude, production type and herd size was generated. Data for the study was generated by surveying livestock producers in Kansas and Colorado in order to determine the rate of contact between herd populations.

“The results of this study will provide information about the impacts of disease-control protocols, which may be useful in choosing the optimal control methods to be used by the livestock industry and animal-health professionals to meet the goal of rapid effective control and eradication,” Dr. Sanderson said. “The challenge behind this project is that you don’t want to destroy the livestock industry in the process of trying to



“... (Y)ou don’t want to destroy the livestock industry in the process of trying to destroy the (FMD) virus,” said Dr. Mike Sanderson, an epidemiologist in the Department of Diagnostic Medicine/Pathobiology.

destroy the virus. You have to control the virus in a way that allows the industry to survive as effectively as possible.”

Dr. Sanderson, an epidemiologist, explained how the study will serve as a component of a larger overall project.

Dr. McReynolds graduated from K-State with a Doctor of Veterinary Medicine and Master of Public Health in 2008 and a doctorate in pathobiology in 2013. She is currently the assistant state veterinarian in North Dakota.

“Our results only give an indication of what could happen in the livestock industry when following specific control protocols,” Dr. McReynolds said.

Check it out at the Library

“Searching the Cochrane Library”

By Carol Elmore

Last month, an overview of The Cochrane Library <http://www.thecochranelibrary.com/view/0/index.html> was discussed as having helpful healthcare information. There are various ways to search Cochrane so by using the topic, “treating asthma with acupuncture”, examples of how to find helpful information will be discussed. One way to search for information is to use the Browse by Topic links on the left hand side of the Cochrane page. If complementary & alternative medicine is selected, a list of conditions will be displayed. Selecting lungs & airways will open a list. Selecting asthma (chronic) and clicking on it will show a list of systematic reviews on this topic. The first one given is about using acupuncture to treat asthma.

Another way to search for information is to use the Special Collections section in the middle of the opening page of

Cochrane. Clicking on the “view all” link brings up a list of topics. As the end of the list on the fourth page is the topic –“Acupuncture: ancient tradition meets modern science” which is a comprehensive discussion of the topic.

A final way to search is by typing “asthma acupuncture” in the Search the Cochrane Library search line on the left hand side of the opening screen. This lists two systematic reviews on the topic.

Feel free to call or e-mail the Veterinary Medical Library, if you would like to schedule an individual session with me on using The Cochrane Library.



Hot Topic: VHC oncologist says cancer is prevalent in pets, but treatable



Dr. Mary Lynn Higginbotham is an oncologist at the VHC.

About 50 percent of dogs and 33 percent of cats age 10 years and older will develop cancer. Although it is very prevalent in these animals, an oncologist in the Veterinary Health Center said, depending upon the type of cancer, it may be very treatable and doesn't have to be a life-limiting disease.

Dr. Mary Lynn Higginbotham, assistant professor of oncology said any breed is at risk of developing cancer. Common types of cancer found in pets are also common in humans:

lymphoma, melanoma and osteosarcoma, for example.

"There are certainly some dog breeds that the Veterinary Health Center has noticed have a tendency to develop tumors, but it varies from tumor to tumor," Dr. Higginbotham said. "Osteosarcomas are the primary bone tumors we see in the limbs, most commonly in the front legs of large dog breeds like Great Danes, mastiffs, Labrador retrievers and rottweilers."

CVM NEWS TICKER

Amy Juracek, veterinary specialty technician in anesthesia in the Veterinary Health Center, was recognized for 20 years of service. She was presented a pin by Dean Ralph Richardson and VHC administrator Shirley Arck.



Three Professorships: **Dr. Ken Harkin** was selected to receive the Steven and Colleen Hodes Faculty of Distinction Professorship in honor of outstanding faculty performance and national/international reputation by his peers. **Dr. Michael Apley** was selected to receive the Dr. Edwin J. Frick Professorship, which recognizes a faculty member with a national and international reputation. Dr. Derek Mosier was selected to receive the Dr. Roy Walter Upham Professorship. This appointment recognizes senior leadership in the college.

Dr. Elizabeth Davis delivered a presentation to Kansas City area high school students at the Olathe campus in the Careers in Veterinary Medicine Lecture Series. The seminar title was "Equine Veterinary Medicine."

Drs. Liz Santschi and Elizabeth Davis traveled to Cherryvale, Kansas, to meet with regional veterinarians. Dr. Santschi presented a talk on "Equine Stifle Lameness" and Dr. Davis provided an update on the Equine Performance Testing Center.

The development office welcomes a new director of development, Debbie Kirchhoff. Prior to joining the CVM, Debbie was director of corporate and foundation relations for K-State Olathe. She earned her undergraduate degree in business from Kansas State University in 1986.



Winning Willie's Pet of the Week



Congratulations to Jodi and Sophie Schendel, Cheney, Kansas, and their dog, Ruby, on being chosen as the winner of Willie's Pet of the Week in a season-long contest sponsored by the Veterinary Health Center. They are pictured with two of the celebrity judges, K-State President Kirk Schulz and VHC Director Dr. Roger Finland. A 2015 calendar featuring a variety of pictures from the contest is available at Varney's Book Store in Manhattan. Proceeds go to the Miles Fund.

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