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College of Veterinary Medicine received \$1.6 million NIH grant to uncover mysteries behind Parkinson's disease

A new research grant for Yulan Xiong, assistant professor of anatomy and physiology at the Kansas State University College of Veterinary Medicine, focuses on gaining a better understanding of the physiological causes of Parkinson's disease.

The National Institute of Neurological Disorders and Stroke awarded Xiong with more than \$1.6 million for a five-year project, "Molecular regulations of LRRK2 in Parkinson's disease." This award is from the research project grant program R01 at the National Institutes of Health (NIH).

Xiong's work in Parkinson's disease has also been supported by an NIH K01 Mentored Research Scientist Development Award and several awards from well-recognized foundations and agencies, including the Parkinson's Foundation Stanley Fahn Junior Faculty Award, William N. and Bernice E. Bumpus Foundation Innovation Award, and an American Parkinson's Disease Association research grant.

"According to the National Institutes of Health, 1 million people in the United States are suffering from Parkinson's disease," Xiong said. "Unfortunately, there is no cure or proven therapy for this disease."

Parkinson's disease is recognized as the most common movement disorder affecting up to 1% of the population above the age of 60 and 4-5% above the age of 85.

"The cardinal symptoms of the disease are caused by the loss of brain cells - called dopaminergic neurons - in the midbrain and deficits in the striatum, which is the area of the brain that controls motor function and reward systems," Xiong said.

Mutations in the Leucine-rich repeat kinase 2 gene, or LRRK1, account for up to 40-50% of Parkinson's disease in certain populations and are the most known common causes for the disease, Xiong said.

"Given its strong genetic links and compelling drug ability, LRRK2 represents a clear target for therapeutic development," she said. "But how the function of LRRK2 is regulated in Parkinson's disease is poorly understood."

The objective of Xiong's study is to answer that question. Her group will first identify and characterize the key regulator for the LRRK2 gene, then determine how it regulates LRRK2 cellular function, and explore how this regulation affects LRRK2 function in striatum and related motor function in mammalian model systems.

"We believe new knowledge about this aspect of LRRK2 biology will advance our understanding of the physiologic and pathophysiologic actions of LRRK2," Xiong said. "We hope it leads to the potential identification of novel targets for future pharmacologic intervention and treatments for Parkinson's disease."

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

New research from Kansas State University 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.

Megan Niederwerder, lead researcher and K-State assistant professor of diagnostic medicine and pathobiology, and her colleagues have published the first report of classical swine fever virus and pseudorabies virus stability in feed ingredients subjected to different environmental conditions mimicking transpacific shipment. "[Stability of classical swine fever virus and pseudorabies virus in animal feed ingredients exposed to transpacific shipping conditions](#)" is available online in the Journal Transboundary and Emerging Diseases.

"Classical swine fever virus and pseudorabies virus cause two of the top four transboundary animal diseases of importance to swine," Niederwerder said. "Both viruses are endemic to areas of the world where feed ingredients are manufactured and imported into the United States each year."

Currently U.S. commercial swine are free to both classical swine fever virus and pseudorabies virus because of costly eradication programs completed in 1978 and 2004, respectively. Niederwerder said reintroduction of these viruses into U.S. swine herds would be devastating and that there are concerns that feed ingredients incorporated into swine diets may serve as new sources for the spreads of animal diseases with economic and welfare significance. Recent changes in pseudorabies virus strain virulence and classical swine fever virus geographic distribution are of great concern for these trade-limiting diseases.

"The emerging threat of classical swine fever virus and pseudorabies virus being reintroduced into U.S. commercial swine is significant and preventing entry is critical for the U.S. pork industry," Niederwerder said. "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 classical swine fever virus and pseudorabies virus in imported feed ingredients had yet to be investigated."

In the researchers' study, they found both viruses survived for the length of the 37-day model in feed, with pseudorabies virus having increased stability across a broader range of feed ingredients when compared to classical swine fever virus.

"This study reports novel data about environmental stability of classical swine fever virus and pseudorabies virus in feed and includes important quantitative information that can be incorporated into risk models for preventing the potential spread of classical swine fever virus and pseudorabies virus through imported feed ingredients," Niederwerder said. "This information adds to our work on African swine fever and reinforces the concept of feed biosecurity for disease prevention."

This research was conducted at Kansas State University's Biosecurity Research Institute. In addition to the K-State research team, co-authors include researchers from Pipestone Veterinary Services, Cornell University and Lincoln Memorial University.



K-State crops team sweeps top individual awards to win 2019 National Championship

The Kansas State University crops team recently captured the title of national champions by winning the Kansas City American Royal Collegiate Crops Contest and the Chicago Collegiate Crops Contest. K-State teams have now won the collegiate crops contest championship in 17 of the past 21 years.

Official members of the K-State team were junior Blake Kirchhoff, Hardy, NE, and seniors Noah Winans, Tekonsha, MI and Nate Dick, Inman, KS. Alternate contestants were junior Madison Tunnell, Olathe and sophomores Alex Kaufmann, Concordia; Evan Bott, Palmer and Trevor Mullen, Salina. All are agronomy majors at K-State.

In both contests, the K-State team took first place in all three phases of the contest: plant and seed identification, seed analysis and grain grading. In addition, team members swept the one-two-three individual overall placing at both events. Such a sweep of all three contest components and the top



Online Professional MBA ranked among nation's top 25 programs

The online [Professional Master of Business Administration program](#) at Kansas State University was recently rated as the 25th best in the nation by U.S. News and World Report's 2020 Best Online MBA Programs.

With this Top 25 ranking among the 321 programs considered, K-State's PMBA program is ranked first in the Big 12, first in Kansas, 19th for veterans and 20th among public universities. The latest ranking marks the program's highest since debuting at 95th in 2016, the first year the program was eligible to be included in the rankings, and significantly higher than last year's ranking of 58th.

"The goal has been to deliver a program that provides our students with the business education, tools and network to take their careers to higher levels," said Kevin Gwinner, Edgerley family dean of the K-State College of Business Administration. "Our rise in the rankings is indicative of our ability to not only fulfill this goal but also further evidence of our faculty's commitment to continuous improvement and supporting the academic success of our students."

three individual placing at both contests is very rare, and has only been accomplished three times before in the 86-year history of the events, all by Kansas State University.

Zebrafish brain research wins \$1.35 million grant

Thomas Mueller, research assistant professor in the Division of Biology, and three collaborators from Germany, England and Israel, received a \$1.35 million grant for the interdisciplinary research project "Navigating the Waters - A Neural Systems Approach to Spatial Cognition in Fish."

The prestigious Human Frontier Science Program grant promotes international collaborations with complementary expertise and multi-perspective approaches. Mueller is working with labs at the University of Bielefeld, Oxford University and Ben-Gurion University.

Mueller, an expert in comparative neuroscience of fishes, will examine how smell and taste contribute to spatial navigation in four fish species with differing navigational strategies: elephantnose fish famous for their ability to generate electric fields for navigation; goldfish and catfish known for their elaborate smell and taste systems; and zebrafish, a genetic model organism that offers mutant and transgenic lines critical for studies of brain function. The comparative approach will elucidate how evolution shaped the structure and function of brain regions in these fascinating fishes to ultimately understand neural and behavioral mechanisms.

DID YOU KNOW?

Kansas State University's Fall 2018 freshman-to-sophomore retention rate is 85.8%. This is the highest retention rate in university history.

The PMBA program was designed for professionals with at least three years of post-baccalaureate work experience who wish to earn their degrees online while simultaneously continuing to build successful careers. The program's quality is evidenced by its prestigious accreditation from the internationally recognized Association to Advance Collegiate Schools of Business, which is awarded to fewer than 5% of programs worldwide. Students receive instruction from the same faculty who are teaching K-State's on-campus MBA students and who are also actively engaged in research, which keeps the program's content current and immediately applicable to each student's day-to-day work life.

K-State ranked most affordable bachelor's in human nutrition and dietetics

Kansas State University has been ranked first [among the most affordable](#) bachelor's in human nutrition and dietetics for 2020 by Great Value Colleges. The school's [online program also was ranked sixth](#).

"K-State has a strong commitment to excellence, which is evident in rankings like these," said Richard Myers, university president. "We continue to be recognized for offering affordable, convenient and quality programs like our bachelor's in nutrition and dietetics. Our outstanding faculty and staff continue to gain national and international acclaim for their teaching, research, scholarly activities and service to students."

The Top 24 schools were selected and ranked based on tuition, student-to-faculty ratio, return on investment, student support network, concentrations/specializations, accreditation, campus diversity support network and "wow" factor. The online programs were ranked in order of net-price tuition.



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