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## K-State, KU Med to launch diabetes education project

Kansas State University and the University of Kansas Medical Center are joining forces to determine the most efficient ways to provide education to the state's residents for preventing diabetes.

The two groups are planning to launch a six-month pilot project in Lyon County and the Central Kansas Extension District to implement the [National Diabetes Prevention Program](#) in rural locations in Kansas. The project is funded by a grant from the [National Institutes of Health](#).

Depending on what they find, the program could then be launched throughout Kansas via the state's extension network.

The NDPP was created in 2010 to address an increasing incidence of pre-diabetes and Type 2 diabetes in the United States. A key element is an approach recognized by the [U.S. Centers for Disease Control and Prevention](#) to make lifestyle changes – such as eating more healthfully and exercising more frequently.

The CDC's research indicates that people who make the recommended lifestyle changes cut their risk of developing Type 2 diabetes by 58% – and 71% for people over 60 years old.

"We know there is a concerning prevalence of pre-diabetes across Kansas, including rural and urban areas, and among younger and older people," said Sandy Procter, a nutrition and health specialist with K-State Research and Extension.

Procter and Gayle Price, a professor and extension specialist in K-State's southeast regional extension office, are leading the university's work on this project.

A majority of adults who are diagnosed with diabetes – an estimated 90% to 95% – have Type 2 diabetes, which occurs when cells in the body become resistant to the effects of insulin. Unlike Type 1, which occurs when the body cannot produce insulin, the onset of Type 2 diabetes can be prevented.

The lifestyle changes most commonly recommended for lowering one's risk of Type 2 diabetes center around weight, physical activity, stress, sleep and the type of food and beverages people choose.

The pilot program, Procter said, "also addresses food because we know diet is an important part of maintaining a healthy weight, as well as diabetes control and prevention. But it reaches beyond food to address lifestyle factors."

For more than a decade, K-State Research and Extension has offered the national extension program, [Dining With Diabetes](#), throughout Kansas. Dining with Diabetes focuses on individuals with Type 2 diabetes and/or their family members and caregivers, Price said. The grant from NIH and the partnership with the University of Kansas Medical Center will help the state's extension agents broaden programming to those who have not yet been diagnosed with diabetes.

"I think KU Med recognized that K-State Research and Extension provides a great opportunity with agent educators located across the state, so we provide an effective avenue to get this very focused program out to people who are at risk," Procter said.

"For health's sake, it really is key for people to have the knowledge that they can change behaviors now to prevent this really costly disease."

Procter said extension agents Emily Prouse (Lyon County) and Leah Robinson (Central Kansas District) are helping to lead the pilot programs in their communities.

If the pilot project is successful – and pending future grant opportunities – K-State Research and Extension and the KU Medical Center will make plans to offer a full year program throughout Kansas, including six months of directed lessons, and six months of "maintenance and check-in," according to Procter.

"Because this program is offered as more of a lifestyle-coaching intervention, it can really help someone understand how they can control situations that sometimes lead to over-eating or sedentary behavior or other activities that may make them prone to diabetes. It's a way to help participants take control and prevent the onset of diabetes as they go into their future."

More information on K-State Research and Extension's efforts to address diabetes in Kansas [is available online](#).

## **Stephen Higgs receives prestigious international award for achievements in medical entomology**

[Stephen Higgs](#), Kansas State University associate vice president for research and director of the [Biosecurity Research Institute](#), is the 2020 recipient of the [Harry Hoogstraal Medal for Outstanding Achievement in Medical Entomology](#).

The medal is an international award from the American Society of Tropical Medicine and Hygiene, or ASTMH, and honors outstanding lifelong service to medical entomology. The American Committee of Medical Entomology, or ACME, virtually presented Higgs with the award at the ASTMH annual meeting this week.

"One of the reasons that I am thrilled to receive the Hoogstraal Medal is that it is awarded by one's peers," Higgs said. "In my previous roles with ACME, I have presented this award to many of the recipients. This is a career award that reflects the work of many students and collaborators from around the world."

Higgs is the first representative from K-State to receive the Hoogstraal Medal. At K-State, Higgs has directed multidisciplinary research that encompasses many aspects of vector-borne viruses, with a particular focus on mosquito-virus-vertebrate interactions. He has published with more than 650 co-authors.

"Dr. Higgs is a true international collaborator and leader who has made significant contributions to K-State's visionary goal of becoming a Top 50 public research institution," said Peter Dorhout, vice president for research. "His impressive body of work shows why he is deserving of this award, and we are proud to have him at K-State."

Under Higgs' leadership, the K-State Biosecurity Research Institute in Pat Roberts Hall has grown into a world-renowned biosafety level-3 facility that houses important multidisciplinary research, training and educational programs on pathogens that affect animals, plants and insects, as well as food safety and security. Higgs is an elected fellow of the American Society of Tropical Medicine and Hygiene and serves as the editor-in-chief of the journal Vector Borne and Zoonotic Diseases.

The prestigious Hoogstraal Medal is named after American entomologist and parasitologist Harry Hoogstraal, who lived from 1917 to 1986, and is recognized as one of the world's foremost authorities on tick-borne diseases. The Hoogstraal Medal has included notable recipients such as Willy Burgdorfer, who discovered Lyme disease.



## Researchers aim to mitigate COVID-19 in meat and poultry processing facilities

Kansas State University researchers are involved in a U.S. Department of Agriculture-funded project to protect meat plant workers and their surrounding communities from the spread of COVID-19.

[In this video](#), animal sciences professor Randy Phebus talks about the work that includes key partnerships between faculty in the College of Agriculture and the College of Veterinary Medicine.

"Primarily we are focusing our efforts on giving the meat and poultry processing industry tools and knowledge that they can use to develop and implement better programs to protect their workers," Phebus said.

He said the team's goals include validating the cleaning and disinfection systems that are used during production, and during sanitation shifts in the plant. The researchers also hope to gain an understanding of how COVID-19 moves around in the plant and maintains – or doesn't maintain – its infectious nature, according to Phebus.

"We also have a piece of this where we are generating models that the industry can use for years to come in setting up the most effective management plans around COVID, (and) probably other agents like influenza," he said.

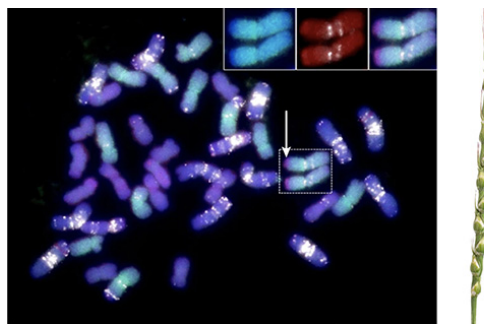
The research is taking place in the Biosecurity Research Institute, a biosafety level 3 agriculture facility.

## K-State Biochemist selected as 2020 AAAS fellow

The American Association for the Advancement of Science — the world's largest scientific society — has chosen [Phillip E. Klebba](#), Kansas State University distinguished professor of biochemistry and molecular biophysics, as one of its [2020 fellows](#).

Klebba is one of 489 fellows chosen this year by the American Association for the Advancement of Science, or AAAS. He was selected for his distinguished contributions to the understanding of the membrane transport mechanisms of bacteria relevant to their practical applications in human and animal health.

Election as an AAAS fellow is a lifetime honor



## Global collaboration is unlocking wheat's genetic potential

In a paper published Nov. 25 in [Nature](#), Kansas State University researchers, in collaboration with the international [10+ Genome Project](#) led by the University of Saskatchewan, announced the complete genome sequencing of 15 wheat varieties representing breeding programs around the world — an invaluable resource to improve global wheat production.

This effort gained momentum in 2018 when the Kansas State University team, in collaboration with the International Wheat Genome Sequencing Consortium, [published the genome assembly of Chinese Spring](#), the first complete reference genome of bread wheat. With rapid advances in DNA sequencing technology, and with experience from assembling the first wheat genome, the 10+ Genome Project brought together the expertise and resources of more than [95 scientists](#) from universities and institutes in Canada, Switzerland, Germany, Japan, the U.K., Saudi Arabia, Mexico, Israel, Australia and the U.S.

This study represents the start of a larger effort to generate thousands of genome sequences of wheat, including genetic material brought in from wheat's wild relatives.

"It's like finding the missing pieces for your favorite puzzle that you have been working on for decades," said project leader Curtis Pozniak, wheat breeder and director of the University of Saskatchewan Crop Development Centre. "By having many complete gene assemblies available, we can now help solve the huge puzzle that is the massive wheat pan-genome and usher in a new era for wheat discovery and breeding."

"Our team was uniquely suited to represent U.S. wheat in this effort here in America's breadbasket and as a land-grant institution with a strong history in wheat research," said Jesse Poland, associate professor at Kansas State University and director of the [Feed the Future Innovation Lab for Applied Wheat Genomics](#) and the [Wheat Genetics Resource Center](#). "We are fortunate to have world leaders in breeding and genetics under one roof, and generous support from the National Science Foundation, [Kansas Wheat](#) and many others."

The Kansas team was responsible for sequencing and analyzing the hard red winter wheat variety Jagger, released in 1994 by the Kansas State University breeding program, now led by Allan Fritz. Jagger was a landmark wheat variety in the Great

bestowed upon association members by their peers. The fellowship program recognizes individuals whose efforts toward advancing science applications are deemed scientifically or socially distinguished.

Klebba [joins 23 current and emeritus Kansas State University faculty members](#) who are fellows of the association.

"Dr. Klebba has a long-standing record of publications from his research," said Peter Dorhout, vice president for research. "The papers from his laboratory routinely devised new techniques, including immunological, molecular biological biochemical, and biophysical methods, that placed him at the forefront of basic biochemical research. It was a pleasure for me to recommend Phil for this recognition."

Klebba's research focuses on three areas: the development of fluorescent nanosensors for biophysical analyses of membrane transport in living cells, leading to understanding of the mechanisms of active iron transport through the cell envelopes of pathogenic bacteria, and the use of this knowledge to discover novel antibiotics against bacterial infectious disease.

Klebba came to K-State in 2012. His research and collaborative projects have garnered more than \$10.5 million in continuous research funding since 1986 from organizations such as the National Institutes of Health and the National Science Foundation. He has more than 85 publications.

## DID YOU KNOW?

A team of three fashion design students were awarded the Optitex Technology Award in the undergraduate category during the 2020 International Textile and Apparel Association's annual conference.

Plains and covered millions of acres for many years. It was selected for this project because of its relevance as a breeding parent as it is found in the pedigrees of current varieties across the U.S.

"Because of our collaboration in this project, we've had access to this phenomenal genomics resource as it's been built, which has already led to tremendous discovery," Poland said. "K-State plant genetics graduate student Emily Delorean is using data from the 10+ Genomes Project to develop a comprehensive analysis of important quality genes and develop better molecular breeding tools, which will have a huge impact on bread making."

In a companion publication published in [Theoretical and Applied Genetics](#), Kansas State University scientists Liangliang Gao, Dal-Hoe Koo and team completed detailed characterization of the 2N introgression, a chromosome segment that was transferred from wild wheat relative *Aegilops ventricosa*, which is found in Jagger, but was not present in the original Chinese Spring reference genome. The 2N segment possesses resistance genes to multiple wheat diseases, including stem and leaf rust, nematodes and the emerging wheat blast disease. The team found that this chromosome segment is present in about 80% of Kansas wheat lines and also a large proportion of wheat around the world, marking its importance toward addressing global wheat improvement.

"Progress of this magnitude is only possible because of the strength of the international wheat breeding network and strong international collaborations in wheat research," said Justin Gilpin of Kansas Wheat. "It is exciting for the Kansas wheat growers to be part of this excellent work."

The work at Kansas State University was supported by the NSF, Kansas Wheat, the United States Agency for International Development, and the National Institute of Food and Agriculture. A complete list of international funding partners is available here: [10wheatgenomes.com/funders/](http://10wheatgenomes.com/funders/).



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