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## Six K-State Professors Receive More than \$3.5 million in National Science Foundation CAREER Awards

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**Six** K-State professors receive more than **\$3.5 million** in National Science Foundation CAREER awards

Christine Aikens

Jianhan Chen

Kendra McLauchlan

Simon Ou

Anna Whitfield

Wenqiao “Wayne” Yuan

When the news was announced Kansas State University had not one, or two, but six faculty members whose research was recognized by the National Science Foundation, it was not only a cause for celebration, but a historic first for the university.

The Faculty Early Career Development Program, or CAREER, award is one of the nation’s most prestigious honors directed toward young faculty in recognition of their high potential to become future leaders in their research areas.

“When talking with past winners of CAREER awards, I am always amazed at the profound impact that the award has had on their professional lives at K-State,” said Jim Guikema, associate vice president for research.

Guikema said he hopes the same is true for the current six.

This year’s winners are Christine Aikens, assistant professor of chemistry; Jianhan Chen, assistant professor of biochemistry; Kendra McLauchlan, assistant professor of geography; Simon Ou, assistant professor of computing and information sciences; Anna Whitfield, assistant professor of plant pathology; and Wenqiao “Wayne” Yuan, assistant professor of biological and agricultural engineering.

Combined, the researchers netted more than \$3.5 million in funding.

### **Christine Aikens**

*Assistant professor of chemistry*

*\$600,000 over four years*

Chemist Christine Aikens, who joined K-State in 2007, will use the award to improve the laboratory experience for students and conduct research that could lead to clean and renewable sources of energy. Aikens is the fourth recipient from K-State’s chemistry department to receive a CAREER award.

A portion of her four-year award will go toward molecular modeling software in the K-State student chemistry laboratories. In addition, Aikens will offer annual energy and sustainability workshops for middle school students to study solar power, biological energy and other renewable energy and materials. The rest of the award will go toward Aikens’ study of the complex photosystem II, where she and her research group will analyze the protein and why its oxygen-evolving center makes it an effective catalyst for water splitting.

Aikens earned a bachelor’s degree from the University of Oklahoma in 2000 and a doctorate from Iowa State University in 2005. She was a postdoctoral research fellow at Northwestern University before joining K-State in 2007.

### **Jianhan Chen**

*Assistant professor of biochemistry*

*\$670,000 over five years*

K-State professor Jianhan Chen will use his award to develop new methods for effective modeling of proteins and to study functional proteins, research that is frequently involved in human diseases like neurodegenerative disease and cancer. Additionally, Chen will use his award to lead two-day summer workshops on biomolecular modeling tools and training projects for high school and college instructors.

Chen earned a bachelor’s degree from the University of Science and Technology of China and a master’s degree and doctorate from the University of California at Irvine. He was a postdoctoral researcher at the Scripps Research Institute in La Jolla, Calif., before joining the K-State faculty in 2007. He was named a K-State Wakonse Fellow in 2009 and has earned two Innovative Research Awards from K-State’s Terry C. Johnson Center for Basic Cancer Research.

### **Kendra McLauchlan**

*Assistant professor of geography*

*\$440,000 over five years*

Geographer Kendra McLauchlan's NSF grant won't buy her a time machine, but it will help her and her team examine data from 10,000 years ago. She will use her award to study contrasts in vegetation history to reconstruct past nitrogen cycling and other ecosystem properties. She will research data from a prairie site, a forested site and a transitional site in increments of 10, 100, 1,000 and 10,000 years. Her research will be made public in an interactive display in the Itasca State Park visitor's center in Park City, Minn., as well as available in modified online modules.

McLauchlan directs K-State's Paleoenvironmental Laboratory, and she has been a part of three other NSF grants at K-State, including two for which she is principal investigator or co-principal investigator.

McLauchlan earned a bachelor's degree from Carleton College and her master's and doctorate degrees in ecology from the University of Minnesota. Before coming to K-State, she was a postdoctoral fellow at Dartmouth College.

### **Simon Ou**

*Assistant professor of computing and information sciences*

*\$430,000 over five years*

Professor Simon Ou is a soldier in the war against cyber attacks, and a recent five-year NSF CAREER award will be put toward further defense for weak links in cybersecurity. With his project, "Reasoning under Uncertainty in Cybersecurity," Ou hopes to improve cybersecurity by creating automated reasoning for network administrators. K-State undergraduate students and the general public will also benefit from Ou's research through outreach programs on the problems of cybersecurity.

Ou earned a doctorate in computer science at Princeton University, and then served as a postdoctoral research associate at Purdue University's Center for Education and Research in Information Assurance and Security and as a research associate at Idaho National Laboratory. He earned bachelor's and master's degrees in computer science from Tsinghua University in Beijing.

### **Anna Whitfield**

*Assistant professor of plant pathology*

*\$1 million over five years*

Professor Anna Whitfield will use her five-year grant to study how virus-carrying insects respond to the viruses themselves. Whitfield hopes to develop an interactive exhibit for K-State's insect zoo to help educate the public about her research. Additionally, she plans to prepare teaching tools for middle school science teachers to incorporate virology into their lesson plans, as well as to mentor undergraduate students from underrepresented groups.

Whitfield earned a bachelor's degree in biological science at the University of Georgia, a master's degree in plant pathology at the University of California, Davis, and a doctorate in plant pathology at the University of Wisconsin. She is an ancillary faculty member in K-State's department of entomology.

### **Wenqiao "Wayne" Yuan**

*Assistant professor of biological and agricultural engineering*

*\$400,000 over five years*

Wenqiao "Wayne" Yuan's efforts to reduce the costs of algae oil production won him a five-year CAREER grant for his project, "Multi-scale Structured Solid Carriers Enabling Algae Biofuels Manufacturing in the Ocean." Yuan hopes that his research will make energy manufacturing from algae economically viable, and he hopes to identify what the best large solid carriers are — like thin sheets of metals or polymers — as well as which surface textures, such as smooth or dimpled, are best for algae growth.

Yuan, in collaboration with Zhijian "Z.J." Pei, a professor of industrial and manufacturing systems engineering at K-State, was previously awarded a \$120,000 NSF grant in 2008 for their work on a related study.

Yuan joined K-State in 2006 and has research interests in biofuels and bioproducts. He earned his bachelor's and master's degrees from China Agricultural University and a doctorate from the University of Illinois at Urbana-Champaign.