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## University licenses technology for coronavirus and norovirus compounds

Yungeong Kim and Kyeong-Ok "KC" Chang, virologists in the K-State [College of Veterinary Medicine](#), and William Groutas, a medicinal chemist at Wichita State University, have been using National Institutes of Health grants to work on human norovirus therapeutics and recently received an additional \$3.7 million grant to develop antiviral drugs to treat Middle East Respiratory Syndrome, better known as MERS human coronavirus. Their work extends to other human viruses that have a similar viral protease, such as rhinoviruses and the newly emerged human coronavirus, COVID-19.

No antiviral drugs are yet available for human norovirus or coronaviruses, which include SARS, MERS and COVID19.

This could change as a result of a [new license agreement](#) between K-State and Cocrystal Pharma Inc., a clinical stage biotechnology company that is discovering and developing novel antiviral therapeutics to further develop certain proprietary broad-spectrum antiviral compounds for the treatment of norovirus and coronavirus infections.

Cocrystal has been granted an exclusive license to certain antiviral compounds developed by Kim, Chang and Groutas. The company intends to pursue research and development of these antiviral compounds, including preclinical and clinical development.

"This licensing agreement provides support to confront the emerging strain of coronavirus with urgency and caution," said Bonnie Rush, dean of the College of Veterinary Medicine at K-State. "The work of our K-State researchers is tremendously challenging and has never been more timely."

Rush said Chang and Kim have collaborated for years on the development of antiviral compounds to combat devastating viral diseases of humans and animals.

Similar to coronaviruses, human norovirus is a major pathogen with 10-21 million cases each year in the U.S. alone. The virus causes gastroenteritis and is also a potential bioterrorism agent because of its ability to cause debilitating illness.

"Our protease inhibitors target a virus protein called 3C or 3C-like proteases, which are essential for virus replication," Kim said. "Other antiviral drugs that have a similar mechanism are HIV protease inhibitors and hepatitis C virus protease inhibitors, but these do not work well against coronavirus."

The licensing agreement was coordinated by [K-State Innovation Partners](#), formerly known as the Kansas State University Research Foundation.

"The team at Cocrystal Pharma moved with a high sense of urgency to finalize the license negotiations," said Bret Ford, director of business development and licensing at Innovation Partners. "We look forward to watching them move with the same sense of urgency to advance our antiviral compounds toward human clinical trials."

This license agreement with K-State advances the company's antiviral programs significantly by providing potent compounds for further development.

"We are incredibly pleased to contract with the Kansas State University Research Foundation as we seek to develop safe and effective antiviral therapies for these viruses," said Sam Lee, president of Cocrystal. "This license agreement opens several development opportunities for us to expand the broad utility of our platform to address significant viruses for which there are unmet medical needs, particularly the COVID-19 coronavirus and norovirus."

The focus of research for Kim, Chang and Groutas has been on human viruses. However, some very important discoveries related to animal viruses such as [feline coronavirus](#) have also resulted from their research.

"We were able to utilize our knowledge and resources to develop a protease inhibitor for this animal viral disease along the way," Kim said. "It is very encouraging for this suggests that we are on the right track for our approach and also that we can contribute to improving animal health."

## College of Education's Rural Education Center creates network to serve rural schools

The [Rural Education Center](#), housed in the Kansas State University [College of Education](#), has recently established a Rural Professional Development School network to help address rural schools' most pressing needs, provide a forum to share best practices, explore grant opportunities and highlight accomplishments.

Eight districts have joined the initial effort to date and all are part of the Kansas State Department of Education's school redesign project: **Ashland** USD 220; **Clay County** USD 379; **Dighton** USD 482; **Haviland** USD 474; **Lakin** USD 215; **Liberal** USD 480; **Pratt** Skyline USD 438; and Twin Valley USD 240, which serves **Bennington** and **Tescott**.

Drawing on its award-winning Professional Development School model with school districts in the Manhattan area, the rural network provides a collaborative forum designed specifically for rural schools.

"Our faculty has taken the greatest strengths of our existing model, reimagined it for rural schools and attracted partnering districts with education leaders who have an uncompromising commitment to their communities and students," said Debbie Mercer, dean of the College of Education. "This is innovation at its finest."

Todd Goodson, professor and chair of the department of curriculum and instruction, believes it affirms K-State's mission.

"As a land-grant institution, our job is to reach as many Kansans as possible," Goodson said. "With the use of technology and a real-time understanding of the needs in rural schools, we can be more effective at enhancing learning opportunities for teachers and students in ways that are both practical and meaningful."

The seeds for the Rural Professional Development School network were sewn when representatives from the partnering rural districts met following the center's inaugural Rural Education Summit last summer on the K-State campus.

J. Spencer Clark, Rural Education Center director and associate professor of curriculum and instruction, said communication plays a key factor in the new network.

"The Rural Professional School Development network provides a two-way system to keep both the center and the districts informed about ways we can help each other meet the needs of our students," he said. "We're excited to have a strong group of districts in this partnership to help us identify issues and challenges and collectively create solutions tailored for each district and community."

Kelly Arnberger, **Dighton** USD 482 superintendent and Dighton Elementary School principal, said he's looking to broaden educational opportunities and experiences for his students.

"Our work to transform learning for the students at Dighton USD 482 is catalyzed with our partnership with Kansas State University," Arnberger said. "At the end of the day, it is about options, and we look forward to

providing more options for our students through our work with K-State."

Districts in the Rural Professional School Development network are already benefiting from the Rural Education Center's recent grant. Thanks to the Teaching Rural Students STEM through Tele-Presence national grant, robots will bring more learning opportunities to rural schools. The center received a \$146,031 award to create a distance learning network to serve rural schools with an emphasis on science, technology, engineering and math.

Entering its fifth decade, the Rural Education Center was previously known as the Center for Rural Education and Small Schools. It is led by Clark and Lori Goodson, assistant director and an assistant professor of curriculum and instruction.

Approved by the Kansas Board of Regents in 1978, the center focuses on meeting the needs of rural schools in Kansas. It emphasizes advocacy for rural schools and their communities by pursuing grant opportunities and other sources of funding to support various rural educational projects. Clark and Goodson also plan to conduct research and coordinate various educational activities to support learning opportunities for rural students and teachers. The center is focused on supporting current curriculum initiatives and goals associated with the Kansas State Department of Education school redesign, STEAM education, place-based education, and civic engagement in rural schools.



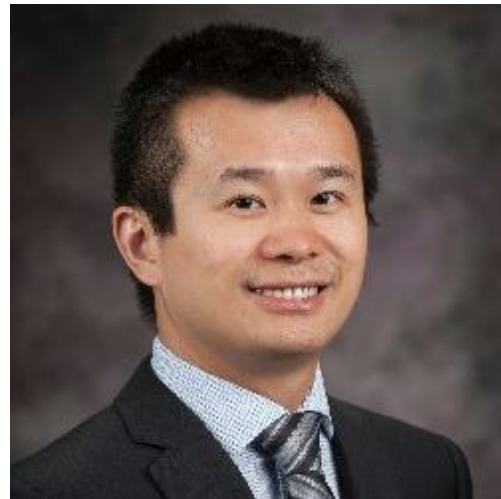
## Recent graduates report higher job placement, continuing education rates and higher starting salaries

Kansas State University's student-centered approach to higher education is consistently influencing employment rates and career success for recent graduates.

"Thanks to support from the entire university community, the class of 2018-2019 found continued success in pursuing a variety of job and educational opportunities," said Kerri Day Keller, director of the university's Career Center. "This year's bachelor's degree graduates set another placement record of 97% securing employment or furthering their education within six months of graduation."

Keller's statistics are from the university's recently released [post-graduation report](#), an annual report that shows a 1% increase in employment and continuing education rates. With an 81% response rate, the increase has become a reoccurring trend. According to the 2019 report, 96% of 2017-2018 bachelor's degree graduates were employed or pursuing further education six months after they graduated. That number was 95% for 2016-2017 graduates and 94% for 2015-2016 graduates according to the respective reporting years.

"Kansas State University faculty and staff are deeply



## Engineering professor receives prestigious NSF CAREER award

Due to their light weight and high strength, metal matrix composites are increasingly used in automotive, aerospace, electronics packaging and thermal management applications. However, attaining both high strength and high toughness in these composites is an essential requirement for their use in these structural applications.

Dong Lin, assistant professor in the [industrial and manufacturing systems engineering department](#) of the [Carl R. Ice College of Engineering](#) at Kansas State University, has been awarded a \$500,000, five-year National Science Foundation grant from its Faculty Early Career Development Program to investigate a novel manufacturing technique to engineer just such nacre- or bio-inspired, 3D metal-graphene composites.

The Faculty Early Career Development (CAREER) Program offers the NSF's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education, and to lead advances in the mission of their department or organization.

committed to students' personal and academic success and it shows," said Thomas Lane, vice president for student life and dean of students. "This student-centered approach helps K-Staters become highly desirable in the job market and get an immediate return on their investment."

The 2018-2019 bachelor's degree graduates reported a higher median salary at more than \$48,000 six months after graduation. Graduates across all degrees were employed by more than 3,400 different organizations and enrolled in more than 740 different educational programs.

"Compared to one year ago, we are pleased to see about a 7% increase to the overall salary average for new bachelor's degree recipients," Keller said.

In addition, Kansas remains the top state for employment of K-State graduates at 56%, and 76% of bachelor's degree graduates were employed in the five-state area of Kansas, Colorado, Missouri, Nebraska and Oklahoma. The span of K-State graduates is wide too. New graduates are employed in 49 states and more than 30 countries.

According to Keller, the variety of opportunities available to K-State students boosts their career readiness.

"Beyond the classroom, K-State students gain marketable skills and experience through a wealth of opportunities such as internships, education abroad, undergraduate research, campus employment, student organizations, leadership opportunities and more," Keller said. "We are fortunate to have a universitywide learning environment that supports the career readiness and employability of our students."

The university offers a variety of student success programs from freshman year to graduation, such as K-State First, a comprehensive program to help new students adjust to campus life, and one of the largest career fairs in the Big 12. In addition, the university has an 18-to-one student-to-teacher ratio and about 92% of classes have fewer than 53 students.

## DID YOU KNOW?

Kansas State University has been named a 2020 Top Employer by [DiversityJobs.com](https://www.diversityjobs.com) for its dedication and commitment to building a diverse workforce and culture.

Lin's project, "Bio-Inspired Manufacturing of High-Strength, High-Toughness Metal-Graphene Composites," will develop both computational and experimental capabilities to understand the strengthening and toughening mechanisms of these materials, and is expected to greatly impact the metal matrix composites industry.

The research will be complemented by an educational and outreach program involving curriculum development, research training, and engaging K-12 students and the general public. Success of the educational strategy will help supply Kansas and the U.S. manufacturing industry with a high-quality manufacturing workforce.

## K-State recognized for excellence in student voter engagement

Kansas State University received a silver seal from the ALL IN Campus Democracy Challenge for increasing student voting participation from 15.7% in 2014 to 36% in 2018 midterm elections. The seal was awarded at the ALL IN Challenge Awards Ceremony, which recognizes colleges and universities committed to increasing college student voting rates.

The National Study of Learning, Voting and Engagement, an initiative of Tufts University's Institute for Democracy and Higher Education, collected the data. [Read K-State's report](#). Student participation across the country in elections increased from 2014 to 2018. According to the study, voter turnout at the more than 1,000 institutions participating in the study increased by 21 points from 19% to 40%.

"We are excited to honor Kansas State University with an ALL IN Challenge silver seal in recognition of their intentional efforts to increase democratic engagement and full voter participation," said Jennifer Domagal-Goldman, executive director of the ALL IN Campus Democracy Challenge. "More institutions like K-State are changing culture on campus by institutionalizing nonpartisan democratic engagement efforts that are resulting in the incredible student voter turnout rates that we've seen across the country."

The [ALL IN Campus Democracy Challenge](#) is a nonpartisan, national initiative recognizing and supporting campuses as they work to increase nonpartisan democratic engagement and full student voter participation. The challenge encourages higher education institutions to help students form habits of active and informed citizenship, and make democratic participation a core value on campus. More than 560 campuses — enrolling more than 6.2 million students — have joined the challenge since its launch in summer 2016.



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