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KANSAS STATE UNIVERSITY | Office of Governmental Relations

Over $600,000 raised in one day to increase access to mental health services for K-State students through All In for K-State

When one-quarter of all U.S. college students have seriously considered suicide and the global pandemic approaches its third year, Kansas State University alumni, faculty, students, staff and friends gave $600,389 to increase access to mental health services for K-State students and reduce the stigma of asking for help. That's the power of K-Staters working together to achieve one bold objective in one day; that's All In for K-State.

"Wow. More than $600,000 was raised by Wildcats from all 50 states and 77 Kansas counties," said First Lady of K-State Sally Linton. "Thank you for jumping 'All In.' Thank you for caring about the future of mental health at K-State. Your heartfelt support will have a significant impact on many life journeys. Go Cats!"

Even K-Staters and friends from as far away as Canada and the United Kingdom came together virtually to support K-State's Counseling and Psychological Services and the Morrison Family Center for Student Well-being and the students they serve.

Veterinary research finds destressing benefit from feeding cattle industrial hemp

A new study by Kansas State University finds that feeding cattle industrial hemp may have a beneficial effect on their welfare: a reduction in stress and increasing the times when they lie down.

"Cattle experience a variety of stress and inflammation," said Michael Kleinhenz, assistant professor of beef production medicine at the K-State College of Veterinary Medicine. "Our most recent data shows how cannabinoids via industrial hemp decreased the stress hormone cortisol as well as the inflammatory biomarker prostaglandin E_2. This shows that hemp containing cannabidiolic acid, or CBDA, may decrease stress and inflammation in cattle. Thus, hemp may be a natural way to decrease stress and inflammation related to production practices such as transportation and weaning."

Kleinhenz has published the results of his study, "Short term feeding of industrial hemp with a high cannabidiolic acid (CBDA) content increases lying behavior and reduces biomarkers of stress and inflammation in Holstein steers," in Scientific Reports.

"Our new research helps us better understand how cannabinoids present in industrial hemp interact with bovine physiology and pharmacology," Kleinhenz said. "For instance, we now know that repeated daily doses of CBDA via feeding hemp does not result in accumulation of cannabinoids in the blood. Additionally, it solidified previous research and shows that each cannabinoid has its own absorption and elimination profile."

Another benefit observed when feeding cattle industrial hemp is that they lie down more, which can help

them ruminate and produce saliva.

Kleinhenz, who is in the college's clinical sciences department, worked with a multidisciplinary team. Researchers on the project included graduate students Mikaela Weeder, Shawnee Montgomery, Miriam Martin and Andrew Curtis; and anatomy and physiology department faculty members Geraldine Magnin, Hans Coetzee, Jason Griffin and Zhoumeng Lin; K-State Research and Extension's John C. Pair Horticulture Center in Haysville; and the environmental and global health department at the University of Florida. Each brought expertise in pharmacology, toxicology and plant biology.

"If hemp is to be utilized as an ingredient in the ration of cattle, it is prudent to know and understand the pharmacokinetics and potential biological effects of cattle exposed to repeated doses of cannabinoids present in industrial hemp," Kleinhenz said. "The initial data we have collected is essential should industrial hemp and its by-products are to be considered by the U.S. Food and Drug Administration and the Association of American Feed Control Officials. Further work is needed to determine if cannabinoids can alter the stress response in cattle during stressful times such as transportation and weaning, but we hope this research is a step forward in the right direction."

Funding for this work was provided by a grant from the Agriculture and Food Research Initiative of the U.S. Department of Agriculture's National Institute of Food and Agriculture.

A big bang: K-State graphene, hydrogen research leads to new company HydroGraph

It's a true research success story: Explosive graphene and hydrogen research from Kansas State University has turned into a successful international company, HydroGraph Clean Power Inc. The company recently went public on the Canadian Securities Exchange and is preparing for decades of growth as an important research and development hub.

HydroGraph and the K-State research involve a simple new way to create graphene: Put acetylene and oxygen in a small chamber and create a controlled detonation that produces large amounts of graphene from a single spark.

Graphene is a single atom-thick, two-dimensional sheet of hexagonally coordinated carbon atoms, which makes it the world's thinnest material and gives it valuable physical and electronic properties. Graphene has numerous applications, such as augmenting high-strength metals, reinforcing concrete, enhancing biomaterials and revolutionizing electronic applications.

The K-State detonation method of creating graphene checks all the right boxes. The process is safer, cleaner, environmentally friendly, cheaper, consistent and faster than other methods. An added bonus is that it is also scalable and can produce high-quality graphene in mass quantities.

K-State's Royal Purple Yearbook wins national Pacemaker Award

The 2021 Royal Purple yearbook won the national Pacemaker Award for best college yearbook in the country. The Pacemaker is considered the Pulitzer of college journalism.

The Royal Purple is a publication of the Collegian Media Group, which also publishes the Collegian student newspaper and Manhappenin' lifestyle magazine.

Gary Lundgren, associate director and coordinator of the Pacemaker competitions, said a winning yearbook Pacemaker delivers engaging verbal and visual stories, showcasing superior photojournalism, writing and design.

The Collegian newspaper staff also won an award for Best News Website in the conference's Best of Show competition among universities with 10,000 students or more. Levy said the beauty is that all three Collegian Media Group publications are produced by students from all academic disciplines, not just journalism.

New College of Education program helps Kansans change careers, become

"We discovered graphene serendipitously in the lab when we were using controlled explosions to make an aerosol gel," said Chris Sorensen, Cortelyou-Rust university distinguished professor of physics and university distinguished teaching scholar. "I wasn't expecting to make graphene."

Sorensen's research team had spent several years developing and patenting aerosol gels, but one day found that their explosion synthesis method also could produce nanographene — a dark and incredibly lightweight material. Several years ago, the Kansas State University Research Foundation patented Sorensen's new detonation technique to mass-produce graphene.

Sorensen's work caught the eye of Harold Davidson and Barry Hemsworth, entrepreneurs from Vancouver, British Columbia. Davidson reached out in 2017 to start a collaboration with Sorensen to build up and automate the graphene-making process to an industrial scale. Davidson and Hemsworth created a start-up company called Carbon-2D Graphene Inc. and worked hard to procure venture capital for Carbon-2D to fund Sorensen's research.

The investment paid off. The research not only led to a pilot-scale graphene production device, but another discovery: an environmentally benign, inexpensive method to make hydrogen. This is a significant advancement because hydrogen will be an important energy source in the near future, Sorensen said.

Carbon-2D Graphene Inc. soon became HydroGraph Clean Power Inc. and the collaboration has expanded to involve other K-State researchers and Kjirstin Breure, who became HydroGraph's chief operating officer. The work has resulted in new inventions, intellectual property and endless possibilities.

Sorensen soon engaged Stefan Bossmann, university distinguished professor emeritus of chemistry, to assist in the chemical side of the collaboration. Bossmann applied a mild oxidation method to the graphene to make a high-quality graphene oxide, which maintains the integrity of the graphene and creates a new material with numerous possibilities.

The team of researchers also includes Arjun Nepal, research assistant professor of physics; Stephen Corkill, research engineer in physics; and numerous graduate students and undergraduate students.

Some of the recent patents from the collaborative research team include:

- A method to create hydrogen-rich syngas in a provisional patent titled "Process for synthesis of syngas components."
- A device for upscaling graphene production in a patent application titled "Device and process for mass production of particulate materials."
- A process for developing turbostratic graphene oxide in a patent application titled "Graphene/graphene oxide core/shell particulates and methods."

HydroGraph continues to support the team, and recently established a $1.4 million research partnership for future projects that involve other K-State researchers in the Carl R. Ice College of

middle and high school teachers

Kansas State University's Master of Arts in teaching program for secondary education, a pathway to teaching for career-changers in Kansas, has received approval from the Kansas State Board of Education. This approval allows Kansas schools to hire qualified candidates in the program to serve as teachers of record on a restricted license while they earn their master's degree and recommendation for an initial teaching license.

The 18-month residency program is based on K-State's successful 11-month Master of Arts in teaching program, ranked No. 17 by U.S. News & World Report.

Tom Vontz, a professor of curriculum and instruction and director of the College of Education's Master of Arts in teaching program, says the secondary education residency program helps the state with its teacher shortage by providing working adults with the resources and the opportunities to pursue their passion for teaching while getting the education they need.

Students admitted to the program begin their teaching careers on a restricted license while completing the requirements for a teaching certificate and master's degree. All students will participate in an intensive weeklong professional development experience to help prepare them for their teaching residencies. During their residencies, students are mentored by staff in local schools and veteran teachers who serve as university supervisors.

Debbie Mercer, dean of K-State's College of Education, is looking forward to the program's launch.

"This new residency program is beneficial to prospective teachers, Kansas schools and, most importantly, K-12 students across Kansas," Mercer said. "The teacher shortage — both in Kansas and across the country — requires innovative, forward-thinking solutions."

K-State researcher receives $6M NSF grant to develop spray-on bioplastics for use in farming

The National Science Foundation has announced that Vaishali Sharda, assistant professor in the Carl and Melinda Helwig Department of Biological and Agricultural Engineering at Kansas State University, will receive a nearly $6 million grant to develop spray-on bioplastics that protect soil and control weeds in an environmentally friendly way.

Sharda will direct the four-year collaborative project, "RII Track-2 FEC: BioWRAP (Bioplastics With Regenerative Agricultural Properties): Spray-on bioplastics with growth synchronous decomposition and water, nutrient and agrochemical management for enhanced field crop production," alongside three co-principal investigators from K-State and two teams of researchers from the University of Nebraska-Lincoln and the South Dakota School of Mines.

Engineering and College of Arts and Sciences: Placidus Amama, associate professor of chemical engineering; Suprem Das, assistant professor of industrial and manufacturing systems engineering; Jun Li, professor of chemistry; and Dong Lin, associate professor of industrial and manufacturing systems engineering.

Other collaborators on the work include the University of Kansas Medical Center and Missouri University of Science and Technology.

The multi-institutional research team continues to further expand on the detonation method to create graphene and hydrogen-rich syngas. They also are developing devices for more efficiently producing the unique graphene and graphene oxide.

DID YOU KNOW?

Kansas State University has been named a 2022 Top Employer by DiversityJobs.com for a third consecutive year.

The project aims to reduce the use of plastics, herbicides and associated environmental impacts in agricultural production by creating an all-in-one bioplastic system that can better manage weeds, nutrients, soils and water resources.

"Creating a protective layer over soil when growing field crops could help farmers better manage many issues at once," Sharda said. "Covering soil with sheet plastic prevents weed growth, erosion and moisture loss, but using large amounts plastic creates waste, is not eco-friendly, and is too costly for field crops.

"New, locally sourced types of bioplastics that fully break down into safe by-products can be made. These new materials could provide farmers with a green way to control weeds, fertilize crops, protect soil and water resources, and work with nature to better manage their fields."

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