Shorts

News and Communications Services
Kansas State University
DOE’s nearly $8M grant renewal keeps J.R. Macdonald Laboratory a leader in ultrafast laser research

The “bread-and-butter” physics research at Kansas State University’s J.R. Macdonald Laboratory has received a three-year grant renewal award from the Department of Energy.

The nearly $8 million grant, for “Structure and Dynamics of Atoms, Ions, Molecules and Surfaces,” helps to support laboratory personnel and to maintain and operate the laboratory’s three main ultrafast lasers, known as HITS, KLS and PULSAR. The J.R. Macdonald Laboratory hosts the atomic, molecular and optical physics program in the physics department and is one of the largest such programs in the country. The laboratory involves 69 researchers, including 11 faculty members, three research faculty, six staff members, 27 graduate students, five undergraduate students, two visiting graduate students and 15 postdoctoral researchers. The laboratory and physics department are part of the university’s College of Arts & Sciences.

“This big operational grant is our bread and butter,” said Itzik Ben-Itzhak, university distinguished professor of physics and director of the J.R. Macdonald Laboratory. “The grant renewal keeps us running day to day and helps us continue to perform experimental and theoretical research. It also enables us to go after developmental grants for specific projects.”

Listen to the sound of laser-induced thunder at the J.R. Macdonald Laboratory on Page 23.

A ‘bear’ necessity: Research uses webcam to study our emotional connection to wildlife, parks

If you visited Alaska’s Katmai National Park in July, you probably enjoyed watching brown bears fish for salmon at the iconic Brooks Falls. But what if you didn’t have to venture to Alaska to see the bears in action because you could watch on a live webcam? Would you have the same emotional response as viewing the bears in their natural surroundings?

That’s what two Kansas State University researchers want to find out through a live-stream video study of brown bears. Jeffrey Skibins and Ryan Sharp, both assistant professors of park management and conservation, want to answer an important question: Do people have the same emotional connections with animals when watching them through live webcams and in real life?

Skibins and Sharp are focusing the study on a “bearcam” provided by multimedia company explore.org, which is the philanthropic media organization and division of the Annenberg Foundation. The “bearcam” offers live footage of brown bears at locations throughout Katmai National Park, including the iconic Brooks Falls, where salmon jump up waterfalls and bears wait nearby to catch them.

“Ultimately we want to know how viewers are affected by seeing something online — not having an actual experience, but having the virtual experience of viewing animals in nature,” Skibins said. “Does it create a conservation behavior action within the viewer? Does it cause people to want to get involved in saving these animals?”

The research project has received financial support from K-State’s horticulture and natural resources department and K-State Research and Extension.

Sweet success with new food technology that cuts calories, fat

A food technology donated to Kansas State University’s Institute for Commercialization is on the cusp of transforming chocolates and many other popular food products.

Indianapolis-based Choco Finesse LLC has introduced Epogee Fat Replacement, which can replace up to 80 percent of the fat and drop total calories by 20-45 percent in typical recipes. The fat replacement tastes like fat that comes from natural vegetable oils. Epogee’s use in food has been confirmed by the Food and Drug Administration for candies, baked goods, spreads, nutrition bars and other foods.

Ken Williams, director of licensing for the Institute for Commercialization, said the university has been involved for several years in creating the relationships needed to advance the technology.

At the Institute of Food Technologists’ annual meeting in July, Choco Finesse announced a partnership with Blommer Chocolate, the largest cocoa processor and ingredient chocolate supplier in North America. Blommer will be using Epogee in a new line of chocolate coatings.

David Rowe, founder and chief president of Choco Finesse, said Epogee’s use is supported by 65 scientific studies and seven journal articles.

“The FDA has noted that Epogee’s effectiveness to safely lower calories is backed by one of the strongest databases ever developed for a new food ingredient,” he said.

Choco Finesse officials say that products containing Epogee will begin to reach consumers in 2017. For more information, visit the company’s website at epogee.net.

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Kansas State University is helping the fight against Zika virus through mosquito research. The university’s Biosecurity Research Institute is taking a two-pronged approach: Researchers are studying mosquitoes to understand how they become infected with Zika virus and researchers are providing the tools to collaborative organizations for further study.

The institute recently contributed to the development of a promising DNA vaccine that is safe and effective against Zika virus and could offer more affordable long-term protection.

“We are hopeful to provide some answers and insights into the relationship between Zika virus and the mosquitoes that transmit the virus,” said Stephen Higgs, director of the Biosecurity Research Institute.

Higgs and other Biosecurity Research Institute scientists — including Danas VanSkewljung, assistant professor of entomology, and Yan-Jang Huang, postdoctoral fellow in diagnostic medicine and pathobiology — have published their collaborative work in Nature Medicine, Science, and Vector-Borne and Zoonotic Diseases.

The researchers have been involved in several important findings, including:

• Culex mosquitovirus, which transmits West Nile virus and Japanese encephalitis, do not appear to transmit Zika virus.
• People infected with Zika virus may not be susceptible to Zika virus again.
• Zika virus is present in the blood very early during infection and remains in some tissues for a long time but is only briefly present in other tissues.

EPA grant to K-State engineers could help clear the air in the Windy City

Chicago communities most at risk for poor air quality will soon have the opportunity to participate in their own air quality monitoring with help from Kansas State University.

The project, “Shared Air/Shared Action: Community Empowerment through Low-Cost Air Pollution Monitoring,” is being conducted by three K-State researchers and seven Chicago organizations. It received a $107,000 grant from the Environmental Protection Agency to investigate if giving communities access to low-cost portable air pollution monitoring devices could help improve air quality, which is directly related to human health concerns.

Chicago’s environmental justice communities — areas that share a disproportionate amount of the risk in contamination and pollution from industrialization and modern society — are the focus of the project. The researchers will do a pilot study in winter 2016 and will launch the full-fledged study in spring 2017.

“In a crowded city, many people and upbring next to landfill, major highways or industrial areas,” said Wendy Griswold, the project’s principal investigator and Kansas State University’s Center for Hazardous Substance Research project manager. “Studies have shown that people living in lower-income, minority communities adjacent to such industrial areas experience higher pollution levels.”

The National Endowment for the Humanities funds approximately 9 percent of proposals to the program, and Machor’s award was only one of two grants in Kansas for 2016.

To determine how Twain’s readers and critics shaped the way he is remembered, Machor is looking at the way the author’s works were received in his lifetime as well as the way the work has been represented and revered in the last 140 years. He also is working to address a gap in Twain reception scholarship: Most of the work has focused on “Huckleberry Finn,” “The Prince and the Pauper” and “Tom Sawyer,” and posthumous reception has been limited almost exclusively to “Huckleberry Finn,” a book that was controversial for encouraging bad behavior.

Machor hopes to finish a draft of his book in 2018.

English professor seeks the true Twain in NEH-supported project

A Kansas State University English professor used a summer stipend from the National Endowment for the Humanities to explore how Mark Twain came to be thought of as the folksy writer from Missouri who opened quodlitous womon.

The NEH stipend is helping James Machor with his book project about how readers received Twain’s work. Summer stipends support advanced research that is to humanities scholars, general audiences, or both. The National Endowment for the Humanities funds approximately 9 percent of proposals to the program, and Machor’s award was only one of two grants in Kansas for 2016.

A flurry of research is currently underway to understand how Zika virus is transmitted and what strategies can be developed to stop transmission. The goal is to develop a vaccine that prevents infection, new ways to control young mosquito populations, and new methods to treat existing infections.

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They didn’t bring home a medal for their efforts, but two Kansas State University faculty members did bring home gold — in a way.

Bryan Pinkall, assistant professor of voice who is a professional singer with the Grammy-winning Kansas City Chorale, assisted with the opening ceremony for the Rio Olympics more than games to the stage but is only briefly present in other tissues.