

SPARC Johnson Cancer Research Center

Kansas State University

95% of donations support funding cancer research. \$411,840

awarded to faculty and \$266,500 to students' cancer research in 2024.

70⁺ faculty researchers in 22 departments and five colleges.

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On the cover: Revathi Govind, professor, Division of Biology.

Kev West, Florida

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The Johnson Cancer Research Center's SPARC! magazine highlights the innovative research and impactful work conducted by scientists, faculty and students at Kansas State University. **SPARC!**, Scientific Progress, Awareness and Research in Cancer, is a platform to share groundbreaking cancer research, foster collaboration and engage the K-State community in advancing cancer care. The magazine showcases the center's commitment to improving public health, supporting future scientists and making strides in the fight against cancer through compelling stories and updates. Generous donations fund JCRC, and your support helps continue this vital work. The cure starts with us: scientists, students and supporters like you!



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Disarming CDiff

Revathi Govind, Ph.D.

Professor, Division of Biology Full member, Johnson Cancer Research Center

What was her path to K-State? Govind's research journey began with volunteering in a microbiology lab at Texas Tech University's Health Sciences Center. After two years, she joined their graduate program and earned her doctorate in microbiology and immunology. She then completed a postdoc at Institut Pasteur in Paris before accepting a faculty position at K-State.

What does she do? Govind's lab works with a bacterial pathogen called C. difficile, better known as CDiff, which causes life-threatening infections, mainly in hospitalized patients. This bacterium makes highly resilient spores that spread from patient to patient and produce toxins to induce highly contagious diarrhea. Her lab studies how CDiff produces and controls spores and toxins.

How does her work improve cancer care, treatment or reduction? CDiff infections are highly prevalent in cancer patients and often interfere with their cancer treatments. Govind's research findings can lead to efficient ways to prevent and treat CDiff infections in cancer patients and others in hospitals to improve overall care.

How does JCRC make her work possible? Support from the JCRC has helped Govind's lab recruit and train the next generation of scientists and physicians. Students trained in the lab have gone on to study and work in reputable research labs and medical schools around the country, including Harvard, Johns Hopkins and the University of California San Francisco.

What is next for her research? Govind and her lab will continue to discover methods to disarm CDiff and enhance the treatment and outcomes of cancer patients.

The nerve to tackle lung cancer

Pankaj Baral, Ph.D.

Associate professor, Department of Diagnostic Medicine and Pathobiology Associate member, Johnson Cancer Research Center

What was his path to K-State? Baral earned his undergraduate and master's degrees in Nepal, focusing on infectious diseases, and a Ph.D. in infection and immunity from Mahidol University, Thailand. After postdocs at LSU and Harvard, he joined K-State in 2020.

What does he do? Baral's research focuses on how the nervous and immune systems work together during infections and cancer and how signals between these systems help the body fight infections and cancer and control inflammation.

How does his work improve cancer care, treatment or reduction? Lung cancer is the leading cause of cancer deaths in the U.S., and lung inflammation plays a major role in its development. Baral's research explores how nerve signals affect immune cells in the lungs, which could help control chronic inflammation and prevent lung cancer.

How does JCRC make his work possible? In 2022, Baral received the Linders Expansion Award to advance his lung cancer research. Additionally, the JCRC provided essential resources and core equipment to support his work in neuroimmunology.

What is next for his research? Baral aims to identify potential drugs in mouse studies that can target the signals between the nervous and immune systems to help treat lung cancer.





Tracking inflammation to improve cancer care

Ryan Tucker

Undergraduate student, Department of Chemistry

What was his path to K-State? Tucker, born and raised in Los Angeles, knew K-State well. When he decided to complete college, it felt like the right fit. As a public land-grant university, K-State supported his transfer and offered opportunities for involvement and growth.

What is his research? Tucker develops tools to measure oxylipins, blood molecules indicating inflammation and pain. He focuses on extracting, separating, detecting and measuring these markers in human plasma to study their link to pain from cancer or its treatments.

How does his work improve cancer care, treatment or reduction? His research aids in developing reliable tests to monitor inflammation, enabling early prevention and a better understanding of its link to cancer and health. This supports pain management therapies to enhance cancer patients' quality of life.

How has JCRC funding benefitted him and his research? JCRC funding eases the financial burden of undergraduate research, allowing Tucker to focus on problem-solving, access advanced resources and engage in meaningful work that fosters growth.

What are his plans after graduation? After graduation, Tucker plans to work in the animal health and welfare field with future aspirations in veterinary medicine.



From CRA to director: The path to success

Sherry Fleming, Ph.D.

Director and full member, Johnson Cancer Research Center Professor, Division of Biology

What was your path to K-State? As a military spouse and non-traditional student, I balanced moves, family and jobs. After earning my bachelor's and master's degrees at K-State, I taught in Alabama, earned a Ph.D. in Colorado, completed a postdoc in D.C. and returned to K-State as faculty.

What inspired your cancer research journey, and how did being a CRA impact your career?

While washing dishes in a research lab, my curiosity led to a Cancer Research Award (CRA). Designing experiments and presenting data thrilled me, boosted my confidence and proved I could succeed like traditional undergrads. I wanted more — a Ph.D.!

What was the transition from student researcher to faculty research at the JCRC like? As an

undergrad, I focused on experiments, unaware of faculty responsibilities. As faculty, I tackled challenges like securing funding, mentoring and leading projects. This transition helped shape my research and support JCRC scholars. My CRA experience gave me insight into the student perspective, making me a better mentor.

What advice do you have for current CRA students? I encourage students to embrace curiosity, ask questions and gain diverse lab experiences. Both undergraduates and nontraditional students bring fresh perspectives to STEM and should explore their ideas. My curiosity as an undergrad led me to apply my research to cancer.

What are you most proud of in your journey from a CRA to director? I am proud to be a successful faculty member, mentor and funded researcher. My non-traditional journey — from earning a bachelor's degree as a mom in my 30s to completing a Ph.D. with college-age kids and thriving in academia as a grandmother — shows the power of perseverance.

What is next for you? I will retire this summer to travel, explore my hobbies and spend quality time with my adult grandchildren. I am figuring out what comes next and am excited about the possibilities!



Revolutionizing cancer research with Al

Stacy Littlechild, Ph.D.

Data scientist, Vivodyne Alumna and awardee

What was your path to K-State? K-State was a household name while I was growing up in western Kansas. My enthusiasm for science and engineering began in middle school and was nurtured through programs like K-State's Girls Researching Our World (GROW) workshop. Those experiences made choosing K-State an easy decision — I felt like I belonged before I even enrolled.

What do you do, and how does your work contribute to cancer research? I am a scientist at a TechBio company, developing AI tools to analyze 3D images of human tissues. By combining biology, technology and data science, I help uncover treatment targets, refine drug regimens and advance cutting-edge therapies, improving the effectiveness and safety of cancer treatments.

How did you choose this career path? As a student, I kept an open mind, worked hard and followed my interests. During my postdoc, my work generated so much data that I had to develop a system to analyze it, which sparked my passion for coding and data science. This led to my first industry role as an image data analyst.

How did the JCRC contribute to your success? My student research experience was pivotal to my success. The award funded my research, resulting in two first-author publications, and supported conference attendance, where I connected with Cardiff University scientists in Wales. This collaboration led to a Ph.D. and postdoc, solidifying my career foundation.

What is next? I am passionate about advancing biology and developing therapies, aiming to use my expertise to drive impactful discoveries.





Capturing cancer's impact: Art meets awareness in Kansas

Shreepad Joglekar, MFA

Department head and associate professor, Department of Art Associate member, Johnson Cancer Research Center

What was his path to K-State? Joglekar immigrated to the U.S. from India as a graduate student, earning an MFA from Texas Tech in 2006. After five years teaching at a Texas community college, he joined K-State in 2023. His experiences shaped a teaching philosophy focused on high-impact, experiential learning, inspiring students to create art that helps others.

What does he do? Joglekar is the head of K-State's art department and a JCRC mentor. His work explores social conditions, focusing on themes like immigration, public space and environmental reflections such as cancer on the community.

How does his work improve cancer care, treatment or reduction? Joglekar's project, Surveying the Invisible: Cancer and Research in Kansas, documents cancer-affected individuals in Russell and Lincoln counties. Using photography, audiovisual media, a website, a photo book and an exhibition, it raises public awareness and supports the center's outreach mission.

How does JCRC make his work possible? Joglekar appreciates the JCRC Innovative Research Award, which funded equipment, supported an undergraduate student and enabled fieldwork. It will also cover exhibitionquality prints, a website and a photo book for Kansas public libraries, offering valuable experiential learning for students.

What is next for his research? After losing his mother to cancer, Joglekar gained a unique perspective, blending the scientific view of a researcher with the personal impact of the disease. He plans to explore art's role in patients' lives, including art therapy, and aims to make a meaningful contribution to this field.

From researcher to patient: A scientist's journey with cancer

Mark Haub, Ph.D.

A SUCCESSION DESTRICTION DESCRIPTION

 I: A proposed framework owth and progression.

> Professor, Department of Food, Nutrition, Dietetics and Health Full member, Johnson Cancer Research Center

What was his path to K-State? As a post-doctoral fellow, Haub studied nutrition and metabolism in aging. He later transitioned to a nutrition and exercise role at K-State to advance his career.

What is his research? Haub's research explores food and exercise as medicine. He studies prebiotics and probiotics for gut health, dietary fiber's role in diabetes risk, and how nutrition and exercise enhance quality of life during cancer treatments.

How does his work improve cancer care, treatment or reduction? Haub educates healthcare providers on cancer treatment needs — pre/post-surgery, radiation and chemotherapy — to improve patients' and caregivers' quality of life while identifying gaps to enhance efficacy and reduce side effects.

How does JCRC make his work possible? Encouraged by JCRC, Haub mentored undergraduate cancer awardees, enriching their experiences while gaining valuable fresh perspectives from the next generation of researchers.

How has having cancer affected his research? A JCRC affiliate since 2002, Haub shifted to administrative roles before brain cancer reignited his passion for research. Despite cognitive challenges from treatment, healing and support restored his abilities. Now, his experience as both patient and scientist drives his work.

What is next for his research? Haub recently launched a Food and Exercise as Medicine lab, where he studies dietary supplements and metabolic health. He is actively seeking funding and collaborating with the oncology community to support clinical trials.

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Why I give

Sarah Young, Ph.D.

Alumna and donor Member, Johnson Cancer Research Center Advisory Council

Why do you give to the JCRC, and what impact do you hope to have? My son, Alex, lost the fight in his 30s to embryonal rhabdomyosarcoma, a rare cancer that primarily affects children. I hope her contributions inspire investigations into rhabdomyosarcoma and encourage young people to study cancer.

How has your son's journey influenced your decision to support research? Alex's journey highlighted the lack of treatments and knowledge about this cancer, even at top medical institutions. His experience drives my commitment to advancing research and raising awareness for this under-researched disease.

How does your research background shape your approach to philanthropy? With pharmaceutical research experience, I understand that failure is part of discovery. Many drugs fail in early trials, but I know persistence leads to breakthroughs.

Why is funding student researchers important for the future of cancer **research?** Funding students encourages them to explore cancer research. By providing support for research they are passionate about, I help them develop in the field and creates opportunities for them to pursue careers in cancer research or treatment.

What would you say to someone considering donating to cancer research or the JCRC? I encourage donors to support what they are passionate about. The JCRC drives cancer research and inspires future researchers, and donations help fund breakthroughs that make a real difference in advancing research and offering hope to those affected by cancer.

What moments and milestones are yu most proud of in your journey as a donor and advocate for cancer research? As a donor and advocate, I am proud of milestones such as promising blood test research and potential treatments using targeted radiation and stem cells. Though setbacks occur, she remains hopeful for breakthroughs that could improve diagnosis and treatment.





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College of Agriculture

Entomology Plant Pathology

College of Arts and Sciences

Art

Biochemistry and Molecular Biophysics Chemistry **Division of Biology** Music, Theater, & Dance Philosophy Physics Psychological Sciences Sociology, Anthropology, and Social Work Statistics

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Alan Levin Department of Mechanical and Nuclear Engineering **Computer Science Engineering Extension** Mike Wiegers Department of Electrical and Computer Engineering Tim Taylor Department of Chemical Engineering

College of Health and Human Sciences

Food, Nutrition, Dietetics and Health Kinesiology

College of Veterinary Medicine

Anatomy and Physiology Clinical Sciences **Diagnostic Medicine/Pathobiology**

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