

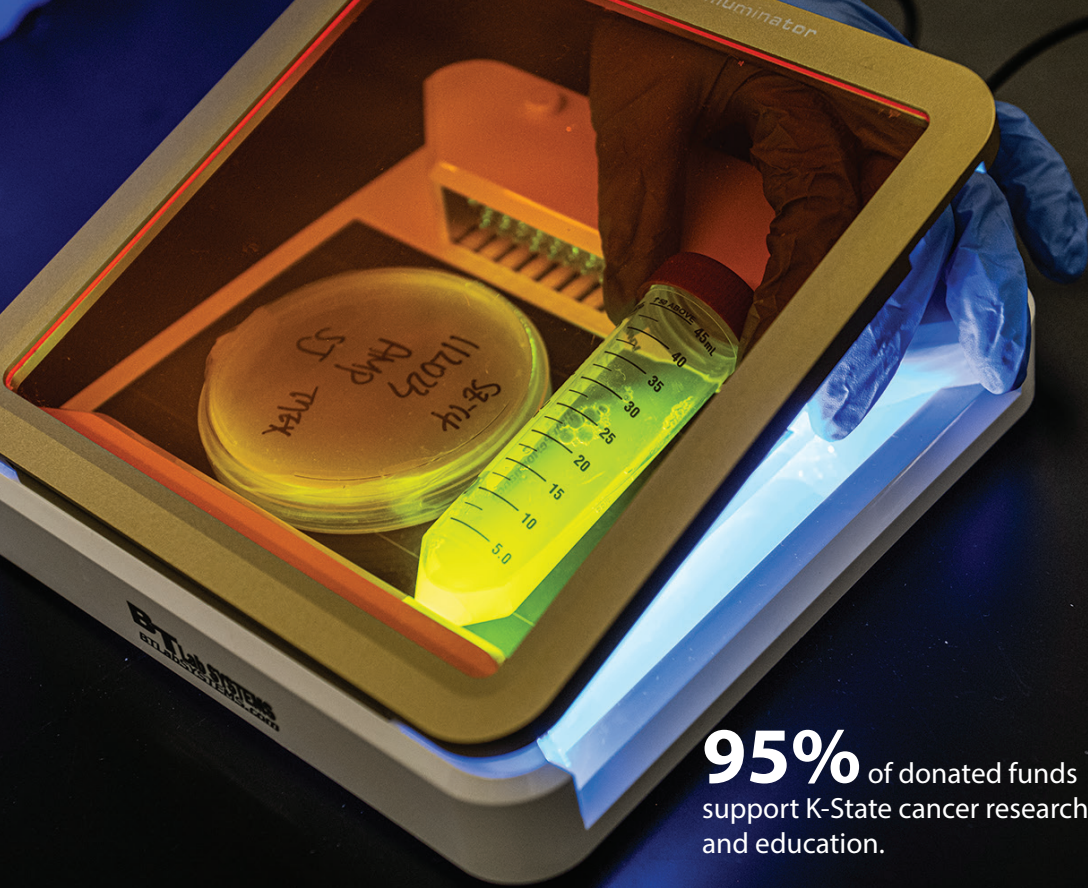
2024

SPARC

Johnson Cancer Research Center



K a n s a s S t a t e U n i v e r s i t y



95% of donated funds support K-State cancer research and education.

\$492,677 was awarded to faculty and **\$205,484** to students' cancer research and training in 2023.

80+ faculty researchers are fighting cancer in 22 departments of 5 colleges.

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The cure starts with us!

Kansas State University faculty members conduct basic cancer research to improve cancer prevention, diagnostics and treatments while training tomorrow's cancer scientists and medical professionals. You can help the Johnson Cancer Research Center by visiting cancer.k-state.edu/support scanning the QR code.



Scan this QR code to give online.

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Welcome to the 2024 edition of **SPARC**. This issue highlights the accomplishments of Johnson Cancer Research Center scientists, students and supporters over the past year.

Last fall, the center teamed up with students to support President Linton during his treatment for tongue and throat cancer. President Linton battled his cancer while visiting Kansas communities and unveiling a new strategic plan.

We've been on the road visiting Kansas counties grappling with high cancer rates. Karin Goldberg delves into the safety of water wells in high-risk areas. We showcase other amazing scientists, like Shih-Kang Fan, who is building a device to detect cancer from a drop of blood, and Ruth Welti, whose work enhances cancer-protecting substances in vegetables. Professor Won Min Park and graduate student Suna Jo, are crafting more accessible cancer detection sensors for patients.

Alumnus and president of our advisory council Scott Smiley shares how undergraduate cancer research shaped his medical practice and why he supports the Johnson Cancer Research Center.

We hope you will join us in our continued persistence toward finding better ways to detect, prevent and cure cancer. The cure starts with us!

Here's to another year of collaboration, discovery, and progress!

A handwritten signature in black ink that reads "Sherry D. Fleming". The signature is fluid and cursive.

Sherry D. Fleming, *Ph.D.*

Director and Fiedler Chair

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Detecting cancer from a tiny drop of blood

Shih-Kang “Scott” Fan, Ph.D.

*Professor, Department of Mechanical and Nuclear Engineering
Full member, Johnson Cancer Research Center*

What was his path to K-State? After diverse experiences in Taiwan, Los Angeles, Boston, London and Atlanta, Fan settled in Manhattan, attracted to the small-town vibe.

What does he do? Fan’s career transitioned from improving in vitro fertilization to focusing on cancer research, specifically micro-fluidics.

How does Fan’s work improve cancer care? Fan is developing devices capable of screening multiple cancers from a tiny blood drop, aiming for early and manageable detection.

How does the JCRC make Fan’s work possible? The Johnson Cancer Research Center connects Fan with fellow cancer researchers and provides support through research awards and student scholarships.



“A drop of blood is like a fingerprint!”

— Shih-Kang “Scott” Fan



For the full stories, please see the QR code.



“It is crazy to think that the rocks around us may affect our health.”

— Karin Goldberg

Do Kansas wells hide cancer risks?

Karin Goldberg, Ph.D.

*Associate professor, Department of Geology
Full member, Johnson Cancer Research Center*

What was her path to K-State? Goldberg earned her doctorate at the University of Chicago. After working as a tenured professor in her home country of Brazil, she came to K-State in 2016.

What does she do? Where you live impacts your health. Goldberg studies links between cancer risks and well water contaminations. She also studies how human activities, like oil and natural gas extraction, may increase cancer risks.

How did she decide to be a medical geologist? Goldberg turned to medical geology when she learned that materials on the earth's surface can cause disease. She became particularly concerned about the link between cancer and black shales — rocks that are common across much of the U.S.

How does Goldberg's work offer hope for reducing cancer rates? Goldberg's work suggests high rates of certain cancers are linked to toxic substances in well water. She's working to keep people in rural Kansas safe from these cancer-causing contaminants.

How do donations to the Johnson Cancer Research Center make Goldberg's work possible? Donations funded Goldberg's testing of Kansas wells and helped link cancer types to specific contaminants.

What's next? Goldberg is expanding her well water testing to other Kansas counties and working to involve at-risk communities in protecting themselves.

From president to patient — and back again

Richard Linton, *Ph.D., President, Kansas State University*

Tongue and throat cancer patient

Following his battle with tongue and throat cancer, President Richard Linton shares his insights on cancer research from the perspective of a cancer patient.

How did receiving a cancer diagnosis change you?

“Getting a cancer diagnosis is scary. You’re unsure about how it will impact your quality of life and abilities,” Linton said, conveying his gratitude for the exceptional medical teams in Manhattan and Kansas City, as well as for the unwavering support of his family.

“It’s changed my views on the purpose of a person’s life.”

What would your message be to other cancer patients?

“Be optimistic, listen to your doctor and take one day at a time,” Linton said.

Linton prepared intensely for 33 days of radiation and six chemotherapy sessions by focusing on each step of the treatment process and striving to give his best effort throughout.

What would you like Johnson Cancer Research Center scientists to know?

President Linton emphasized the urgent need to refine treatments to minimize side effects and improve cancer care outcomes.

JCRC researchers are actively working to develop drugs that enhance the effectiveness of chemotherapy and radiation at lower doses, improve targeting of radiation to tumors and identify less toxic treatment options for various cancer types.

From boosting overall research capabilities to addressing health concerns specific to the state of Kansas, the center’s initiatives are integral to the Next-Gen K-State strategic plan.



For the full stories, please see the QR code.



*“Cancer researchers’ innovative efforts
bring hope to patients.”*

— Richard Linton

Folding to find cancer: Protein origami

Won Min Park, Ph.D.

*Assistant professor, Department of Chemical Engineering
Full member, Johnson Cancer Research Center*

What was his path to K-State? Park received his college education in South Korea before focusing on cancer research while earning his doctorate in chemical engineering from Georgia Tech. After a stop at MIT, he joined us here at K-State.

What does he do? Park controls protein folding – like origami – to make tiny sensors that detect cancer. The goal is to turn these tiny, folded sensors into tests.

How does Park’s work bring hope for a better future of cancer care? Cancer is a complex process and detecting it early is key. Park’s innovative sensors aim to simplify complex cancer detection tests and make them as accessible as COVID-19 tests.

How does the Johnson Cancer Research Center make Park’s work possible? Generous donations allow Park to help K-State students make game-changing discoveries, provide essential supplies and connect them with scientists around the world.

What is next? Park’s goal is to put a cancer sensor into a smartphone-scannable patch.



“We are trying to make cancer testing as easy as a COVID-19 test.”

— Won Min Park



Aspirations for home cancer testing

Suna Jo

*Graduate student, Tim Taylor Department of Chemical Engineering
Cancer research and travel award recipient, Johnson Cancer Research Center*

What was her path to K-State? Jo's journey began in South Korea, but her passion for making an impact on society led her to K-State.

What does she do? Jo created a sensor that detects high levels of calcium in the blood, which could be a signal of cancer, with the goal of making it available for at-home cancer screening.

How does Jo's work offer hope for reducing cancer rates? Jo's goal is to advance cancer screening methods where people can self-test for breast or colon cancer at home.

How do donations to the Johnson Cancer Research Center make Jo's work possible? Donations to the center allowed Jo to continue her work during the summer. Presenting her work at the American Institute of Chemical Engineers' annual meeting in Orlando, Florida, provided valuable advice on how to bring her vision of at-home cancer screening closer to reality.

What is next? After earning her doctoral degree, Jo wants to develop better cancer treatments or sensors to enhance early cancer detection, ensuring timely treatment and increased patient safety.

“I'm grateful to the Johnson Cancer Research Center for the opportunity to connect with other researchers at a national meeting.”

— Suna Jo



For the full stories, please see the QR code.

Mama was right — eat your vegetables!

Ruth Welty, Ph.D.

*University distinguished professor, Division of Biology
Director, Kansas Lipidomics Research Center
Full member, Johnson Cancer Research Center*

What was her path to K-State? Welty, originally from a small Connecticut town, earned her doctorate from Washington University in St. Louis, Missouri. After training in Kansas City, she found her home in Manhattan.

What cancer research does she do? Welty analyzes lipids, which are the fats in cells, using a technology called mass spectrometry.

How did she decide to be a lipidologist? Welty got hooked on lipids early in her career with support from the American Cancer Society.

How does Welty's work offer hope for reducing cancer rates? Welty's research helps farmers grow vegetables with more protective lipids. The goal is to decrease cancer risk by cultivating healthier diets.

How do donations to the Johnson Cancer Research Center support Welty's work? Thanks to the support of donors, Welty mentors the next generation of cancer researchers. Her students have gone on to prominent jobs in cancer research and therapeutics at organizations like St. Jude Children's Research Hospital and Amgen.

What is next? Welty is working to understand how changes in brain lipids can lead to cancer.



“Changes in the way farmers grow plants can increase how vegetables protect from cancer.”

— Ruth Welty



For the full stories, please see the QR code.

A little mentorship goes a long way

Scott Smiley, M.D.

*Internal medicine, Cotton O'Neil Clinic, Emporia, KS
Johnson Cancer Research alumnus, awardee
President, Johnson Cancer Research Center Advisory Council*

As an internal medicine doctor, how is Smiley working with cancer? In his outpatient clinic, Smiley deals with breast, prostate, colon, lung and many other types of cancers. He diagnoses, treats, monitors and most importantly, works to prevent cancer.

How did the Johnson Cancer Research Center contribute to his success? Smiley received a cancer research award during his senior year to study how viruses cause tumors, which made him a competitive medical school applicant and allowed him to become a board-certified internal medicine physician.

How did lab experience affect his current work as a doctor? Smiley credits his experience for instilling self-confidence. Working beside faculty who believed in him gave him a deeper knowledge of how research leads to cures and taught him to appreciate how long it takes to make a clinical treatment possible.

What inspired Smiley to join the Johnson Cancer Research Advisory Council? Smiley joined the council to pay the center and his mentors back for all the opportunities they gave him and to make a difference for the students.

Why does Smiley support the Johnson Cancer Research Center? Smiley believes in the center's mission to develop tomorrow's cancer cures and knows how students benefit from these research experiences by "giving them every opportunity to find their success."

“My mentors, Drs. Larry Williams and Dick Consigli, believed in me and gave me the opportunities to succeed.”

— Scott Smiley

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Plant Pathology

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Chemistry
Geography and Geospatial Sciences
Geology
History
Physics
Sociology, Anthropology, and Social Work
Statistics

Carl R. Ice College of Engineering

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

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Food, Nutrition, Dietetics and Health
Kinesiology

College of Veterinary Medicine

Anatomy and Physiology
Clinical Sciences
Diagnostic Medicine/Pathobiology

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