

2020

# Conquest

Johnson Cancer Research Center



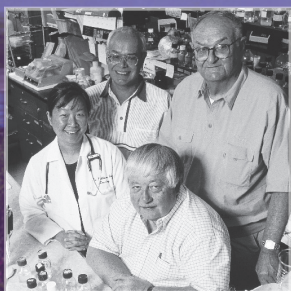
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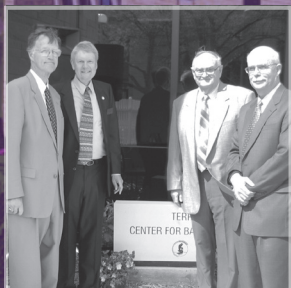
**100%** of donated funds remain at K-State and 95% directly support cancer research.

**\$487,583** was awarded in 2019 for cancer research and training.

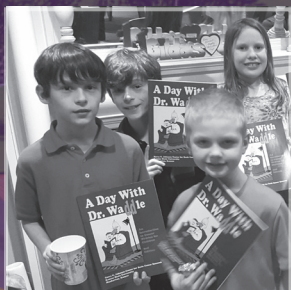
**95** faculty researchers are fighting cancer in 24 departments of 5 colleges.



October 1999 *K-Stater* photo of researchers involved with the Johnson Cancer Research Center. At front is Terry C. Johnson, center director and namesake. Back row, from left: Ruthanne Chun, a veterinary medicine oncology researcher, and Jean-Pierre Perchellet and Richard Consigli, both professors of biology.



The Johnson Cancer Research Center's dedication ceremony on April 3, 2003. From left are James Coffman, provost; Rob Denell, center director; Richard Consigli, professor of biology; and Stephen White, dean of the College of Arts and Sciences.



Children at Gilda's Club Grand Rapids, in Michigan, used the Johnson Cancer Research Center's *A Day With Dr. Waddle* book in 2016 to learn about cancer and explore the emotional benefits of coloring.

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## The fight starts here!

From nanoparticles and stem cells to antioxidants and drug discovery, Kansas State University faculty are conducting the basic and translational cancer research that leads to new treatments and cures, as well as training tomorrow's scientists and medical professionals. To support the Johnson Cancer Research Center's vision to conquer cancer in our time, simply use the enclosed envelope to send your gift, or donate online at [ksufoundation.org/cancer](https://ksufoundation.org/cancer). With your help, we make a difference! To learn more about how you can support K-State cancer research and education, contact Shelley Carver at **800-432-1578** or [shelleyc@ksufoundation.org](mailto:shelleyc@ksufoundation.org).



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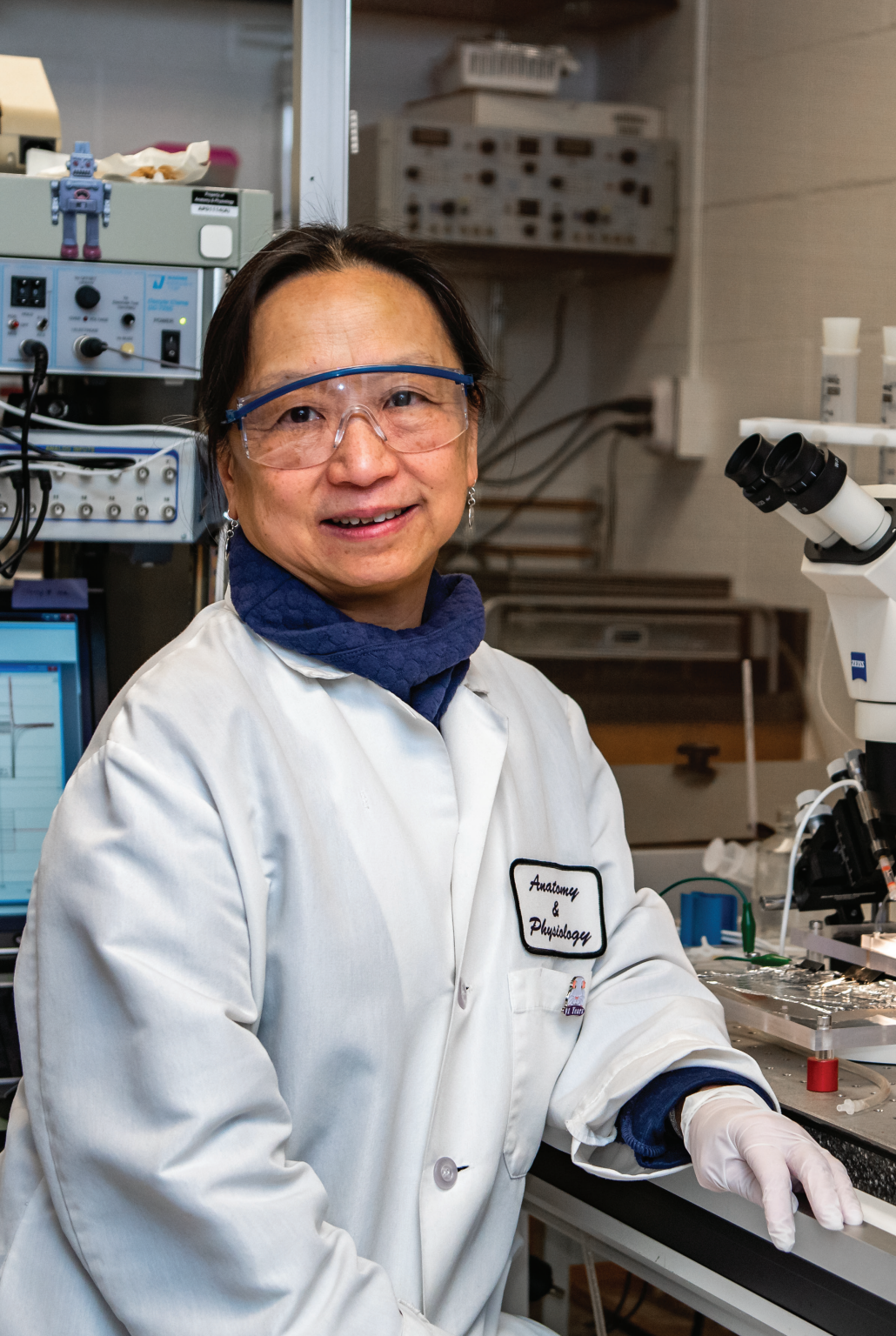
I am honored to be the new director of the Johnson Cancer Research Center. A professor in the Division of Biology, I came to K-State in 2004 to continue studying the immune response to surgery, heart disease and cancer. I'm amazed by the generous support of everyone involved with the center. This support includes the time and effort of others in this transition period, especially Dr. S. Keith Chapes and Dr. Mark Weiss. Rather than being simple placeholders as interim director and associate director, they continued to expand the center. I also greatly appreciate the center's staff, advisory council and research members who have taken time to answer questions and offer advice.

In a first step toward growing the JCRC, we have a new associate director, Dr. Annelise Nguyen, associate professor in the Department of Diagnostic Medicine/ Pathobiology. Scientifically, Annelise brings expertise in breast cancer drug design and toxicology, and a valuable connection to clinical samples from the National Cancer Institute. She also has experience working with National Institutes of Health training grants. Annelise's MBA provides experience in business, marketing and coordinating events. Together, we look forward to accelerating the growth of the JCRC.

To succeed, the JCRC requires support from many different constituents. This issue of Conquest presents an array of individuals who are critical to the center's success. JCRC faculty, like Drs. Asano, Bahadori, Fong, Comer and Yu, initiate frequently collaborative research while also training students. Students, like Mackenzie, perform many of the experiments while learning to apply their classwork. Alumni and donors, like Lori, continue to give back by providing funds to enhance research and learning. Other supporters, like Jennifer, honor the memory of loved ones by raising money for the fight against cancer. Please keep reading to see these stories.

We are grateful to all who support the center in any and every form. I hope to visit with many of our friends in the coming months, but if you are in the area, please stop by and introduce yourself. We would like to get to know you and hear your ideas and stories as we continue to fight for a cure.

Sherry D. Fleming / Director and Fiedler Chair



# K-State scientists change the channel on cancer drug delivery

By Marcia Locke

The common chemotherapy drug cisplatin was FDA-approved for use in testicular and ovarian cancers in 1978. Yet, after all these years, scientists still do not know exactly how it and similar drugs work. Such drugs enter cancerous cells and cause them to kill themselves, but it is not clear how they enter the cell to begin with.

Two Kansas State University researchers with different, but complementary, skill sets have teamed up to figure out, in molecular detail, how substances penetrate cell membranes in both normal circumstances and diseased states.

Peying Fong, associate professor of anatomy and physiology, is an expert in cell membrane physiology. Jeffrey Comer, assistant professor of anatomy and physiology, is an expert in computer simulation of molecules. Together, they are working to better understand cell membrane proteins that mediate the movement of substances into and out of cells called transport proteins.

Currently, Fong and Comer are focusing on LRRC8 proteins, which assemble themselves into channels, like pores, in the cell membrane. There are five types of LRRC8 proteins — A through E — and their channel-forming configurations can vary.

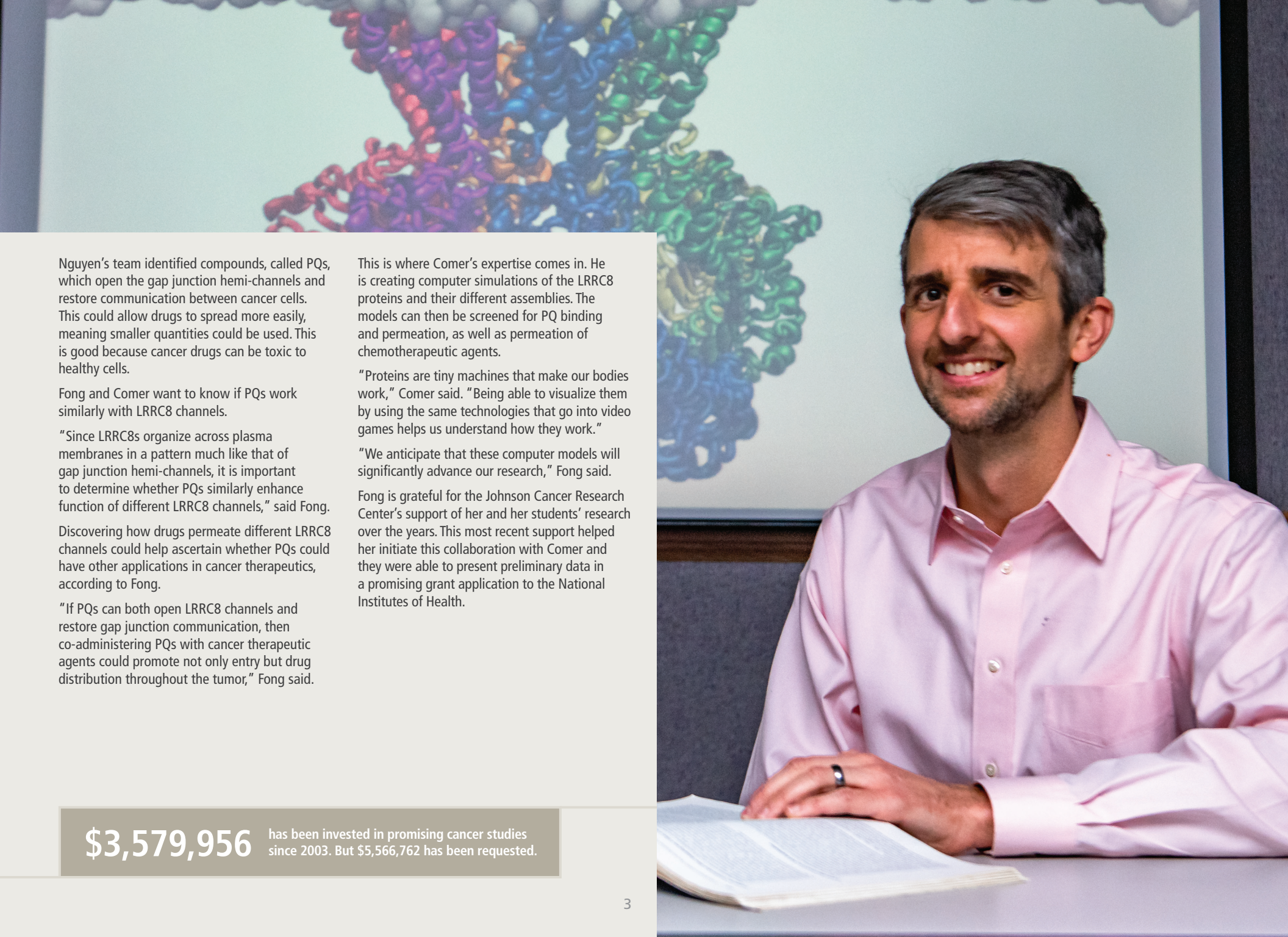
Channels containing LRRC8D allow cisplatin to permeate the cell. Interestingly, ovarian cancers with poor prognosis have fewer of these channels. It is not yet known whether other LRRC8 proteins can carry cisplatin or other drugs.

With an Innovative Research Award from the Johnson Cancer Research Center, Fong and Comer are unraveling the complexities of LRRC8 channels, hoping to uncover information that could help create new cancer therapeutics.

One approach they're taking is to build on past work done by K-State researchers Annelise Nguyen, associate professor of diagnostic medicine and pathobiology; Dee Takemoto, professor emeritus of biochemistry; and Duy Hua, university distinguished professor of chemistry. This team discovered compounds that alter channels similar to LRRC8s, raising the possibility that these drugs also affect LRRC8s.

Substances don't just enter cells; they also travel from cell to cell. This is how cells communicate with each other — and how drugs spread throughout a tumor. However, cancer cells do not communicate well because some of their channels, called gap junction hemi-channels, close. This suppresses drug distribution.





Nguyen's team identified compounds, called PQs, which open the gap junction hemi-channels and restore communication between cancer cells. This could allow drugs to spread more easily, meaning smaller quantities could be used. This is good because cancer drugs can be toxic to healthy cells.

Fong and Comer want to know if PQs work similarly with LRRC8 channels.

"Since LRRC8s organize across plasma membranes in a pattern much like that of gap junction hemi-channels, it is important to determine whether PQs similarly enhance function of different LRRC8 channels," said Fong.

Discovering how drugs permeate different LRRC8 channels could help ascertain whether PQs could have other applications in cancer therapeutics, according to Fong.

"If PQs can both open LRRC8 channels and restore gap junction communication, then co-administering PQs with cancer therapeutic agents could promote not only entry but drug distribution throughout the tumor," Fong said.

This is where Comer's expertise comes in. He is creating computer simulations of the LRRC8 proteins and their different assemblies. The models can then be screened for PQ binding and permeation, as well as permeation of chemotherapeutic agents.

"Proteins are tiny machines that make our bodies work," Comer said. "Being able to visualize them by using the same technologies that go into video games helps us understand how they work."

"We anticipate that these computer models will significantly advance our research," Fong said.

Fong is grateful for the Johnson Cancer Research Center's support of her and her students' research over the years. This most recent support helped her initiate this collaboration with Comer and they were able to present preliminary data in a promising grant application to the National Institutes of Health.

**\$3,579,956**

has been invested in promising cancer studies since 2003. But \$5,566,762 has been requested.





# Radiological engineer and alumnus works to protect astronauts, and the rest of us, from radiation

By Marcia Locke

Astronauts face a lot of radiation in space. The rest of us encounter radiation in a variety of settings as well.

Ionizing radiation — the kind faced by astronauts and victims of nuclear weapons and used to create medical X-rays and CT scans — can cause molecular changes in the body that can lead to cancer. So, scientists are working to better understand it and protect us from it.

Amir Bahadori, assistant professor of mechanical and nuclear engineering at Kansas State University, studies ways to evaluate and reduce the risk of developing cancer due to radiation exposure.

"We use computational tools to determine how much radiation the body receives in various exposure scenarios and to explore ways to reduce the resulting cancer risk," Bahadori said.

According to Bahadori, better tools are needed to characterize radiation exposure and estimate biological damage and probabilities of developing cancer.

In 2017, the Johnson Cancer Research Center provided Bahadori's team a \$20,000 Innovative Research Award to create an improved, miniaturized neutron spectrometer, which is an important tool for detecting and monitoring radiation.

"Current neutron detectors tend to be massive and involve complex signal processing," Bahadori said.

With the JCRC award, Bahadori's team created a neutron spectrometer that fits in the palm of the hand. It recently earned a provisional patent.

Bahadori has some other cancer-fighting projects going on as well. He is working with NASA to develop active-radiation shielding technology that uses electromagnetic fields to deflect space radiation before it ever reaches astronauts.

He has teamed up with Steve Eckels, professor of mechanical and nuclear engineering, to improve the technology used for modeling the human body's response to nonionizing radiation, and with Punit Prakash, associate professor of electrical and computer engineering, to improve cancer therapy outcomes by using both ionizing and nonionizing radiation.

In the future, Bahadori would like to develop better radiation risk models than are currently available. He plans to investigate the biological processes that happen immediately upon radiation

exposure as well as over the years — sometimes decades — that it takes for cancer to develop.

Bahadori appreciates student involvement in his research and serves as a mentor for the JCRC's undergraduate Cancer Research Award program.

"The CRAs are helpful for both me and the students because they allow me to bring in undergraduates who have an interest in research, put them on a topic and mold them into future researchers," Bahadori said.

He knows firsthand how important such experiences can be for students. While earning his Bachelor of Science in math and mechanical engineering with the nuclear engineering option at K-State, he said he had the "opportunity of a lifetime" to work at the university's nuclear reactor. This experience and his mentor Ken Shultis, professor of mechanical and nuclear engineering, inspired him to go further.

After graduating from K-State in 2008, Bahadori went to the University of Florida to pursue a doctorate in medical physics. He had a full-time job with NASA before he finished his degree.

Staying true to his K-State upbringing, the Kansas City, Kansas, native returned to his alma mater in 2015 to join the Carl R. Ice College of Engineering faculty and continue his work to protect humankind from radiation.

Programs to advance K-State cancer research and education are made possible by private donations.



# The fly on the wall offers clues to help fight cancer

By Joe Montgomery

Flies can be a pesky nuisance. But the next time you reach for a swatter, you may want to reconsider. It turns out that flies may hold a key for unlocking some secrets about how cancer tumors grow.

Thanks to research by Kansas State University cancer biologist Jianzhong Yu, a relatively simple concept is being examined at a microscopic level.

Recently, Yu, an assistant professor of anatomy and physiology, unveiled promising results by studying the behaviors of specific proteins in fruit flies. The proteins have known counterparts in humans.

Revealing a previously elusive process, Yu and his collaborators — Naren Li, postdoctoral fellow; Yulan Xiong, assistant professor; and Qinfang Liu, doctoral student, all in anatomy and physiology — revealed that if you cut off the nutrient supply, you can suppress the growth of tumors.

"We published a study where we identified 'Headcase,' called Hdc, and 'Unkempt,' or Unk, as two nutrient-restriction-specific tumor suppressor proteins that form a complex that acts to restrict cell-cycle progression and tissue growth in response to nutrient stress in *Drosophila*, or fruit flies," Yu said.

Their article, "Headcase and Unkempt Regulate Tissue Growth and Cell Cycle Progression in Response to Nutrient Restriction," was published in the journal *Cell Reports*. The study was supported by the Johnson Cancer Research Center, Kansas INBRE and the College of Veterinary Medicine.

"Given the role of the human counterparts of these proteins, our results suggest that Hdc and Unk may function as tumor suppressors in mammals," Yu said. "Although the human ortholog of Unk has not been studied in the context of cell proliferation, we showed that both Hdc and Unk are able to inhibit tissue growth in vivo in the *Drosophila* model. Thus, it is worthwhile in the future

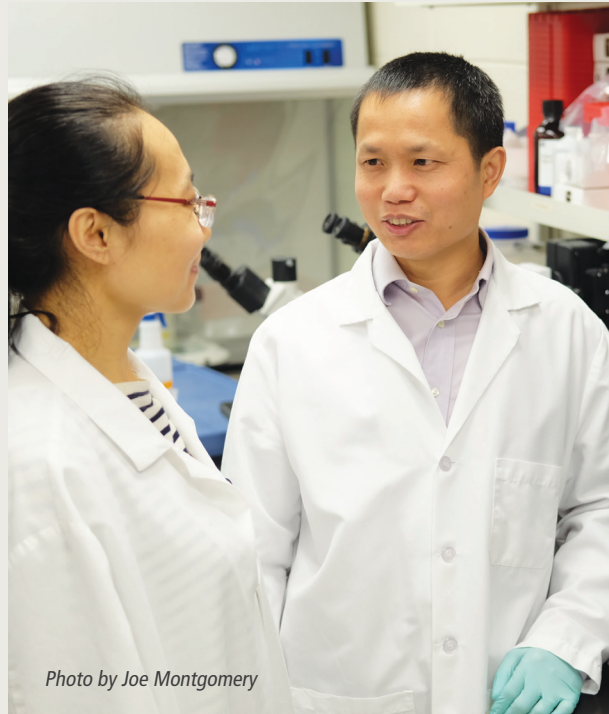


Photo by Joe Montgomery

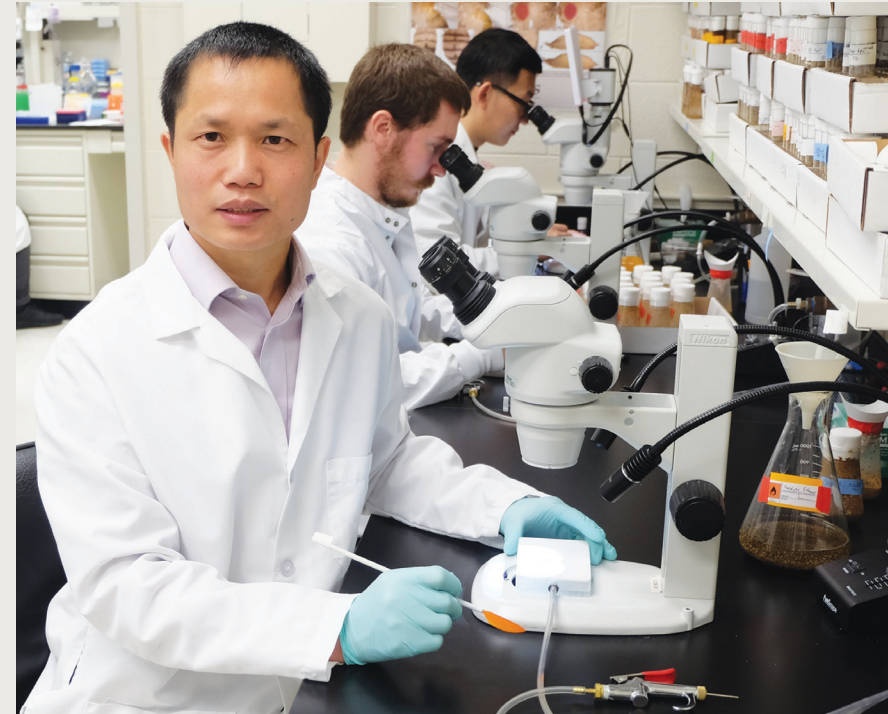
to investigate the growth control function of these two proteins, especially in regard to the formation of cancer tumors."

Yu appreciates the \$25,000 Innovative Research Award he received from the JCRC in spring 2019 for supporting his study of the regulation of cell proliferation and cell cycle progression in response to nutrient restriction in mammalian cells.

"Our preliminary results so far suggest conserved function of the two human counterpart proteins in the mammalian system," Yu said. "We are currently working on the underlying molecular mechanisms."

Yu is grateful to the JCRC for its long support of his lab through other grants as well.

**\$37,250** supported laboratory equipment purchases in 2019. But hundreds of thousands of dollars are needed.



"The Johnson Cancer Research Center has been very important from the start of my research at K-State in 2016," Yu said. "The center helped us obtain the incubator where we do all of our fruit fly research. The center has also supported a salary during the summer for a graduate student. The center plays a very important role in what we do."

Yu has been able to leverage the JCRC's support. He said it has helped him procure more funding from other sources to advance his research.

Perhaps only the fly on the wall knows what new discoveries are waiting to be made.



# Biology major wants to help solve the puzzle of cancer

By Marcia Locke

Mackenzie Thornton is an ambitious senior in microbiology and pre-medicine at Kansas State University. She started working in a laboratory during her first semester of college, and now she's applying to medical school. The self-proclaimed puzzle enthusiast wants to help solve the problems of complex diseases.

Thornton works with Katsura Asano, professor of biology, studying translation, the cellular process of producing proteins. Misregulation of translation can lead to diseases like cancer. Thornton is looking specifically at gene expression changes that occur during translation under nutritional stress in human colorectal cancer cells.

"Proteins regulate cell cycle, cell division, cell motility — everything cells need to survive — so it's important to study them," Thornton said.

According to Thornton, one way the body tries to fight cancer is by starving the cancer cells, withholding the nutrients they need to grow.

"We're trying to understand how cancer cells regulate translation and are able to grow, proliferate and metastasize in a nutrition-stressed environment," Thornton said. "We want to know the exact mechanisms that allow them to keep growing when they shouldn't."

The Asano lab's ranking student researcher for two years now, Thornton says that working in the lab has helped expand her knowledge in cancer biology and genetics, along with developing time management, leadership and communication skills. It has also reinforced her enjoyment of research and decision to attend medical school.

Thornton is thankful for her Cancer Research Award from the Johnson Cancer Research Center.

"The CRA funds help a lot," Thornton said. "I don't feel pressured to work outside the lab and spend less time conducting my research because my lab time has value."

She also appreciates the Cancer Research Award Banquet that recognizes the awardees and their mentors as well as the donors who make the awards possible.

"I loved meeting my donors, Jim and Kathy Haymaker, and chatting with them and learning that Kathy was in my sorority," Thornton said. "It was also fun to get out of the basement of Ackert Hall and socialize, but still in the science realm, and see what everyone else was doing."

In addition to her CRA, Thornton received a national Barry M. Goldwater Scholarship, a Kansas IDeA Network of Biomedical Research Excellence Star Trainee Scholarship and several other awards and honors. One of her favorite experiences was participating in the University of Kansas' Summer Student Research Trainee Program, studying head and neck cancers with a respected and enthusiastic otolaryngologist.

"Awards and honors motivate students to stay involved," Thornton said. "It's nice to be told that what you're doing matters."

Thornton credits her biology teacher at Blue Valley North High School in Overland Park, Kansas, with sparking her interest in biology.

"I discovered I really liked biology, specifically on the molecular level, when I took AP Biology with Ms. Riss," Thornton said. "She made it fun to learn biology. When other people are happy and excited, it flows onto you."

Another personal experience inspired her to go into research. At the beginning of her freshman year, her grandfather was diagnosed with amyotrophic lateral sclerosis or ALS.



"Being told we don't have a cure, we don't know what causes it, there's a lot of research but not enough answers — that made me want to get into research and contribute to the solution somehow," Thornton said. "Every scientist contributes in one way or another, and it takes an army."



**\$100,000**

a year is dedicated to training undergraduate students to do scientific research.



# Curiosity-driven microbiologist studies life and cancer at the cellular level

By Marcia Locke

Katsura Asano grew up a curious boy in Japan. Over time, his questions became more philosophical. How did life originate? How did the earliest organisms diverge into different forms? What makes humans human? Guided by his university mentor, Asano turned his curiosity into a career in research, studying the human cell up close.

Now a biology professor at Kansas State University, Asano is an expert in a cellular process called translation. During translation,

a tiny piece of cellular machinery called the ribosome makes protein. Asano studies how alterations in this process can initiate cancer formation.

After earning his doctorate in molecular biology from the University of Tokyo in 1994, Asano wanted a change. He moved to the United States, which he calls “a top scientific playground” where scientists can enjoy science, and redirected his research to be more relevant to humans. He switched from prokaryotic cells, which do not have a nucleus — like bacteria — to eukaryotic cells, which do have a nucleus — like human cells — and are considered more evolutionarily advanced.

While a postdoctoral fellow at the National Institutes of Health, Asano helped develop tools to study translation using yeast, a fairly novel approach at that time. Yeast is easier to work with than human cells and can provide answers relevant to humans.

**\$129,583**

was awarded in 2019 to graduate students who will lead the next generation of cancer research.

Asano brought this experience to K-State in 2001. Now, using yeast and human cells, he is looking closely at some specific proteins involved in cell translation that he has linked to cancer.

His team recently discovered that the protein 5MP1 is an oncogene, a gene that has the potential to cause cancer. 5MP1 reprograms the translation of a downstream protein called c-Myc. This genetic change promotes cancer formation in colorectal cells. Further investigation of this phenomenon could help develop a new cancer therapy.

With a \$23,000 Innovative Research Award from the Johnson Cancer Research Center, Asano is working to better understand the mechanism and physiological effect of 5MP1’s control over c-MYC and other target proteins, and clarify how they cause cell overgrowth, reprogramming and tumorigenesis, or cancer formation.

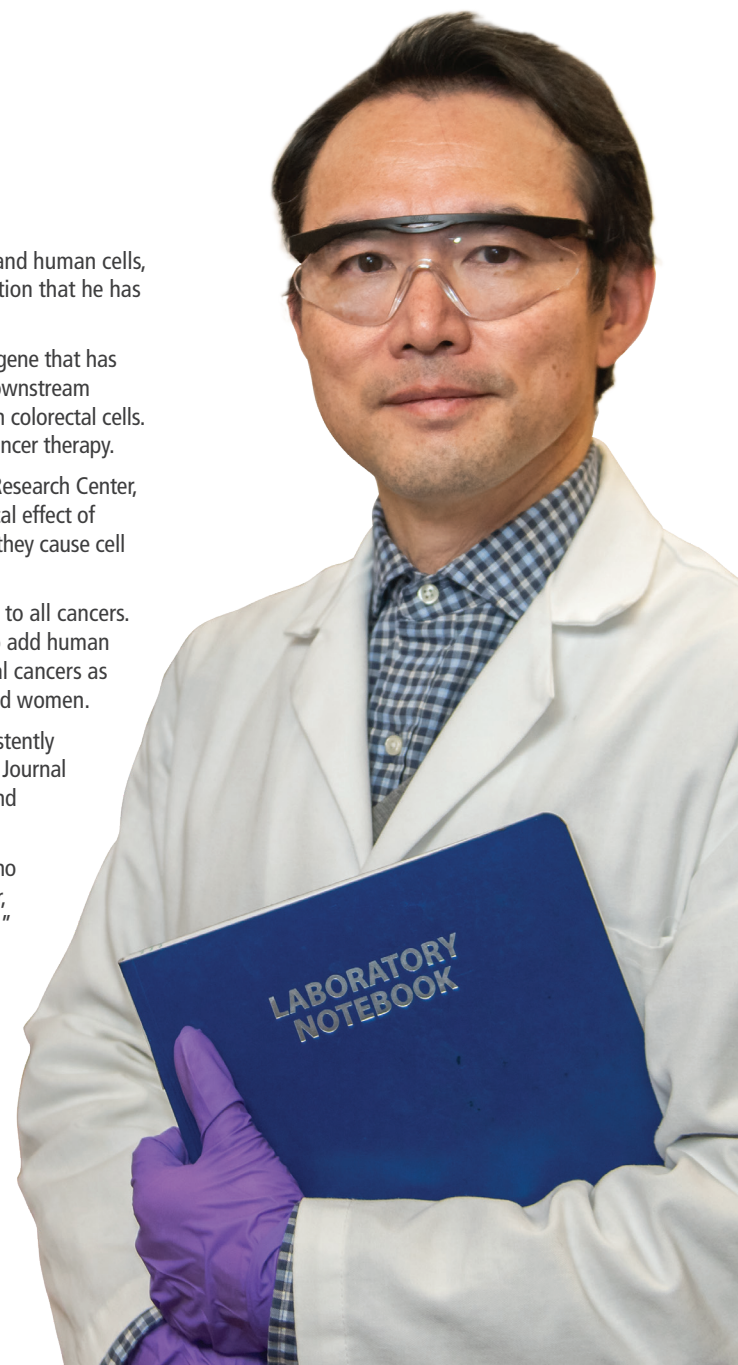
Asano believes that his findings with colorectal cancers should apply to all cancers. He plans to work with Nick Wallace, assistant professor of biology, to add human papillomavirus oncogenes to the study. HPV causes almost all cervical cancers as well as cancers of the throat, genitals and other sites in both men and women.

Another mission Asano takes seriously is mentoring students. He consistently sponsors student researchers in his lab, and he coordinates the Cancer Journal Club, a forum for students to discuss current cancer research articles and practice presenting to a group.

“To be a professional, you have to make a contribution to society,” Asano said. “I think my research will answer important questions about cancer, but I’m not there yet. Meanwhile, my contribution is through education.”

Asano is very active with the JCRC’s Cancer Research Award program, which fosters undergraduate student research experience by providing funds for the students and for their faculty mentors to cover research expenses. Asano has mentored 30 CRA students since 2004.

“I have had a lot of good mentors, and even students, who have opened my eyes to how I can make a contribution to solving the world’s problems, like cancer,” Asano said. “Science is my connection to the world and mentoring students is one of my missions.”





# From cow brains to human kidneys

## Transplant surgeon establishes cancer research scholarship in honor of her experience at K-State

By Marcia Locke

Lori Kautzman, M.D., performs more than 50 kidney, liver and pancreas transplants a year. She loves her work and credits her undergraduate cancer research experience at Kansas State University for the professional path she took.

Kautzman enjoyed math in high school but rejected her guidance counselor's only career suggestion to be a math teacher and enrolled in business at K-State in 1996. Within a year, she switched majors again, this time to biology, and thrived.

In her third year of college — second in biology — Kautzman received a Cancer Research Award from what was then called the KSU Cancer Center. It was later renamed the Terry C. Johnson Cancer Research Center in honor of its founding director and Kautzman's cancer research mentor.

For her award, she would investigate a naturally occurring protein compound called CeRes-18. It stops a cell from dividing and hastens cell death. This is important for cancer research because cancer cells over-divide and do not die when they're supposed to.

Surprisingly, her research would also involve harvesting cow brains. Yes, removing cows' brains.

Kautzman and Johnson traveled to a couple of slaughterhouses a week to procure brains from freshly killed cattle. They needed the tissue for their research. One cow brain provided the same amount of CeRes-18 — one-millionth of an ounce — as 300 mouse brains.

Kautzman did it all — from resecting brains to isolating CeRes-18 from the tissue to studying it under a microscope.

"It didn't gross me out; I thought it was cool," Kautzman said. "That's when I figured out I can deal with blood and guts."

Meanwhile, her grandfather was diagnosed with an aggressive leukemia and died soon after.



**\$1,686,000** has been invested in undergraduate research training since 1980.

Photo by Karen Roeder

"I became even more fascinated with cancer, how one cancer cell can multiply and wreak havoc on your body," Kautzman said.

Kautzman graduated in only three years. While figuring out what to do next, she worked in Johnson's lab and at the cancer research center. Johnson and other colleagues knew she loved science but not the isolated laboratory environment, so they encouraged her to go to medical school.

She didn't consider it seriously at first but then decided to go for it. She was accepted at the University of Kansas Medical School. During her clinical rotations, she fell in love with transplant surgery.

Kautzman is now an abdominal transplant surgeon in Texas, performing liver, kidney and pancreas transplants and other cancer surgeries. She credits her undergraduate cancer research experience for the trajectory she chose and the fulfilling career she now has.

"My research experience helped me decide what to do and not do with my life," Kautzman said. "It was invaluable and has helped me tremendously in my life."

In 2019, she established the Kautzman Family Cow Brain Scholarship to support undergraduate student cancer research.

"Scholarships helped me and I always wanted to give back to honor Dr. Johnson and everything he did for me," Kautzman said.

"It was a good time for me financially and, in my line of work, I know life can be short."

"I also love young students who have good energy and want to pursue something, whether it's a doctorate, medical degree or whatever," Kautzman said. "And I feel like the Cancer Research Award holds students accountable, unlike other scholarships where the students just get the money and don't do anything for it."

The Kautzman Family Cow Brain Cancer Research Award may be just the help some future life-saving medical workers or scientists need to achieve their dreams.







Photo by Gerald Wiens

## Frank Alonso's loved ones 'demand better' with 'You'll Never Run Alone 5K'

By Marcia Locke

On Sept. 28, 2018, Frank Alonso was diagnosed with stage IV pancreatic cancer. The beloved soccer coach, husband and father had planned to fight it, but he died less than six weeks later, on Nov. 4. He had just turned 52 years old.

Within a few months, Frank's wife, Jennifer, and daughters, Isabella and Sophia, had already started planning a 5K to honor him and raise

money for pancreatic cancer research and a community soccer scholarship.

"Soccer was Frank's passion," Jennifer said. "And now it's my passion to fight the disease that took his passion away from him and took him from his family and the community he touched."

Frank coached soccer in the Manhattan community for 20 years, including 13 seasons as head coach

for the Manhattan High School boys' soccer team. He was inducted into the Kansas Soccer Hall of Fame in February 2020 in recognition of his contributions to soccer in the state.

As an avid runner and graphic designer, Jennifer thought a 5K would be a good way for her to honor Frank, rally his loved ones and raise money for cancer research. So, she, Isabella and Sophia partnered with Manhattan Running Company and planned the You'll Never Run Alone 5K for Aug. 18, 2019.

The 5K's name is inspired by the song, "You'll Never Walk Alone," composed by Rodgers and Hammerstein and later popularized by Gerry and the Pacemakers. It is the anthem of England's Liverpool Football Club, Frank's favorite professional soccer team.

Jennifer and team worked hard on the event's logistics and publicity, approached potential sponsors and recruited volunteers. Registrations poured in, as did support from numerous sponsors, including the event's major sponsor and Frank's employer, Cox Media.

On race day, lingering overnight storms threatened to cancel the event. But the sky cleared up just in time and Manhattan saw possibly its largest inaugural 5K ever. As a testament to the admiration surrounding Frank in the Manhattan community, the event drew 350 participants. Many of Frank's former soccer players and friends showed up to honor him and support the Alonso family.

"I am so blown away and humbled by this community's generosity and support," Jennifer said. "For a first-year race, these numbers are unheard of!"

The inaugural You'll Never Run Alone 5K raised an impressive \$10,900 for the Johnson Cancer Research Center's pancreatic cancer research team. This multidisciplinary ensemble of outstanding scientists is working to develop better early-detection methods and cutting-edge drug therapies for pancreatic cancer.



Jennifer and Sophia presented the donation check to the Johnson Cancer Research Center at the Sept. 21, 2019, K-State soccer game. Frank had been a respected friend of K-State soccer and Coach Mike Dibbini, who were pleased to support this tribute.

The second annual You'll Never Run Alone 5K is scheduled for Aug. 9, 2020. Like last year, Jennifer hopes to attract people of all physical abilities and interests to join in the fun whether they run or walk. She also plans to offer a virtual race for faraway participants.

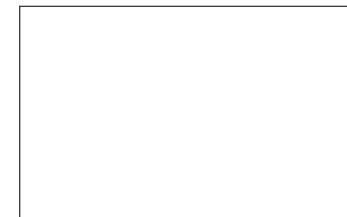
"Together, we will honor Frank and demand better for all those who have lost their battle to pancreatic cancer and all those who are still fighting," Jennifer said. "With friends and family by your side, you'll never walk or run alone."



Coach Snyder has selected the Johnson Cancer Research Center to be one of four great organizations supported by the 2020 Bill Snyder Highway Half-Marathon and 5K. Join the fun in Manhattan, Kansas, May 23, 2020! [billsnyderhighwayhalf.com](http://billsnyderhighwayhalf.com)

Every gift helps, and more than 95% of funds donated come from gifts of less than \$1,000.





## Cancer Research Departments and Units

### College of Arts and Sciences

Biochemistry and Molecular Biophysics  
Biology  
Chemistry  
Mathematics  
Physics  
Sociology, Anthropology, and Social Work  
Statistics

### College of Agriculture

Entomology  
Grain Science and Industry  
Horticulture and Natural Resources  
Plant Pathology

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Kinesiology

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Anatomy and Physiology  
Clinical Sciences  
Diagnostic Medicine/Pathobiology  
Nanotechnology Innovation Center  
Veterinary Diagnostic Laboratory

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