

WORKING TOGETHER FOR A **CANCER-FREE** TOMORROW

MARKEY CANCER CENTER | 2021 ANNUAL REPORT
UNIVERSITY OF KENTUCKY





MARKEY WHITNEY AND EDWIN HARRISON
CANCER INSTITUTE FOR WOMEN

"At Markey Cancer Center, we have big goals and we are not stopping until we get where we want to be."

B. MARK EVERS, MD
DIRECTOR, UK MARKEY CANCER CENTER

Cover: Dr. Joseph Kim performs hyperthermic intraperitoneal chemotherapy (HIPEC), an innovative procedure that delivers chemotherapy to the abdomen during surgery. Kim, chief of surgical oncology, is one of the many faculty and employees at Markey working toward a cancer-free tomorrow.

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TOGETHER, WE CAN

A cancer-free tomorrow isn't some far-off fantasy. Through the indispensable work we do at the UK Markey Cancer Center, we firmly believe that this future is achievable.

At the heart of all our endeavors is this goal: To reduce cancer burden with a focus on Kentucky and its most vulnerable populations through research, prevention, treatment, education and community engagement.

This has never been an isolated effort. All of us – our doctors, nurses, researchers, pharmacists, social workers, dietitians, volunteers and so many others – are ceaselessly working together to make this vision a reality for our fellow Kentuckians.

We can't stamp out cancer in the Commonwealth without innovative therapies, and at Markey, we offer our patients the latest advances in medicine so that they have the greatest chance at a full recovery. Take our expanding CAR T-cell therapy program, for instance. This team is now treating more patients with this state-of-the-art method than ever.

And with an eye to the future of cancer care, our researchers are laser-focused on propelling even more groundbreaking treatments forward. Markey patients can take advantage of these before anyone else through clinical trials, including new treatments for neuroendocrine tumors. Our Precision Medicine Clinic offers numerous early-phase clinical trials so that our patients can access tomorrow's medicines today.

I am proud to say that it is through this collaborative undertaking that we remain a world-class cancer center and the only National Cancer Institute-designated cancer center in Kentucky. We were also recognized as a top 50 cancer center by U.S. News & World Report for the fifth year in a row.

Even as the coronavirus pandemic continues to grip our state and nation, we are still dedicated to providing high-quality, unparalleled care to all our patients across the Commonwealth. If anything, the compassion and tenacity our clinicians already show has only grown stronger in the face of such challenges.

United together, we make Markey what it is today. And Markey is where Kentucky comes to beat cancer.



B. Mark Evers

B. Mark Evers, MD
Director, UK Markey Cancer Center



IT TAKES A TEAM

A surgeon can't complete a life-saving operation solo. Nor can a researcher develop the next breakthrough treatment on their own.

It takes a team with a vision to make a real impact, and Dr. Mark Evers has the best team there is at the UK Markey Cancer Center. This teamwork is a testament to Markey's status as a world-class cancer center. Markey not only provides the finest, most compassionate care in the Bluegrass, it is also paving the way for the future of cancer treatments through leading-edge research and clinical trials.

We at the UK Markey Cancer Foundation are continuously inspired by Dr. Evers and are honored to be a part of his team. That's why we are driven to do everything we can to help Markey achieve its goal of alleviating Kentucky's cancer burden.

Working in tandem with Markey, we are making significant strides in conquering cancer in the Commonwealth. We are proud to say that we reached new milestones, adapted to timely challenges and much, much more in 2021.

Given the importance of research in advancing the fight against cancer, we have now given a total of \$500,000 to female-led research teams through our Distinguished Researcher Grants. Started in 2016, the Markey Women Strong program is a special opportunity for our donors to support the Markey Cancer Foundation.

Because the coronavirus pandemic is still impacting families across the state who are in need of cancer care, we knew that we had to help them in their time of need. We purchased hundreds of hotel vouchers so that patients and their caregivers can find a place to stay during treatments. With that peace of mind, they are better able to focus on the most important thing: getting better.

Even in the face of daunting difficulties, the team at Markey never loses sight of its mission of being the place where Kentucky comes to beat cancer. And as Markey relentlessly works toward a cancer-free tomorrow, we are resolved to be there every step of the way.



Farra M. Alford

Farra M. Alford, Chair,
UK Markey Cancer Foundation



Michael Delzotti

Michael Delzotti, CFRE, FAHP
President and CEO,
UK Markey Cancer Foundation



TRAILBLAZING NEW WAYS TO TREAT A RARE CANCER

Because of the increased incidence of neuroendocrine tumors, especially in Kentucky, doctors and researchers at Markey are determined to find new ways to care for patients with this uncommon type of cancer.

When Paul Roscoe went to his primary care physician for a checkup in the summer of 2016, he was in rough shape: The 6'2" former football player and fitness enthusiast had lost 40 pounds without trying in just a few months.

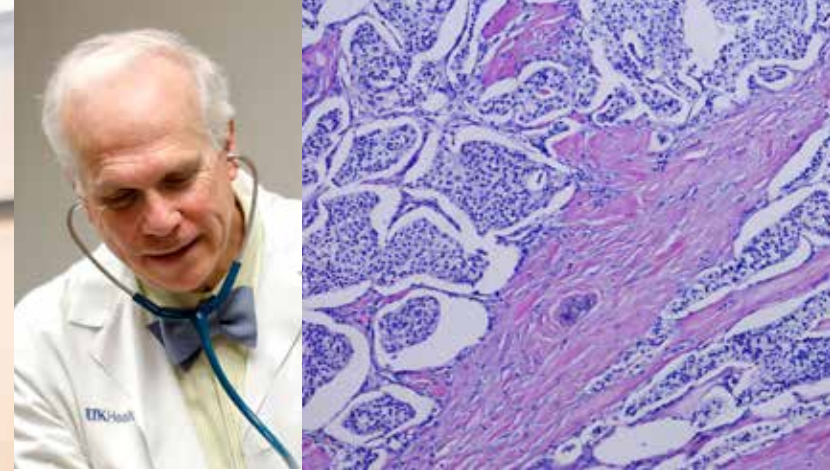
The culprit? Stage IV pancreatic neuroendocrine tumors, which had spread to his liver and other surrounding organs. The tumors were wreaking havoc on his hormones and gastrointestinal tract. After receiving this diagnosis from a local gastroenterologist, Roscoe was determined to educate himself on this disease that he'd never heard of.

"I just dove into my research and started looking up information on neuroendocrine cancers," he said. "I mean, I couldn't even spell it."

Through his research, Roscoe learned that a nationally renowned doctor who specialized in these rare cancers was just down the street: UK Markey Cancer Center medical oncologist Dr. Lowell Anthony. In August 2016, he walked into his first appointment at Markey to consult with Anthony.

Increase in incidence of NETs

Although neuroendocrine tumors (NETs) occur in almost seven people out of 100,000, doctors have seen an almost seven-fold increase in incidence in the United States in the past few decades, according to an article published in *JAMA Oncology*. Even more alarming, according to data from the Kentucky Cancer Registry, the incidence in the Bluegrass State is closer to 10 per 100,000.



Opposite: Paul Roscoe and his wife visit Markey for an appointment.

Above left: Dr. Lowell Anthony, a board-certified medical oncologist and chief of medical oncology, is a national expert on neuroendocrine tumors.

Above right: Microscopic tissue demonstrating a pancreatic neuroendocrine neoplasm.

With this data front of mind, physicians at UK Markey Cancer Center have come together to increase the availability of NET treatment, further our understanding of this malignancy through research and provide personalized support for patients like Roscoe.

"I just put everything I had in Dr. Anthony's hands and let him work his magic."

PAUL ROSCOE

"Kentucky has a substantial NETs patient population, compared with the country as a whole," said Dr. Charles Kunos, medical director of Markey's Clinical Research Office. "Because of these high numbers, Kentucky serves as an NETs referral center for a large section of the country. And we're able to offer patients the highest-quality care from some of the most experienced physicians, like Dr. Anthony."

Treatment at Markey

"I wasn't in very good shape when I walked in to see Dr. Anthony," Roscoe said.

Not all neuroendocrine tumors can be treated the same way – different hormones, which cause different problems and side effects, can be sent into overdrive depending on the type of tumor involved. Roscoe's diagnosis of pancreatic neuroendocrine cancer puts him in some famous company – it's the same disease that took the lives of both Steve Jobs and Aretha Franklin.

Luckily for Roscoe, his tumors had developed in the "tail" of the pancreas, which meant the disease was more surgically accessible than tumors that develop in the pancreas head.

After Roscoe's first round of chemotherapy, Anthony performed multiple tests until he could

narrow Roscoe's diagnosis further: a malignant VIPoma, a type of pancreatic neuroendocrine tumor that forms from the cells that produce vasoactive intestinal peptides (VIP). This specific cancer occurs in just one of every 10 million people.

Rather than going after the primary pancreatic tumor, Anthony tried a different approach: tackling the liver tumor first. He switched Roscoe over to different chemotherapies to help treat metastasis of the disease.

The chemo helped, but Roscoe was experiencing extreme fatigue and was taken off one of the medications. During the next year, he underwent two liver embolizations, a procedure that blocks blood flow to the liver tumors and helps kill cancer cells.

The liver embolizations were rough on Roscoe – he was in a lot of pain and was readmitted to the hospital twice. But the treatment was effective, and in April 2019, he was finally able to undergo surgery. Markey surgical oncologist Dr. Michael Cavnar biopsied Roscoe's liver and removed the tail of his pancreas – resecting all the primary tumor – and also removed his gallbladder, appendix, spleen and 16 lymph nodes.

"It's like being the closing pitcher in a baseball game," Cavnar said. "Dr. Anthony got him into a great position for me to go in and get Mr. Roscoe's primary tumor out."

Leading the way with Lutathera

With Roscoe's pancreatic tumor gone, the focus is back to the remaining disease in the liver. Roscoe's tumors have unfortunately continued to progress, so the next step of his treatment will involve Lutathera.

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This radioactive treatment is specifically for neuroendocrine tumors occurring in the pancreas or gastrointestinal tract. It's given to patients like Roscoe, who continue to experience tumor growth after receiving multiple other therapies.

Though the drug wasn't approved by the Food and Drug Administration until 2018, Anthony has been involved in research on it for more than two decades. Markey was the first medical center in Kentucky to offer it, and so far Anthony has treated more than 100 patients with the drug.

"With the Lutathera, we're anticipating more improvement in his symptoms," Anthony said. "It will hopefully reduce the amount of disease he has, help control his gastrointestinal issues and give him more energy."

Anthony has touched the lives of many patients with NETs, including Amanda Lockey and her husband, who were so inspired by Anthony that they funded an NETs clinical trial at Markey as a way to give through the Markey Cancer Foundation.

Clinical trials in NETs research

With only a handful of agents approved for the treatment of NETs, the majority of which are limited to gastroenteropancreatic NETs, clinical trials are an important therapy option for this patient population.

Markey holds the distinction of opening the first radiopharmaceutical clinical trial for the treatment of NETs within the National Cancer Institute's Experimental Therapeutics Clinical Trials Network (ETCTN). The ETCTN employs a collaborative, team-based approach to early-phase clinical trials of NCI Investigational New Drug agents in high-priority areas of unmet cancer treatment needs. With 40 high-profile cancer centers across the United States, the

network funds trials led by clinician scientists at participating sites, and the trials are then conducted by the network sites.

This specific trial, ETCTN 10450, is overseen by medical oncologist Dr. Aman Chauhan and is examining the combination of Lutathera and the novel DNA-PK inhibitor peposertib for the treatment of NETs.

"It's a big win for our patients regionally because they don't have to travel very far to participate in these cutting-edge trials."

DR. AMAN CHAUHAN

"Lutathera works so well in treating this patient population, but it's not curative," Chauhan said. "It's a big advance for the field, but we shouldn't stop there. We need to continue to improve our treatment options."

Chauhan is also running another ETCTN trial, 10388, which is investigating the side effects and best dose of triapine – a ribonucleotide reductase inhibitor – plus Lutathera for the treatment of NETs. Both trials are ongoing, and he expects data to be presented in the next two years.

"There's a lot of excitement about the potential of these therapies in the NET community," Chauhan said. "And it's a big win for our patients regionally because they don't have to travel very far to participate in these cutting-edge trials."

Training next generation NET experts

With all of the demonstrated efficacy and further promise of radiopharmaceutical agents in the treatment of NETs, Kunos, Anthony and Chauhan are working to pass along their expertise to other oncologists across the country. They were recently awarded a grant to create a Radiopharmaceutical Alliance with other U.S. colleges and universities to

Dr. Aman Chauhan, Dr. Caryn Sorge and Dr. David Worhunsky started a pediatric neuroendocrine tumor program, one of the few clinics of its kind nationally.



A MULTIDISCIPLINARY APPROACH TO TREATING RARE CANCER IN CHILDREN

Neuroendocrine tumors are rare among adults, but they're even rarer among children, with fewer than three cases per million in this age group, according to an article in *Global Pediatric Health*. This means there is a general lack of expertise when it comes to the screening and management of pediatric NETs. To close this gap, physicians from UK Markey Cancer Center and UK HealthCare Kentucky Children's Hospital have come together to bring all this care under one umbrella.

The new Pediatric Neuroendocrine Tumor Clinical and Research Program offers a multidisciplinary approach to screening, diagnosing and managing NETs in pediatric patients, including medical oncology, pediatric oncology and pediatric surgery. Spearheaded by Dr. Aman Chauhan, the program also combines the expertise of pediatric oncologist Dr. Caryn Sorge and pediatric surgeon Dr. David Worhunsky, as well as pediatric pathology, genetics, interventional radiology, nuclear medicine and radiation oncology.

mentor five early-career investigators on the use of radiopharmaceuticals for the treatment of cancer, including NETs.

"Our mission is to accelerate the world's transition to sustainable radiopharmaceutical therapy through education and mentored research," Kunos said.

The right choice for Roscoe

Roscoe has been dealing with his disease for nearly four years, and he'll continue to fight it for the rest of his life. Because of the extent of

Housed in the DanceBlue Pediatric Hematology Oncology Clinic at Kentucky Children's Hospital, the program is a one-stop shop for patients and their families. They're also able to use DanceBlue resources to create a kid-friendly and family-focused experience.

"The beauty of this program is that we're all housed within the same system. So we have the luxury of having the experts at Markey, but then we can mold it into a pediatric experience," Sorge said.

The program is also preparing to participate in a pediatric clinical trial investigating the use of the drug Lutathera. This will give patients in the program access to a leading-edge therapy found to be beneficial in adults with NETs, which is important, as there are currently no treatments approved by the Food and Drug Administration for pediatric NETs. Only six sites in the country will have access to this trial.

liver metastasis, a complete cure is not an option. The goal is to keep him as healthy and active as possible so he can have the best quality of life.

And while Roscoe says he could have gone anywhere in the country for treatment, he felt that Markey was the place for him.

"We've moved seven times, and I got to thinking, 'I'm just so happy with the care I've had at Markey,'" he said. "So I just put everything I had in Dr. Anthony's hands and let him work his magic."

THE RIGHT TEAM AT THE RIGHT TIME

Many consider colorectal cancer a disease that affects older people. But at 27, UK researcher Ronnie Wu received the diagnosis – and the complex, specialized care he needed to take on a fast-growing cancer.

For about a week in May 2020, UK chemistry doctoral student Yueming “Ronnie” Wu felt a little off – some stomach pains, constipation.

But the 27-year-old’s mild discomfort rapidly turned into full-blown illness. He took himself to UK Albert B. Chandler Hospital’s Emergency Department, where he was seen by Dr. Andrew Bernard, UK division chief of acute care surgery and trauma. Bernard immediately ordered tests to rule out common health issues, like gallstones or indigestion.

Wu’s pain worsened and his abdomen became distended. Further testing showed a narrowing in the colon, and he needed to go into surgery.

The Sanders-Brown Center on Aging researcher, who had no family history of cancer, was diagnosed with a worst-case scenario: advanced colorectal cancer that had eroded through the wall of his colon and had spread to the lining of his abdominal cavity.

“The fact that I had cancer totally flips my world upside down physically and emotionally,” Wu said. “I’m shocked and I’m scared, but I choose to face it with a positive attitude.”

With the UK Markey Cancer Center in the next building over, Wu could meet with his oncology team and start treatment immediately.

Eradicating the cancer

After recovering from his surgery, Wu began treatment with Markey medical oncologist Dr. Zhonglin Hao and hematology/oncology fellow Dr. Janeesh Veedu.

Though colorectal cancer is often considered a disease of the older population, the number of cases happening in people younger than 50 has risen sharply in the past 30 years. Hao and Veedu say that 12 percent of diagnosed colorectal cancers now occur in people under 50.

Hao and Veedu chose a variety of chemotherapies to target Wu’s disease. Halfway through his six-month chemotherapy schedule, Wu had a follow-up CAT scan and a colonoscopy. The result? The treatment was working and the tumor had shrunk.

That news led Wu to meet the team of doctors who would take him on to the next phase – a second major surgery to try to fully eliminate the cancer from his body.

The power of HIPEC

In October 2020, Wu met with Markey surgeons Dr. Sandra Beck and Dr. Prakash Pandalai to determine if he would be a candidate for cytoreductive surgery with hyperthermic intraperitoneal chemotherapy, commonly known as HIPEC.

During this procedure, the surgery team first cuts out any sites of remaining visible cancer within the abdominal cavity. Once that step is complete, HIPEC

“The fact that I had cancer totally flips my world upside down physically and emotionally. I’m shocked and I’m scared, but I choose to face it with a positive attitude.”

RONNIE WU

begins: two catheters are placed in the abdomen to create a circuit with a machine designed to heat the chemotherapy in the abdomen to 103 degrees. One catheter pumps the heated chemotherapy into the abdominal cavity, while the second catheter brings it back into the machine. This circuit can run anywhere from 30 to 90 minutes depending on the type of chemotherapy used. In essence, it “washes” any remaining microscopic disease with the hot chemotherapy, with the goal of killing any lingering cancer cells.

“When we got the results back after the surgery, it was a home run.”

DR. PRAKASH PANDALAI

“It’s highly effective at killing the cells we cannot see,” Pandalai said. “This is a treatment that’s not offered in many places, and we specialize in it.”

The goal of chemotherapy prior to CRS-HIPEC is to shrink as much of the tumor as possible, making it easier for the surgeons to then try to fully eliminate the disease.

In February, Wu underwent the lengthy CRS-HIPEC procedure with Beck leading the surgical resection and Pandalai in charge of the HIPEC portion.

“When we got the results back after the surgery, it was a home run,” Pandalai said.

A bright future

Right now, Wu’s prognosis is good. After the CRS-HIPEC procedure, he is now considered NED – no evidence of disease. He will continue to receive scans on a regular basis to look for any recurrence.

Hao has added an even more precise way to monitor Wu: a blood test called the Signatera QNS test. It looks for substances in the blood that colorectal cancer may produce – and would find this warning sign earlier than a scan.

Wu also has some optimistic advice for patients who find themselves in a similar situation.

“When you have symptoms, don’t ignore it,” Wu said. “Trust your doctors; they know what they are doing. Believe in the technology, medicine and the science.”

Above and bottom right: Doctoral student Ronnie Wu, a researcher with the UK Sanders-Brown Center on Aging, has maintained a positive attitude throughout his cancer journey.

Below left: Dr. Prakash Pandalai, a board-certified surgical oncologist, is an expert in treating gastrointestinal cancers and in hyperthermic intraperitoneal chemotherapy. He administered Ronnie Wu’s HIPEC treatment.



ADVANCING HEALTH EQUITY TAKES PASSION

Dr. Lovoria Williams, associate director for cancer health equity at Markey Cancer Center, discusses her inspirations and initiatives to foster inclusion.

What is your role at the University of Kentucky?

My primary role is associate professor in the College of Nursing. The majority of my faculty appointment is devoted to research focused on advancing health equity among communities of color and the medically underserved.

I am also associate director for cancer health equity at Markey Cancer Center. This position is part of the Markey Community Impact Office. A major initiative of this office will be the organization and expansion of Markey's research and outreach portfolio that is focused on reducing health disparities based on race/ethnicity, socioeconomic status, disability, gender identity, sexual orientation and other factors.

Lastly, I'm associate director in the Center for Clinical and Translational Science (CCTS) and co-director of Integrated Special Populations. I work to ensure that the CCTS meets the needs of diverse trainees and faculty and that the CCTS research portfolio is inclusive of people of color (POC), LGBTQIA+ populations and rural communities. I also direct the DREAM Scholars, a career development program for health equity-focused scholars of color, pre-docs and junior scientists, as well as LGBTQIA+ scientists.

What inspired you to become a nurse and then continue your education?

I've always wanted to be a nurse, and I was definitely influenced by my mother. She was a community caregiver – always striving to assist anyone in need.

I was influenced to continue my education by an advanced practice nurse who was my health care provider. She took such a holistic approach to patient care that I was inspired to become a nurse practitioner.

I practiced in the primary care clinic at the VA Medical Center for about 11 years and really just became frustrated in the role, mainly because I didn't feel that I was effective in helping my patients improve their preventive behaviors. Over time my patients' health progressively worsened from preventable conditions such as obesity and type 2 diabetes. I wanted to learn how I could affect behavior change in my patient population. So that's what inspired me to go back for a doctorate.

What sparked your interest in pursuing a diversity focus?

Growing up I saw the POC around me have worse health than other groups. At the time, I didn't understand all the factors that affected health outcomes, such as social determinants of health and other structural inequities. But I remember seeing it happen and recall wanting to help change outcomes among POC.



Above: Working together with her colleagues Dr. Jean Edward, left, and Dr. Adebola Adegboyega, right, Dr. Lovoria Williams leads Markey's health equity efforts in cancer outreach, engagement and research.

Why is having a focus on diversity critical for Markey?

Over the last year, social justice and equity has brought us to a critical juncture. More people now are willing to acknowledge how social determinants have negatively impacted Black and brown people. Social determinants also affect health outcomes. Markey has demonstrated such impactful work in the Appalachian community, so we know that we have a passion for advancing health equity. And now is the time to apply that more broadly across all special populations, such as racial and ethnic minorities, LGBTQIA+ and medically underserved individuals.

How can we educate minority groups on the importance of participating in clinical trials?

Historically, POC largely do not participate in clinical trials as much as others. There are also so many factors that influence an individual's decision to participate. Research suggests the main limiting factor is that POC are not asked to participate and when asked, they are as willing to participate as others.

To understand and overcome barriers to enrollment among Black and Latino populations, the American Society of Clinical Oncology (ASCO) and the Association of Community Cancer Centers (ACCC) have partnered to develop a pilot study. The aim is to engage over 40 cancer centers nationally to pilot test a research site self-assessment tool and an implicit bias training program. Markey was selected as one of the sites. The tool will provide an objective assessment of our clinical trial processes, and these data will help us determine areas where we can intervene to increase trial enrollment.

Secondly, scientists and clinicians of color are underrepresented in health care, and we all have biases. There are instances where implicit bias plays a role in the patient encounter. Therefore, the second part of the ASCO/ACCC project will assess for implicit biases among a few of our clinicians and clinical trial staff. The same staff will subsequently receive an implicit bias intervention and a reassessment to determine if baseline measures of biases change. If the training is effective, ASCO/ACCC will disseminate the test and the intervention to other cancer centers. We are extremely excited to be a part of this.

Additionally, I recently received funding from the Markey Cancer Foundation. This funding will allow me to explore factors that influence patients and their families to decline or accept an offer to participate in a clinical trial. Secondly, I will survey clinicians and staff members to examine their confidence with engaging POC in clinical trial discussion and will develop an intervention to strengthen their confidence. We are confident these two projects will increase our understanding of barriers to clinical trial enrollment for POC at Markey and allow us to develop specific strategies to address them.

Below: Dr. Lovoria Williams uses her skills as an instructor as well as a researcher in cancer health equity.



EARLY DETECTION, BETTER OUTCOMES

A CT scan to check for pneumonia revealed something unexpected for nonsmoker Brenda Spillman: a small lung mass.

When Lexington resident Brenda Spillman came down with pneumonia in 2016, the illness lingered in her lungs, gradually causing her to lose her breath. For three weeks, she tried over-the-counter medicines to no avail.

“Then one morning I got up, called my son, and said, ‘I can’t breathe,’” Spillman said. “And he said, ‘If you don’t go to the doctor right now, I’m going to come and take you.’”

Spillman’s primary care doctor ordered a CT scan, which found two things: pneumonia, as expected, and another thing her doctor did not expect: a small spot in the upper lobe of her right lung. She sought out a pulmonologist, who decided to scan her annually to watch for changes in the small lung mass.

The first two years, the spot appeared the same. After her third yearly scan, she was told the mass was growing rapidly.

A diagnosis at Markey

Spillman was referred to the UK Markey Cancer Center’s Multidisciplinary Thoracic Clinic, where she saw interventional pulmonologist Dr. Ashish Maskey. Due to the tumor’s increased size and PET scan results, the chance of cancer was very high. Spillman was referred to Markey thoracic surgeon Dr. Jordan Miller, that same day for a definitive intervention that would be both diagnostic as well as therapeutic.

Miller suggested a minimally invasive wedge resection followed by possible removal of the affected lung lobe, depending on pathology results. The pathology results confirmed their suspicions: Spillman had a stage 1 adenocarcinoma, a type of lung cancer commonly seen in nonsmokers.

After her surgery to remove the growth, she spent three days in the hospital and completed

outpatient therapy to help regain her exercise tolerance.

Lung cancer among nonsmokers

The diagnosis surprised Spillman. “I never smoked nor drank,” she said. “But things happen.”

While smoking is the biggest risk factor for lung cancer, Miller notes a national trend of more patients like Spillman receiving similar diagnoses.

“As the stage of lung cancer increases, the survival decreases. That’s why we want to identify it early – it’s our opportunity to cure it.”

DR. JORDAN MILLER

Because her cancer was found early, Spillman didn’t have to undergo chemotherapy or radiation. For two years, she’ll visit Miller every four months and get scanned to make sure her cancer doesn’t return. Her

prognosis is good – Miller says the five-year survival rate for her cancer and staging is about 90 percent.

“As the stage of lung cancer increases, the survival decreases,” Miller said. “That’s why we want to identify it early – it’s our opportunity to cure it.” In 2015, the Food and Drug Administration approved low-dose

CT screening for lung cancer. This screening is recommended for current and former smokers ages 50-80 who have a 20 pack-year smoking history, and it is the most effective tool available to find lung cancers early.

“If something abnormal is found on a CT scan, even if that person is a nonsmoker, it should be taken seriously and followed,” Miller said.

Spillman is now doing well, keeping herself busy with volunteering and maintaining her yard.

“It’s just the grace of God that I’m still moving,” she said. “I’ve been blessed.”

Opposite: Lung cancer survivor Brenda Spillman is grateful her cancer was found early.

Left: Dr. Jordan Miller is a thoracic surgeon specializing in minimally invasive techniques to treat lung cancer.

UK STUDY ADDRESSES REDUCING BARRIERS TO CARE

A study headed by Lovoria B. Williams, PhD, associate professor in the UK College of Nursing and associate director for cancer health equity at the UK Markey Cancer Center, highlights the benefits of utilizing community health workers in educating racial minority populations in lung cancer screening.

With funding from the Bristol Myers Squibb Foundation and in collaboration with researchers from Augusta University, the team aimed to assess the value of using community health workers to promote lung cancer screening knowledge in a Georgia city where the community is predominantly African American and almost a quarter of residents live below the poverty line.

Despite lung cancer screening recommendations for smokers and former smokers published by

the U.S. Preventive Services Task Force, in 2018 it was observed only 2-4 percent of eligible individuals participated in such screenings.

“Populations of color are often late adopters of new cancer screenings and are more likely to be diagnosed with cancer at a later stage than white populations. We need to be in these communities, and we need to be proactive.”

LOVORIA B. WILLIAMS, PHD

Funded by a Markey Cancer Center CCSG grant, Dr. Williams conducted a dissemination and implementation study in Western Kentucky and found the utilization of community health workers successfully increased the knowledge of lung cancer screening and overall general cancer knowledge, attitudes and beliefs related to lung cancer among Kentucky communities also.

Kentucky is a national leader in lung cancer screening uptake, with 20 percent of those eligible having met the screening guideline compared to the national uptake of about 14 percent. However, among eligible Black adults, only 6 percent have undergone screening. “Populations of color are often late adopters of new cancer screenings and are more likely to be diagnosed with cancer at a later stage than white populations,” Williams said. “It is critical for Markey to continue its community engagement among communities of color. The University of Kentucky has led a concerted effort in Appalachia and has built essential trust relationships that have resulted in improved health outcomes. We will apply this successful Appalachian model in communities of color and make a sustained investment that will lead to the reduction of health inequity.”

A PROMISING TREATMENT BRINGS **LONG-TERM REMISSION IN SIGHT**

When other therapies fail, adults with blood cancers can turn to the innovative CAR T-cell therapy for a chance at recovery.

The UK Markey Cancer Center was the first hospital in Kentucky to offer groundbreaking CAR (chimeric antigen receptor) T-cell therapy treatment for adults with blood cancers.

In only four years, this program has grown from five patients in 2018 to around 40 in 2021.

“CAR T-cells provide an opportunity for long-term remissions, if not a cure, for some blood cancers in patients who in the past had a very limited chance,” said Dr. Gerhard C. Hildebrandt, director of Markey’s CAR T-cell therapy program.

CAR T-cell therapy is a type of immunotherapy that uses the body’s own cells to fight cancer. Immune cells (T-cells) are removed from the patient’s body before being genetically modified by adding chimeric antigen receptor therapy to them. The CAR then reprograms the T-cells to fight specific cancers, and the cells are infused back into the patient.

This is usually a one-time therapy that can be performed outpatient or inpatient. If relapse occurs, a second infusion may be necessary.

Current CAR T-cell therapy options

CAR T-cell therapy is an option for those who have failed other therapies. At Markey, it is used to treat:

- Acute lymphoblastic leukemia
- Diffuse large B-cell lymphoma
- Follicular lymphoma

- Mantle cell lymphoma
- Multiple myeloma
- Primary mediastinal B-cell lymphoma
- Transformed follicular lymphoma

“CAR T-cells provide an opportunity for long-term remissions, if not a cure, for some blood cancers in patients who in the past had a very limited chance.”

DR. GERHARD C. HILDEBRANDT

Side effects vary but can include cytokine release syndrome with fever and shortness of breath, neurotoxicity, infections, and low blood counts. Patients and referring providers shouldn’t shy away from this promising treatment because of potential side effects, though.

“These side effects are very manageable,” Hildebrandt said.

Clinical trials

An upcoming trial at Markey will study the effectiveness and safety of an off-the-shelf product that uses donor CAR T-cells instead of a patient’s cells. Using donor cells could significantly reduce the time it takes to deliver treatment, from three or four weeks to just a few days.

The future of CAR T-cell therapy

Several companies currently study and manufacture CAR T-cell therapy products for



different diseases. Hildebrandt hopes to expand Markey’s program so more patients can receive this treatment for other conditions. His goal is to engage with more industry partners, expand collaborations with academic centers and potentially bring CAR T-cell development in-house. Doing so could help bypass production shortages, reduce treatment costs and strengthen Markey’s position as the key immunotherapy center in Kentucky.

Contact the Markey CAR T-cell therapy team

Hildebrandt, together with associate medical director Dr. Chait Iragavarapu, lead pharmacist Jessica Cupac and program administrator Jennifer Biser, leads Markey’s CAR T-cell therapy team.

To refer a patient for CAR T-cell therapy or to learn more about the program, contact CARTatMarkey@uky.edu. You can also make a referral request to the Markey Hematology Clinic through UK•MDs at **800-888-5533** or through EpicCare Link.



Top: Dr. Gerhard Hildebrandt discusses a case with a colleague.

Below, right: Engineered receptors on the surface of a T-lymphocyte bind specifically to CD19-antigen molecules on the surface of a leukemia cell. This activates a signal cascade in the T-cell leading to the segregation of vesicles that contain perforin and granzymes molecules. The perforins build channels for the granzymes, which enter the leukemia cell and activate finally the apoptosis (cell death) of the cancer cell.

THIS BASKETBALL COACH'S GOAL? BEAT CANCER.

A melanoma diagnosis didn't slow A.W. Hamilton down. He was determined to overcome this disease and inspire others with his story.

Motivated by a conversation with his grandfather, A.W. Hamilton has been writing his goals on his bathroom mirror since high school.

At the age of 40, Hamilton, head basketball coach of Eastern Kentucky University, has accomplished a lot when it comes to reaching his goals. In six years as head coach of Hargrave Military Academy and entering his fourth season at ECU, he has compiled a 288-64 record. Two of his former players were selected in the 2015 NBA Draft. At ECU, he has guided the program to a historic turnaround since arriving in 2018. Under his leadership, the Colonels have broken 19 school records, highlighted by 15 conference wins this past season – the most in school history. On top of it all, Hamilton was named the Ohio Valley Conference Coach of the Year and National Association of Basketball Coaches (NABC) District 18 Coach of the Year in 2020.

And he isn't done yet. He has three million-dollar checks on his mirror, one for each of his children when they turn 18, and he wants to start the largest charity foundation in Kentucky.

But when Hamilton was unexpectedly diagnosed with melanoma in 2020, he didn't know what to make of his mirror of goals.

"I'm thinking to myself, 'How am I going to accomplish all this?'" he said. "I got into a really dark place because I wasn't sure what was going to happen to me, if I was going to be able to do the things that I set out to do."

His diagnosis came after his brother-in-law had a stroke – a wake-up call that inspired Hamilton to get a physical for the first time since 2004. While all of his tests came back normal, there was a small mole on the back of his ear that his doctor sent off for a biopsy. Turns out, it was melanoma. Within two days, Hamilton was sitting in the office of Dr. Joseph Valentino, an oncology head and neck surgeon at UK Markey Cancer Center.

"I was freaking out," Hamilton said. "But I was like, 'You know what? I've got to regroup here.' So I made a new goal: to beat cancer, tell my story and save somebody else's life."

Valentino discovered that the mole on Hamilton's ear had intermediate thickness, meaning the cancer had a chance of spreading throughout his body through lymph nodes and blood vessels. Hamilton underwent a PET scan so that Valentino could see how much the cancer might have spread before recommending a treatment plan.

(continued on page 19)

"So I made a new goal: to beat cancer, tell my story and save somebody else's life."

A.W. HAMILTON

Hamilton at ECU sports facility.

A ROAD MAP TO SURVIVORSHIP

Throughout her cancer journey, Elizabeth Barr set goals for herself, from meeting her first grandchild to dancing at her son's wedding. The UK Markey Cancer Center helped her achieve each one.

When Elizabeth Barr (E, as she's known to everyone), started to feel pain in her abdomen in March 2017, she had no idea that it was the beginning of a four-year roller coaster ride that would nearly kill her — and an incredible recovery that would lead her doctors to nickname her Lazarus.

She visited a urologist to rule out a UTI, then underwent a colonoscopy. Her test results came back normal, but the pain continued to intensify. During another exam, Barr's gynecologist felt something unusual and referred her to UK HealthCare, where she met Dr. Fred Ueland, chief of the Division of Gynecologic Oncology at the UK Markey Cancer Center. He recommended surgery to confirm Barr's diagnosis: a malignant ovarian tumor.

Barr already has a complicated health history: She was born with only one kidney and had an ovary removed in her 20s due to a non-cancerous tumor. Because of this and the aggressive nature of her cancer, Ueland and his team removed Barr's remaining ovary and uterus as well as a portion of her colon. The surgery was followed by 10 hours of chemotherapy every three weeks.

"We looked forward to it because we got to know those nurses, doctors and staff, and they became like family," Barr said.

The end of her treatment regimen was in sight by late 2017. But in January 2018, shortly after

completing chemo, Barr's pain returned. By February, a scan confirmed that her cancer was back. Barr and her husband, Cary, met with Dr. Avinash Bhakta, a colorectal surgeon at UK HealthCare, to undergo a minimally invasive laparoscopic right colon resection. The team felt confident they had removed all recurrent tumors.

However, in May 2018, Barr felt pain again. A PET scan revealed more disease in her abdomen, and she began having severe gastrointestinal bleeding.

"At that point, chemo was out of the question, surgery was out of the question," Barr said. "I was pretty weak."

Barr began a series of blood transfusions to strengthen her body and was referred to Dr. Mark Bernard for radiation therapy to treat the cancer and stop the bleeding. The palliative care team came in to speak to the couple, but Barr was only interested in one thing.

"I wanted to live long enough to see my first grandchild who was due on my birthday, June 30," she said.

Barr came home from the hospital in early June, weak from radiation and on a liquid diet, but determined to make it through.

"For the month of June we waited for the radiation to work," Barr said. "On July 1, 2018, William Palmer Dycus was born, and I got to see my



"I wanted to live long enough to see my first grandchild who was due on my birthday, June 30."

ELIZABETH BARR

Above, left: Meeting her grandchildren (Will and Caroline) for the first time was a big motivator for Barr.

Above, right: Elizabeth Barr at her family farm.

Below: The UK Markey Cancer Center Molecular Tumor Board meets on a regular basis to determine the most effective treatment for cancer patients.

grandchild the day he arrived. So then I gave Dr. Ueland another goal: that I wanted to be here for my son's wedding in October 2019."

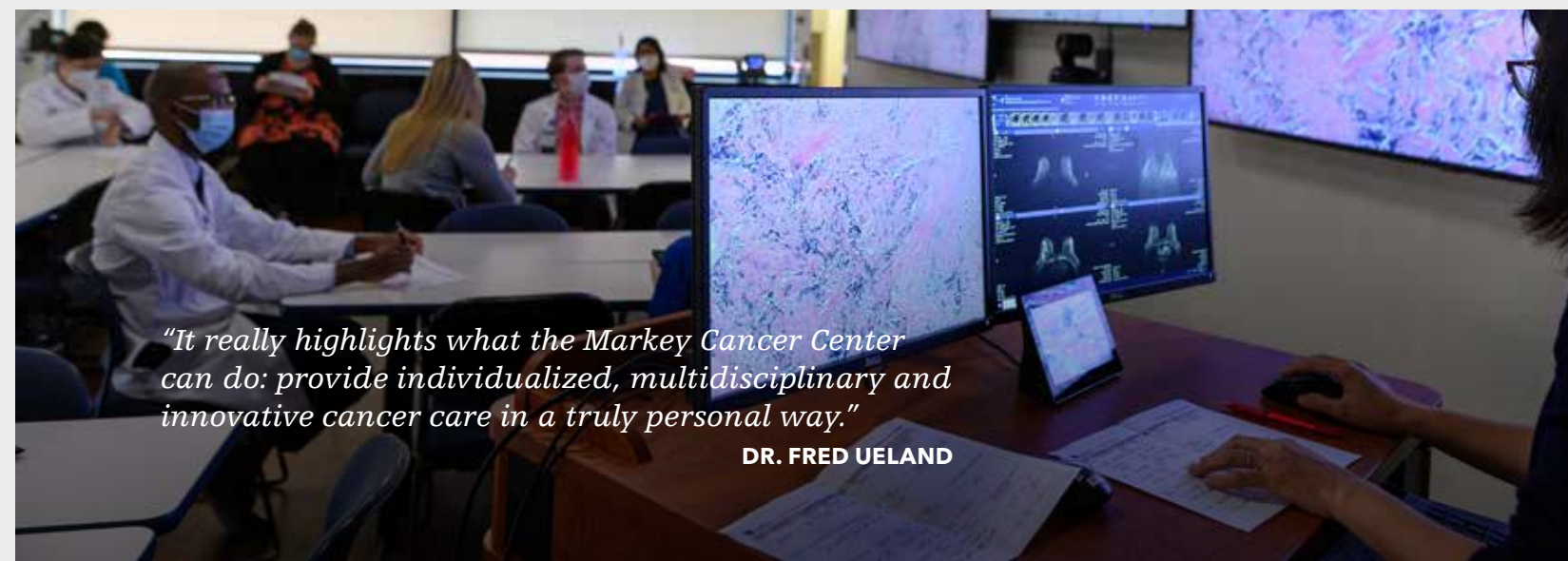
Following another surgery, Ueland ordered whole genome sequencing on Barr's cancer specimen to look for mutations or abnormal genes in the cancer tissue. As Barr recovered at home, the Molecular Tumor Board at Markey met to review her case. This team of physicians, surgeons, scientists, researchers and pharmacists specialize in interpreting genomic test results and translating them into personalized cancer treatments. They recommended a type of immunotherapy called pembrolizumab, which helps the immune system recognize and attack cancer cells.

After three treatment cycles, Barr walked into Ueland's office and told him that for the first time in a long time, she felt normal. Six months later, her scans were cancer-free.

"It really highlights what the Markey Cancer Center can do: provide individualized, multidisciplinary and innovative cancer care in a truly personal way," Ueland said.

Thanks to the Molecular Tumor Board, Barr received her lifesaving treatment two years before it became widely available for her type of cancer. Today, she has been entirely off therapy for over a year and is doing well. Barr credits Markey with giving her a road map to survivorship — allowing her to meet her grandchildren, dance at her son's wedding and plan for the future.

"I just always needed to know we had a game plan," she said. "And UK HealthCare did it. They thought outside the box and gave someone like me a chance."



"It really highlights what the Markey Cancer Center can do: provide individualized, multidisciplinary and innovative cancer care in a truly personal way."

DR. FRED UELAND

RESEARCH WITHIN REACH

The Markey Cancer Research Network allows patients across Kentucky and beyond to access leading-edge clinical trials close to home.

An alliance between the UK Markey Cancer Center and regional hospitals brings vital cancer research studies to people in their home communities.

The Markey Cancer Research Network (MCCRN) consists of member sites conducting investigator-initiated studies developed by Markey faculty as well as studies available through the National Cancer Institute's National Clinical Trials Network. MCCRN works with each site to select a research study portfolio that aligns with its goals to serve its patients and community.

"Sometimes studies require multiple and frequent visits. Having sites closer to home is something that patients and the facilities appreciate."

DR. TIMOTHY MULLETT

Hospitals go through rigorous processes to implement clinical trials. They receive support and training from Markey to assist with study implementation, recruitment and screening strategies. "These partner institutions are significant contributors to these trials," said Kris Damron, director of the Markey Cancer Center Research Network.

By increasing the availability of clinical research, people don't need to travel to Lexington to participate in some of the latest cancer research.

"Clinical trials in cancer are complex. Sometimes studies require multiple and frequent visits," said Dr. Timothy Mullett, medical director of the

network. "Having sites closer to home is something that patients and the facilities appreciate."

The member hospitals include:

- King's Daughters Medical Center, Ashland
- Owensboro Health Regional Hospital, Owensboro
- St. Claire Regional Medical Center, Morehead
- St. Elizabeth Healthcare, Edgewood
- St. Mary's Medical Center, Huntington, W. Va.
- Tri-State Regional Cancer Center, Ashland

"Being an affiliate of an NCI-designated cancer center gives our patients access to cutting-edge research and clinical trials while also minimizing travel," said Kristie Whitlatch, president and CEO of King's Daughters Medical Center, which has been affiliated with MCCRN for over 25 years.

Lung cancer and tobacco studies

Hospitals participating in the research network have recruited significant numbers of patients for an average of 200 trials each year. Sites have done well with enlisting patients for a series of lung cancer precision medicine trials, including the Lung Cancer Master Protocol. This trial evaluates immunotherapies and biomarker-driven therapies for people with advanced non-small cell lung cancer.

One recently completed survey study looked at the impact of suspending lung cancer screening during the COVID-19 pandemic, while another study evaluated the factors that facilitate cancer programs implementing tobacco treatment.

6 MEMBERS

King's Daughters Medical Center, Ashland
Owensboro Health Regional Hospital, Owensboro
St. Claire Regional Medical Center, Morehead
St. Elizabeth Healthcare, Edgewood
St. Mary's Medical Center, Huntington, WV.
Tri-State Regional Cancer Center, Ashland



These studies provide vital data for Kentucky, which has some of the nation's highest rates of smoking and lung cancer.

Adapting to challenges

The pandemic produced challenges, but MCCRN sites rose to the occasion. King's Daughters Medical Center, St. Elizabeth Healthcare and Owensboro Health Regional Hospital in particular managed to continue research while guidelines and national and institutional standards evolved.

"Our top priority is the safety of our patients," Whitlatch said. "No patients are more at risk during the pandemic than those with a cancer diagnosis."

MCCRN sites have adapted well to best help their patients, Damron said. "They modified research operations and successfully continued their research in the midst of stringent changes to operations."

RESEARCH EXPANDING IN BOWLING GREEN

The Medical Center at Bowling Green is developing a research program and plans to become the newest member of the Markey Cancer Center Research Network. This program offers exciting opportunities for expanded research in southwestern Kentucky.

The UK College of Medicine recently established a four-year regional campus at Bowling Green in partnership with Western Kentucky University and The Medical Center at Bowling Green. The campus accepted its first students in 2018. It offers two combined degree programs: MD/MBA and MD/MPH.

A medical program in this part of the Commonwealth will give these students the opportunity to participate in research and get exposure to research careers.

"We're excited about the potential," Damron said. "There's certainly an opportunity for what will grow into a sophisticated infrastructure for clinical trials because of the College of Medicine's presence."

UK RESEARCH STUDY BECOMES KEY TO CANCER BATTLE

After IV chemotherapy failed to shrink her tumor, Kathy Caldwell had another option: a clinical trial.

After a successful bariatric surgery, Kathy Caldwell of Middlesboro, Ky., kept telling her primary care provider she was experiencing recurring pain in her abdomen. Her doctor routinely dismissed her concerns, but Caldwell didn't feel right.

One day, several months after the surgery, Caldwell started feeling nauseous and laid down to rest. When the mother of three woke up the next morning, she looked in the mirror and noticed her entire body had yellowed.

"I was yellow, head to toe, even my scalp," she said. She called Dr. Joshua Steiner, who had performed her gastric bypass surgery. "He said, 'Get up here now. There's something wrong.'"

After running tests, Steiner realized that something more serious than a gallstone was causing these issues.

"He got really teary eyed, came over to me, put his hand on my leg and said, 'Katherine, this isn't good,'" Caldwell recalled.

Within hours, Steiner had referred Caldwell to Dr. Roberto Gedaly, a liver transplant specialist and director of the UK HealthCare Transplant Center. "If it was my wife, [Dr. Gedaly] is who I would take her to," Steiner said.

Diagnosis and treatment

Encouraged by Steiner's trust in Gedaly, Caldwell went through a series of tests to address her jaundice and uncover its cause. It wasn't until she met with liver specialist Dr. Meera Gupta in 2019 that Caldwell finally found out what had been causing her pain: intrahepatic cholangiocarcinoma, also known as bile duct cancer.

Gupta told Caldwell that her tumor was unresectable – too advanced to remove by surgery – and that patients with her diagnosis were not currently eligible for liver transplant. Caldwell's team made a plan to start her treatment with IV chemotherapy, in the hopes that it would shrink her tumor to a size that could be removed surgically.

"I wasn't going down without a fight."

KATHY CALDWELL

Six months in, her tumor remained unresectable, but she learned she might be a candidate for a clinical trial.

The clinical trial

Led by surgical oncologist Dr. Michael Cavnar and medical oncologist Dr. Reema Patel at the UK Markey Cancer Center, the trial was for a specialized type of treatment for cancers like Caldwell's.

"The doctors have all been so wonderful to me. With them, I don't feel like just a patient. They show concern, and they make me feel like an individual person."

KATHY CALDWELL

Above: Kathy Caldwell of Middlesboro, Ky.

Bottom, left to right: Clinical trials buttons are worn by staff at Markey to make patients aware of the option; surgical oncologist Dr. Michael Cavnar and medical oncologist Dr. Reema Patel review imagery.

Cavnar and Patel were studying the safety of combining two separate medical devices: an implantable pump typically used to deliver pain medicine to the spinal cord and a special catheter designed to be implanted into an artery. For the study, this device combination was being surgically implanted in a way that allowed chemotherapy to be infused directly into the liver at a higher dose.

Typically, when patients receive chemotherapy, it's administered through their entire body via their bloodstream. The method Cavnar and Patel were studying would allow more chemotherapy to be delivered directly to the tumor at a higher dose than the IV chemotherapy Caldwell had received previously.

She was eager to participate.

"I wasn't going down without a fight," she said. "I was like, 'Sign me up!' If they're willing to take me, I'll do it."

Caldwell got the hepatic artery infusion pump implanted in June 2020. The trial period is for six months, but due to an issue with the catheter, Caldwell had to have the pump removed and could only participate for five and a half months. Despite being unable to continue with the implanted pump, Caldwell and her doctors are pleased with the progress she made during her time with it. Now, she's continuing her treatment through radiation and oral chemotherapy, personalized to her cancer.

Caldwell is thankful for the treatment she continues to receive at UK HealthCare, and she's grateful for the strength that her faith has given her.

"The doctors have all been so wonderful to me," she said. "With them, I don't feel like just a patient. They show concern, and they make me feel like an individual person. I feel like God handpicked them just for me."



EXPANDING ACCESS TO LEADING-EDGE CARE

Through the UK Markey Cancer Center Affiliate Network, patients in all corners of the state can receive the advanced care they need.

Now in its 15th year, the UK Markey Cancer Center Affiliate Network (MCCAN) is a model for programs in Kentucky and beyond. A collaboration with community hospitals, the Markey Affiliate Network ensures people of the Commonwealth and surrounding states have access to excellent cancer care close to home.

Patients at affiliate hospitals can be referred to Markey in Lexington for specialized surgery and other services, and doctors at Markey work closely with community providers to coordinate care.

“Being affiliated with UK gives us the opportunity to use some of their more specialized services and providers that we wouldn’t ordinarily have access to.”

DR. SAMUEL BAILEY

“Combined with research opportunities and complex care that only an NCI-designated cancer center like Markey can provide, the Markey Cancer Center Affiliate Network benefits so many patients in need of advanced cancer care right here in Kentucky,” said Dr. Mark Newman, executive vice president for health affairs at UK HealthCare.

MCCAN’s advantages

The affiliate network started in 2006 with three sites: Harrison Memorial Hospital in Cynthiana, St. Claire Regional Medical Center in Morehead and Rockcastle Regional Hospital in Mount Vernon.

These hospitals are still members of the Markey Affiliate Network, which has grown to 19 sites. Markey provides cancer-specific education for

providers at these sites and helps cancer programs achieve and maintain Commission on Cancer (CoC) accreditation. Dr. Timothy W. Mullett, medical director of the Markey Affiliate Network, said accreditation is a good benchmark for measuring the quality of cancer programs.

Specialized care close to home

Through the affiliate network, patients don’t have to travel far to access the latest treatments.

“The majority of cancer cases can be treated successfully in local communities if you have the right training, the right professionals and the right equipment,” said Cheri Tolle, administrative director of the Markey Affiliate Network.

Dr. Samuel Bailey, medical oncologist at Hazard ARH Regional Medical Center, said being part of the affiliate network benefits providers and patients. “Being affiliated with UK gives us the opportunity to use some of their more specialized services and providers that we wouldn’t ordinarily have access to.”

Setting the standard

The Markey Affiliate Network’s efforts have garnered the attention of other organizations, including the National Cancer Institute and the CoC, which developed a task force to look at improving the quality of rural cancer care programs. The University of Iowa, which is part of the task force, is using the Markey Affiliate Network as a model as it seeks to expand care in rural communities, and the NCI is particularly interested in how the network has helped UK recruit researchers.



Dr. Mark Newman conveys the value of UK HealthCare outreach networks to Kentucky communities at the University Health Committee Board Retreat in September 2021.

“Combined with research opportunities and complex care that only an NCI-designated cancer center like Markey can provide, the Markey Cancer Center Affiliate Network benefits so many patients in need of advanced cancer care right here in Kentucky.”

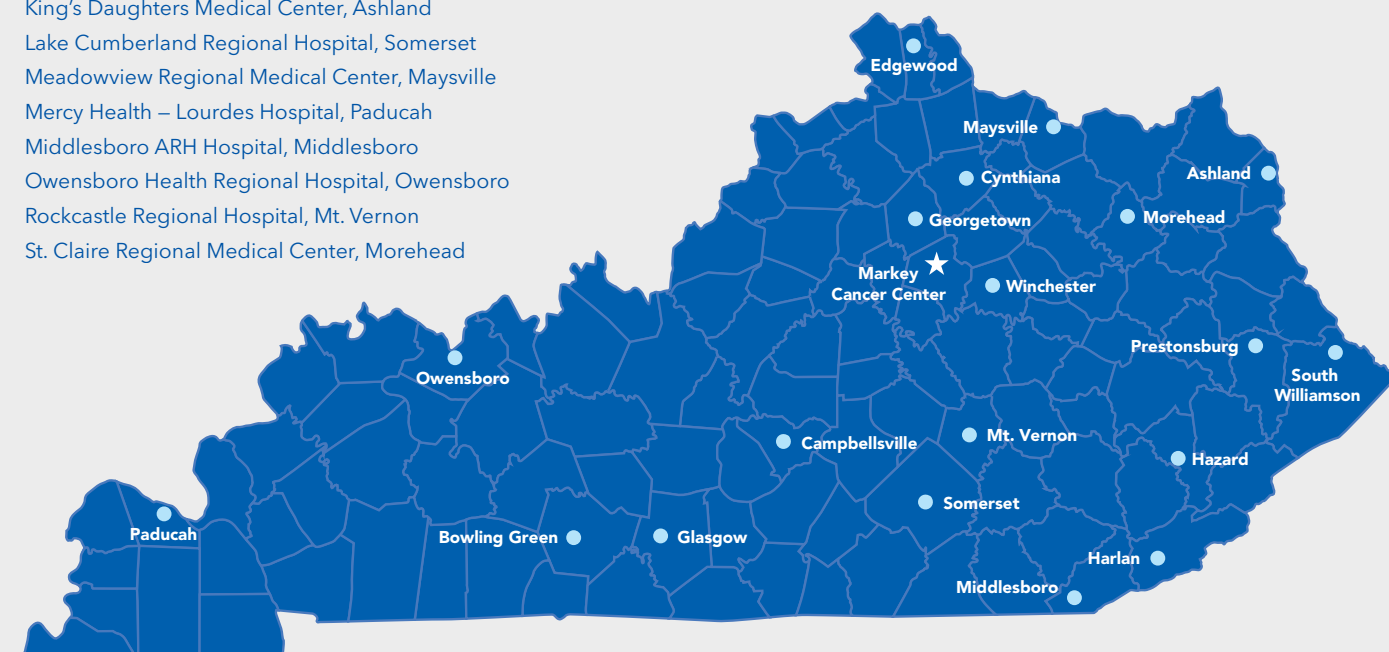
DR. MARK NEWMAN, EXECUTIVE VICE PRESIDENT FOR HEALTH AFFAIRS AT UK HEALTHCARE

UK MARKEY CANCER CENTER AFFILIATE NETWORK

19 MEMBERS

- Clark Regional Medical Center, Winchester
- Georgetown Community Hospital, Georgetown
- Harlan ARH Hospital, Harlan
- Harrison Memorial Hospital, Cynthiana
- Hazard ARH Regional Medical Center, Hazard
- Highlands ARH Regional Medical Center, Prestonsburg
- King’s Daughters Medical Center, Ashland
- Lake Cumberland Regional Hospital, Somerset
- Meadowview Regional Medical Center, Maysville
- Mercy Health – Lourdes Hospital, Paducah
- Middlesboro ARH Hospital, Middlesboro
- Owensboro Health Regional Hospital, Owensboro
- Rockcastle Regional Hospital, Mt. Vernon
- St. Claire Regional Medical Center, Morehead

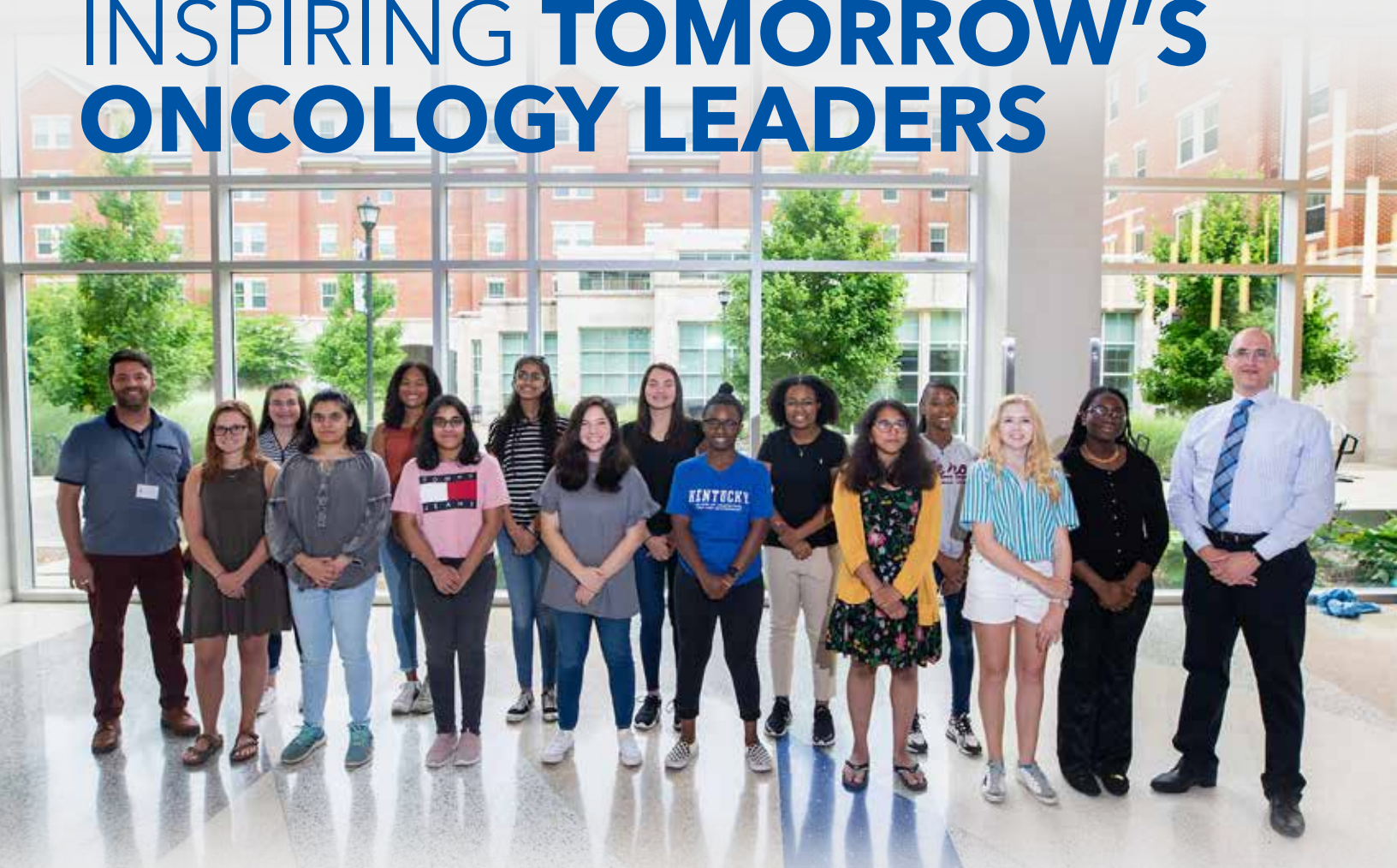
- St. Elizabeth Healthcare, Edgewood
- Taylor Regional Hospital, Campbellsville
- The Medical Center at Bowling Green, Bowling Green
- TJ Samson Community Hospital, Glasgow
- Tug Valley ARH Regional Medical Center, South Williamson



Other service lines at UK HealthCare saw the success of the Markey Affiliate Network and developed similar collaborations, including the Gill Heart & Vascular Institute Affiliate Network and the UK/Norton Healthcare Stroke Care

Network. “Relationship building with community hospitals and their providers is crucial to the development of these networks, and MCCAN showed how this could be achieved,” Mullett said.

INSPIRING TOMORROW'S ONCOLOGY LEADERS



High school and college students from underrepresented backgrounds were able to explore careers in cancer care and research through new programs at Markey.

Diversity in science is critical to research and patient care. More diverse perspectives in health care can lead to advances in knowledge, greater innovation and creative problem solving.

That's why the UK Markey Cancer Center is inspiring young people from historically underrepresented groups to learn more about the fields of cancer medicine and research. Two new programs held in the summer of 2021 gave high school and college students the chance to do just that.

Summer HealthCare Experience (SHE) in Oncology

The Summer HealthCare Experience (SHE) in Oncology program empowers female high school students to learn more about cancer science and medicine. Markey was one of five universities to receive funding from the American Cancer Society (ACS) to hold a two-week program.

Nineteen students from across Kentucky learned how to use at-home science kits to perform cancer

Opposite: Dr. Nathan Vanderford leads the SHE in Oncology program to inspire more women to take interest in careers in oncology research.

Below, left to right: Markey STRONG scholars Omar Bojang and Kennedy Palmer present their work in the summer program.

genetic experiments and presented their findings. Other SHE program highlights included:

- Lectures and career development sessions.
- A panel of female cancer center leaders.
- A panel featuring cancer survivors.

“Providing opportunities like these is critical to building a diverse pipeline of future oncology leaders.”

KATHY GOSS, AMERICAN CANCER SOCIETY VICE PRESIDENT FOR REGIONAL CANCER CONTROL

Planned as an in-person experience, the program moved to a virtual format because of the COVID-19 pandemic. This gave students at the five

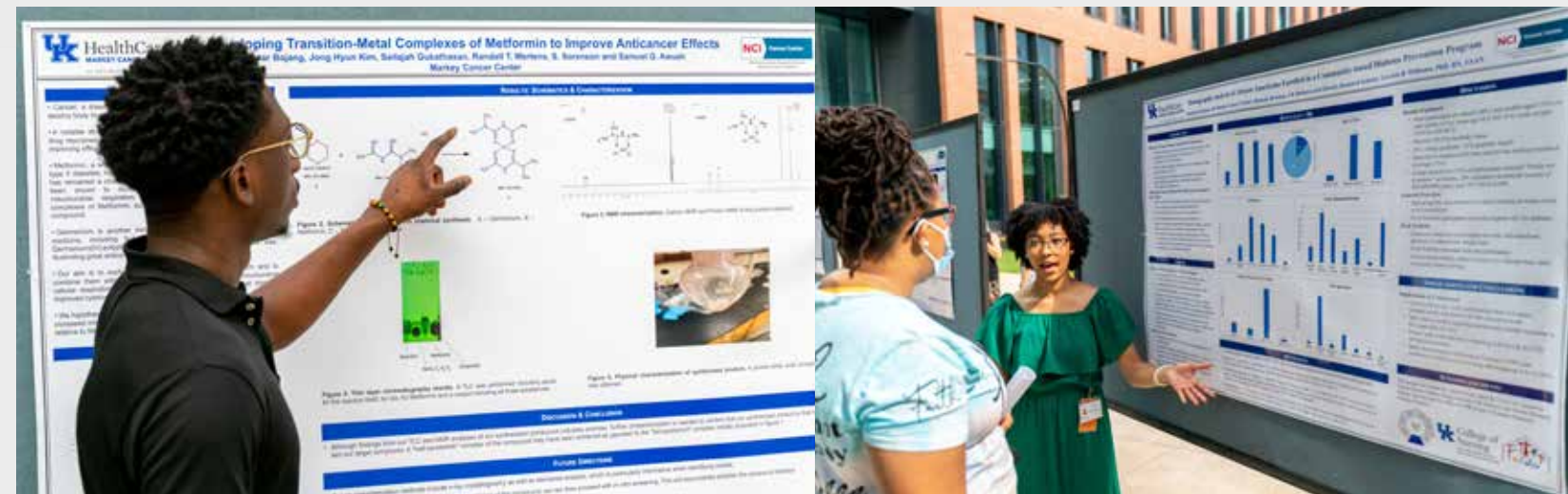
universities chances to collaborate in ways they couldn't during separate in-person programs.

“The virtual nature really allowed participants to engage with each other across these five different locations,” said program director Nathan Vanderford, PhD, MBA.

Group clinical case study projects at each cancer center also looked at the unique causes and consequences of cancer in the various geographic areas and populations.

“It was phenomenal to have them interact with each other and learn about the cancer populations each cancer center is responsible for and why those individuals get cancer,” Vanderford said.

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Markey STRONG Scholars

Eight rising sophomores, juniors and seniors from the University of Kentucky and colleges throughout the Bluegrass participated in the Markey Science Training in Research, Oncology, Networking and professional Growth (STRONG) Scholars Program. The Markey STRONG program aims to encourage the talents of students who come from underserved or underrepresented backgrounds, including African American and Hispanic students, and other underserved populations.

Participants spent 10 weeks exploring their interests in research and cancer. Program highlights included:

- Research techniques.
- Individual research experiences with matched faculty mentors.
- Lab work with peer mentor graduate assistants or post-doctoral students.

- Weekly didactic learning sessions and roundtable sessions.
- Clinical shadowing with oncologists, surgeons, pathologists and other providers.

At the end of the program, participants presented their work at a poster session and had an opportunity to personalize their white lab coats for the “Coats of Colors” Ceremony, reflecting the diversity that is so important for research and medicine. Mentors said the scholars were well prepared to do research, and some expect the scholars will share authorship on papers as a result of their work.

“It was a wonderful experience for everyone,” program coordinator Erin Oakley, PhD, said. “The scholars that participated really formed a bond with each other and the experience meant a lot to each of them.”

Above: Directed by Dr. Kathleen O’Connor (far right) and coordinated by Dr. Erin Oakley (far left), the Markey STRONG Scholars program seeks to empower underrepresented groups to explore careers in science and oncology.



Support from the American Cancer Society

The ACS funded both programs. Markey STRONG was also supported by the University of Kentucky Diversity and Inclusion United In True racial Equity (UNITE) Research Priority Area and the UK College of Medicine Office of Diversity, Equity and Inclusion.

“The American Cancer Society was proud to partner with UK Markey Cancer Center for the launch of the SHE in Oncology Program and Markey STRONG Program to expose enthusiastic young people to careers in cancer research, care, and community outreach and engagement,” said Kathy Goss, PhD, ACS vice president for regional cancer control. “Providing opportunities like these is critical to building a diverse pipeline of future oncology leaders.”

ENGAGING COMMUNITIES ACROSS KENTUCKY

Markey’s newly created Community Impact Office is making big strides in statewide cancer control and prevention through its outreach efforts.

With Kentucky’s high cancer incidence and mortality rates – some of the highest in the nation – community outreach is an important part of educating residents about cancer prevention and screening. The UK Markey Cancer Center is supporting this mission with the creation of the Community Impact Office (CIO), which combines two important statewide programs under one umbrella and expands their reach through new and innovative staff roles.

The CIO oversees all community outreach and engagement for Markey and strives to ensure that advances in cancer research – from prevention through survivorship – extend beyond university walls to reach the community. The Office identifies ways to collaborate with community partners to reduce cancer burden and disparities throughout the state, facilitates research in direct response to community priorities and needs, and disseminates and implements evidence-based practices and policies throughout the community.

“It’s not just community outreach; it’s community engagement,” said Pamela Hull, PhD, associate director of population science and community impact, who leads the CIO. “Our community engagement takes many forms, including outreach, policy, education and facilitating research.”

The CIO houses two long-running, statewide cancer programs: the Kentucky Cancer Consortium (KCC), a comprehensive cancer control coalition that develops the state’s Cancer Action Plan, and the Kentucky Cancer Program (KCP), a cancer

prevention and control program with regional staff who collaborate with partners in local communities.

Kentucky Cancer Consortium

In most other states, CDC-funded comprehensive cancer control programs, such as KCC, are managed by the state department of health. But in Kentucky, Markey receives that funding on behalf of the state and, through the CIO, organizes and manages the consortium for the Commonwealth.

“The consortium, which has been in place since 2002, brings together more than 80 partners statewide, such as the Kentucky Department for Public Health, American Cancer Society, health systems, University of Louisville, and other institutions,” Hull said.

These KCC members drive the consortium’s activities and collectively create and maintain Kentucky’s Cancer Action Plan. Addressing the unique needs of Kentucky residents, this plan provides strategies and goals regarding cancer prevention and detection, treatment and quality of life. KCC also shares resources and convenes members in work groups to coordinate collective actions that focus on identified needs.

Within the state’s current five-year Cancer Action Plan, which extends through 2022, KCC focuses on three priority areas: tobacco treatment/lung cancer, colorectal cancer screening and cancer survivorship. These priorities were chosen based on member input and data from the Kentucky

OUTREACH HIGHLIGHTS IN PAST YEAR



Cancer Registry on the burden of cancer and the impact of prevention and early detection strategies across the state.

“It’s not just community outreach; it’s community engagement. Our community engagement takes many forms, including outreach, policy, education and facilitating research.”

PAMELA HULL, ASSOCIATE DIRECTOR OF POPULATION SCIENCE AND COMMUNITY IMPACT

KCC is actively preparing the next version of the Cancer Action Plan, which will be in place from 2022 through 2027 and directly informs the strategic plans of individual member organizations, including Markey. The new plan is being guided by the 2021 Kentucky Cancer Needs Assessment and a community-engaged prioritization process conducted by the CIO and a steering committee of statewide partners, with a focus on social determinants of health and health equity. The comprehensive needs assessment and community input highlighted key areas of need and opportunities to reduce the cancer burden and disparities in Kentucky communities.

In addition to preparing the next Cancer Action Plan, the KCC has been working diligently on other initiatives during 2021:

- The Consortium is addressing a common problem among Kentucky patients: receiving bills for preventive medical services that should be free under federal law, such as cancer screening. A work group from KCC presented to the Kentucky Health Insurance Advisory Council about this challenge and recruited insurance representatives to join the effort in devising Kentucky-focused solutions.
- In collaboration with the Harvard Center for Health Law and Policy Innovation, KCC convened partners in a series of health equity-focused webinars. Topics included the role of radon in cancer risk reduction and access to medically supportive food and nutrition for cancer prevention and cancer survivorship.
- KCC co-hosted a symposium with the Markey Cancer Center Affiliate Network focused on how patient navigators across the state can meet the needs of Kentucky cancer survivors.

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Kentucky Cancer Program

Since 1982, KCP has served as Kentucky’s statewide cancer prevention and control program, co-led by the Markey Cancer Center and the University of Louisville Brown Cancer Center. KCP collaborates with a variety of organizations to implement and evaluate evidence-based cancer prevention and control programs in communities throughout Kentucky.

“KCP is an important, long-standing program,” Hull said. “It was created by visionary representatives in the Kentucky State Legislature back when the fight against cancer was starting to gain momentum.”

Embedded within Kentucky’s 15 area development districts is a KCP regional cancer control specialist who lives and works in each district. The specialists affiliated with Markey cover the eastern part of Kentucky, while the University of Louisville specialists oversee the western part. They all work to deliver a menu of cancer control programs customized for their regions.

“KCP’s regional cancer control specialists are integrated and engrained in the local fabric of these communities,” Hull said. “They have a close, on-the-ground perspective in the local communities, which is important because cancer prevention is not one-size-fits-all for all of our different regions across the state.”

Throughout the year, KCP regional cancer control specialists:

- Conduct outreach with residents and health care providers to promote cancer risk reduction and screening programs.
- Connect residents to programs that help them navigate the health care system to get screenings or the appropriate care.

- Connect patients, survivors and caregivers with helpful resources.
- Deliver programs in schools on tobacco and vaping prevention.

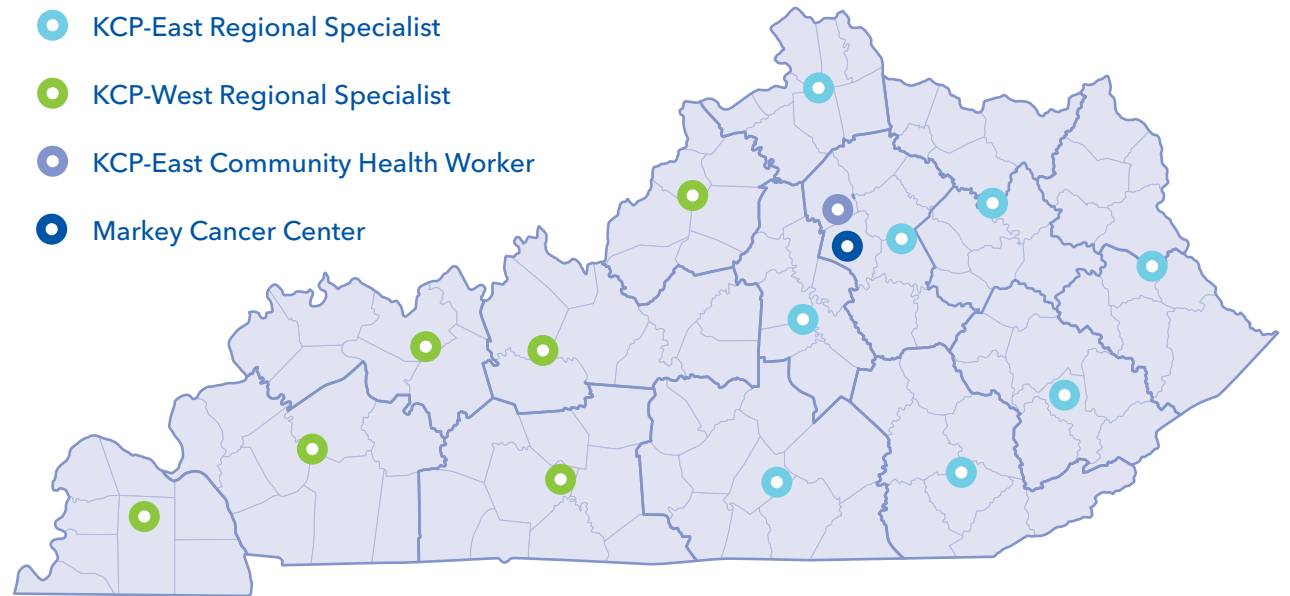
With a pulse point in each district, KCP was able to quickly assess community needs at the onset of the COVID-19 pandemic and pivot from in-person program delivery. Regional cancer control specialists worked locally and resourcefully to ensure continued access to services and programs.

Each regional cancer control specialist also maintains a District Cancer Council (DCC), in which they gather partner organizations and institutions in their region to network, share resources, coordinate programs and understand local cancer control needs. These councils adapted to convening virtually in 2021, which enabled partners to share challenges and successes and maintain DCC networks and relationships.

KCP received funding from Markey this year to create a new position within the CIO: a community health worker. This role will focus on expanding and strengthening the program’s partnerships in Black communities, particularly in the greater Lexington area. The aim is to improve health equity and reduce barriers to cancer care and screening among this population.

Other CIO accomplishments

In addition to the Community Impact Office’s KCC and KCP efforts and accomplishments this year, the Office expanded its staff to help amplify its work with partners across the state. The new Data, Dissemination and Evaluation Team is led by a new CIO director of operations and evaluation. A quality improvement research director liaises directly with the Markey affiliate and research



networks to facilitate research on improving how cancer prevention, screening and care guidelines are implemented across the state. The team also includes a data visualization specialist who collated multiple sources of data for the 2021 Kentucky Cancer Needs Assessment, as well as a health communications manager who focuses on how to effectively disseminate evidence-based research and cancer-related information to the community.

“This new talent will help us enhance the ability for Markey’s research and outreach to respond to community needs, connect researchers and community partners across the state, and better communicate to the public why and how research is important in the fight against cancer,” Hull said.

The CIO is also prioritizing diversity, equity and inclusion (DEI) efforts through its programs, with the leadership of Lovoria Williams, PhD, FNP-C, FAANP, FAAN, associate director for cancer health equity at Markey.

“The KCC and KCP are our boots on the ground, and my job is to make sure those boots are going everywhere and reaching everyone, including minorities, and ensuring they’re equipped to do that,” Williams said.

Williams, who wears many hats within and outside the CIO, including associate professor in the College of Nursing, meets regularly and holds trainings on cancer health inequities with KCP staff and KCC partners to empower them to address these issues in their areas. She also leads the CIO’s collaborations with the Markey Clinical Trials Office to develop strategies to improve the participation of minorities in clinical trials.

In addition to her role with the CIO, Williams leads Markey’s DEI Committee, through which she and other members across the cancer center’s various units meet monthly to discuss and enact strategic plans to improve DEI throughout Markey. One plan that has already been implemented is Markey’s partnership with the American Cancer Society to create the Markey STRONG research program for undergraduates of color who are interested in cancer research.

“DEI is a new conversation around UK and Markey, and my role is to provide support and make sure we’re developing cultural humility, understanding health inequities, and uncovering the source of health inequities and the strategies to address them,” Williams said.



THE POWER OF COLLABORATION

The Markey Cancer Center at Lexington Clinic provides a community cancer experience while leveraging Markey's academic medical center offerings.

In 2019, UK HealthCare and the Lexington Clinic joined together to expand outpatient cancer care in Central Kentucky. The collaboration – the Markey Cancer Center at Lexington Clinic – is a unique relationship combining community-focused care with the services of an academic medical center.

“The goal is to be part of one of the nation’s leading cancer center programs while providing patients with personalized care in a community environment,” said Kate Cundy, director of oncology services.

The Lexington Clinic provides cancer care in two locations – medical oncology and chemotherapy in Lexington and Richmond, along with radiation oncology in Richmond. Medical oncologists and radiation oncologists at the Lexington Clinic work collaboratively with their counterparts at Markey and specialists throughout UK HealthCare. Patients

can get quick referrals to UK specialists as needed and can be presented to Markey tumor boards.

Dr. Rachel M. Harper, a medical oncologist at the Lexington Clinic, appreciates the ready access her patients have to surgical subspecialists, including colorectal and gynecologic oncology.

“It’s great to be able to tell our patients that we know these surgeons well and to see our patients come back from surgeries doing well,” Harper said.

Lexington Clinic patients also have the opportunity to participate in clinical trials, such as the Oncology Research Information Exchange Network (ORIEN), which tracks patients to gain insight into the genomic characteristics of tumors and find more effective treatments. UK HealthCare has enrolled 5,000 participants in the ORIEN trial, and 400 of those have come from the Lexington Clinic.

“When asked if they’d like to participate in this program, the response from our patients here has been remarkable,” said Dr. William Camp, hematologist/oncologist with the Markey Cancer Center at Lexington Clinic. “They have recognized the value of this alliance studying their personal cancer information not only for themselves, but also to other present and future individuals with cancer and their families.”

Harper shared that her patients are also enthusiastic about the opportunity to be a part of advancing cancer treatment.

Markey Cancer Center at Lexington Clinic, Richmond, Ky.

MARKEY
CANCER CENTER
AT LEXINGTON CLINIC





"Markey has made such an impact on access through all of their outreach and all of their facilities and affiliates across the state. And the foundation is an incredibly vital part of those efforts."

LOIS REYNOLDS

IMPROVING CANCER CARE THROUGH PHILANTHROPY & SERVICE

Through her work with the Markey Cancer Foundation, Lois Reynolds has made a lasting contribution to advancing care in the Commonwealth and beyond.

Lois Reynolds' husband, Billy, calls her a professional volunteer. She has volunteered for and held positions on various charitable non-profit organizations at the local, state and national level, including the UK Markey Cancer Foundation.

"Lois is the perfect example of using philanthropy and volunteerism to live your values out loud," said foundation president and CEO Michael Delzotti. "She is a woman of action, in service to others." During her time with the Markey Cancer Foundation, Reynolds took on leadership roles, including board secretary and membership on every event committee. "I'm never going to be in a position to be the largest financial donor, but I am a doer," she said. "I said I'd be on every committee, be at every meeting and help plan any event."

Reynolds saw the need to harness the giving power of women and make an even more meaningful difference in cancer research. After talking with Delzotti, Reynolds spearheaded the creation of Markey Women Strong in 2017. Every year, 100 members contribute \$1,000 each to support female cancer researchers and vote to award two \$50,000 grants. "We know women are the ones who guide the philanthropy dollars in the household," she said. "They are the ones making decisions about where these funds should go."

Markey Women Strong members host informal receptions in their homes and the researchers give them an exclusive look into how donations impact groundbreaking cancer discoveries at Markey. "These female researchers present their information to hundreds of people at conferences, but it's very technical," Reynolds said. "We want to hear about their kids, why they chose Kentucky and what they plan to do next. I'm proud of Markey Women Strong and happy that it's still going on. People invite their friends to join, and it's become a network."

After starting out as a dental assistant at 17 in her small Eastern Kentucky hometown of Virgie, Reynolds and her family moved to Lexington in 1983. She continued her dental career as an oral surgery assistant and also worked in health education and public relations for the UK College of Dentistry and Department of Emergency Medicine. Throughout her career, she has been an oral health advocate and spent five years with Oral Health America as a national spokesperson and director of program development. In 1998, she started Lois Reynolds & Associates, LLC, a consulting and speaking firm, providing project management and health care management.

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Reynolds recently took a step back after serving 15 years as a trustee on the Markey Cancer Foundation board. She felt it was time the board had an injection of fresh ideas. Scaling back her involvement also gives her time to focus on her family, especially her adult daughter Aly, who has special needs.

Cancer has touched Reynolds' life many times. Her Uncle Bill died of melanoma at the age of 42, and her mother passed away from lung cancer. Other family members and friends over the years have battled cancer and she herself has had many non-melanoma skin cancers removed. In the past, many of Reynolds' friends and family traveled outside Kentucky to seek cancer treatment. Now Markey is equipped to provide better care for people across the state, ensuring no one needs to leave the Commonwealth to get world-class cancer treatment, she said. Patients at Markey benefit from new drugs, treatment options and clinical trials only offered at an NCI-designated center like Markey.

The cancer treatment and research Markey provides are essential for people of Kentucky, Reynolds said. The Markey Cancer Center Affiliate Network, a collaboration with community hospitals across the Commonwealth, offers care for rural residents who might not otherwise have many options. "Markey has made such an impact on access through all of their outreach and all of their facilities and affiliates across the state," she said. "And the foundation is an incredibly vital part of those efforts."

Lois Reynolds with fellow founding members of Markey Women Strong.



PAYING IT FORWARD

Patients can use Markey Cancer Foundation's estate planning service to organize their estate and to give back.

In late October, Michael Schnurr celebrated what he refers to as his "second birthday," which is the anniversary of his bone marrow transplant. To say it changed his life is an understatement – it saved it.

In 2012, Schnurr was diagnosed with a type of blood cancer – myelodysplastic syndrome. After a few years of biopsies, blood transfusions and chemotherapy, he needed a bone marrow transplant (BMT).

"I couldn't have been more blessed than to be under the care of Markey's Dr. Roger Herzig," Schnurr said. Apprehensive about the transplant, he and Herzig struck a deal based on their shared love of Thoroughbred racing. "If he would let me take one more trip to Del Mar racetrack, I'd come back and have the transplant."

Schnurr is thankful for Markey, which offered him a great support system at a world-class facility just five minutes down the road.

"The doctors, nurses and staff are truly a team," he said.

His own experience, coupled with his viewpoint that everyone is touched by cancer, prompted Schnurr to support Markey's BMT research program through philanthropy. It wasn't long before he decided to participate in Markey Cancer Foundation's complimentary value-



"This planning helped me organize my estate in such a way that I can support research even after I'm gone."

MICHAEL SCHNURR

based estate planning service. An estate planning consultant explains how to leave more to heirs, avoid some taxes and support cherished charitable organizations, if the participant chooses to do so.

Ken Turpen of Thompson & Associates worked with Schnurr to organize his financial goals and create a comprehensive plan. Turpen has worked in the field of philanthropy for more than 30 years, including as a gift officer.

"I've never seen anything more donor-focused," he said. "No one is asked for money throughout the process. Most people I chat with do include charitable giving in their estates. That's because they're already a champion for those organizations."

Schnurr considers himself just a regular guy who wants to support research. "It's the only way we're going to beat cancer," he said. "This planning helped me organize my estate in such a way that I can support research even after I'm gone."

Schnurr didn't have big "second birthday" plans. He looked forward to playing some golf, weather permitting. Just another day is reason enough to celebrate.

MARKEY IN BRIEF

Additional highlights that helped make 2021 another successful year for Markey Cancer Center.

Nurses in the Medical-Surgical Oncology Unit, Pavilion A.

At Markey, Magnet recognition is a team effort

A quality initiative at the UK Markey Cancer Center to reduce hospital-acquired pressure injuries was a key part of UK HealthCare's recent Magnet redesignation.

Nurses on the Medical-Surgical Oncology Unit identified an increase in pressure injuries, which can cause pain and lead to longer hospital stays. This prompted the nurses to request more training and education on pressure injury prevention. The nursing oncology leadership team then developed a plan that included roving education sessions and a Four Eyes Skin Assessment, a collaborative method that uses two nurses (four eyes) to inspect and assess patients.

The program was a success. In 2018, rates of infection dropped from .54 per 1,000 patient visits to .16 per 1,000 in an eight-month period. The effort shows how Markey nurses are empowered to identify problems and seek solutions, said Nina Barnes, nursing director for oncology services and acute pain services.

Magnet redesignation is important in oncology because some of the same goals used for Magnet are shared by the National Cancer Institute designation, said Patty Hughes, chief nursing officer for ambulatory care, oncology, infusion services and pain management.

Hughes added the Magnet redesignation confirms the exceptional care nurses provide. "They work as Magnet nurses every day, so preparing for the redesignation site visit was easy for them as they simply showcased the outstanding quality care and outcomes we provide," she said.



Dr. Luksana Chaiswing, left, and Dr. Emilia Galperin.

Women powering research by women

The UK Markey Cancer Foundation's Markey Women Strong program reached a major milestone in 2021: It has given a total of \$500,000 to female-led research teams at Markey through its annual Distinguished Researcher Grants. This also marks the fifth consecutive year the grants have been awarded.

Dr. Emilia Galperin and Dr. Luksana Chaiswing are this year's recipients and have each been awarded a \$50,000 grant. Galperin is using a multidisciplinary approach to understand cell-to-cell communication in cancers that are resistant to certain treatments. Chaiswing focuses on the reasons some cancer patients become resistant to their treatments. She and her team are mainly studying prostate and brain cancers.

"I am so appreciative of the Markey Cancer Foundation for their support of our outstanding Markey women investigators," said Dr. Mark Evers, director of the Markey Cancer Center.

Started in the summer of 2016, Markey Women Strong aims to make a meaningful difference in cancer research by funding female researchers focused on advancing the fight against the disease at the University of Kentucky. Each member of Markey Women Strong contributes an annual donation of \$1,000, and together they read grant applications, hear from the researchers and then vote to decide which applicants receive the funding.

"It is incredibly gratifying to hear that others find our research important and worthy of pursuit," Galperin said. "This award is a testament to the talented and dedicated women in my lab."



Launch event at Meadowview Regional Medical Center, Maysville, Ky.

Meadowview Regional joins Markey Affiliate Network

Meadowview Regional Medical Center, part of LifePoint Health, is expanding its cancer treatment facilities in Maysville, Ky., and collaborating with the UK Markey Cancer Center and its affiliate network. The expansion is made possible by a \$7.6 million investment from LifePoint Health.

"With the expansion of this facility, the launch of additional cancer treatment services and our new collaboration with Markey, Meadowview Regional Medical Center will be this region's home for cancer care," said Joe Koch, Meadowview's market president and chief executive officer. "We will be fighting with you and for you, right here in Maysville."

Meadowview Regional Medical Center is now considered a candidate member of the UK Markey Cancer Center Affiliate Network and is making steps to become a full member.

As part of the formal collaboration, Markey Cancer Center will assist Meadowview in preparing for its American College of Surgeons Commission on Cancer accreditation, which is the quality standard for all affiliate network sites.

"We are excited to work with Meadowview Regional Medical Center in building a strong oncology program," said Dr. Timothy Mullett, medical director of the affiliate network. "By working together with hospitals across the state, we have the potential to make a serious impact on cancer prevention and care."





Dr. Erin Burke, left, and Dr. Emily Marcinkowski.

Kentucky's leader in Hidden Scar surgery

UK HealthCare has officially been recognized as a System of Excellence for Hidden Scar breast cancer surgery, the highest level of Hidden Scar designation. UK HealthCare is the first and only hospital system in Kentucky to receive this title. Of the thousands of Kentucky women who will be diagnosed with breast cancer this year, most will need surgery as part of their treatment. Though surgical techniques over the decades have improved, traditional breast cancer surgeries still leave visible scars.

Hidden Scar breast cancer surgery allows surgeons to remove the cancerous tissue through a single incision made in a hidden area, preserving the natural shape of the breast while reducing visible scarring. Patients who undergo this approach experience optimal clinical and cosmetic outcomes and are at no higher risk of breast cancer recurrence than patients who undergo other surgical techniques.

Surgical oncologists Dr. Emily Marcinkowski and Dr. Erin Burke are certified to perform Hidden Scar surgeries at UK HealthCare.

"The surgery scars left behind can be more than a physical reminder - they can impact the emotional health of the patient as well," Marcinkowski said. "Having the option to perform Hidden Scar breast cancer surgeries is another way we can help give our patients the best outcomes and the best quality of life."

Parkview Patient Tower at King's Daughters Medical Center.

Working together to improve health care access

UK HealthCare and King's Daughters Health System have partnered to better serve patients throughout Kentucky, southern Ohio and West Virginia.

"Our goal in entering into this partnership is to strengthen local health care, not just in Ashland and Eastern Kentucky, but throughout the Commonwealth and beyond," said Kristie Whitlatch, president and chief executive officer of King's Daughters.

King's Daughters has already enjoyed a longstanding, positive relationship with UK HealthCare, Whitlatch noted, including an affiliation with the UK Markey Cancer Center.

"This is a win-win situation for two strong organizations," said Dr. Mark F. Newman, UK HealthCare executive vice president for health affairs. "This partnership builds on our existing relationship and creates mutual alignment between our two organizations."

The partnership, which went live in April 2021, provides expanded access to tertiary-level services for residents of Eastern Kentucky, southern Ohio and West Virginia, including access to UK HealthCare's solid organ transplantation program and bone marrow transplantation.

It also broadens the existing relationship between the Markey Cancer Center and King's Daughters. As a longtime member of both the UK Markey Cancer Center Affiliate and Research Networks, King's Daughters Oncology Center for Excellence has been able to offer patients access to advanced cancer treatment and cancer clinical trials not available anywhere else.

"By working together to provide specialty and subspecialty care, we're giving patients the best evidence-based care while keeping them close to home and their support networks," Newman said.

The Rainmaker Hospitality team donated rooms to Markey patients during the pandemic.

Rainmaker Hospitality offers lodging to Markey patients amid pandemic

When Lexington's Hope Lodge was forced to close at the start of the COVID-19 pandemic, a local hotel group partnered with the UK Markey Cancer Center to provide its patients with a place to stay during their treatment. Rainmaker Hospitality donated more than 1,000 nights of hotel stays to cancer patients, caregivers and family members.

"We are in the hospitality business, that's what we do: We take care of people," said Sunil Patel, president of Rainmaker Hospitality Group. Rainmaker provided 10 complimentary rooms each night to cancer patients and their caregivers, as well as discounted rates to their families.

Early in the pandemic, when patient demand for lodging exceeded 10 rooms per night, Rainmaker generously supplied vouchers for additional rooms at discounted rates. The UK Markey Cancer Foundation purchased over 300 vouchers to deliver peace of mind for patients and families.

The partnership, initially intended to run from April to the summer of 2020, has lasted, with Rainmaker continuing to provide support to Markey patients and families through discounted rates.

"Many of our patients drive from hours away to receive life-saving treatment at our facilities," said Dr. Mark Evers, director of the UK Markey Cancer Center. "We're grateful to Rainmaker Hospitality for stepping up in our patients' time of need."

UK HealthCare physicians, nurses and staff participate in the Epic rollout in May 2021.

Embracing an Epic undertaking

Physicians and staff throughout UK HealthCare and the Markey Cancer Center worked together to ensure a successful transition to the Epic electronic health record system.

"It was a huge project, and there were a lot of moving parts," said Dr. Chait Iragavarapu, a hematologist and one of the physician leaders on the project. "People went above and beyond to make sure it was as successful as it was."

Responsibilities for the transition were distributed across faculty and staff. Implementation started in summer 2020, and the system went live in June 2021.

The effort is already producing results, according to Dr. Susanne M. Arnold, associate director of clinical translation at Markey and a physician leader on the project. "Epic allows us all to see what is happening with a patient in real time - it makes us more efficient, and with the ability for patients to contact us directly, it makes us more accessible," she said.

Referring physicians can refer patients to Markey and communicate with UK HealthCare using Epic. They can also see patient information for referred and admitted patients, including discharge summaries and test results. Patients can use Epic's MyChart portal to message providers, request refills and more.

Referring providers can sign up for access at: ukhealthcare.uky.edu/medical-professionals/physician-portal



Blythe Clay rings the symbolic bell, signifying her completion of treatment.

A gift that reverberates with hope

When Blythe Clay finished her treatment at UK Markey Cancer Center, she achieved a remarkable milestone. She had undergone a months-long journey of treatments and infusions. For her, crossing the finish line was marked by reflections on the experience, including the unique bond shared by cancer patients.

It wasn't until later that Clay learned from a friend about "ringing the bell." At medical centers across the country, patients who finish their last treatment mark the occasion by ringing a bell. She was determined: Markey patients should have that same opportunity. It instills hope and inspiration, both in patients who have finished treatment as well as those at every stage of the journey.

"It's symbolic, I know," Clay said. "But it's very meaningful, too."

She and her husband, Robert, established Three Chimneys Farm - widely considered one of the world's preeminent Thoroughbred horse and stallion breeding farms. For 46 years, the pair managed what she considers a championship team. She also regards the team at Markey as "all-stars." Her primary care physician, Dr. Connie Jennings, oncologist Dr. Mara Chambers and surgeon Dr. Patrick McGrath were consistently by her side, figuratively and literally, as were the nurses in the chemotherapy unit. "They were incredible. They were so caring - faces full of light and laughter."

Much like her commitment to the bell, Clay is steadfast in her beliefs about medical research. It's the motivation behind her two-part gift, supporting both the bell for patients and McGrath's research.

"Research is so important," she said. "One of the drugs that was used in my case was a fairly new drug, developed just for my kind of cancer. Five years from now there'll be cures for things we know nothing about. And it's all made possible through research."



John V. Boardman III.

Inspired to help his community

For John V. Boardman III, the fight against cancer is personal.

"Like so many who have a cancer story, I lost my father when he was just 51 years old," Boardman said. "His passing has inspired me to do everything in my power to help prevent that happening to another family."

Boardman joined the UK Markey Cancer Center Foundation Board of Trustees in January 2021 as a way to help his community.

"As a lifelong Kentuckian, I am excited to be a part of the Markey Cancer Foundation," he said. "It positively impacts so many people in our extended community and across the world. It would be hard to argue that any Kentucky hospital or organization has had or will continue to have a greater impact on the research and development of treatment breakthroughs."

Helping people has always been a priority for Boardman. After working in a large bank for many years, he desired to serve his clients in a more personal manner. He formed his own financial planning and wealth management company, Ballast. The company acts as the "Personal CFO" of its clients by coordinating and managing all aspects of their financial life.

Boardman's commitment to his community is evident not just through his words but also his actions. A servant leader, Boardman has committed himself to furthering the missions of the Kentucky Teachers' Retirement System, First Tee of Lexington, American Cancer Society Hope Lodge in Lexington and his alma mater, Centre College.



Swing for a Cure softball tournament.

His dream to help others lives on

As the winners of the 2021 Swing for a Cure softball tournament celebrated, a face was absent from the crowd. Tom Howser, co-founder of the event, died a few weeks prior. His presence, nonetheless, was palpable to many.

"Tom's dream for Swing for a Cure was to bring his family, friends and the community together to help raise money for a cause that was near and dear to his heart," said tournament co-founder Damon Moore. "Tom was the type of guy that gave 110 percent to everything he did and never expected recognition for his hard work."

Howser, a cancer survivor, witnessed firsthand as his fellow cancer patients struggled financially, which is why he was inspired to give back. Established in 2017, Swing for a Cure is a single-elimination softball tournament and fundraising event. All proceeds go toward two charities, including the UK Markey Cancer Foundation. The philanthropic event helps patients overcome barriers to care, such as transportation to and from appointments and non-hospital housing expenses.

Unfortunately, Howser contracted COVID-19 and was in the hospital for 109 days. He spent his hospitalization planning the 2021 tournament. His prognosis was initially good - 12 months to heal and a lifetime on oxygen - but complications from the virus led to his death.

Friends and family were resolute and knew the greatest tribute to Howser was to move forward with the event - in 2021 and well into the future. In lieu of flowers, his family asked that people donate to Swing for a Cure.

When teams assemble for future tournaments, they will take the field honoring Howser's vision to bring his community together and support patients with cancer.



January 4, 1946
- July 18, 2020

Dr. Roger Herzig, pioneer of novel bone marrow (BMT) protocols.

Remembering Dr. Roger Herzig

For nearly 50 years, Dr. Roger Herzig educated generations of physicians, was a beloved provider to countless patients and pioneered novel bone marrow transplant (BMT) protocols. He passed away on July 18, 2020, at age 74.

A true trailblazer, Herzig helped develop some of the first BMT therapies to treat leukemia and lymphoma at the National Cancer Institute. He also founded BMT programs at cancer programs at University Hospitals in Cleveland, Cleveland Clinic and the University of Louisville. His reach and impact included tenures at the University of Cincinnati and the University of Kentucky.

"Dr. Herzig was humble, sincere and brilliant," said nurse Cathi Curren, who worked alongside Herzig for more than six years at UK HealthCare. "We worked together, but he was also my dear friend. He never gave himself enough credit for all he has done in the world of malignant hematology and bone marrow transplant."

Herzig cherished his family and is survived by his wife of 53 years, Donna Stern Herzig; four children, David, Daniel, Robert and Brian; three daughters-in-law, Belinda, Sallie and Emilie; and nine grandchildren.

"Dr. Herzig dedicated his entire life to his patients and to the field of BMT. He mentored numerous transplant physicians of current times, and that will carry his legacy forward."

DR. GERHARD HILDEBRANDT

The Markey Cancer Foundation is a 501c3 not-for-profit organization whose efforts exclusively support the programs of the Markey Cancer Center. We are grateful to the members of our community who have generously supported the Markey Cancer Center's mission through their gifts and pledges to the foundation.

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Gifts and pledges recorded between July 1, 2020 and June 30, 2021

Markey Women Strong

FY 2021

Markey Women Strong is a generous group of donors who have a unique focus – to fund women-led cancer research at the UK Markey Cancer Center. The membership contribution of \$1,000 supports female researchers working to solve the mysteries of cancer through two grants of \$50,000 each.

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Call to Post Society

FY 2021

Members of the Call to Post Society generously contribute \$1,000 or more of unrestricted funds, between July and June each year, to support the fight against cancer. Based on the amount given in the previous fiscal year, donors are placed in different giving levels, with each tier offering its own set of benefits.

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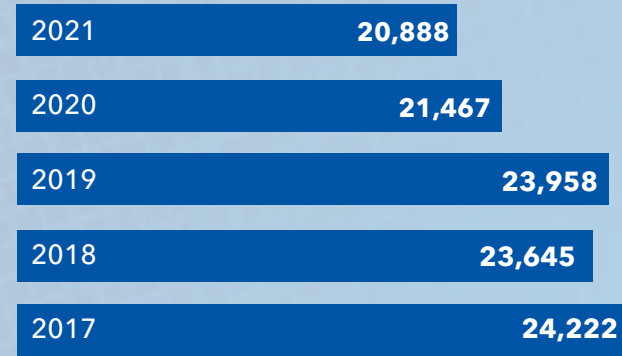
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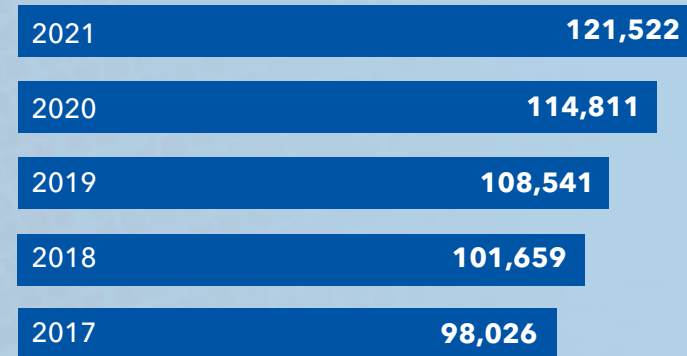
FY 2021 = 07/01/2020 - 06/30/2021

MARKEY BY THE NUMBERS

Radiation oncology treatments by fiscal year



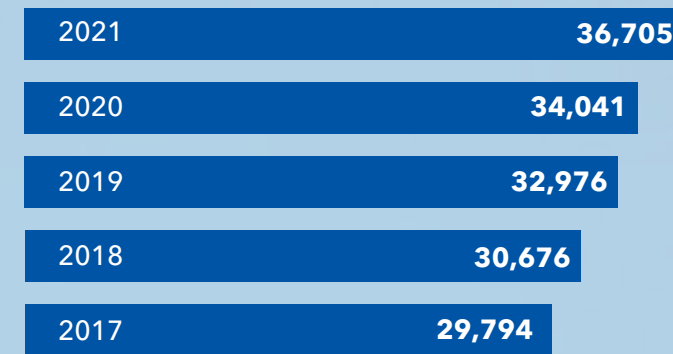
Outpatient neoplasms & hematology visits by fiscal year



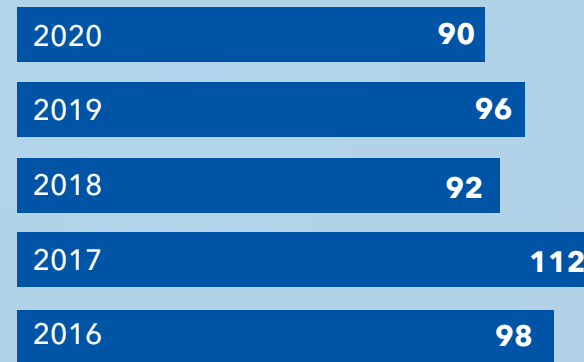
Inpatient neoplasms & hematology by fiscal year



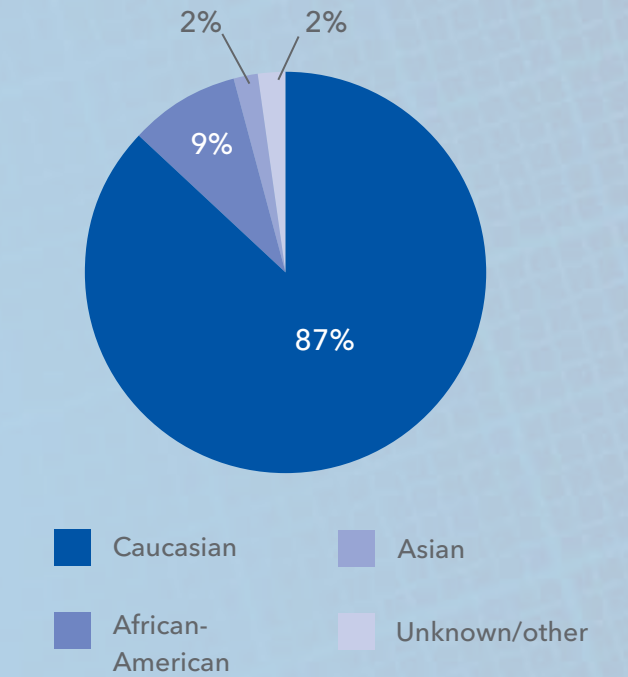
Unique patient neoplasms & hematology by fiscal year



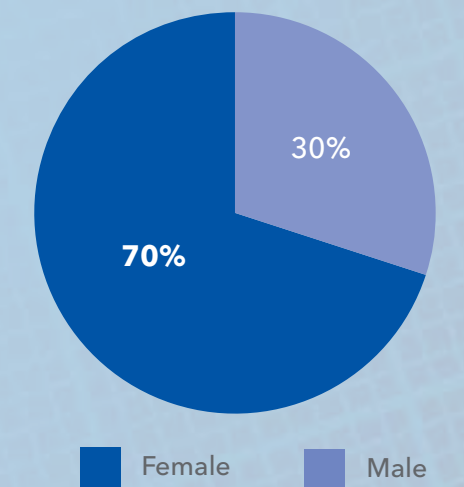
Bone & marrow transplants by calendar year



Unique patients by race, fiscal year 2021

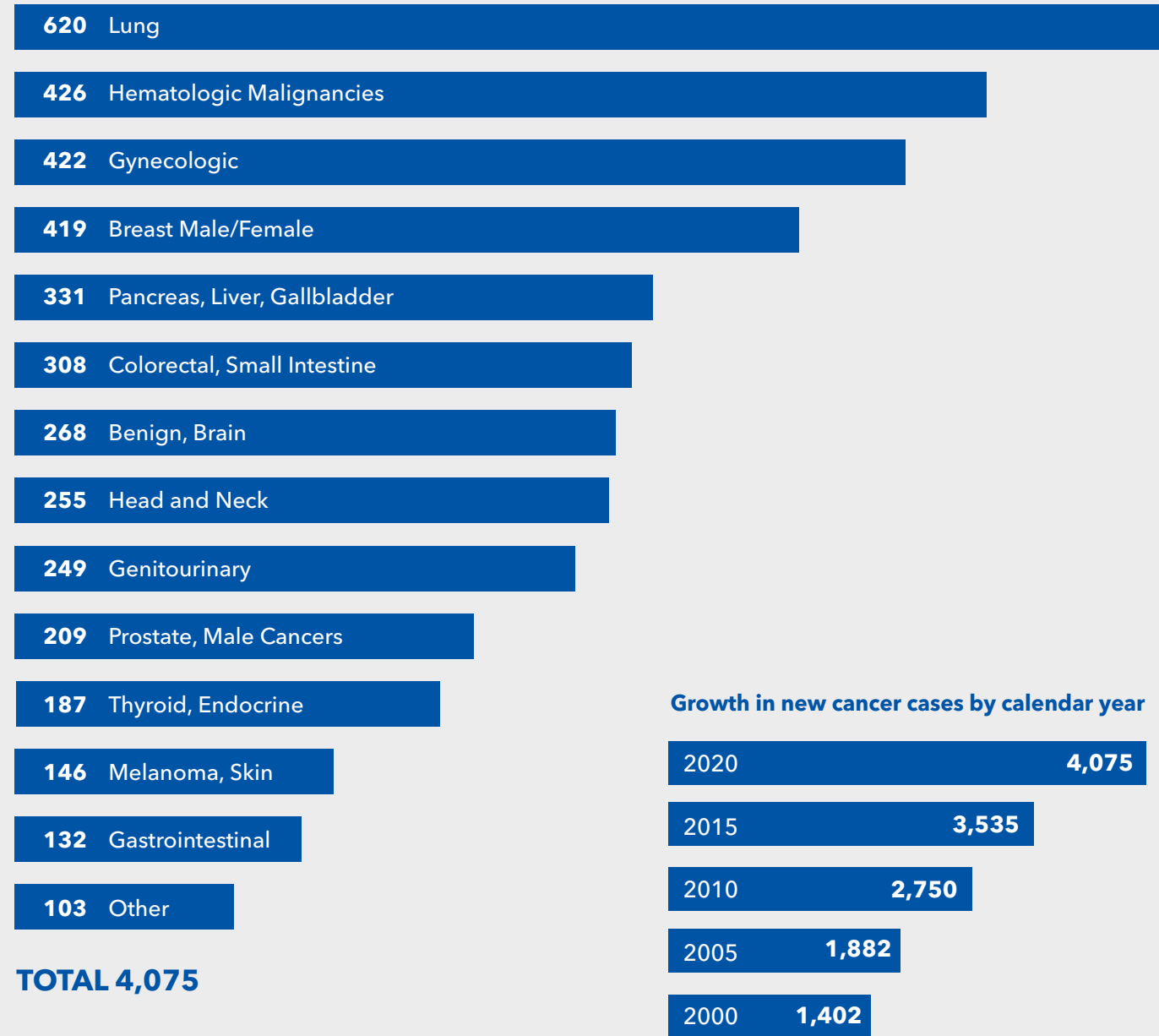


Unique patients by gender, fiscal year 2021

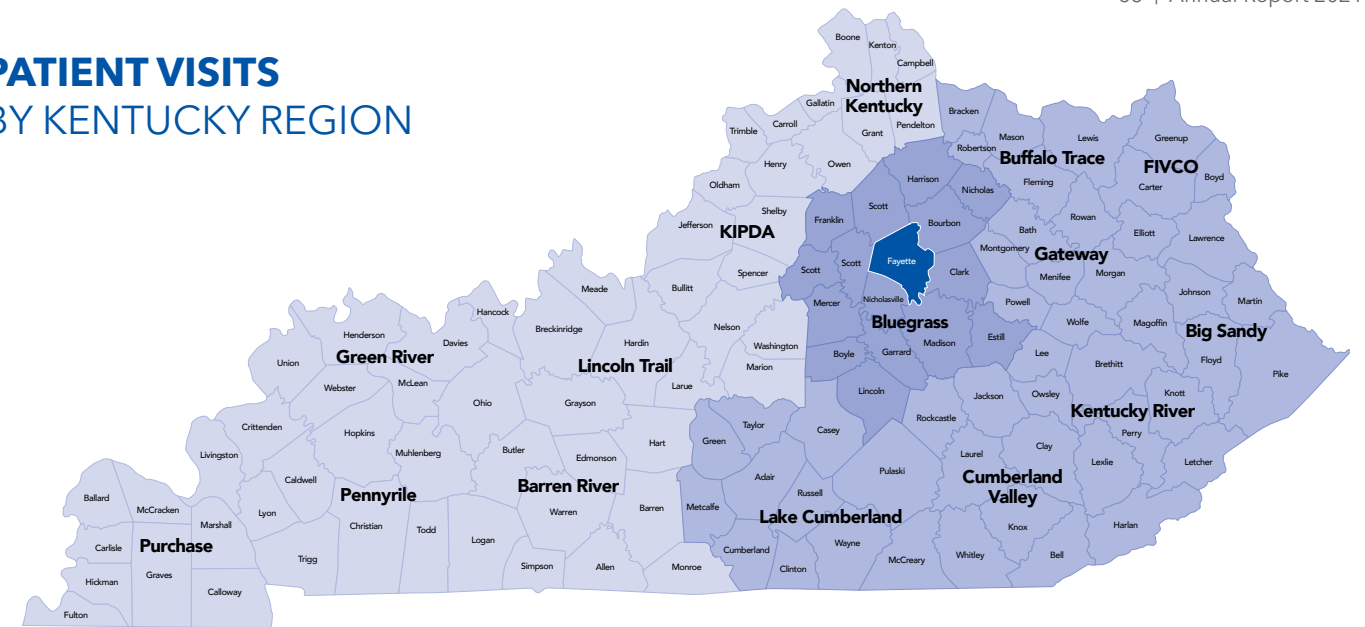


MARKEY BY THE NUMBERS

UK Markey Cancer Center cancer cases by tumor site, calendar year 2020



PATIENT VISITS BY KENTUCKY REGION



Markey Cancer Center visits by Kentucky Region,* inpatient and outpatient by fiscal year

UK HealthCare Market	Kentucky Region	2017	2018	2019	2020	2021
Primary	Fayette	31,409	33,681	34,943	37,140	40,810
	Bluegrass	31,534	31,391	33,828	38,231	39,373
Tertiary	Cumberland Valley	8,133	8,597	8,691	8,080	8,847
	Lake Cumberland	5,217	5,169	6,073	6,016	6,012
	Kentucky River	4,332	4,841	4,773	4,632	4,869
	Gateway	3,750	3,570	4,073	4,580	5,132
	Big Sandy	3,613	3,577	4,186	4,150	4,450
	FIVCO	2,307	2,144	2,431	2,405	2,788
	Buffalo Trace	2,305	2,662	2,711	2,614	2,828
Other KY ADDs	KIPDA	1,608	1,751	1,811	1,533	1,316
	Lincoln Trail	1,307	1,661	1,825	1,707	1,875
	Lake Cumberland	1,266	1,137	1,309	1,337	1,373
	Northern Kentucky	1,000	985	1,113	1,458	1,359
	Barren River	336	438	353	418	421
	Green River	348	566	417	475	334
	Pennyrile	215	226	223	422	351
	Purchase	208	179	276	307	422
Unknown, Out of State	2,490	2,644	3,323	3,019	2,563	
Grand Total		101,378	105,219	112,359	118,524	125,123

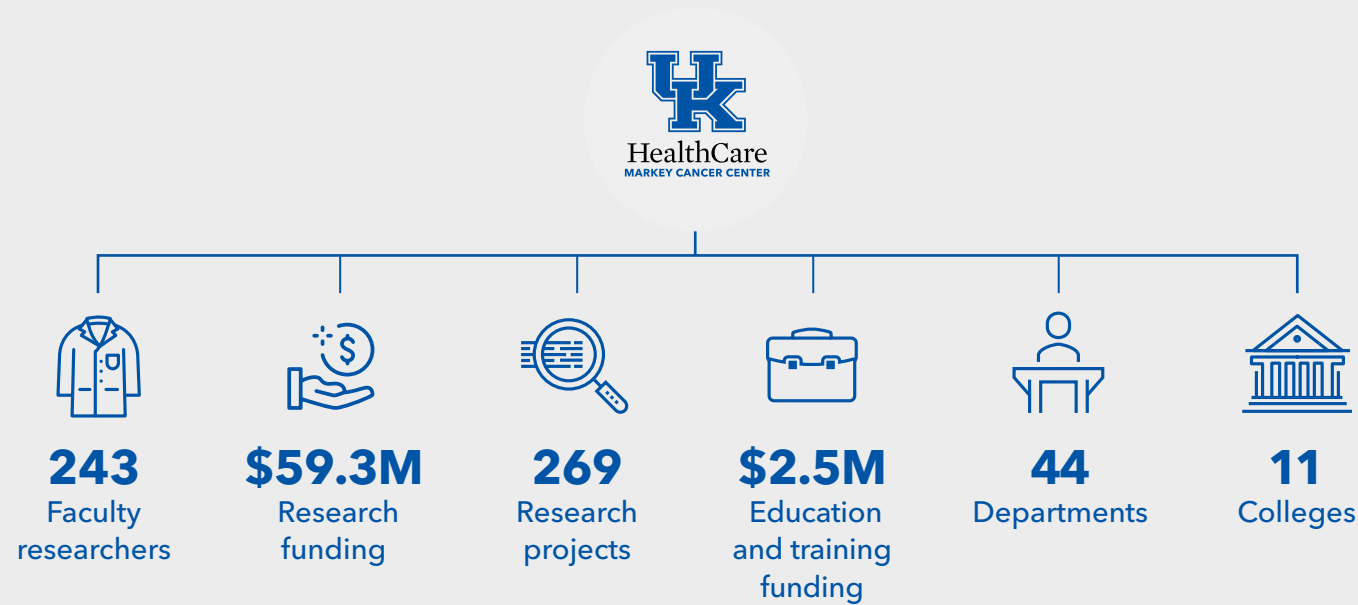
*Data includes DX02 adult non-hospice patients | Kentucky Region = Kentucky Area Development Districts (ADD)





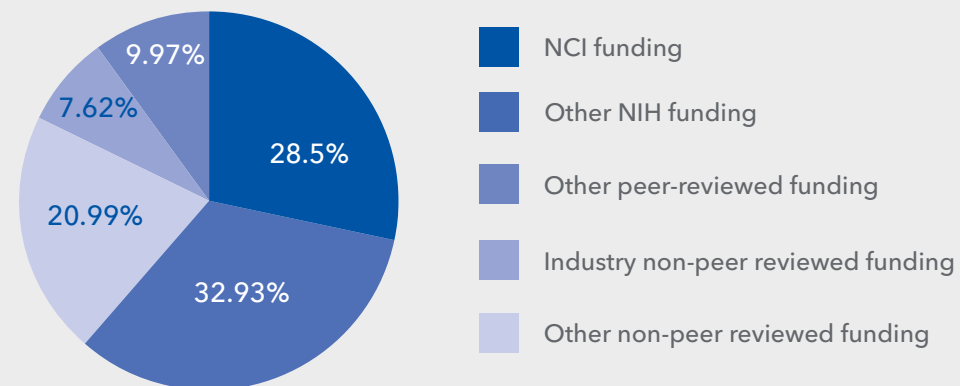
MARKEY BY THE NUMBERS

The UK Markey Cancer Center, Kentucky's only NCI-designated cancer center, is driven by 269 research projects representing \$59.3 million in research funding. Our research portfolio is supplemented by \$2.5 million in education and training funding. Markey's research efforts across UK include:



Data as of September 30, 2021

Markey research funding summary: \$59.3 million
(Total costs as of June 30, 2021)



MARKEY BY THE NUMBERS

UK Markey Cancer Center publications, July 2018 to June 2021

Faculty members in the Markey Cancer Center have produced over 840 publications in the last 3 years of NCI funding. Many of these publications represent collaborations between researchers in multiple Markey research programs and with research institutions outside of UK, from across the country and around the globe.

Research Program	Number of Publications	Publications Involving Collaborations Within a Program	Publications Involving Collaborations Across Programs	Publications Involving Collaborations with Other Research Institutions
Molecular and Cellular Oncology	244	25.4%	36.1%	59.4%
Translational Oncology	488	26.2%	24.2%	54.1%
Cancer Prevention and Control	232	22.4%	15.5%	64.2%
Total Unique Publications	840	26.2%	14%	60%





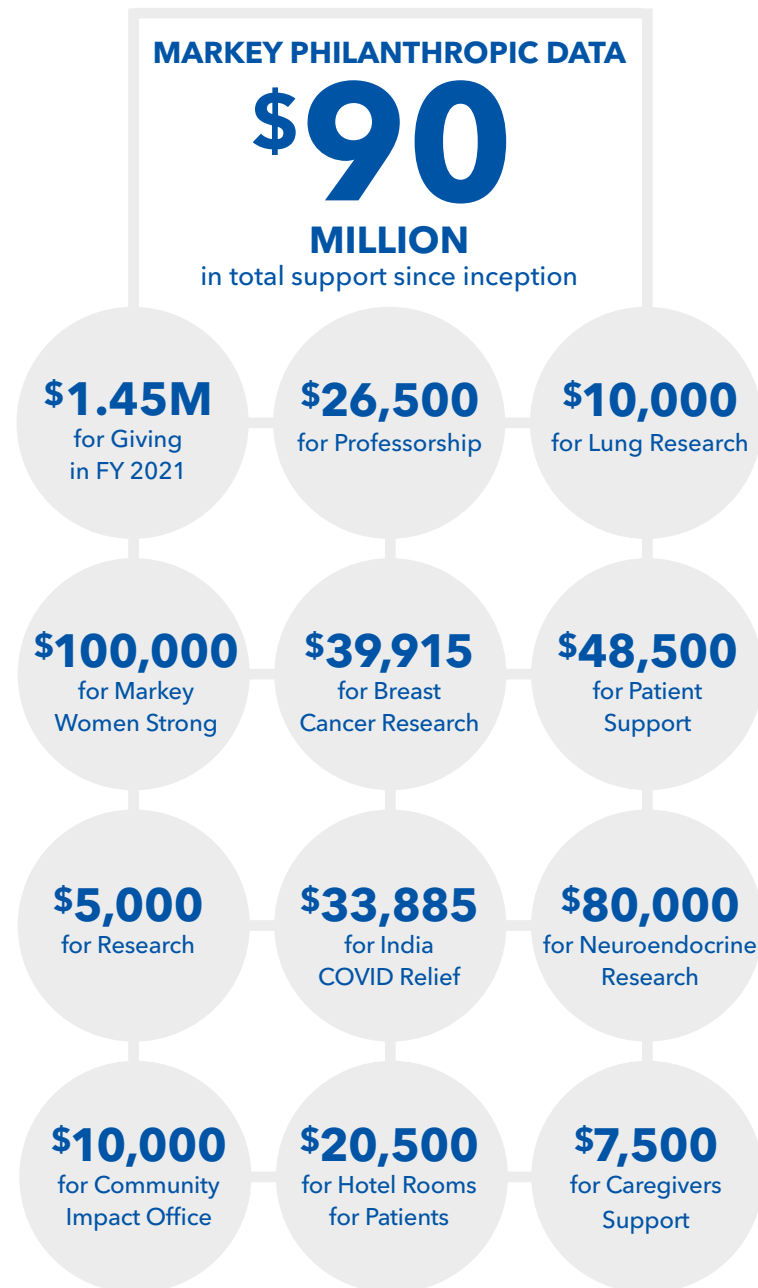
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The UK Markey Cancer Foundation has resources available to those interested in exploring their planned-giving options. Planned gifts can be directed toward research, patient care, or any of Markey's other cancer-related programs and funds.

For more information or to discuss making a gift to the UK Markey Cancer Foundation, call **859-323-6448**.



RANKED AMONG THE NATION'S BEST

- No. 1 cancer program in Kentucky
- Highest possible 30-day patient survival
- High patient volume
- Above average nurse staffing
- Endorsed by national organizations, such as NCI, FACT, CoC and Magnet

Learn more about our ranking at usnews.ukhealthcare.com.

To make a referral: 800-888-5533.

Appointments available: 866-340-4488.



A Cancer Center Designated by the National Cancer Institute



CREDITS

The UK Markey Cancer Center Annual Report 2021 is a publication of UK HealthCare Brand Strategy and the UK Markey Cancer Foundation.

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UK Markey Cancer Center Mission

Reduce cancer burden with a focus on Kentucky and its most vulnerable populations through research, prevention, treatment, education, and community engagement.

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