



OUR PATIENTS
OUR PEOPLE
OUR MISSION

UNIVERSITY OF KENTUCKY MARKEY CANCER CENTER
ANNUAL REPORT 2019

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Markey by the numbers

"We've given Kentuckians a place they can turn to in the face of adversity, a place they can be proud of."

DR. MARK EVERS, UK MARKEY CANCER CENTER DIRECTOR

FRONT COVER: Surgical oncologist Dr. Emily Marcinkowski specializes in treating patients at the UK Markey Cancer Center who have breast cancer. "I never want my patients to feel like a number, like they're just another part of my day. I want them to feel important. And I want them to know how much I care," she says.



THE POWER OF PERSPECTIVE

In a state where cancer is at its worst, how do we at the University of Kentucky Markey Cancer Center know if we're doing our best?

Some days, it's hard to tell. Days when exciting research hits a roadblock. Or a promising treatment proves unsuccessful. Or another Kentucky family receives a devastating diagnosis.

Those moments can cloud our view and make us feel like we're facing an insurmountable challenge. But time provides a different perspective. A perspective that's defined by successes of the past and full of hope for the future.

As I complete my tenth year as the director of the UK Markey Cancer Center, I'm humbled by how far we've come in such a short amount of time.

When I arrived at UK in 2009, those affected by cancer often had to leave the state to find the care they needed. Markey changed that. Back then, Kentucky didn't have a National Cancer Institute-designated cancer center. Markey changed that. In 2009, cancer was in control in Kentucky. Markey changed that.

In just 10 years, Markey has become one of only 71 NCI-designated cancer centers in the country and the only one in the Commonwealth. We've expanded our affiliate network from just four facilities in 2009 to 21 partner hospitals across the state today, bringing world-class cancer care and research to every corner of Kentucky. We've ramped up screening and prevention efforts to stop cancer before it takes its toll. And above all else, we've given Kentuckians a place they can turn to in the face of adversity, a place they can be proud of.

None of our success would be possible without the creative pursuits of our scientists, the compassionate care of our clinicians, and the unbridled support of our friends at the Markey Cancer Foundation.

Together, we've built a place where patients like Josh Paschal can find the care they need today, while researchers like Xiaoqi Liu can pursue the science that will save the lives of patients in the future. And through innovative initiatives, like our new collaboration with Lexington Clinic, we're making sure more Kentuckians than ever before have access to our care.

Every day at Markey, we strive to do our best for our patients and for our state. I'm proud of what we've accomplished and I'm excited about what's to come, no matter what challenges we may face. Because no matter what, Markey is the place Kentucky comes to beat cancer, and that's not changing anytime soon.



B. Mark Evers

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



DRIVEN BY VISION

When UK Markey Cancer Center Director Dr. Mark Evers says, "Markey is the place Kentucky comes to beat cancer," he's not just repeating a clever catchphrase; he's saying what he knows to be true.

For 10 years, Dr. Evers' vision for what is possible in cancer care and research in Kentucky has driven the UK Markey Cancer Center's every move – from making precision cancer care in the Commonwealth accessible, to creating our affiliate and research networks that spread Markey's expertise from Western Kentucky to West Virginia, to embracing a model of care that focuses on treating the whole person, not just their cancer. It's a clear-eyed, comprehensive vision that has turned Markey into a world-class cancer center right here in the Bluegrass.

From recruiting the best and brightest minds in research to Lexington, to developing the next generation of cancer care facilities at UK, the Markey Cancer Foundation has worked arm-in-arm with Dr. Evers to make his vision a reality.

We do that by connecting Markey's passionate supporters with the cancer center's expert researchers, clinicians and caregivers to forge impactful partnerships that have the power to change lives. Our grateful patient program allows Markey patients to support the cancer center in ways that are meaningful to them and that will positively impact the lives of other patients in the future.

We do it through initiatives like Markey's nurse navigator program. With support from the Markey Cancer Foundation, the cancer center staffs a full-time oncology-certified nurse navigator who guides patients and their families through the entire course of their cancer journey: from diagnosis to life after treatment.

And we do it by leveraging the Commonwealth's love for its flagship university into transformative support for cancer care and research at Markey. We're thrilled to be a part of UK's Kentucky Can campaign and we welcome all Kentuckians to join our cause. When you donate to the Markey Cancer Foundation, you are dedicating your resources to address the disease right here in your home state, not to entities operating elsewhere. To this end, we owe a tremendous note of thanks to our donors who support us.

Looking at the last decade, we think you'd be hard-pressed to find a cancer center in the U.S. that does more for its state than Markey. That's due in large part to Dr. Evers' extraordinary vision of what's possible and his unwillingness to back down in the face of even the most daunting challenges. We're proud to be by his side – and can't wait to support the next and the new right here at Markey.



Farra M. Alford

Farra M. Alford
Chair, UK Markey Cancer Foundation



Michael Delzotti

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



Xiaoqi Liu, PhD, chair and professor in the toxicology and cancer biology department at the UK College of Medicine and the Lucille P. Markey Endowed Chair in Oncology Research, is focused on developing novel treatments for advanced prostate cancer.



RESEARCHER EARNS MULTIPLE R01 GRANTS

Four prestigious awards fuel UK scientist's exploration into new treatments for advanced prostate cancer

Powered by four R01 grants from the National Cancer Institute, UK Markey Cancer Center researcher Xiaoqi Liu, PhD, is unraveling the secrets of a mysterious enzyme that may be to blame for hard-to-treat prostate cancer.

Liu, chair and professor in the toxicology and cancer biology department at the UK College of Medicine and the Lucille P. Markey Endowed Chair in Oncology Research, has spent his career researching the role that the enzyme polo-like kinase 1 (Plk1) plays in cancer, with the goal of developing novel treatments for patients with the disease.

His current work, which focuses on enhancing therapy outcomes for patients with prostate cancer, is funded by four R01 grants from the NCI, totaling more than \$1 million per year for five years in research support and making Markey a hub of innovative prostate cancer research.

"With almost all of the available therapies in prostate cancer, patients will eventually develop resistance," Liu explained. "The goal of my research is to understand the basic mechanisms

of this therapy resistance and then devise new approaches that enhance the efficacy or overcome the resistance of particular types of therapy."

"The goal of my research is to understand the basic mechanisms of this therapy resistance and then devise new approaches that enhance the efficacy or overcome the resistance of particular types of therapy."

XIAOQI LIU, PhD

All four of the R01 grants focus on uncovering how Plk1 – an important signaling pathway that is prominent in some tumors – can be targeted with new therapies to kill cancer cells, specifically in castration-resistant prostate cancer (CRPC) that is unaffected by a common type of drug called androgen signaling inhibitors (ASIs). Although ASIs are one of the current standards of care for CRPC, they have been shown to improve overall survival for patients for only several months.

Liu's lab's research is homing in on four distinct areas of focus:

- **Overcoming drug resistance for CRPC:** Under this grant, Liu and his team are attempting to define how Plk1 activates androgen receptor (AR) signaling and demonstrate its importance as a therapeutic target in CRPC.
- **Improving chemotherapy for CRPC:** This research is analyzing whether Plk1-associated activity impacts AR signaling, which, in turn, causes the prostate cancer to build up resistance to docetaxel – a current standard of care for metastatic CRPC. Liu's team is testing whether a combination therapy with docetaxel plus a Plk1 inhibitor may improve patient survival.
- **Treatment of CRPC:** Through this grant, Liu's team is investigating whether Plk1 plays a role in regulating the β -catenin pathway, which is known to cause significant genomic alterations in CRPC and can make the disease harder to treat. The research is examining the potential impact of combination therapy with a Plk1 inhibitor and a β -catenin pathway inhibitor in the treatment of metastatic CRPC.
- **Enhancing anti-neoplastic activity of metformin in prostate cancer:** Using the established and widely used diabetes drug metformin, which may inhibit the development of CRPC, Liu and his group are investigating

whether combining it with a Plk1 inhibitor is helpful in treating ASI-resistant CRPC.

With prostate cancer being the most common cancer diagnosis and the leading cause of cancer death among men, Dr. Peng Wang, genitourinary and prostate cancer oncologist at Markey, says finding a new way to treat the disease is critical and targeting Plk1 could be a promising approach.

"In collaboration with Dr. Liu's lab, we're working to develop multiple clinical trials for our prostate cancer patients that will target Plk1 to see if it can either delay resistance or even re-sensitize patients to other treatment," he said. "And this would be very, very helpful for our patients."

R01 grants from the NCI support health-related research projects, covering most of the associated research costs for a three- to five-year span. Most scientists strive to earn R01 grants to support their research across their careers; having four selected for funding simultaneously is a significant accomplishment.

In 2018, more than 28,000 new R01 applications were reviewed by the National Institutes of Health, but fewer than 5,000 were awarded funding. As of October 2019, Markey has 72 active R01 grants through the NCI, and Liu serves as principal investigator for more than any other researcher on that list.



"Nobody wants to be the face of lung cancer. But if I'm not going to take this opportunity, who is?"

LINDI CAMPBELL

SURVIVOR UNITES OTHERS IN FIGHT AGAINST LUNG CANCER

Lindi Campbell seeks to combat the stigma of the disease and bring survivors together

At 55, Lindi Campbell is a self-professed cardio queen.

Her level of fitness is more impressive when you learn that Campbell is missing more than a third of her lung capacity.

Two years ago, she underwent surgery to remove a growth in her right lung. She woke up to sobering news: Despite having never smoked, she had officially become a lung cancer survivor.

Looking for answers

Years before she came to the UK Markey Cancer Center, Campbell went to her primary care physician after experiencing chest pains and clamminess in her hands.

After her doctor ordered X-rays, which showed "a shadow," Campbell sought out a pulmonologist to define the growth.

"It was two years and four months of scans, second opinions, third opinions and even infectious disease doctors," she said.

Her biopsies all came back negative for lung cancer. But because the spot continued to grow, she went in for surgery, which resulted in her cancer diagnosis and caused the decline in lung capacity.

After her procedure, Campbell transferred her care to Markey, where her case is closely monitored by medical oncologist Dr. Susanne Arnold and thoracic surgeon Dr. Jordan Miller.

Opposite page: Markey patient and lung cancer advocate Lindi Campbell, photographed at Everybody Fights in Lexington..
Inset: Campbell with her Markey medical oncologist, Dr. Susanne Arnold, during her Unite to Fight Against Lung Cancer fundraising event in November 2019.
Above: Campbell, a self-professed cardio queen, continues to make working out a priority in her life, despite missing a third of her lung capacity.

"Every cancer patient is different in terms of what they want out of a doctor, and to me, that relationship was important," Campbell said. "It's a real relationship built on truth, trust and my best interest."

The ins and outs of lung cancer

Lung cancer wasn't something Campbell ever worried about, but after her recovery, she educated herself on the disease.

When detected early, as it was in Campbell's case, lung cancer is much more treatable. In Kentucky, only 18 percent of lung cancer cases are diagnosed at an early stage.

Because lung tumors can grow very large before they cause symptoms – which can be mistaken for less serious health problems – most people aren't diagnosed until the cancer is advanced. As the leading cause of lung cancer, smoking is linked to up to 90 percent of deaths from the disease. Radon, a colorless, odorless radioactive gas that occurs naturally in the soil, is the second-leading cause. Campbell never smoked but grew up around secondhand smoke and believes she may have been exposed to radon.

A search for fellow survivors

While she was able to gather medical and statistical information on lung cancer, Campbell noticed something lacking: a community.

Because so many lung cancer diagnoses are linked to smoking, Campbell says the stigma of the disease prevents many people from sharing their stories or reaching out for help.

"I thought, 'What could I do to use my energy and my story to raise money and awareness?'" she said. "Nobody wants to be the face of lung cancer. But if I'm not going to take this opportunity, who is?"

Forming a community of her own

In January 2019, Campbell founded Breath of Hope Kentucky, Inc., a nonprofit organization focused on awareness, prevention and early detection of lung cancer.

"It's up to us to be our own health advocate," Campbell said. "The more awareness that is out there, the more primary care physicians and pulmonologists will see a patient's symptoms as a possible sign of early stages of lung cancer, even if that person never smoked."

The UK Lung Cancer Screening Program is available for those who might be at high risk for lung cancer, including current and former smokers. For those whose risk is small or unknown, Campbell emphasizes knowing your own body and seeking medical help if something feels off.

Back in action

Campbell's personal journey is still in progress. She worked hard to restore her level of fitness and has returned to her favorite fast-paced workouts. She had hoped to make it to the five-year survival mark with clean scans and no further treatment. Unfortunately, a CT scan in July showed a few spots in her other lung.

Luckily, her most recent visit with Arnold and Miller provided some positive news – her scans showed no new growth of the nodules in her lung. It's a win she'll take for now. And in the meantime, she's got a community to build and grow.

"Even if you start something, and you're the only person, it's like the quote from the movie *Field of Dreams*: If you build it, they will come."

MAKING CANCER PREVENTION SUSTAINABLE, ACCESSIBLE

Two NCI-funded research programs aim to implement important efforts in cancer prevention

Continuing its mission to lower Kentucky's high rates of cancer incidence and mortality, UK Markey Cancer Center has initiated two long-term research projects, which are supported by more than \$16 million in grant funding. Both initiatives go beyond community education by attempting to make fundamental changes to how Kentuckians, and Americans more broadly, approach cancer prevention and care.

Researchers in Markey's Cancer Prevention and Control (CP) Research Program will lead the funded projects, which respectively focus on colorectal and cervical cancers. Established in 2013, the CP Program centers around creating cancer prevention initiatives – such as smoking cessation, HPV vaccination, mammography and lung cancer screening – that are easily accessible to Kentuckians.

"There are particular obstacles to getting cancer screening in all populations," the CP Program's co-leader Mark Dignan, PhD, MPH, explained. "But in Appalachia, people have barriers such as very limited public transportation and low income, and we need to reach out and find ways to make our healthcare system work better so we can decrease the incidence and mortality of these cancers."

ACCSIS project in colorectal cancer

Funded through a \$5.4 million, five-year grant from the National Cancer Institute's Moonshot Initiative, the Accelerating Colorectal Cancer Screening through Implementation Science in Appalachia (ACCSIS-Appalachia) project is implementing a multilevel intervention strategy to combat the high rates of colorectal cancer in the area.

Working together in 12 Appalachian counties in Kentucky and Ohio, researchers from UK and Ohio State University (OSU) deploy cancer screening outreach for patients, support providers in recommending patients for colorectal cancer screening, emphasize the importance of follow-up care and find ways to work with electronic health records to improve tracking.

"It's our contention that when healthcare systems work together, we can have better outcomes, and patients don't fall through the cracks and get lost or get contradictory information," Dignan noted. "We want to make change within the community and the healthcare system that can be sustainable."



"We want to make change within the community and the healthcare system that can be sustainable."

MARK DIGNAN, PhD, MPH

Multi-initiative cervical cancer grant

Through an \$11 million NCI-funded grant, Markey's CP Program is working in collaboration with researchers at OSU, West Virginia University and University of Virginia to combat the high cervical cancer incidence and mortality rates in Appalachia. Currently in its first year, the project is implementing three initiatives across 10 health systems in the area:

- **Smoking cessation:** Researchers are working with Federally Qualified Health Centers (FOHC) in the Appalachian region to enroll female patients who smoke into a multi-level smoking cessation program that provides counseling support and prescription medication.
- **HPV vaccination:** This initiative is testing different engaging strategies, including



A Cancer Center Designated by the National Cancer Institute

Markey Cancer Center is Kentucky's only NCI-designated cancer center.

informational comic books and clinic champions, to increase the rates of HPV vaccinations among Appalachian girls and women ages 11 to 26.

- **Cervical cancer screening:** In the third part of this project, researchers are testing the effectiveness, feasibility and sustainability of mail-out HPV self-testing kits among Appalachian women.

"Cervical cancer can be treated and prevented, but we need to do a better job of implementing the screening and follow-up procedures we already have," Dignan said. "Colon cancer incidence is increasing, but we do have good screening and early detection strategies for it. We're going to make a difference in how these cancers affect our population."



NEXT-GENERATION CARE FOR THE NEXT GENERATION

New program at Markey brings specialized cancer care to teens and young adults

Teens and young adults who have cancer have better outcomes if they're treated at cancer centers that care for both children and adults. That combination of expertise – along with support services that meet the unique needs of young adults – can make all the difference.

Uniting world-class experts

The new UK HealthCare Adolescent and Young Adult (AYA) Oncology Program brings together doctors and specialists from both the DanceBlue Hematology/Oncology Clinic and the UK Markey Cancer Center. The new program takes a novel approach to treating patients ages 15 to 29, with a focus not only on treatment but also on the emotional and social needs of this age group.

"It's a population that's underserved and has unique needs," says Dr. John D'Orazio, chief of pediatric hematology and oncology.

Caring for medical and social needs

With the specialized resources of the AYA Program, UK HealthCare is making the treatment process easier for young adult patients and helping them achieve their personal and professional goals.

Patients in this age group often struggle with the loss of autonomy that can come with a cancer diagnosis. They aren't children anymore, but the pressures of school or work can be burdensome when coupled with a cancer diagnosis. School work and social lives may suffer during treatment, and maintaining a job can be a challenge for those starting out in the workforce. This age group may also have trouble keeping up with other responsibilities during treatment, including appointments, bills and more.

"It's a population that's underserved and has unique needs."

DR. JOHN D'ORAZIO

Latest treatments now

Patients in the AYA Program receive treatment at either the pediatric DanceBlue Clinic or Markey, depending on their diagnosis. Those with sarcomas, lymphoma, and testicular and ovarian cancers are usually treated in the pediatric clinic. Patients with colorectal, breast or thyroid cancers receive treatment in the adult clinic. All young adults at the clinic get treatments tailored to their individual needs.

Pediatric oncologist Dr. Caryn Sorge talks with patient Bethany Stephens in the DanceBlue Hematology/Oncology Clinic serving adolescents and young adults with cancer and helping them to be successful into adulthood.

The program also encourages eligible young people in the AYA Program to participate in a clinical trial. Traditionally, young adults don't participate in clinical trials as frequently as others, so stoking interest in research could help Markey scientists learn more about how cancer affects this particular age group.

Regardless of whether young adults receive their treatment at Markey or the DanceBlue Clinic, they have access to all the resources of the AYA Program, including a nurse practitioner, social worker and school intervention specialist, as well as dietary and pain management support, fertility counseling and genetic counseling. Having someone to talk to about the stress and challenges that come with cancer can be helpful for young adults. In addition, quarterly dinners are planned for patients and families that will offer educational opportunities on topics including financial planning, insurance, healthy eating and other practical issues.



MARKEY LEADS THE WAY IN TRACKING CHILDHOOD CANCER PATIENTS

The UK Markey Cancer Center became the first hospital in the country to accept pediatric patients for the Oncology Research Information Exchange Network's (ORIEN) Total Cancer Care® Protocol.

ORIEN is an alliance of top North American cancer centers collaborating and sharing data in order to advance cancer discoveries. Members follow the Total Cancer Care Protocol, which provides a standard system for tracking and studying molecular, clinical and epidemiological data throughout patients' lives. The study is intended to improve care and quality of life for people affected by cancer. Patients enrolled in the program benefit from lifetime monitoring that continues after completion of their cancer treatment. This allows doctors to anticipate and catch problems early on.

This monitoring should be helpful for pediatric cancer patients, about 10 percent of whom have a genetic mutation that puts them at higher risk for a secondary cancer. Doctors and researchers can use the collected data to find targeted treatments for current and future patients. They can also use the data to predict trends or changes in a patient's cancer and recommend additional screenings that may fall outside of standard recommendations.

The ORIEN network is managed by M2GEN, a for-profit subsidiary of the Moffitt Cancer Center in Tampa, Fla. Markey joined the ORIEN network in 2017 and enrolled more than 3,000 patients in its first two years. Patients who have cancer or are at risk for cancer are eligible for the program from birth.

MARKEY PATIENT INSPIRES BLUEGRASS TRADITION

Family's nonprofit gives back to programs that made a difference in daughter's life

Daphne Scruggs Fields loved music. She taught herself how to play the banjo and upright bass, and she was well known throughout the local bluegrass community, where she played with numerous bands.

The Frankfort, Ky., woman passed away at the age of 34 in 2013 from triple-negative breast cancer, two years after her initial diagnosis, but her family knew they wanted to keep her memory alive and honor her love of music.

That's why the Scruggs family created the nonprofit Daphne's Legacy to raise funds for research and promote awareness of triple-negative breast cancer. The disease is an aggressive and hard-to-treat form of breast cancer that often affects younger women like Fields, a wife and mother of two children.

Daphne's Legacy holds an annual 5K run/walk, silent auction, concert and other events over the course of two days each April, around the time of Fields' birthday.

Donating close to home

The family initially gifted funds raised through Daphne's Legacy to a national research

organization but shifted its focus to benefit the local community because Fields received her treatment at the UK Markey Cancer Center. The family was also inspired by the Markey researchers who are pursuing new treatments for this type of breast cancer.

Daphne's Legacy has raised \$23,000 for research at Markey, allowing Markey Director Dr. Mark Evers to determine the best use of the funds for research related to triple-negative breast cancer.

A legacy of music

After meeting and talking with the Markey Cancer Foundation's philanthropy staff, the family also wanted to give back to the music therapy program, which was important to Fields when she was a patient.

"Music is great for the soul, and Daphne and our entire family believes that wholeheartedly," said Melissa Mills, Fields' aunt and president of the nonprofit.

Music therapy, which is part of the UK Creative Arts Therapy program, can help patients cope with stress, pain, anxiety and other challenges associated with

illnesses. It includes everything from singing and playing an instrument to musical movement and writing songs. Any physician can prescribe music therapy for a patient at UK HealthCare.

Fields' family donated money to establish a scholarship fund for UK's music therapy interns, who must complete supervised clinical training. Most music therapy internships nationally are unpaid, but this scholarship includes a stipend for interns, which will give UK an advantage in attracting the best students from around the country.

The family also gave a banjo for music therapists to use so that patients can enjoy bluegrass music or try their hand at playing the instrument themselves.

Mills says the family is grateful for the opportunity to support current and future patients at Markey in honor of Daphne.

"We're extremely happy to be able to give locally," said Mills. "Our hope is to give a little bit more each year. We're glad to be in this partnership with UK, where scientists and doctors are actively pursuing better treatments and a cure for triple-negative breast cancer."

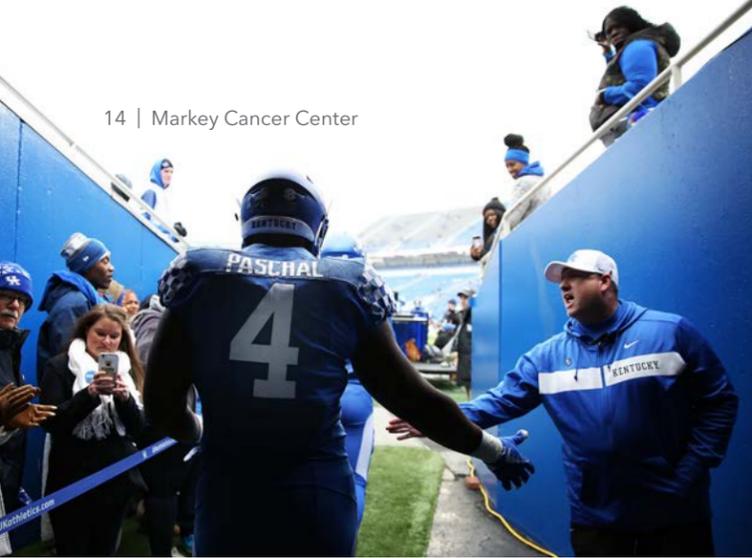


"Music is great for the soul, and Daphne and our entire family believes that wholeheartedly."

**MELISSA MILLS, DAPHNE'S AUNT
AND PRESIDENT OF DAPHNE'S LEGACY**

Top: Daphne's sons, George and John Robert, play banjo and mandolin in the UK Chandler Hospital Pavilion A Atrium for guests, patients, families and staff.

Bottom: Daphne Scruggs Fields plays the upright bass with a group called Stirfry Musette during a Home and Garden Show. She was well-known in the bluegrass community, where she played with many local bands.



ALL-OUT BLITZ ON CANCER

UK football player tackles life-threatening challenge: skin cancer

As a rising star on the UK football team, Josh Paschal appeared to be at the peak of physical health. For the 6-foot-3-inch, 284-pound defensive lineman, cancer was the last thing on his mind, especially skin cancer.

But in July 2018 when he was just a 19-year-old sophomore, he noticed a small spot on the bottom of his right foot. He thought it was a blood blister. The football team's athletic trainer immediately sent him to a dermatologist.

Biopsy results showed that Paschal had a rare and aggressive form of skin cancer: acral lentiginous melanoma (ALM). Two days after his diagnosis, he was in surgery.

He had appeared in all 13 football games his freshman year, receiving accolades for his outstanding play. Now he would be sidelined.

"It was a shock," Paschal said.

An unexpected diagnosis

"I kept thinking this can't be real," he said. "I thought skin cancer was something I didn't have to worry about because I'm African American."

While ALM accounts for 2 to 3 percent of all melanoma cases, its incidence is higher in people of color, particularly in African Americans, according to research published in the *Journal of the American Medical Association*. It appears most often in areas unaffected by sun exposure, such as the soles of the feet, palms of the hands

and under the nails. African Americans have the highest melanoma death rate of any racial group, even though white people are 20 times more likely to receive a melanoma diagnosis.

"I thought skin cancer was something I didn't have to worry about because I'm African American."

JOSH PASCHAL

"Fortunately, Josh, his trainer and his family all focused on the problem and took quick action," said Dr. Mark Evers, director of the UK Markey Cancer Center, who performed Paschal's surgeries and worked with a team of other specialists to develop a treatment plan.

After surgery, tests showed some cancer cells remained at the edge of the tissue that was removed. To get "clean margins," Paschal had a second surgery that August.

Leading-edge cancer care

Afterward, with Paschal showing no signs of remaining cancer, UK HealthCare plastic surgeon Dr. James Liau joined Evers and performed a skin graft, taking skin from Paschal's calf to repair and replace the tissue on the sole of his foot.

Five days after his skin graft, Paschal began immunotherapy, which boosts the body's own

immune system to fight disease. He received an infusion of the drug Opdivo® once a month. Approved by the FDA in 2018 for certain patients with melanoma, Opdivo significantly lowers the risk of recurrence. His last infusion took place in September 2019.

"Immunotherapy has completely changed the treatment of melanoma," said Dr. Peng Wang, the Markey medical oncologist leading Paschal's post-surgical treatment. "Ten years ago it was a sad situation. We had no medications to offer. Now we have multiple options and sometimes have to debate which one to choose first."

"With his support, his strong faith, his hard work, and the help of our amazing group at Markey, cancer is just going to be one chapter in the book of Josh Paschal."

DR. MARK EVERS

To guide the decision-making process, Paschal's case was brought to Markey's Melanoma Tumor Board, which consists of medical, surgical and radiation oncologists, as well as pathologists. It meets every other week, bringing the best minds together to discuss how to care for individual patients.

Back in the game

Throughout his treatment, Paschal continued to work out and went through intensive rehabilitation. The entire Markey team was thrilled when he returned to the game on November 17, 2018, where he made a tackle that contributed to the team's win against Middle Tennessee.

Paschal also played in the last regular season game and in the Citrus Bowl win against Penn State. The Wildcats ended the season 10-3, their best record since 1977.

The football player invited Evers to join his family at UK's annual CATSPY Awards, where UK athletes are recognized for their achievements. Paschal won the Heart of a Wildcat award.

"It was very special," said Evers, a season ticket holder. "With any cancer diagnosis, we remain hyper-vigilant. But with his support, his strong faith, his hard work and the help of our amazing group at Markey, cancer is going to be just one chapter in the book of Josh Paschal."

UK defensive lineman Josh Paschal and his parents (middle left) turned to UK Markey Cancer Center melanoma surgeon Dr. Mark Evers (not pictured) and medical oncologist, Dr. Peng Wang (far right), when Josh was diagnosed with melanoma. His doctors prescribed a combination of surgery and a new immunotherapy with the aim of preventing cancer reoccurrence in the future.



CLINICAL TRIAL WORKS WONDERS FOR MARKEY PATIENT

After exhausting all treatment options, a new chemotherapy drug was this Kentucky woman's last hope

Tollesboro, Ky., resident Jenn Highfield was far younger than most when she was diagnosed with colon cancer. With a family history of the disease, she had been getting colonoscopies since age 30, decades before the recommended age of 50. Those screens were a lifesaver: When she was just 38, her doctor found a cancerous polyp.

After a consultation with one oncologist, Highfield sought a second opinion at the UK Markey Cancer Center. A flurry of treatments followed: chemotherapy, radiation, a resection and more chemotherapy.

Still, her cancer spread. Her liver, lungs and lymph nodes became affected. She had a liver ablation, a lung resection and more radiation to a lymph node that couldn't be removed. The cancer remained.

With all options exhausted, Highfield's oncologist suggested she explore hospice care.

But Highfield and her husband, Tyrome, wanted to search for more possibilities. They traveled to Nashville and then Chicago for a second and third opinion but received the same answer each time.

One night, Jenn became severely sick and was rushed to the UK Chandler Emergency Department from her home in Tollesboro – a 90-minute drive. After she was admitted, her case caught the attention of Markey oncologist Dr. John Villano.

Another chance

Villano, the medical director for Markey's Precision Medicine Clinic, came to Jenn with something she hadn't seen in a long time – hope. Villano was opening

up an arm of a clinical trial to test the efficacy of a new chemotherapy drug, BXQ-350.

"The trial had just opened, and she was a candidate because all other therapies had failed, and her cancer was still progressing," Villano said.

The Precision Medicine Clinic opened last year, expanding access to phase I and phase II clinical trials, so that patients can try promising new drugs that are not yet FDA-approved. In phase I trials, patients are often among the first people to receive a new drug or treatment. Phase II trials build on the information gathered in a phase I trial and often compare the drug's efficacy with the current standard treatment for that specific cancer.

"With this drug, I feel like I'm back to normal – I feel like I did before I had cancer."

JENN HIGHFIELD

Manufactured by the Kentucky pharmaceutical company Bexion, BXQ-350 had never been investigated in humans before. BXQ-350 is administered via infusion, and Jenn initially came to the Precision Medicine Clinic every weekday for treatment. After one month, she was tapered down to monthly infusions.

The breakthrough

Jenn's health improved dramatically in the first few weeks – partly because the drug is less toxic to her system.

"With this drug, I feel like I'm back to normal – I feel like I did before I had cancer," she said.

While the drug was given to patients who have a variety of solid cancer types, those with primary

colorectal cancer – like Jenn – have responded the most favorably.

Jenn is now in remission, showing no evidence of the disease that had been spreading throughout her body.

Even though the trial is now closed at UK, Jenn will continue to receive the monthly infusions both because of her progress and because she's not experiencing any negative side effects from the drug.

Pushing medicine forward

Markey currently has 113 open trials and 48 more to launch. Forty-four of those open studies and 14 of the upcoming studies are early-phase trials run through the Precision Medicine Clinic.

New trials will also be designed to target specific mutations based on data from the Molecular Tumor Board – and will hopefully lead to newer, more effective treatments.

Witnessing a patient like Jenn experience such a breakthrough in treatment because of a clinical trial is humbling, Villano said.

"It reaffirms why you're in the field," he said. "It inspires you and makes it all worthwhile."

Jenn Highfield and her husband, Tyrome (opposite top), found hope for Jenn's cancer diagnosis when they met Dr. John Villano (opposite bottom), who recommended a new clinical trial that has proven to be successful.

HIGH SCHOOLERS MAKE A DIFFERENCE THROUGH ACTION PROGRAM

Appalachian students take their first steps toward a cancer-focused career

Launched in 2016, the Appalachian Career Training in Oncology (ACTION) Program is on a mission to foster the future of cancer care in Kentucky. Three years after its creation, the program took the next step forward in nurturing the career interests of students interested in oncology – expanding its offerings to include high school students in addition to college undergraduates.

The program offers students from Kentucky's Appalachian region an opportunity to gain hands-on experience within the research, clinical, outreach and education areas of cancer and prepares them to pursue a career in health and medicine.

Welcoming high school students

New in 2019, invited high school applicants were able to participate in two consecutive summer sessions with the program on the University of Kentucky campus. In its first year, the high school cohort welcomed 20 students to participate in career-building activities with a variety of researchers, lecturers and mentors.

High school students coming into the program are met with a crash course in cancer biology, epidemiology and treatment. Throughout the summer, students engaged with all phases of research and clinical care through workshops and lectures and by shadowing Markey's doctors and healthcare providers. Attendees will also become

published authors in an upcoming compilation of student essays reflecting on their unique relationship with cancer having grown up in an area where cancer is at its worst.

Students also had the opportunity to come together and reflect on all of their work during an end-of-summer symposium, an event that may have been the highlight of the experience, ACTION Program Director Nathan Vanderford, PhD, MBA, said.

"Our symposium and poster session may have collectively been the most impactful event of the summer," Vanderford said. "The students worked really hard on their posters. And, of course, they worked on their research throughout their time on campus. They were proud to show people what they had been working on, and they should be."

Vanderford said getting experience at such a young age is crucial in helping students develop their interests and start thinking about their future.

"Coming here and having this first five weeks of independence gives us a unique time to help them decide what they want to do," he said.

Getting that first impression of life on an academic campus goes a long way toward preparing students for success, ACTION Program Coordinator Chris Prichard said. Prichard had the chance to get to know this small group of students during their time on campus and build a valuable mentoring relationship.

ACTION program students spent five weeks of their summer at Markey and on the University of Kentucky campus learning about careers in science and cancer research. The NCI-funded ACTION program focuses on the Appalachian region of the U.S., where cancer incidence and mortality are the highest in the nation.

"It's great having that one-on-one interaction during the summer," Prichard said. "It's very rewarding to work with a student and know that you are making an impact, changing their life for the better."

Preparing for the future

Shedding light on the resources available to help these students pursue an oncology career is a major goal of the ACTION program. Students learn about applying for scholarships, test-taking practices and overall financial literacy. These areas needed particular attention due to the disadvantages that many residents of the Appalachian region face when making educational decisions after high school.

"Giving students the tools to become change agents in their own families and communities is one of the ultimate goals of the program."

NATHAN VANDERFORD, PhD, MBA

"Chris and I spend a lot of time visiting schools throughout this region," Vanderford said. "One student's mom was a teacher...and she was telling us about the huge financial barrier our students face related to attending college. Even I didn't totally appreciate their level of barrier before. We keep that in mind now so we can show the students ways to go to college with financial aid opportunities."

Building on their first summer with the program, attendees will stay engaged with ACTION on a monthly basis throughout the year. Ahead of their second summer, students will participate in fun trips, including a visit to the Louisville Slugger Museum, as well as formal educational events, such as check-ins with their research labs.

Agents of change

While attendees continue to develop their own professional skills and interests, the program encourages them to bring the information they've learned back home where there are alarming rates of cancer incidence. In the end, Vanderford hopes the program can make a tangible impact on lives for both students and their communities.

"Giving students the tools to become change agents in their own families and communities is one of the ultimate goals of the program," Vanderford said. "There are examples where participants have parents who use tobacco products, and it's their goal to get them to stop smoking, dipping, chewing, etc. If we can just reduce tobacco use, if we could cut that out today, in the next 15 to 20 years, that would have a huge impact on cancer rates. Promoting that mindset with these kids will make a difference."

THE BENEFITS OF BEING A QUITTER

Markey program encourages and helps patients to go tobacco-free

Tobacco use impacts cancer outcomes in many ways, including an increased risk for second cancers, recurrence and even death.

Kentucky has one of the nation's highest smoking rates, but the UK Markey Cancer Center hopes to change that number through the Markey CARES (Cancer-specific, Assessment, Referral, Engagement, and Support) Tobacco Treatment Program. Funded by a grant from the National Cancer Institute, the program supports efforts to educate patients on the benefits of quitting as well as to train providers to offer guidance and support.

Markey, the only NCI-designated center in Kentucky, competed with more than 30 other NCI-designated cancer centers for the two-year grant awarded in 2017. As a part of the grant, which was recently extended for an additional year, Markey agreed to sustain the program financially once funding runs out.

What the CARES program does

The CARES program developed at Markey includes changes to the electronic medical record to ensure providers ask every cancer patient about their tobacco use at each visit. Patients who use tobacco are also asked if they intend to quit and if they would like help in doing so.

"By simply asking patients if they smoke, we are sending a message that this is something that matters – in the same way we treat blood pressure and changes in weight as vital signs," says Jessica L. Burris, PhD, assistant professor of psychology and a member of the Markey team. "We're trying to send the message that this is something we

care about, this is something that matters and we can help you with."

As part of the CARES program, many providers, including social workers, pharmacists, nurses and other allied health professionals, received tobacco treatment specialist training. Nurses at Markey affiliate network hospitals throughout Kentucky were also trained, so they can provide tobacco cessation services to patients who stay closer to home for some or all of their cancer treatment.

"We have really amazing patients and outstanding clinicians. If we can work together and capitalize on the strengths we have, we can really move the needle in terms of tobacco use. It's not just a quality of life issue. It's a quantity of life issue."

JESSICA BURRIS, PhD



Below left: Markey providers and staff implement the CARES program in practice for patients in need of tobacco cessation counseling.

At right: Jessica Burris, PhD, started the Markey CARES (Cancer-specific, Assessment, Referral, Engagement, and Support) Tobacco Treatment Program to educate patients about the benefits of quitting and to train providers in guidance and support.

Messaging includes a patient education booklet available in waiting rooms, website content and information on TV monitors in the cancer center that reinforces the benefits of quitting, especially for those with cancer. Providers are encouraged to reassure patients who use tobacco that they don't need to feel embarrassed about asking for help, and that it isn't too late to make a positive change for their health.

Evidence-based support

It can be difficult for cancer patients to give up a significant coping mechanism like tobacco use in the midst of the stress of diagnosis and treatment. Plus, many people feel they should be able to rely on their willpower to quit, but research and data don't support that approach, Burris says. For patients who ask for help quitting, tobacco treatment specialists can provide free individualized counseling and give reliable advice about other evidence-based

support, including medication, free phone-based counselors and an online community.

CARES program data shows 22 percent of Markey's cancer patients use some form of tobacco. Of that number, about 20 percent have asked for and received help through the CARES program so far. Burris' next goal is raising that number significantly.

"Yes, our [tobacco use] prevalence rate is higher in Kentucky and we have some barriers other states don't have in terms of a patient population that is often struggling with poverty," Burris explained. "We also have really amazing patients and outstanding clinicians. If we can work together and capitalize on the strengths we have, we can really move the needle in terms of tobacco use. It's not just a quality of life issue. It's a quantity of life issue."



CLINICAL TRIALS BOOT CAMP **EMPOWERS** **JUNIOR FACULTY**

New researchers learn the ins and outs of clinical trials through intensive training program

Clinical trials are the backbone of advances in medical treatment and essential to providing the best possible patient care. Although clinical trials are the start of exciting possibilities, designing them can be an uphill battle for new researchers.

Dr. Susanne Arnold, UK Markey Cancer Center's Associate Director of Clinical Translation, saw the challenges that junior faculty face in creating new clinical studies, so she set out to equip researchers with the tools, supplemental training and support to succeed. In 2013, she established the Clinical Trials Boot Camp to help junior researchers develop their own investigator-initiated clinical trials.

"New faculty have great ideas and enthusiasm, but they lack experience in creating effective clinical trials," said Arnold. "We want to help bridge that gap with support from senior clinician scientists."

A crash course on clinical trials

Clinical Trials Boot Camp is a four-week intensive training initiative that provides an overview of the clinical trials development process. Senior faculty researchers and staff share best practices for designing and conducting cancer clinical trials as well as information about Markey's Shared Resources Facilities and the Protocol Review and Monitoring System. Trainees are tasked with developing a full research

protocol of a clinical trial by the end of their training.

This crash course presents information essential to developing clinical trials that identify new treatment options, said Dr. Leigh Anne Faul, director of Markey's Investigator-Initiated Trials Office.

"Research is for gladiators," said Faul. "Clinicians, staff, researchers and senior executive leadership are wholly dedicated to the mission of reducing cancer mortality in Kentucky. Innovative clinical trials are key to achieving our goal. The boot camp highlights the necessary elements and best research design strategies, and then it centralizes these resources for new faculty to leverage in support of their ideas for new cancer treatments."

The boot camp's impact

Since the program began in 2013, boot camp graduates have developed new clinical trials unique to Markey and enrolled more than 200 patients in clinical trials at the cancer center. Additionally, trainees have served as principal investigators on over 31 interventional therapeutic clinical trials following their training.

"These investigators take a leap of faith that their commitment to this process will result in novel therapies for their patients," said Arnold. "It is truly the most rewarding thing to see a

"Clinical trials are how we make progress in cancer treatment."

DR. SUSANNE ARNOLD



Dr. Susanne Arnold started the clinical trials boot camp in 2013 to teach junior investigators how to develop their own investigator-initiated trials.

new faculty member develop something that will provide meaningful treatment options for their patients."

New way forward

Building on the success of the Clinical Trials Boot Camp, a next-level course was created in 2018 to accelerate clinical translational research by Markey investigators.

Advanced Clinical Trials Boot Camp assists investigative teams led by more seasoned researchers to achieve national recognition for their clinical trials. This program allows senior researchers to present their formed concepts for trials to Markey leadership and research teams. After receiving feedback, these teams develop grant proposals for clinical research focused on scientific breakthroughs discovered at Markey.

As these training sessions progress with new participants, education about the logistics of designing and conducting treatment research is making a significant impact on Markey's strategic portfolio of clinical trials.

Just as clinical trials are centered on the promise of innovation and forward thinking, Markey intends to infuse the development process with that same approach in order to reach for new heights in cancer prevention, detection and treatment.

"Clinical trials are how we make progress in cancer treatment," said Arnold. "Providing Kentuckians with new treatment options through novel clinical trials will ultimately improve the health of those fighting cancer and hopefully cure more cancer in our state. It's an investment of our cancer center's future."



DOING SOMETHING 'WONDERFUL' FOR THOSE WITH CANCER

Markey surgeon embraces next-generation treatments to help patients

Dr. Joseph Kim joined the UK Markey Cancer Center as chief of surgical oncology in 2018 driven to help those in Kentucky who are affected by cancer. A little more than a year into his tenure at UK, he's doing just that.

A specialist in hepatobiliary and gastrointestinal (GI) cancer treatment, Kim leads a highly experienced team of seven surgeons and oversees all aspects of surgical oncology at Markey. It's a role that allows him to have a significant positive impact on the lives of hundreds of patients each year.

We caught up with Kim to talk about his journey to Markey, the future of cancer treatment, and what motivates him as a doctor and as a researcher.

Why did you want to join the team at Markey?

Multiple aspects made it the perfect position. I did my training and general surgery residency up the road at the University of Cincinnati. Also, Dr. Emily Marcinkowski, one of the breast surgeons here, was one of my trainees at City of Hope in Los Angeles. She helped to recruit me here. Knowing somebody from the past was a special attribute.

I also appreciated the opportunity to work for a tremendously large organization with a burgeoning surgical oncology program. It was the type of challenge I was looking for – along with the opportunity to continue translational research.

What treatments are making a difference for patients with GI and hepatobiliary cancers?

Hyperthermic intraperitoneal chemotherapy (HIPEC) is an innovative procedure for patients whose cancer has spread in the peritoneal cavity. It involves two steps. First, you remove the visible cancers. Then, you instill hot or heated chemotherapy into the abdominal cavity. There are two potential advantages to this process: Chemotherapy is applied directly to the cancer cells rather than in the bloodstream, and along with the heat, both directly kill cancer cells.

Every Friday here at UK, we perform robotic surgery for cancer patients. These minimally invasive procedures offer smaller incisions, less pain and quicker recovery. I have performed over 100 of these complex procedures, and I led a team at my previous institution in New York that performed the first fully robotic Whipple surgery for pancreatic cancer on Long Island.

Dr. Joseph Kim is Markey's chief of surgical oncology, a role that he says allows him to make a significant impact in the fight against cancer in Kentucky.

It's really important to me – and to Kentucky – that we have the whole spectrum of care for pancreatic cancer. It is one of the most common cancers in the state. We perform an average of one pancreatic cancer operation every week, while my research laboratory focuses on other treatment options for pancreatic cancer.

What types of research are you working on?

My research lab is looking at drug discovery using cancer models. We are using the research we've conducted in the lab and have partnered with industry to expand the use of life-saving drugs in the clinic. I have an assistant research professor who runs my laboratory on a day-to-day basis, and we have a research fellow who we brought to Kentucky from New York. My laboratory has been funded by the National Institutes of Health and the American Cancer Society, and we've laid the groundwork during this past year for our projects to directly impact our patients in the near future.

What do you like most about working at Markey?

Even though it is a large institution, there is a lot of interaction, camaraderie and collegiality. It's really been a great place to work. Everybody is so friendly here.

What inspires you as a physician?

What motivates me is my upbringing. I was born in South Korea and raised in Chicago. My parents immigrated to the U.S. to provide a better education for their children. My mother was an administrative assistant and my father was a welder, so it was a very blue-collar upbringing. My parents instilled hard work and Catholic values.

"It's really important to me – and to Kentucky – that we have the whole spectrum of care for pancreatic cancer. It is one of the most common cancers in the state."

DR. JOSEPH KIM

My work at UK is never-ending, but it's fulfilling. I come in the morning at 6 and I usually leave around 7 p.m. Personally, it is a challenge. All of these patients who we treat – we're trying to do our best for them, and I try to give everything I have. The operations are technically difficult, and they keep you on your toes. When things are successful, it gives you a great deal of satisfaction that you've done something wonderful for your patients.

CELEBRATING 10 YEARS OF INNOVATION, COLLABORATION

*Markey's Research Day continues
to present new possibilities*

In 2019, Markey celebrated its 10th annual Markey Cancer Center Research Day (MCCRD).

Over the past decade, this event has grown and expanded its reach by finding new voices across campus each year to share the importance and future of cancer research. MCCRD has now grown into a banner annual event, and even in its humble beginnings, it was rooted in the goal of encouraging collaboration.

The evolution of Research Day

In 2007, an earlier version of the event was held in the Biomedical Biological Sciences Research Building atrium. The event hosted 64 research posters that year, all held on easels. The early days were more informal and originally designed as an opportunity for simple networking around research.

When Dr. Mark Evers arrived as the UK Markey Cancer Center director in 2009, he saw great potential in the event. He hired Cancer Education Liaison Terry Keys to coordinate education conferences and events throughout the year at Markey; and, among the highest priorities, was to reimagine MCCRD with Evers' vision – a task that Keys took to heart with Dr. Kathy O'Connor, associate director of cancer education and mentoring and also the scientific director of MCCRD.

In 2010, the event moved to the Singletary Center, which offers more space and an auditorium for presentations, including two MCCRD highlights: the Susan B. Lester Memorial Lecture and the State of the Cancer Center Address from Evers. Over time, the event evolved

into what it is today: an engaging exchange of ideas, a forum for robust conversation, budding collaborations, and a showcase for up-and-coming scientists, all centered on the next generation of cancer researchers at Markey.

"MCCRD is a celebration of our accomplishments over the year, the progress of our science and our progress in our common goal in the fight against cancer," O'Connor said. "It's a day when we put everything aside and celebrate everything great about Markey and our science."

Uniting innovative thinkers

Exhibitors were brought into the event in 2013 in order to raise money for hosting the endeavor and expand the options for networking and learning during lunch. The event now recognizes Markey's Difference Makers of the Year – those who go above and beyond to make Markey a positive place for patients and healthcare professionals alike. The event evolved to include accomplished guest speakers who have a wealth of knowledge to share with attendees. As O'Connor hands the reins of the event over to Dr. Tianyan Gao and Keys, she looks forward to the progress the two will make in continuing the event's upward trajectory.

O'Connor's own research on triple-negative breast cancer was selected by the Markey Women's Strong program to receive a \$50,000 Distinguished Research Grant in 2017, the program's inaugural year. Markey Women Strong, a UK Markey Cancer Foundation program, strives to empower passionate ambassadors for the research and clinical work at

Markey, and is presented to recipients during an MCCRD awards presentation.

The opportunity to explore research opportunities and collaborate with new colleagues continues to draw an eager crowd. MCCRD routinely reaches Singletary Center capacity with over 400 attendees each year.

"Markey Research Day is a day when we put everything aside and celebrate everything great about Markey and our science."

DR. KATHY O'CONNOR

In 2019, MCCRD continued its celebration of unique collaboration with 138 posters and 442 attendees, making it the most well-attended event to date. Despite a decade of success and positive feedback, Keys is still looking for ways to improve by asking attendees for their feedback.

The most common reply: Never change the State of the Cancer Center Address. Evers' annual recap of the previous year in treatment, research and more has become a staple of the event, offering attendees the chance to hear about Markey's goals from the director himself.

"You go there expecting to find one thing but come out with new, innovative findings from so many people," Keys said. "This is one way that we can help people see how many paths into cancer research are out there. It's more than the things they've been told about or grow up with."

Markey Cancer Center Director Dr. Mark Evers and Dr. Kathy O'Connor established Markey Research Day 10 years ago when he joined the University of Kentucky in 2009.



Markey Cancer Center at Lexington Clinic providers Susan Liddle, MD; William Camp, MD; Falguni Amin-Zimmerman, MD; Karen Mulholland, RN, MSN, AOCNS, APRN; and Rachel Harper, MD, provide high-quality cancer care locally for patients in Lexington and Richmond. The practices are managed by Lexington Clinic administrators Jeff Taylor and Kate Cundy (right).

COLLABORATING ON CANCER CARE IN THE BLUEGRASS

A new collaboration gives patients in the Bluegrass greater access to advanced cancer care and the latest treatments

UK HealthCare and Lexington Clinic joined together this year to enhance and expand outpatient cancer care throughout Central Kentucky. This new collaboration – Markey Cancer Center at Lexington Clinic – brings medical hematology/oncology and chemotherapy services to patients in Lexington at South Broadway and Andover locations and in Richmond. Richmond also offers radiation oncology services.

The collaboration began on June 24, 2019, and benefits patients by providing improved access to specialty pharmacy services, supportive treatment services, clinical trials and more.

The power of collaboration

Founded in 1920, Lexington Clinic is a community-focused provider and the largest independent multi-specialty group in Kentucky with more than 200 providers in more than 30 specialties. The group sees more than 1,000 new cancer patients every year.

“Lexington Clinic is thrilled to offer cancer services in collaboration with UK HealthCare and Markey Cancer Center,” said Dr. Andrew H. Henderson, Lexington Clinic CEO. “Our commitment is, and has always been, to perfect the patient experience and provide the best care possible. This collaboration has allowed us to expand our services and reach out to help the people of Central Kentucky.”

“This collaboration has allowed us to expand our services and reach out to help the people of Central Kentucky.”

DR. ANDREW H. HENDERSON

Lexington Clinic medical oncology, radiation oncology physicians and advanced practice providers provide services as part of the Markey Cancer Center at Lexington Clinic. Through the collaboration, patients continue to see their same physicians and providers and receive care at their location.

Patients who need advanced cancer care or those who may benefit from clinical trials may be referred for care at the Markey Cancer Center on the UK campus.

Upholding the UK mission

UK HealthCare is focused on improving its outpatient services in critical clinical areas, including cancer.

“We are always looking for opportunities to combine our strengths to provide the best care to Central Kentuckians. Our collaboration with Lexington Clinic is allowing us to do just that when it comes to treatment for cancer.”

DR. MARK F. NEWMAN

This relationship with Lexington Clinic increases the number of patients who could potentially participate in clinical trials, which is crucial to the development of new drugs and therapies at Markey. It also boosts UK’s mission of excellence in research, education and clinical care within the Bluegrass.

“We are always looking for opportunities to combine our strengths to provide the best care to Central Kentuckians,” said Dr. Mark F. Newman, UK executive vice president for health affairs. “Our collaboration with Lexington Clinic is allowing us to do just that when it comes to treatment for cancer.”

WORKING TOGETHER FOR YOU

MARKEY
CANCER CENTER
AT LEXINGTON CLINIC





HEADS UP! ON HEAD AND NECK CANCERS

New screening program aims to detect cancers sooner and improve quality of life

Kentucky has one of the highest incidences of head and neck cancer in the United States. Rates nationwide are increasing at less than half of a percent a year, while rates in the Commonwealth have increased by more than 2 percent since 2001.

That's why the UK Markey Cancer Center, the UK Voice & Swallow Clinic, and the UK Ear, Nose & Throat Clinic teamed up with Kentucky CancerLink and the Head and Neck Cancer Alliance to offer free head and neck cancer screenings to the public. Head and neck cancers include tumors of the mouth, throat, nasal passages, sinuses and thyroid gland. Many are tobacco-related; however, occurrences of oropharyngeal cancer (mouth and throat cancer) caused by human papilloma virus, or HPV, are increasing.

The first Heads Up! screening event at Markey was held in April 2019 during Oral, Head and Neck Cancer Awareness Month. UK physicians, speech pathologists, residents, graduate students, medical students and nursing students volunteered at the event.

"If we were able to detect these cancers sooner, overall survival and quality of life for these individuals would be much better."

TAMMY WIGGINTON

Why screenings matter

Screenings like Heads Up! are important because many head and neck cancers are not found until the disease is advanced, said Tammy

Right: Dr. Alexandra Kejner (left); Tammy Wigginton, MS, CCC/SLP, BCS-S, speech pathologist; and Melissa Hounshell, Markey's community outreach director, started the Heads Up! screening program in 2019.

Above: Dr. Joseph Valentino, Markey's medical director for the head and neck cancer program, examines patients at the 2019 Heads Up screening event.

Opposite: Volunteers work at Markey's Heads Up! screening event, a new initiative that offers free head and neck cancer screenings to the public.



Wigginton, MS, CCC/SLP, BCS-S, a speech language pathologist in the Voice & Swallow Clinic.

"In the early stages, symptoms can be very mild," said Wigginton. "If we were able to detect these cancers sooner, overall survival and quality of life for these individuals would be much better."

Organizers set a goal of seeing 20 patients during the two-hour event, and they ended up screening 29, some of whom drove from as far as two and a half hours away. Sixteen of those 29 patients needed some type of follow-up referral.

In addition to the cancer screening, attendees received education about their cancer risk factors, free blood work to check for cholesterol and blood sugar, and a check of their weight and body mass index. Free colon cancer screening kits were given out to those who qualified.

The future of Heads Up!

Another screening event was set up for October 2019, and organizers plan to continue twice-yearly screenings.

"We were pleasantly surprised," said Melissa Hounshell, community outreach director for the Markey Cancer Center. "But it also showed us the demand and the interest in a brand new screening like this."

Wigginton hopes to expand the program into rural communities in Kentucky so people don't need to travel to Lexington for screenings.

"Sometimes we tend to think people don't want to make their health a priority, when in fact they would if they could," said Hounshell. "This is one very important piece of the puzzle. It's our responsibility to do it, and this is good for Kentuckians."



Stephanie Malicote, BSN, RN, OCN, CCRP, serves as the affiliate liaison, connecting affiliates with advanced cancer services at Markey when needed.



Kris Damron and Cheri Tolle, MAEd, CHES, lead the UK Markey Cancer Center Research and Affiliate Networks, respectively. Dr. Timothy Mullett serves as the medical director of both programs.

HIGH-QUALITY CARE, CLOSE TO HOME

Affiliate network brings Markey's expertise to people across Kentucky and the region

The recipe for conquering cancer across Kentucky calls for a special, essential ingredient: collaboration.

Through its affiliate network, the UK Markey Cancer Center collaborates with community hospitals to expand access to high-quality cancer care in the Commonwealth and surrounding states.

Started in 2006, the network provides 21 affiliate hospitals with programs and services that expand local healthcare options and ensure the highest level of patient care. The affiliate network model allows people to receive high-quality cancer care close to home, while also connecting them to specialized treatment at Markey when it's needed. The network program includes:

- An affiliate liaison to help patients and caregivers visiting Markey
- Professional education and training for cancer team members
- Quality assessments and improvements
- Community outreach, including screening and prevention programs
- Marketing and public relations

- Access to specialized programs, such as telegenetic counseling

Standardized, high-quality care

As Kentucky's only National Cancer Institute-designated cancer center, Markey is dedicated to improving cancer care throughout the state, which has some of the nation's highest rates of lung and other cancers. Through the affiliate network, Markey works with network hospitals to achieve and maintain Commission on Cancer (CoC) accreditation.

"These high standards are key to delivering outstanding cancer care throughout the region and make it possible for patients to receive much of their care without leaving their home communities," says Dr. Timothy Mullett, medical director of the UK Markey Cancer Center Affiliate and Research Networks. Mullett was recently named chair-elect of the national CoC.

"We know that a lot of cancers can be treated locally with the right professionals, the right equipment, and the right standards of care," says Cheri Tolle, MAEd, CHES, administrative director of the Markey Affiliate Network. "We want to help our community hospitals maintain high-quality cancer care and keep patients at their local hospitals whenever possible."

Connecting patients with Markey

Keeping people close to home minimizes disruptions to their lives and keeps them near vital support systems. But depending on the capabilities of their community facilities and their diagnosis, they may need referrals to Markey for specialized surgeries and treatments, clinical trials, or consultations for complex or hard-to-treat cancers.

"We want to help our community hospitals maintain high-quality cancer care and keep patients at their local hospitals whenever possible."

CHERI TOLLE, MAEd, CHES

The affiliate network's Affiliate Liaison Program connects patients with Markey providers, ensuring a smooth transition from the community hospital to the academic medical center setting and encouraging follow-up care with community providers whenever possible.

Stephanie Malicote, BSN, RN, OCN, CCRP, has provided assistance for more than 600 patients from all 21 affiliate sites since the Affiliate Liaison Program began in May 2017. An oncology certified nurse with a background in research, Malicote provides a central point of contact at Markey for affiliate hospitals, serving as a conduit between

referring physicians and Markey providers. In this role, she also:

- Offers support and guidance for patients before, during and after their care at Markey
- Helps patients get the answers and information they need about their condition
- Facilitates referrals, testing, treatment and follow-up care
- Meets with patients on their first visit to Markey
- Connects patients with needed resources, such as support groups, lodging, transportation, gas cards and financial aid

Both patients and community hospitals benefit from the collaboration and relationships established through the affiliate network.

"While patients may need to come to Markey for specialized treatments or surgeries, we also want them to receive as much care at home as they can," Malicote says. "But when they are here, it's a plus for patients to have that one person here who is a go to and that can help them with any questions. UK is huge and patients usually come from smaller communities, so it's good to have that one contact that can help guide them through our system."



MARKEY BY THE NUMBERS

UK MARKEY CANCER CENTER AFFILIATE NETWORK

21 MEMBERS

- AdventHealth Manchester, Manchester
- Clark Regional Medical Center, Winchester
- Georgetown Community Hospital, Georgetown
- Hardin Memorial Hospital, Elizabethtown
- 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
- Mercy Health – Lourdes Hospital, Paducah
- Middlesboro ARH Hospital, Middlesboro
- Our Lady of Bellefonte Hospital, Ashland
- 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



UK MARKEY CANCER CENTER RESEARCH NETWORK

7 MEMBERS

- Hardin Memorial Health, Elizabethtown
- 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



MARKEY BY THE NUMBERS

MARKEY COMMUNITY OUTREACH 2019

People reached at events, presentations, and screenings across Kentucky

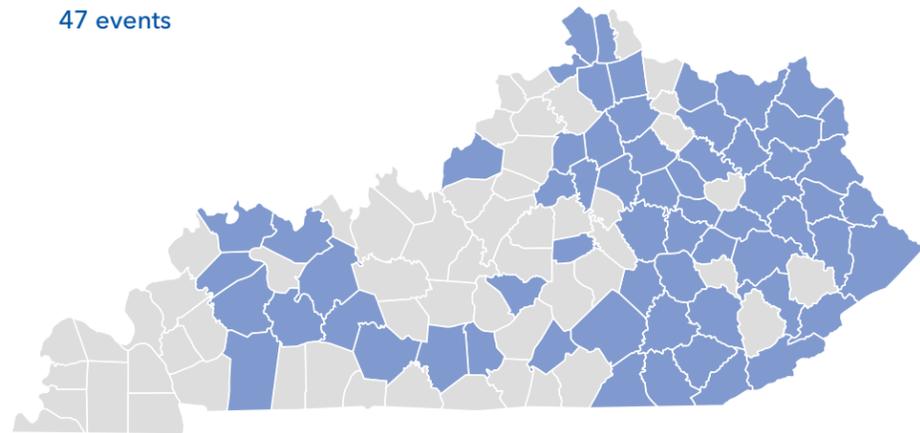
CY19	13,262 people	90 events
FY18	5,455 people	53 events
FY17	5,206 people	47 events



90
Events



13,262
People



MARKEY COMMUNITY OUTREACH AND KENTUCKY CANCERLINK FIT DISTRIBUTION 2019

A statewide community screening for colon cancer



980
Kits provided to
6 partners



64
Counties



582
Kits
Returned



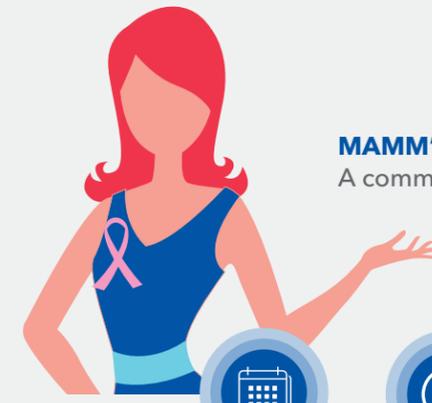
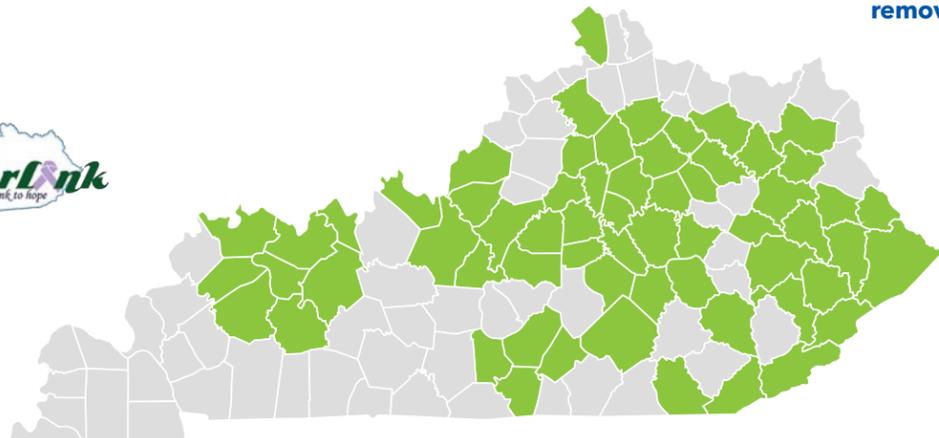
100
Positive



47
Colonoscopies



26
Patients
with polyps
removed



MAMM'S DAY OUT

A community screening for breast cancer



3
Events



85
Women
screened



14
Additional
viewed



3
Biopsies
performed



1
Diagnosed
with cancer

HEADS UP! SCREENING 2019

A community screening for head and neck cancer



2
Events



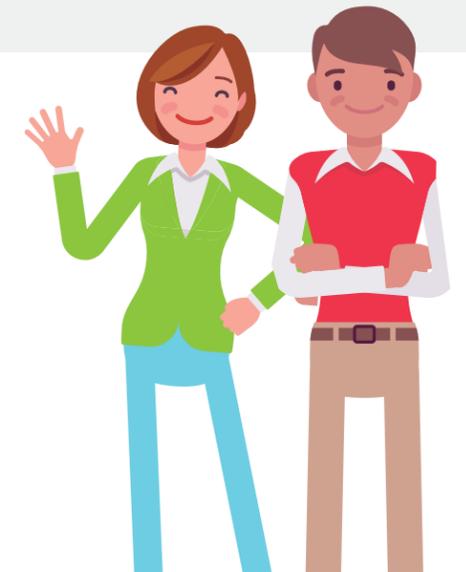
62
People Screened



34
Normal



28
Follow-up



MARKEY YOUTH HEALTH AMBASSADORS

A peer-to-peer statewide health and wellness program



3
Programs Added in 2019

Elliott County
High School

East Carter
High School

Lawrence County
High School

Johnson Central and Prestonsburg High School added in 2018

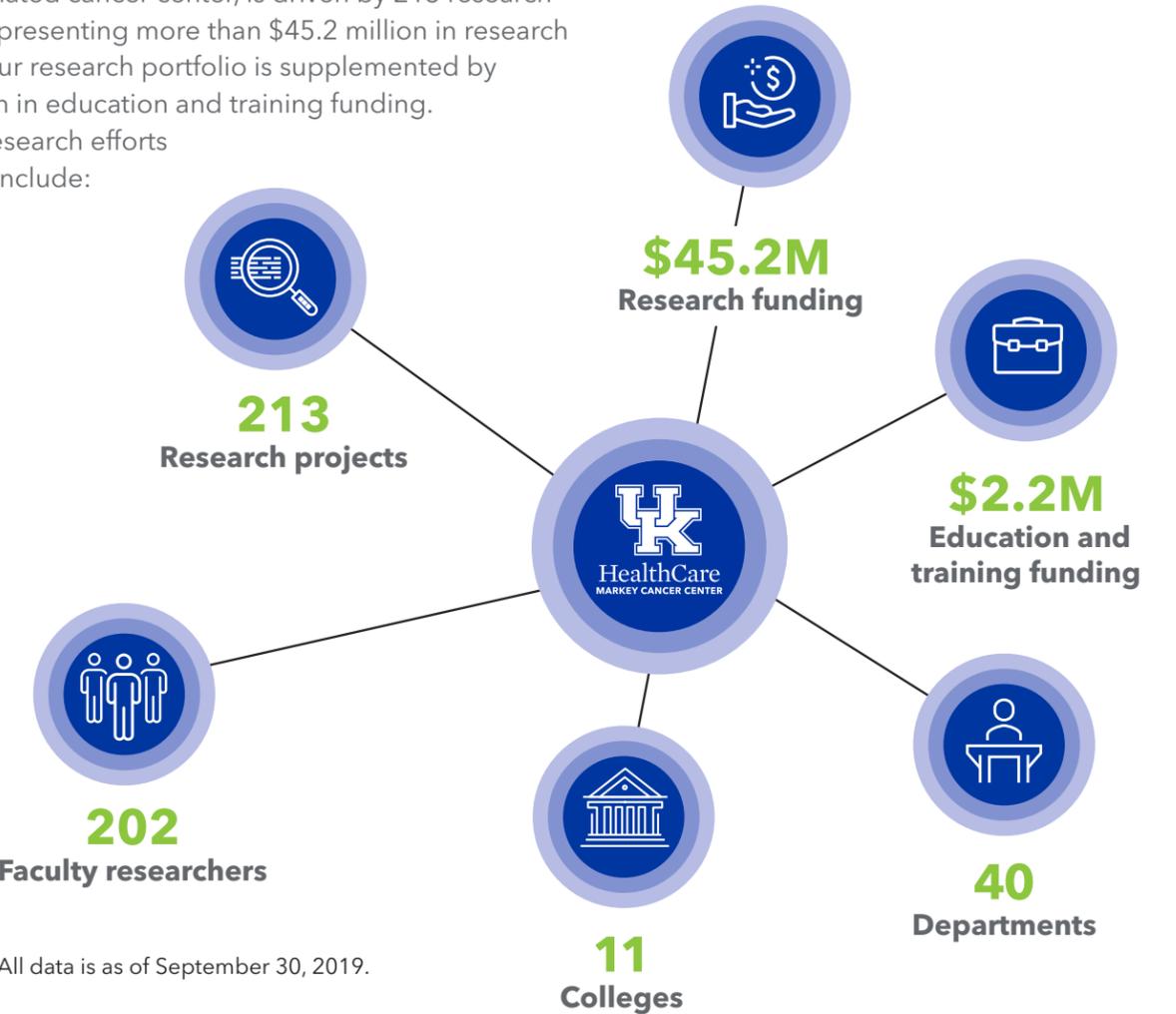
MARKEY BY THE NUMBERS

UK Markey Cancer Center Publications, July 2014 to June 2019

Faculty members in the Markey Cancer Center have produced over 1,000 publications in the last five years of NCI designation. Many of these publications represent collaborations between researchers in multiple Markey research programs and with research institutions outside of UK, around 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
Cancer Cell Biology and Signaling	236	28%	49%	57%
Genomic Instability, Epigenetics and Metabolism	220	22%	44%	65%
Drug Discovery, Delivery and Translational Therapeutics	494	23%	27%	58%
Cancer Prevention and Control	304	18%	15%	66%
Total Unique Publications	1,045	24%	17%	61%

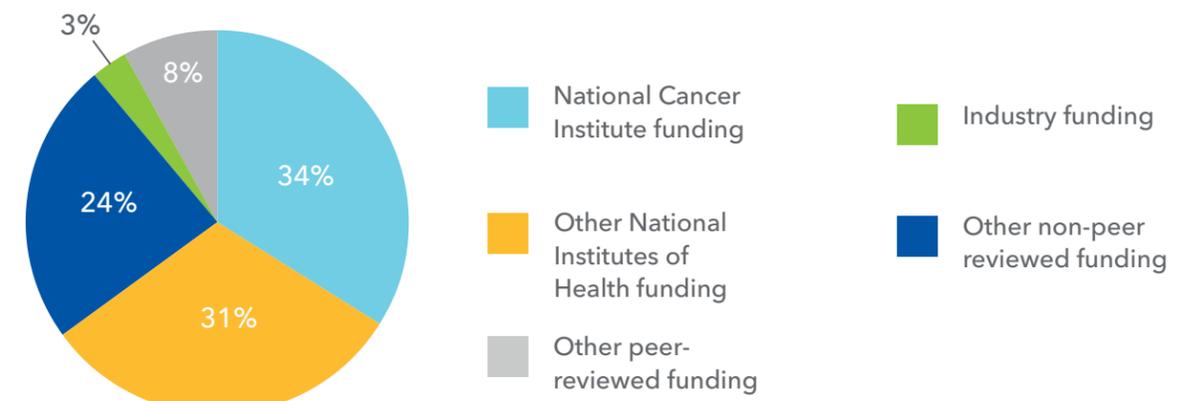
The UK Markey Cancer Center, Kentucky's only NCI-designated cancer center, is driven by 213 research projects representing more than \$45.2 million in research funding. Our research portfolio is supplemented by \$2.2 million in education and training funding. Markey's research efforts across UK include:



*All data is as of September 30, 2019.

Markey research funding summary: \$45.2 million

(Total Cost as of September 30, 2019)

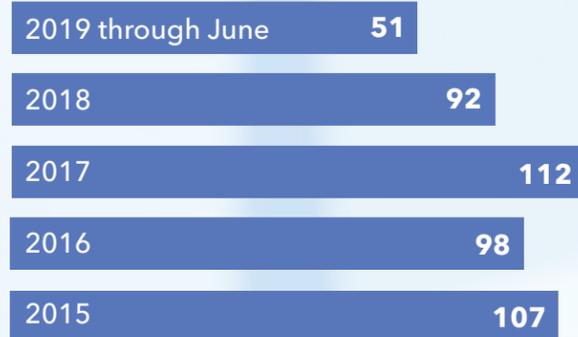


MARKEY BY THE NUMBERS

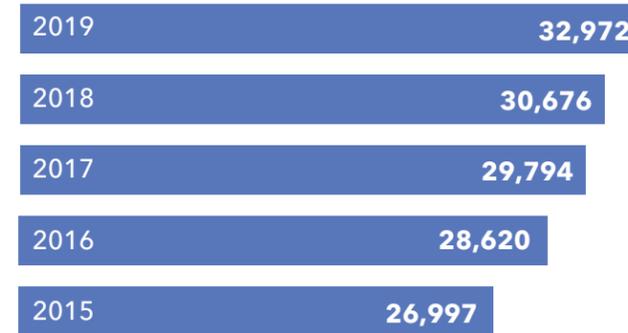
Radiation oncology treatments by fiscal year



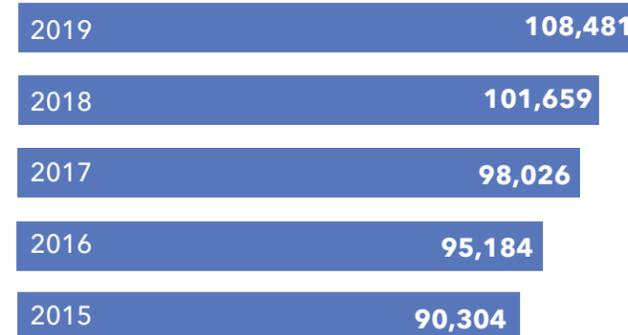
Bone and marrow transplants by calendar year



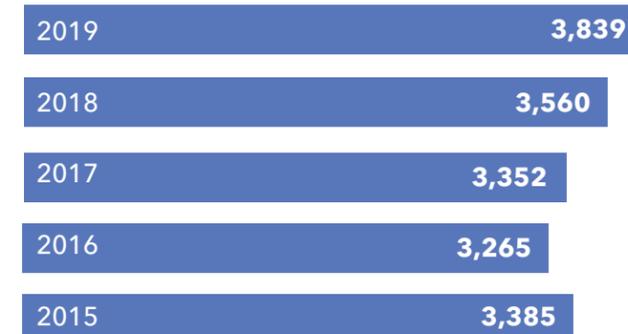
Unique patient neoplasms & hematology by fiscal year



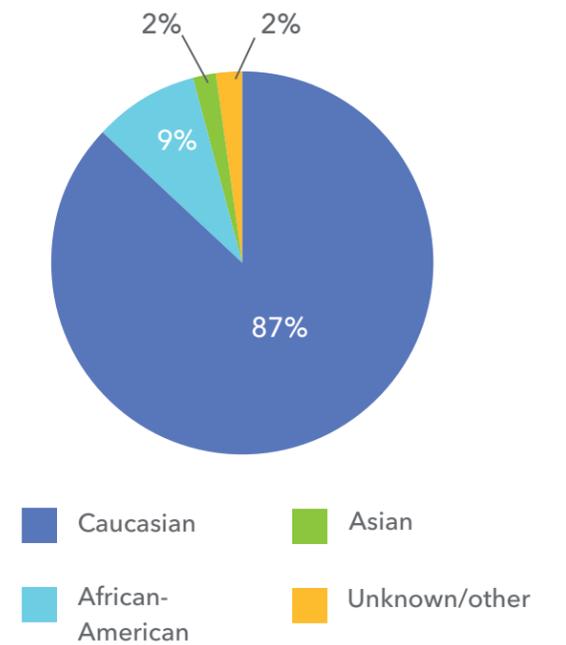
Outpatient neoplasms & hematology visits by fiscal year



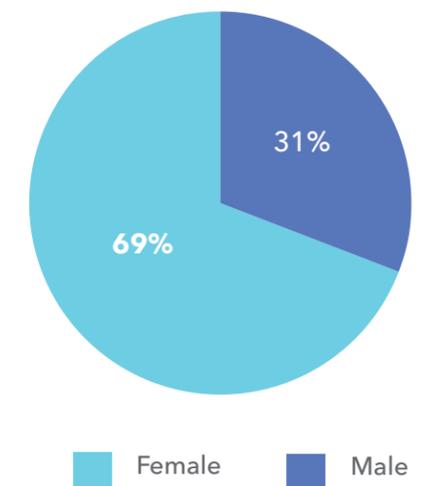
Inpatient neoplasms & hematology visits by fiscal year



Unique patients by race, fiscal year 2019

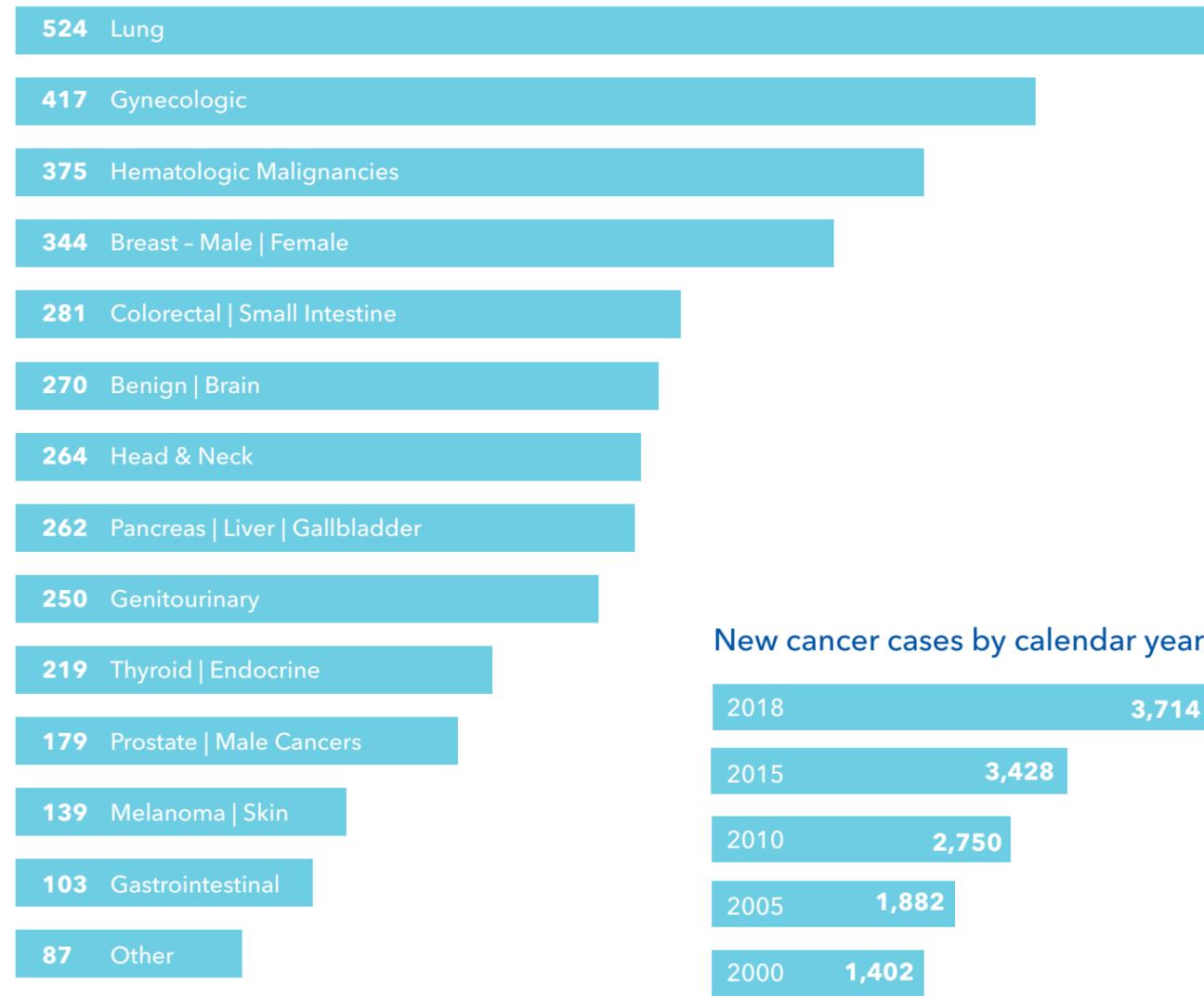


Analytic cancer cases by gender, fiscal year 2019



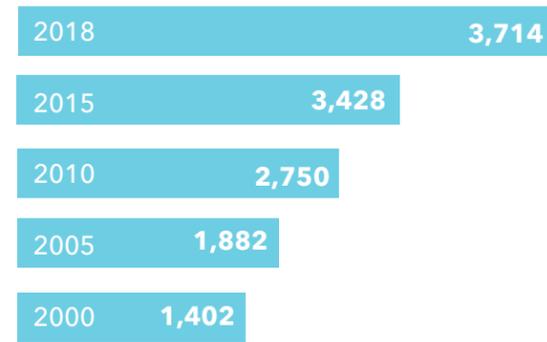
MARKEY BY THE NUMBERS

UK Markey Cancer Center cases by tumor site, calendar year 2018



TOTAL 3,714

New cancer cases by calendar year



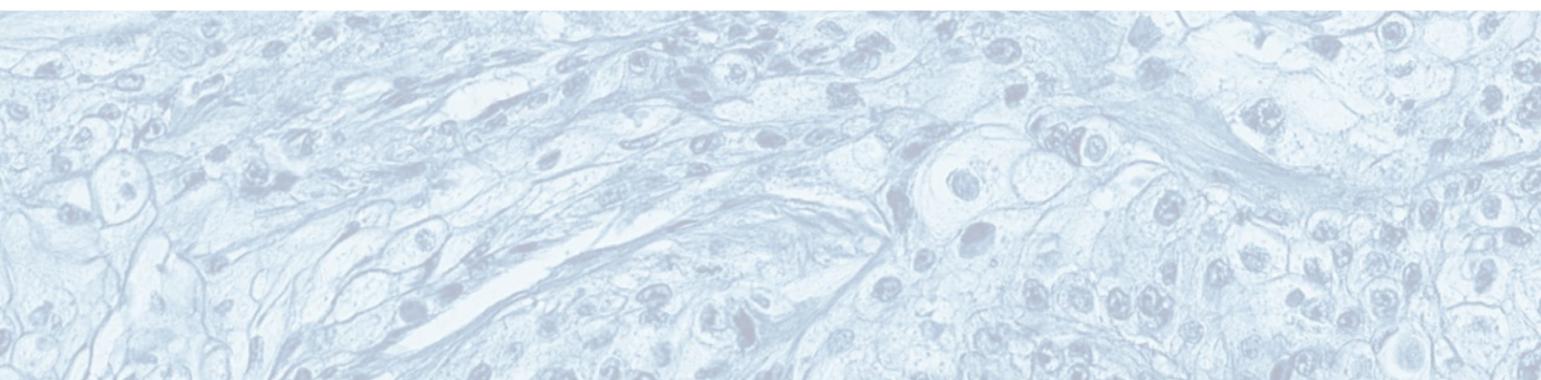
PATIENT VISITS BY KENTUCKY REGION



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

UK HealthCare Market	Kentucky Region	2015	2016	2017	2018	2019
Primary Secondary	Fayette	29,375	31,532	31,409	33,681	35,052
	Bluegrass	28,719	29,794	31,534	31,391	33,734
Tertiary	Cumberland Valley	7,707	8,339	8,133	8,597	8,695
	Lake Cumberland	4,942	4,931	5,217	5,169	6,066
	Kentucky River	4,569	4,080	4,332	4,841	4,772
	Gateway	3,537	4,000	3,750	3,570	4,071
	Big Sandy	3,293	3,114	3,613	3,577	4,183
	FIVCO	2,091	2,351	2,307	2,144	2,402
	Buffalo Trace	1,926	1,894	2,305	2,662	2,698
Other KY ADDs	KIPDA	1,235	1,539	1,608	1,751	1,779
	Lincoln Trail	1,136	1,301	1,307	1,661	1,822
	Lake Cumberland	511	737	1,266	1,137	1,280
	Northern Kentucky	1,031	1,060	1,000	985	1,111
	Barren River	256	296	336	438	352
	Green River	338	313	348	566	417
	Pennyryle	115	316	215	226	223
	Purchase	113	263	208	179	273
Unknown Out of ST	Unknown Out of State	2,795	2,589	2,490	2,644	3,400
Grand Total		93,689	98,449	101,378	105,219	112,330

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





UK MARKEY CANCER FOUNDATION BOARD OF TRUSTEES

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#33

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 and Magnet

Learn more about our ranking at [usnews.ukhealthcare.com](https://www.usnews.com).

To make a referral: 800-888-5533.

Appointments available: 866-340-4488.

CREDITS

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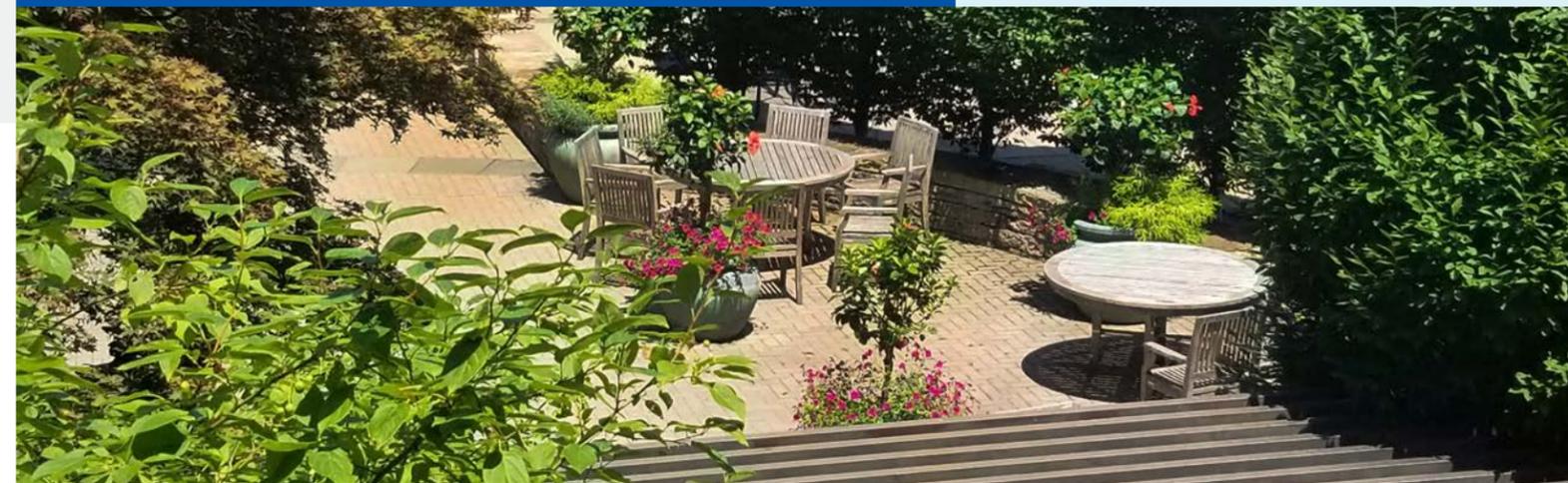
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The UK Markey Cancer Foundation has resources available to those interested in exploring their planned-giving options. Planned gifts can be directed toward research, patient care, or any of Markey's other cancer-related programs and funds.

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





"I feel like I'm back to normal – I feel like I did before I had cancer."

**JENN HIGHFIELD,
UK MARKEY CANCER CENTER PATIENT**



"Markey is where Kentucky comes to beat cancer."

**MARK EVERS, MD,
UK MARKEY CANCER CENTER DIRECTOR**

UK Markey Cancer Center Mission

To reduce cancer mortality in our region through a comprehensive program of cancer research, treatment, education and community engagement with a particular focus on the underserved population of Kentucky and Appalachia.

To make a referral: **800-888-5533**. Appointments available: **866-340-4488**.

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