CANCER AWARENESS

SPECIAL EDITION

colors

FOR A

cure

THE REPUBLIC

OCTOBER 6, 2022

ABOUT THIS SECTION

Cancer is far reaching, impacting different parts of the body in various forms. It also touches just about everyone in some way, whether firsthand or through a loved one.

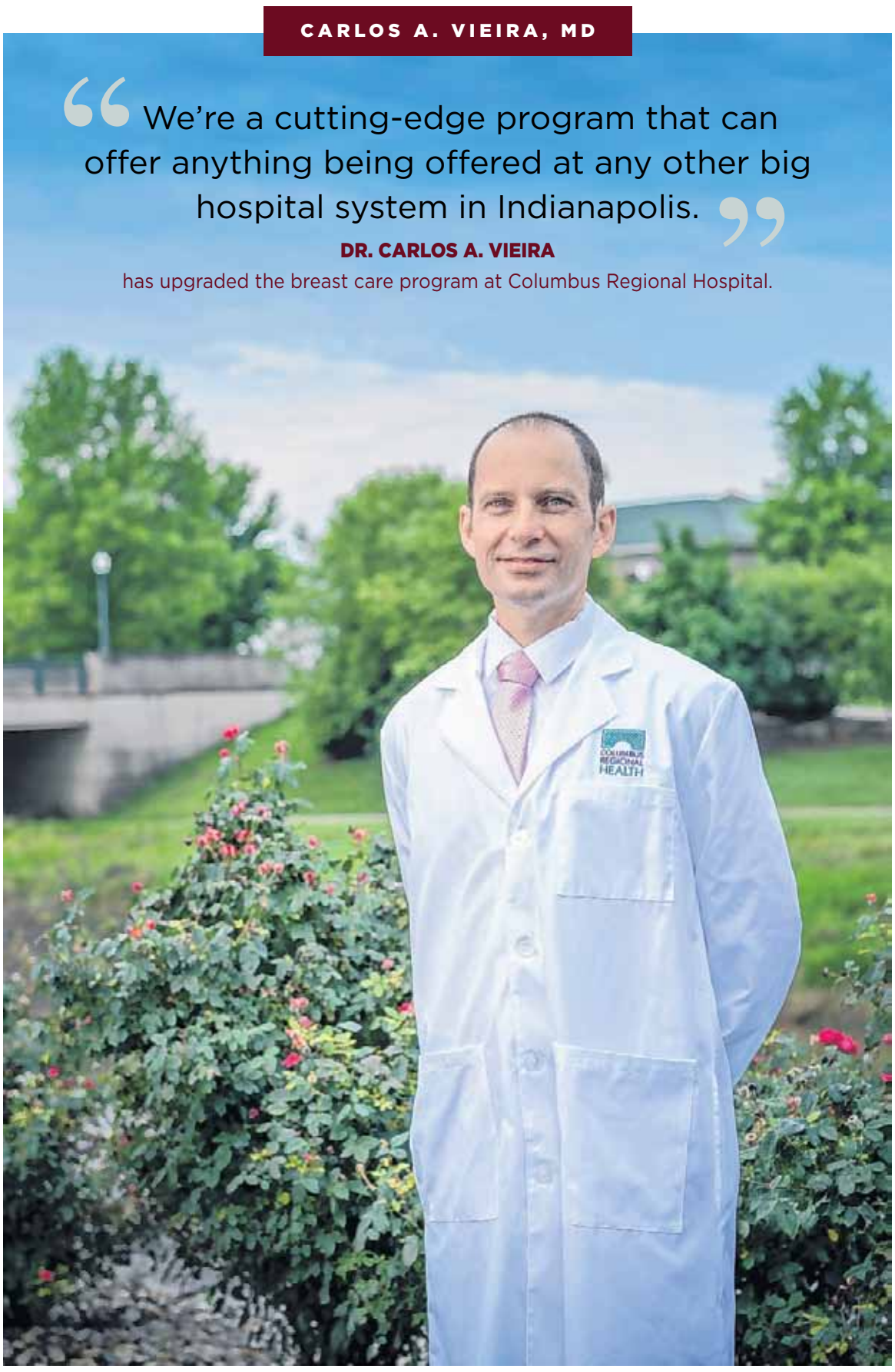
Each October, The Republic publishes an annual cancer section. We call it Colors for a Cure because certain colors are used symbolically to highlight specific types of cancer: pink for breast, orange for leukemia and light blue for prostate, for example.

This section shares the stories of people who are battling cancer or have survived it. Our hope is that this publication provides valuable information, hope and inspiration.

We hope that you will find the personal stories and other information valuable and useful personally or for others going through their own cancer journey.

INSIDE

CARLOS A. VIEIRA, MD



A NEW STANDARD of care

Local breast surgeries increase with arrival of specialist

STORY BY
TOM JEKEL
PHOTO
SUBMITTED

A transformation of breast care services at Columbus Regional Health over the past two years has resulted in new and improved care options for women in the Columbus area.

Improvements coincide with the Sept. 3, 2020, arrival of Dr. Carlos A. Vieira, a fellowship-trained breast surgeon, to lead the Columbus-based hospital system's breast care multidisciplinary team.

The CRH breast care program includes screening mammograms, breast surgery, radiation and medical oncology services and cosmetic/reconstructive surgery services with a focus on breast conservation. The services are all available on the Columbus Regional Hospital campus.

Incidence statistics demonstrate the importance of breast services, as one in every eight women born in the United States (about 12 percent) will develop breast cancer at some point in their lives, Vieira said.

When he joined Columbus Regional Health, Vieira became the first breast cancer specialist to perform surgeries on local patients. Until then, breast cancer surgeries were performed by CHR general surgeons.

Before Vieira's arrival, an estimated 70% of Columbus area breast cancer patients sought out breast surgery specialists affiliated with large Indianapolis health care systems, roughly an hour away, he said.

That trend has reversed in the past two years, with 70% of Columbus area women now receiving their breast care treatment within a 15- to 20-minute drive of their homes or businesses at Columbus Regional Health, Vieira said.

"It took a lot of work," Vieira, 50, said of reversing the patient-care trend, citing tremendous support within the Columbus community.

"We're a cutting-edge program that can offer anything being offered at any other big hospital system in Indianapolis," Vieira said.

Innovations that have been introduced by Vieira at Columbus Regional Health include:

- Use of a numbing solution when removing the breast, which reduces post-operative pain.
- Use of a special, long scalpel blade that can remove hard-to-reach tumors and allows for a better cosmetic outcome with less-visible scarring.
- Performing mastectomies

(SEE **CARE** PAGE 9)

Carlos A. Vieira, MD

AGE: 50

FAMILY: Married since 1996 to Maria; daughters Caroline, 23, and Angelina, 16.

HOMETOWN: Born in New Orleans. At age 1, family moved to Joinville, Santa Catarina, Brazil, where he grew up.

RESIDENCE: Fishers, since 1999

EDUCATION AND TRAINING: Medical degree, Universidade Federal de Parana, city of Curitiba, state of Parana, Brazil, 1990-1997; internship, Mount Sinai Medical Center of Florida, 1998-1999; residency and surgery, Indiana University School of Medicine, 1999-2004; fellowship in breast cancer surgery, Northwestern University, Chicago, 2019-2020.

CAREER: Operated private medical practice in Shelbyville, 2004-2019; surgeon for Columbus Regional Health Breast Surgery, 2020-present.

BUFFY SHELTON

local TREATMENT

Columbus breast cancer patient counts her blessings with care at CRH

When 54-year-old Buffy Shelton scheduled her annual mammogram in 2020, the Columbus native was checking off one of her annual to-do items, as she had done every year since turning 40.

Shelton had been due for her annual breast screening in February, but she delayed the test for six months until Aug. 1 of that year due to timing of the COVID-19 pandemic and the nation's public health emergency.

After her appointment, Shelton returned to work at her in-home daycare center, Little Whippersnappers, which she launched in 1994 after becoming a first-time mother with the birth of twin sons.

But Shelton was interrupted later in the day, informed over the phone that she needed to return to the Columbus Regional Health Breast Health Center for an ultrasound test – the next day, Shelton recalled.

The request came from Dr. Suzanne Hand, a diagnostic radiology specialist with the Breast Health Center since 2018. Hand, who conducted Shelton's mammogram, specializes in breast imaging and biopsy.

"I'm fine," Shelton remembers telling Dr. Hand, convinced they had called the wrong person by mistake, but she returned Aug. 2 just the same.

STORY BY TOM JEKEL

PHOTO BY DAVE STAFFORD

The ultrasound confirmed what the mammogram had found — a suspicious spot on her left breast.

Dr. Hand then recommended a biopsy, which she performed, and it discovered a 1.5-centimeter cancerous tumor, described as Stage 1, the earliest stage of cancer. Shelton was diagnosed with Invasive Ductal Carcinoma, the most common type of breast cancer.

Decision time

Shelton learned that she would need surgery to remove the tumor — and that a capable team of general surgeons at Columbus Regional Hospital was ready to perform the surgery. Or, if she were willing to wait about a week and a half, Shelton was told that she could meet to discuss her case with a surgeon who specializes in breast cancer cases, Dr. Carlos Vieira, who was about to join the Columbus Regional Health staff.

Buffy Shelton

AGE: 54

FAMILY: Phil Shelton, husband of 31 years, a materials business leader with Cummins; 28-year-old twins sons, Preston of Columbus and Parker of Charleston, South Carolina; and son Peyton, 22, of Spartanburg, South Carolina.

HOMETOWN: Columbus

RESIDENCE: Columbus

OCCUPATION: Owner and operator of Little Whippersnappers daycare business in Columbus since 1994.

Had her only option been to have the operation done by a CRH general surgeon, Shelton said she would have tried to find a breast cancer specialist to do the surgery in Indianapolis, where others before her had traveled.

"But I didn't want to go north," Shelton said during a video interview hosted on the CRH website. "I wanted to stay here. I have a business to run. I have a family. Traveling back and forth is not what I wanted to do," Shelton said.

So she and her husband, Phil, met with Vieira on Sept. 3, 2020, his first day as Columbus Regional Health's first surgical breast cancer specialist, to discuss having her surgery performed just seven minutes from her north side Columbus home.

They showed up with a long list of questions.

"By the time he finished, we didn't have any questions left," Shelton said of Vieira, the only fellowship-trained breast surgeon in southeastern Indiana. "He had covered everything so thoroughly."

One in every 8 women (12 percent) in the United States has had or will have breast cancer, statistics indicate. In Shelton's case, Vieira recommended that she have a lumpectomy, a procedure in which the surgeon removes cancer and other abnormal breast tissue and a small amount of healthy tissue around it.

Shelton was presented options, however.

She also had the opportunity to consider a mastectomy, a surgical operation to remove one or both breasts that does not require radiation. It was also up to Shelton whether to go through her cancer treatments in Columbus or commute to Indianapolis.

Surgery scheduled

Shelton chose to stay in Columbus and have Vieira perform a lumpectomy, which is the procedure in 80 percent of his breast cancer cases. As his first Columbus patient, Shelton's surgery was scheduled for Sept. 11 at Columbus Regional Hospital. Vieira would also remove lymph nodes from under Shelton's arm.

"He called me with my test results," Shelton said of Vieira. "That's a big deal for me."

Lumpectomies also require radiation therapy, which reduces the chances of cancer returning. After the cancer was removed, Shelton did 20 rounds of radiation, Monday-Friday for four weeks, also in Columbus.

Additionally, it was recommended that Shelton go through hormonal therapy, a process that lasts five years, which she is also doing in Columbus.

Besides Vieira, her cancer team also included Dr. Mark Henderson, a radiation oncologist, and Dr. Stephanie Wagner, a medical oncologist and hematologist, both with Columbus Regional Health.

Time of celebration

After a post-surgery follow-up mammogram, Shelton was declared cancer-free. She said there's a 1 percent chance of her cancer ever returning — favorable odds that she was happy to receive.

At the conclusion of her six-month follow-up appointment with Dr. Vieira, she was asked to wait a bit before leaving — and the whole breast surgery staff came in and cheered her.

Like Vieira's other patients who had successful surgeries, Shelton was presented a pink sweatshirt that said "stronger than cancer" on the front.

"I felt like we'd just had a big party, a true celebration. I felt I'm on the other side of it now," Shelton said.

In July 2021, Vieira performed a second surgery on Shelton, a breast reconstruction.

Most hospitals require a different plastic surgeon to do the reconstruction, Shelton said. Being able to have Vieira do hers, however, "that's huge," she said.

At her one-year follow-up, Shelton brought in coffee and doughnuts for Dr. Vieira and his staff.

(SEE **LOCAL** PAGE 8)

Pictured: Breast cancer survivor Buffy Shelton of Columbus poses for a photo in the backyard playground of the in-home daycare she has operated since 1994.

COLUMBUS REGIONAL HEALTH

your partner for life

STATE-OF-THE-ART

As specialists in our field, we have long been focused on the best results possible when it comes to cancer care. Treatment at our facility rivals any you might find in a larger metropolitan area, but ours gives you the advantage of having the people who love and support you close at hand. Staying close to home can also reduce the burden for you that repeated travel can become during a trying time. In short, we're state-of-the-art and easy to get to.

CONTINUOUS CARE MODEL

We employ a continuous care model, which means that a single team, made up of doctors and healthcare personnel, works with a patient throughout the entire treatment and recovery process.

ACCREDITED BY ACOC

We are accredited by the American College of Surgeons' Commission on Cancer. Approval by the Commission on Cancer (CoC) is given only to facilities that have voluntarily committed to provide the best cancer diagnoses and treatment. (Only one in four Cancer Centers nationwide receives this recognition.)

Experts in Cancer Care

Close to Home

You do not have to travel far to receive world-class cancer care. At Columbus Regional Health's Cancer Center, we are passionate about providing our patients with the latest advancements in treatment options close to home, so patients have the support of friends and family. In most cases, our multidisciplinary approach to cancer care allows us to provide all cancer treatments in one convenient location, including surgery, systemic therapy, and radiation therapy. It's important to see your physician quickly, so we focus on offering convenient, timely appointments to meet our patients' needs. We care about our patients and their family members, and we are here to provide the emotional and physical support they need throughout their cancer journey.

It all adds up to great cancer care, right here in Columbus, Indiana.

Upcoming Event! FREE clinical breast exam.

Should you be screened?
If you are age 40 or older and answer "yes" to all of the following statements, you should register today for your FREE exam:

1) I have not had a breast exam or mammogram within the last 12 months.

2) I do not have health insurance or my insurance does not cover screenings.

3) I do not have a pre-existing breast condition, or I have not been treated for breast cancer in the past 5 years.

If you are someone with dense breast tissue or have a family history of breast cancer, we especially encourage you to consider a screening.

Registration is required and appointments are limited.
Appointments last approximately 20-30 minutes. Same-day referrals will be made for patients requiring a follow-up appointment.

For more information, scan the QR code below, or visit *crh.org/events.*

MyChart Offers Self-Scheduling for Your Annual Mammogram

The Breast Health Center at Columbus Regional Health is now offering self-scheduling for your annual mammogram. Your screening mammogram may be scheduled directly through your MyChart account.

From the main menu screen on your account, click "Schedule an appointment," and follow the instructions.

Don't have a MyChart account?
Sign up by visiting *www.crh.org/mychart.*

Learn more about our Breast Health Center at: *www.crh.org/breast*

Free Clinical Breast Exams
October 29, 2022, 8:00 a.m.-12:00 p.m.
Columbus Regional Health
Breast Surgery
2326 18th Street, Ste. 230,
Columbus, IN 47201

Call 812-376-5744 to register.

Radiation Oncologists

Kevin McMullen, MD

Mark Henderson, MD

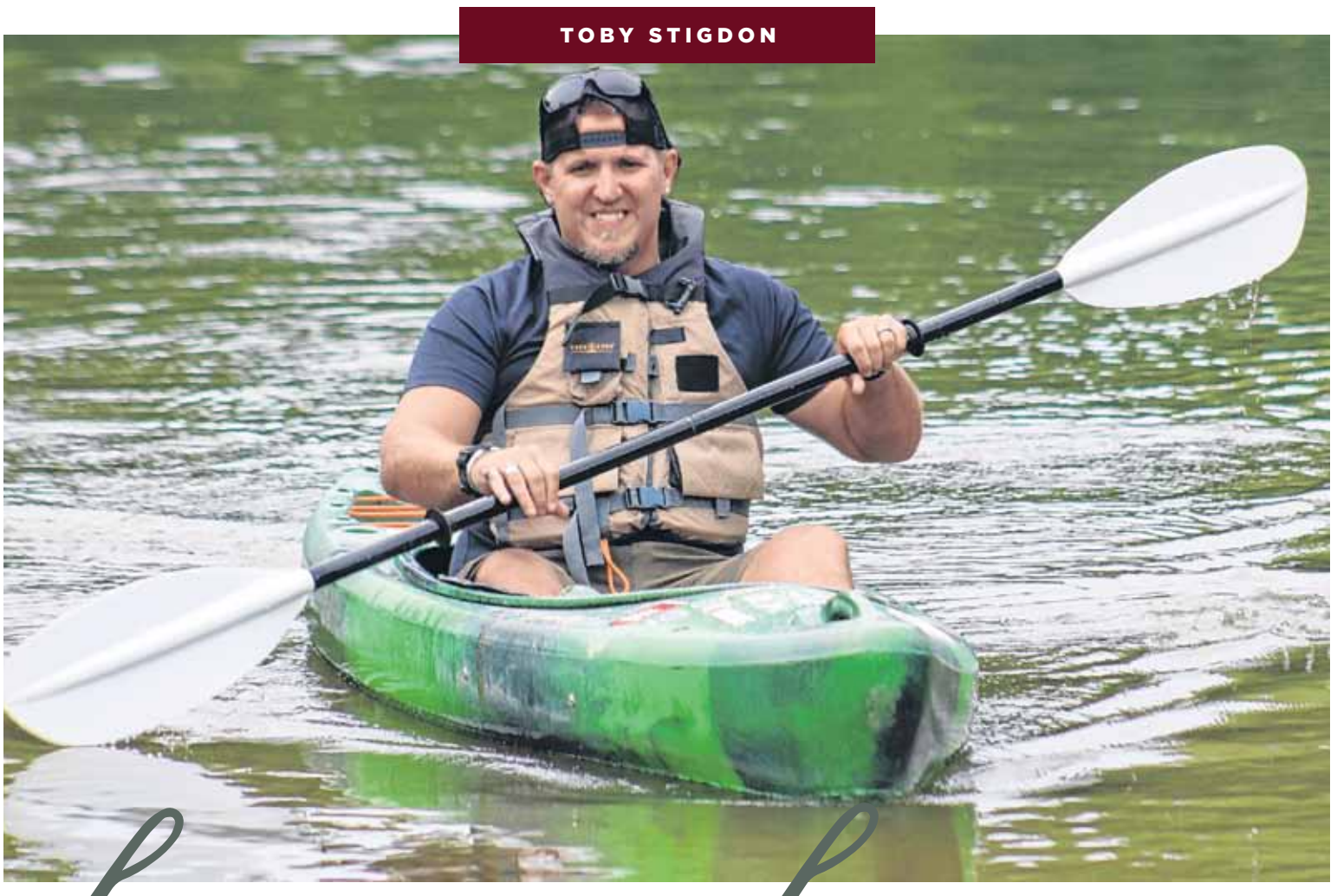
Medical Oncologists

Stephanie Wagner, MD

Nadeem Ikhlaque, MD

CRH.ORG/CANCER

TOBY STIGDON



kayaking FOR A CAUSE

Columbus man with cancer uses 66-mile river trip to raise funds for other patients

For some people, birthdays are a chance to slow down and kick back.

However, Columbus resident and Seymour native Toby Stigdon has other plans for this year's festivities — namely, paddling 66 miles across the state to raise funds for cancer patients.

Stigdon, who turns 43 on Oct. 10, has a terminal diagnosis of poorly differentiated thyroid cancer. He's using his trip — aka "Kayaking for Cancer" — as a way to raise funds for other cancer patients and their families, asking that individuals donate to the Schneck Medical Center Foundation to show their support.

STORY BY JANA WIERSEMA

PHOTO THE TRIBUNE FILE PHOTO

The trip begins tonight. Before Stigdon leaves, Upland Columbus Pump House will hold a launch party from 6-8 p.m. The public is invited to stop in and "toast Toby off on his Kayaking for Cancer adventure."

Stigdon will traverse the East Fork White River from Columbus to Sparksville, Indiana. The plan is to complete the 66.7-mile journey in about three days. Stigdon's brother, Levi, and two of his cousins will accompany him on the trip.

He's also heard from other individuals, including some cancer survivors, who want to go on the trip too. His response? The more, the merrier, even if they only want to come part of the way. If more people are along for the ride, it'll attract more attention to the cause, he said.

"God willing, if I'm here next year, we're going to do it again," said Stigdon. "Or hopefully my family will continue on the fundraising."

At first, his goal was merely to raise $6,600, with 100 donors each giving $66 to mark the length of his trip. However, he quickly surpassed the $6,600 mark and hopes to double his

(SEE **KAYAKING** PAGE 10)

If you go

WHAT: Send-off party for "Kayaking for Cancer"

WHEN: 6-8 p.m. tonight

WHERE: Upland Columbus Pump House, 148 Lindsey Street

How to give

To support Kayaking for Cancer, go to schneckmed.org/foundation/give/give-now and follow these steps:In the "My donation is for" category, select "Cancer."

Under "Online Form Tribute Type", select "In Honor of."

For "Online Form Tribute Name", type "Toby Stigdon."

In the comment section, type "Kayaking for Cancer."

Alternatively, checks can be mailed to Schneck Medical Center at 411 West Tipton Street, Seymour IN 47274.

QUESTION-AND-ANSWER: NADEEM IKHLAQUE

‘THERE IS OPTIMISM’

CRH oncologist discusses importance of lung cancer screenings, smoking prevention, treatment advances

STORY BY ANDY EAST

Columbus Regional Health is hoping to screen more local residents for lung cancer, one of the biggest cancer killers in Bartholomew County, which officials say is largely driven by the high smoking rate in the community.

From 2011 to 2020, 457 Bartholomew County residents died from lung cancer, accounting for nearly 30% of all cancer deaths in the community over that time period, according to the most recent figures from the Indiana Department of Health.

At the same time, about 24% of adults in Bartholomew County are smokers, compared to 21% of adults in Indiana and 16% of adults nationwide, according to a January 2020 policy brief on CRH’s tobacco awareness website.

Dr. Nadeem Ikhlaque, a medical oncologist and hematologist who specializes in lung cancer at CRH, spoke with The Republic about why Bartholomew County tends to have more lung cancer patients than the national average and the importance of getting screened. The conversation has been edited for length and clarity.

Q: How does our local lung cancer rate compare to state and national levels?

A: It is actually slightly on the higher side as compared to the national average just because, in Indiana, the prevalence of smoking is higher, and that’s why we see more lung cancer patients than the national average. And Columbus, the city itself, also has a higher prevalence of smoking. Unfortunately, that is leading us to see higher numbers of lung cancer patients.

Q: You’ve mentioned that smoking is one of the main causes of lung cancer. Are there any other common causes?

A: When I teach my students, I always tell them that the first 10 risk factors for lung cancer are smoking. The majority of the patients that we see (are smokers.) But unfortunately, we are understanding more that there is a small percentage of lifelong nonsmokers who can develop lung cancer. It is either related to some specific genes, which can potentially lead to lung cancer, or there is some type of environmental exposure, which can potentially lead to lung cancer.

Q: You’ve talked about the risk that smoking poses, what about vaping?

A: Vaping is as dangerous, if not more so, than smoking. I know this is the new fashion, but it truly has turned out to be as dangerous as smoking, and in some studies, actually even more toxic to the lungs.

Q: Why get screened for lung cancer?

A: There is a much higher chance of detecting lung cancer at an early stage as compared to an advanced stage, because by the time lung cancer begins to cause symptoms, 90% of the time it is a stage 4 or stage 3 disease.

(SEE **OPTIMISM** PAGE 10)

ENGINEERING TREATMENT

Purdue scientists reverse pancreatic cancer progression in 'time machine' made of human cells

STORY BY PURDUE UNIVERSITY RESEARCH NEWS

WEST LAFAYETTE — What makes pancreatic cancer so deadly is its covert and quick spread. Now, a "time machine" built by Purdue University engineers has shown a way to reverse the course of cancer before it spreads throughout the pancreas.

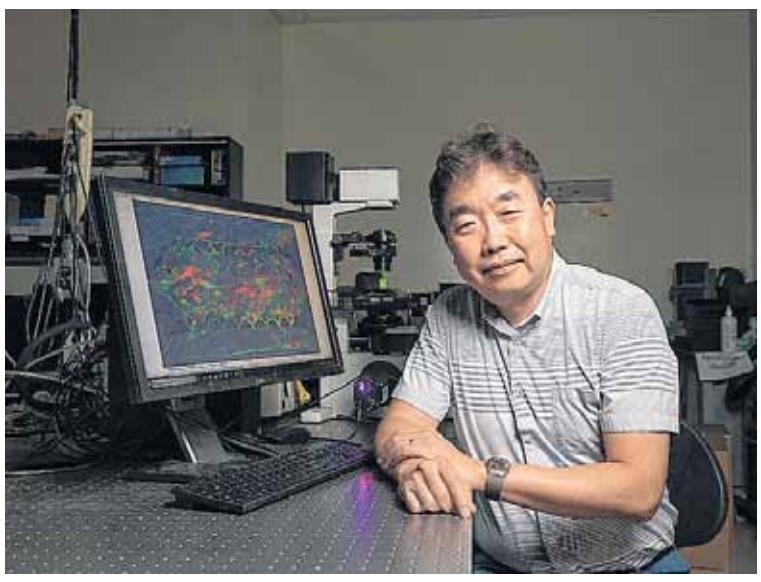
"These findings open up the possibility of designing a new gene therapy or drug because now we can convert cancerous cells back into their normal state," said Bumsoo Han, a Purdue professor of mechanical engineering and program leader of the Purdue Center for Cancer Research. Han has a courtesy appointment in biomedical engineering.

The time machine that Han's lab built is a lifelike reproduction of a pancreatic structure called the acinus, which produces and secretes digestive enzymes into the small intestine. Pancreatic cancer tends to develop from chronic inflammation that happens when a mutation has caused these digestive enzymes to digest the pancreas itself.

If there were a way to go back in time to reprogram the cancerous acinar cells that produce those enzymes, then it might be possible to completely reset the pancreas.

For the past decade, Stephen Konieczny, professor emeritus in Purdue's Department of Biological Sciences, has studied a potential reset button: a gene called PTF1a.

"The PTF1a gene is absolutely critical for normal pancreas development. If you lack the PTF1a gene, you don't develop a pancreas," Konieczny said. "So, our whole idea was, if we turn the PTF1a gene back on in a pancreatic cancer cell, what happens? Will we revert the cancer phenotype? Indeed, that's exactly what happens."



SUBMITTED PHOTO

Bumsoo Han, Purdue University professor of mechanical engineering, has built a realistic model of a pancreatic structure that acts as a 'time machine' to understand cancer and reverse its spread.

Konieczny collaborated with Han's lab to take these findings in molecular biology studies to the next level by testing them in a realistic model of the acinus – the time machine. The published study is featured on the cover of the Oct. 7 issue of Lab on a Chip, a journal by the Royal Society of Chemistry.

Researchers typically investigate possible pancreatic cancer treatment approaches in animal models, but it can take months for pancreatic cancer to develop in an animal. Having a way to study cancer development and treatment concepts in a microenvironment that is just as realistic would save time and give researchers more control over the model.

The model that Purdue researchers developed overcomes a major challenge in accurately capturing the anatomical complexity of the acinus, a circular cavity lined with cells.

"From an engineering perspective, creating this kind of three-dimensional cavity is not trivial. So, figuring out a way to build this cavity is an innovation in itself," Han said.

Han's lab already had experience building a realistic model of another pancreatic structure, the duct, where cancer grows after emerging from the acinus. The researchers took this knowledge and developed a new technique that builds both the duct and acinus in a two-step "viscous fingering" process.

Here's how it works: The model, a postage stamp-size glass platform on top of a microscope slide, has two interconnected chambers. Loading a collagen solution into one chamber fills the finger-like shape of a pancreatic duct, which bulges and then expands to create the cavity structure of the acinus in the second chamber.

Dropping cancerous human cells into the acinar chamber made the model even more realistic. Konieczny's lab engineered the PTF1a gene of a pancreatic cancer cell line to turn on in the presence of doxycycline, a compound commonly used in antibiotics. Once the gene was activated, the cells started constructing the rest of the acinus in Han's model, indicating that they were no longer cancerous and had been reprogrammed.

"In this model, not only do the cancerous cells become reprogrammed, but for the first time, we're able to show the normal three-dimensional architecture of the acinus, which looks very similar to the same structures we see in a healthy pancreas," Konieczny said.

Han's lab is currently conducting experiments exploring a possible gene therapy based on these findings.

This study was partially supported by grants from the National Institutes of Health, the Walther Embedding Program in Physical Sciences in Oncology, and the Purdue Center for Cancer Research, which is one of only seven National Cancer Institute Basic Laboratory Cancer Centers in the nation.

LOCAL

CONTINUED FROM PAGE 3

"Dr. Vieira's staff is tremendous. They all know you by name," she said.

After her experience with Vieira and the staff of Columbus Regional Health Breast Surgery, Shelton said, "You will not get any better care anywhere else."

She has since recommended that five friends diagnosed with breast cancer also work with Vieira. "All have had great success," she said, with one of the women still undergoing treatment.

Despite the occasional celebratory atmosphere, recovery from breast cancer is not a piece of cake.

Shelton said the hormonal therapy can cause occasional, difficult side effects of feeling sick.

"It can be very bad for some people," she said, causing them to quit the treatment early.

Nevertheless, Shelton vows to keep forging ahead with hers.

Although she had plenty on her personal plate to restore her health, Shelton said she couldn't help but think about the 10 students she cares for, newborn to age 5, when confronting her cancer.

At the time of her surgery, the new school year was just starting and Shelton said she worried about impacting the parents who count on her to supervise their children so they can go to their own jobs.

Regarding her own frame of mind, "I needed everything to be normal, the same routine day-in and day-out," she said.

By having the surgery in Columbus, she was able to miss just one day of work – her day of surgery. On that day, Julie Fox, who has been Shelton's daycare assistant for 18 years, ran the daycare for her.

And during the four weeks of radiation therapy, Shelton was away from the daycare for just an hour each day – coinciding with naptime, which Fox also oversaw.

While convenience played a part in her decision to seek her cancer treatment in Columbus, she quickly developed absolute confidence in her care team, ultimately resulting in "a great deal of gratitude" she felt toward them.

"It was absolutely amazing to do everything here. It was the right decision," Shelton said. "However, I didn't make that decision until I met Carlos Vieira."

Shelton felt breast cancer was not something she wanted to go through in life, but she was glad that she went through it with him.

"It could have not turned out better. I feel very blessed," Shelton said.

Breast cancer screening recommendations

The American College of Radiology recommends mammogram screening annually starting at age 40. However, women with a history of breast cancer in the family should have a risk assessment — which predicts the likelihood of developing breast cancer — performed at age 25. Results will help determine whether the patient should begin having mammograms before age 40.

CARE

CONTINUED FROM PAGE 2

without putting a patient under general anesthesia. Instead, nerves that go to a woman's chest area are blocked. Afterward, the patient is sedated — like someone undergoing a colonoscopy — without pain and patient awareness.

This alternative mastectomy approach is a benefit to patients who are extremely sick and is a safer procedure for healthier patients, Vieira said. This approach can also be used for minor breast surgeries on patients who easily develop nausea or have difficulty waking up after surgery, he said.

While three-dimensional digital mammography has been available locally for several years, an even newer screening technology was brought in after Vieira arrived — breast magnetic resonance imaging (MRI) equipment.

The MRI diagnostic test has a much higher sensitivity, able to better detect lesions on the breast that might be missed during a routine mammogram, Vieira said.

It is used for high-risk patients — those with a 20% or higher risk to develop breast cancer, and in select cases for patients classified as having dense breasts, which make it more difficult to spot small legions.

Special training

Vieira holds a distinction that none of his peers in southeastern Indiana have as the only fellowship-trained breast surgeon in the region.

After practicing general surgery and breast surgery in Shelbyville for 15 years, Vieira completed his one-year fellowship training at the McGaw Medical Center of Northwestern University in Chicago on July 31, 2020.

He is a fellow of the American College of Surgeons, a scientific and educational association of surgeons founded in 1913 to improve the quality of care for the surgical patient by setting high standards for surgical education and practice. Completion of the program means that the surgeon's education and training, professional qualifications, surgical competence and ethical conduct have passed a rigorous evaluation.

The doctor feels that his fellowship experience gives him — and his patients — an advantage.

"You have seen thousands of patients with breast cancer," Vieira said. "You're dedicated 100% to that course. You are attuned to all of the advances and techniques."

Treatment options

Five different treatment options are considered for breast cancer patients: Surgery, chemotherapy, hormonal therapy, biological therapy and radiation therapy — all available through Columbus Regional Health.

"Every single breast cancer is different. Some people will require only surgery. Some will require the gamut," Vieira said.

Surgery is the definitive treatment for breast cancer, done 99.9 percent of the time, he said. The only patients who are excluded from surgery are those who are ruled out as a candidate for medical reasons.

While an important part, surgery is far from the only piece of the treatment puzzle.

Vieira works closely with CRH certified mammography and ultrasound technologists, nurse navigators, board-certified radiologists, and medical and radiation oncologists to provide local comprehensive breast care services.

Most breast cancer cases require a combination of surgery, radiation and hormonal therapy to be successful, Vieira said.

A lumpectomy, in which the surgeon removes cancer and other abnormal tissue and a small amount of healthy tissue around it, makes up 80% of Vieira's breast cancer cases and requires radiation therapy, which reduces the chance of cancer returning.

A mastectomy, a surgical operation to remove one or both breasts, does not require radiation, he said.

Second-generation doctor

Vieira did not have to look far for inspiration when considering a career in medicine. His father, Brazilian-born Jose Vieira, has served as a medical doctor in his home country for nearly 50 years — and still practices to this day.

The senior Vieira, a kidney specialist, grew his private practice by treating patients as family, and the younger Vieira strives to do the same.

For example, Carlos Vieira in August attended the 60th wedding anniversary of one of his patients. From his youth, Vieira has memories of accompanying his father on weekend social visits to the homes of his Brazilian patients to share a meal.

"That's from my upbringing, seeing how my dad took care of his patients," Vieira said.

Born in New Orleans, where his father was training to become a medical doctor, Vieira grew up starting at age 1 in Brazil, where he attended medical school from 1990 to 1997.

"I liked to study – read, learn how to make diagnoses. I began to think, how can I impact people in a very fundamental way that will bring me purpose?" said Vieira, explaining his decision to pursue a career as a surgeon.

Besides the surgical act, Vieira learned how to interact with patients, demonstrating empathy in their care leading up to and after surgery. It helped that he became multilingual, influenced by his mother, Sonia Vieira, a retired teacher who gave private lessons in English, the second most prevalent language in Brazil after Portuguese. He also speaks Spanish, which he uses almost daily while conversing with patients within the diverse Bartholomew County population.

While serving as a general surgeon, Vieira realized that helping breast cancer patients brought him particular satisfaction.

"Being able to cure breast cancer is very rewarding – emotionally to the patient and also to the provider," he said.

This fall, Vieira got involved in two grassroots programs organized by Columbus North High School students for their senior projects.

"Serving for a Cure" was presented Sept. 15 during a Columbus North-Jennings County High School volleyball game. Volleyball player Logan Branstetter's project was two-fold — to raise money for a breast cancer patient while also finding out how many local women are regularly getting mammograms.

A project by Rylie Boezeman will provide free breast exams from 8 a.m. until noon Oct. 29 at the CRH Breast Surgery department in the medical building at 2326 18th St., Suite 230 in Columbus, sponsored by Columbus Regional Health.

"I am excited to be here," Vieira said. "The community has been very supportive. With a lot of joy and hard work, we have been able to make the breast services at Columbus Regional Hospital better every day."

CRH breast care services

Columbus Regional Health breast care services are available on the main campus of Columbus Regional Hospital.

- Breast cancer screening and diagnostic mammography are offered in the Breast Health Center, Suite 110 of the CRH medical office building at 2326 18th St. Phone: 812-669-1607 to schedule a mammogram.
- The Columbus Regional Health Breast Surgery offices are located in Suite 230 of the same 18th Street building, where referrals and follow-up patient office visits take place. Phone: 812-376-5711.
- Breast cancer surgery is performed inside the hospital at 2400 17th St. Radiation and chemotherapy treatment are performed in the Cancer Center of the main hospital.

SOURCE: Columbus Regional Health

Types of breast cancer

Breast cancers are considered either invasive or noninvasive.

The only type of noninvasive carcinoma is ductal carcinoma in situ (DCIS), which is the presence of abnormal cells inside a milk duct in the breast.

There are two types of invasive breast carcinoma: invasive ductal carcinoma (IDC), when abnormal cells growing in the lining of the milk ducts change and invade breast tissue beyond the walls of the duct; and invasive lobular carcinoma (ILC), when abnormal cells form in the breast and spread to other parts of breast tissue.

SOURCE: Dr. Carlos Vieira, Columbus Regional Health breast surgeon

KAYAKING

CONTINUED FROM PAGE 6

original goal for a total of $13,200. As of Sept. 8, he had raised $12,000.

"I don't want momentum to slow down," he said. "I want all the caring people out there to continue to care, because, again, this fundraiser is not for me. This is for the people who will be battling in the future, and I want them to know that there's thousands of people out there that care about them."

Stigdon attributes much of the success to the support of Upland Columbus Pump House and server/bartender Jessica Franklin. When he asked if the restaurant would post fliers, she "ran with it."

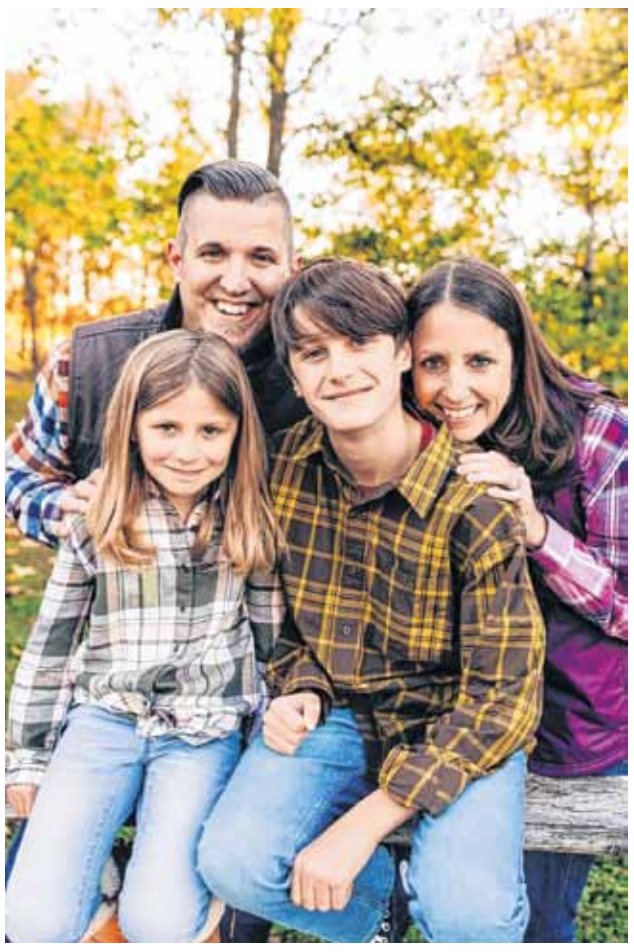
About 10 minutes after speaking to Franklin, Stigdon ran into Tony Moravec — owner of the Pump House — and his son, Ryan, who donated $200 right then and there.

"I think, when you and I first met, you had just started, right?" said Franklin. "You were a couple hundred dollars into it. And within 48 hours, we got $1,800. I think that was phenomenal. I'd love to see that every day."

Stories by the Seymour Tribune and Louisville's WDRB station have also helped spread the word.

One donation even came in from a friend of Franklin in Colorado — someone who will likely never see Schneck's cancer center in person, said Stigdon.

"Our story has reached as far south as Louisville and here through Columbus, as far west as Colorado, and as far east as my family in New York," he said.



SEYMOUR TRIBUNE PHOTO

Seymour native Toby Stigdon lives in Columbus with his wife, Samantha, and children, Chase, 13, and Olivia, 8.

He also wanted to give shout-outs to Upland, Circle K and Taylor Brothers Construction for their support.

When asked how he came up with the idea of Kayaking for Cancer, Stigdon said he's always enjoyed helping others, and his dad instilled in him a love of the outdoors. Additionally, the big trip takes place on his birthday weekend.

"What easier way to ask somebody to donate to a good cause and have fun celebrating my birthday?" said Stigdon.

He reached out to the Schneck Medical Center Foundation about the idea, and executive director Stephanie Flinn was on board. She had told him about how there were patients at the cancer center who couldn't afford the gas to make it to their appointments or couldn't find the funds to pay for their medication.

The funds that Stigdon raises will go to meeting patients' needs. He added that, depending on how much is raised, the cancer center may begin automatically giving gift cards to new patients, along with a note from Stigdon and his contact info in case they want to talk.

Stigdon was diagnosed in May 2021 with poorly differentiated thyroid cancer that metastasized to his lungs.

"I have numerous tumor nodules that are unresponsive to Chemotherapy, therefore this is a terminal diagnosis," Stigdon wrote in his Kayaking for Cancer flier.

It started with his wife noticing a large lump on his neck and saying that he needed to have his thyroid examined. Stigdon met with a few different doctors after that. At one point, he was told that he had anaplastic thyroid cancer, which is extremely aggressive. If that were the case, he would've only had a year to live.

This turned out not to be true. However, the verdict was that his condition was still terminal and that there were "enumerable tumors" in his lungs.

He told The Republic that he will undergo one more radioactive iodine treatment and then go on a pill that will shrink the blood vessels in his tumors. While he has heard about other patients that have lived three to five years on this medication, it's hard to say how long he has.

"I'm hoping with the prayers and the fight that I make 10 years to see my kids or, God willing, just be miraculously cured," said Stigdon.

He added that he's happy with however much he can get, though he does cry, sometimes, when he's alone and he thinks about leaving his family. Still, he's grateful for the people in his life — and having previously worked in long-term care, he feels he's lived "100 lifetimes" with the stories he's heard.

"When my time comes, I'll be at peace," he said.

OPTIMISM

CONTINUED FROM PAGE 7

If we pick it up at an early stage ... we can offer a curative surgery or a very specifically focused radiation therapy for those patients who cannot undergo a major surgery. ... Both of those treatments are available at CRH.

Q: To what extent have you noticed a decrease in lung cancer screenings during the COVID-19 pandemic?

A: That was a big issue. ... The pandemic did influence all the screenings and all the preventive stuff. And ... we did actually see a significant rise in the numbers of stage 4 lung cancer patients because these patients probably were not able to go through screening the last couple of years before they presented with symptoms.

Q: Where can someone get screened for lung cancer?

A: Their primary care office. And we have here at CRH a Lung Institute as well. So, they can easily either contact their primary care office, or they can just contact the Lung Institute to get your screening CTs done.

Q: Who should get screened?

A: Those who have a history of smoking or are current smokers. Those who quit smoking within the last 15 years, and those within the age group of 50 to 75.

Q: What does a lung cancer screening entail?

A: It is a CT scan without any dye or anything, so there is no risk. It's a low-radiation, low-risk CT scan.

Q: What else do you think people should know about lung cancer?

A: It is so important to have an anti-smoking campaign throughout the community, targeting the younger generation so they never start smoking. ... When someone smokes for so many years, we see that the toughest part is to quit smoking. So, targeting the school-age group to develop that awareness, kind of that hatred against smoking, and that it can potentially cause some fatal illnesses, including lung cancer. I think that is the number one message in terms of community outreach for lung cancer. And then the second message I wanted to give is for patients who are actually diagnosed with lung cancer. There is hope. There is optimism. There are multiple new treatments which are much better, more tolerable, and much more effective than what we used to see. That is what's making me excited as a lung cancer doctor, my patients can benefit, and we see the difference both in terms of quality of life and improvement in overall survival.

AREA HOSPITALS' CANCER SERVICES

COLUMBUS REGIONAL HOSPITAL

Address: 2400 E. 17th St., Columbus

Key departments: Breast Health Center, Cancer Center, Lung Institute

Phone: CRH main, 812-3794441 or 800-841-4938; Breast Health Center, 812-376-5064

Website: crh.org

Services offered:

» Medical oncology: Hematology, chemotherapy and immunotherapy

» Radiation oncology: Tomosynthesis mammography or 3-D mammography

» Chemotherapy, radiation, surgery

» Social work, clinical nutrition, rehabilitation

» Tobacco awareness, skin cancer screenings, lung screenings

» Intensity-modulated radiation therapy: IMRT is a type of conformal radiation, which shapes radiation beams to closely approximate the shape of the tumor. Local or regional control of a tumor is the ultimate goal of an overall treatment strategy, especially for a patient with cancer.

» Stereotactic body radiosurgery therapy: SBRT uses a system to precisely locate the tumor and deliver highly concentrated, highly focused radiation treatment. The custom mapping provided by the system plans the radiation to account for a patient's anatomy, breathing and organ motion. The result is that less-to-no healthy tissue is exposed to radiation, making it ideal for cancers within or surrounding vital organs. Can be used for cancers of the body and brain.

» Prone breast board radiation therapy: Radiation therapy positioning capability that allows a patient's breast tissue to fall away from the body during treatment, keeping radiation away from vital organs such as the heart and lungs and focusing it solely on the tumor within the breast.

» High dose rate (HDR) brachytherapy: Radioactive seeds or sources are placed in or near the tumor itself, giving a high radiation dose to the tumor while reducing the radiation exposure in the surrounding healthy tissues.

The term "brachy" is Greek for short distance. Is often a treatment option for many types and locations of cancers including breast, skin, prostate, lung and cervical and gynecologic tumors.

» Screening mammography: These look for early warning signs of breast cancer, performed routinely on women 40 and older.

» Digital mammography: This is like using a digital camera to take a picture instead of a camera that uses film. The image is captured by a special X-ray detector, which converts the image into a digital picture for immediate review on a computer monitor. The digital image provides a bit more contrast.

» Diagnostic mammography: Gives additional and special digital mammography views, beyond screening mammograms.

(SEE **SERVICES** PAGE 6)

MARY KOST

fighting FOR A CURE

Driven by experience, woman's cancer advocacy stretches from Commiskey to Capitol Hill

STORY BY DAVE STAFFORD

PHOTOS SUBMITTED

For Mary Kost, the fight against cancer is deeply personal, and it's one she champions from her dad's hometown of Commiskey all the way to the nation's Capitol.

"Like many people, I have had lots of family and friends touched by cancer," Kost said.

She lost her mother-in-law, Wilma Kost, to a rare form of cancer called leiomyosarcoma. But Kost said after her mother-in-law's diagnosis 25 years ago, Wilma had the opportunity to participate in a clinical trial that led to new treatments that since have become the standard of care.

Importantly, those advances in care through research and trials led to remarkable improvements in the rate of survival from leiomyosarcoma and other soft-tissue cancers. A 2015 study archived at the National Library of Medicine found that a patient with these types of cancer in 2015 generally had five-year survival rate of 62%. Back in the 1990s, when Wilma Kost was diagnosed, that same survival rate was just 28%.

Advances like that, Kost said, give her hope as a volunteer for the American Cancer Society Cancer Action Network.

"I have seen firsthand the strides we have made in fighting cancer. I know the work I do keeps these advancements moving forward. Seeing this gives me hope for better treatments and more cures," she said by email while on a lobbying trip last month to Washington, D.C.

Kost was on Capitol Hill to press Indiana senators Mike Braun and Todd Young to support bills to fund cancer research and care including the Medicare Multi-Cancer Early Detection Screening Coverage Act, HR 1946/S. 1873. If passed, that legislation supported by ACSCAN would extend Medicare coverage to cover multi-cancer screening tests, which can detect more than 50 forms of cancer in the earliest stages, when treatment is most successful.

Closer to home, Kost, a Jennings County native who now lives in New Albany, organized the third annual Jennings County Lights of Hope event to raise funds for cancer research. The event, held over this past Labor Day weekend, featured luminarias in honor of those lost to or touched by cancer. It took place at the historic James Covered Bridge, about a mile from the home of Kost's father, former farmer and Cummins Inc. retiree Robert Keller.

(SEE **FIGHTING** PAGE 8)

Pictured from top: Mary Kost and her father, Robert Keller, 87, who survived stage 4 kidney cancer diagnosed more than four years ago, stand before the James Covered Bridge near Commiskey during the Jennings County Lights of Hope event Sept. 3. // Jennings County native and American Cancer Society Cancer Action Network volunteer Mary Kost stands on Capitol Hill in Washington, D.C., in mid-September. Kost is lobbying Indiana senators Mike Braun and Todd Young to pass bills to fund earlier Medicare cancer screening and expand cancer patient access to clinical trials.

OUR HOSPICE

‘WE MEET PATIENTS WHERE THEY ARE

Our Hospice serves region with care, compassion

STORY BY
BARNEY QUICK

PHOTOS
SUBMITTED

When a person concludes that recovery from a major illness such as cancer is not in the cards, the script flips a bit. He or she switches from deferring to the expertise of specialists to being in the driver’s seat.

That’s the model Our Hospice of South Central Indiana employs in its treatment of patients. A team of caregivers representing various aspects of care takes its cue from what the patient wants.

“We meet patients where they are,” says medical director Dr. Leigh Anderson. “We want to identify the patient’s goals, find out about their hopes and worries.”

Anderson is a new face for Our Hospice, which announced her appointment as medical director in September. She received her doctor of medicine and her hospice and palliative medicine fellowship from Indiana University School of Medicine and completed her residency in internal medicine at St. Vincent Hospital.

“Our entire staff, patients and families have already been impressed by the leadership and expertise that Dr. Anderson has brought to our organization,” Our Hospice president Laura Leonard said when Anderson’s appointment was announced.

The care team for an Our Hospice patient consists of a physician, nurse practitioner, home health aide, social worker, chaplain and volunteer. Such a group is equipped to meet a patient’s medical needs, but also spiritual and emotional needs, as well as such practical considerations as bathing, grooming, convenient placement of personal effects and comfort.

The team cares for the patient in his or her home or residence facility in most circumstances. Occasionally, a patient may stay at the Our Hospice Center at 2626 17th St. in Columbus under any of three circumstances: a crisis episode at home, a caregiver needing a break, or if a family is unsure what steps to take.

Our Hospice’s service area includes 15 counties and extends to the borders of Ohio and Kentucky. In addition to the Columbus facility, it has offices in Greensburg and North Vernon.

The concept of hospice has its roots in the Crusades of the 1000s A.D. The modern hospice movement was launched by British nurse, physician, social worker and writer Dame Cicely Saunders in 1967.

Our Hospice was founded in 1980. It was part of Columbus Regional Hospital until 2004, when it became an independent organization with its own board of directors and administrative staff.

“A group of very committed individuals came together in the 1980s to begin building this,” said Leonard.

She cites physicians of the era such as Sherm Franz and Ben Ranck, as well as her own predecessor Sandy Carmichael as prominent players.

Medicare and Medicaid reimburse nonprofit institutions such as Our Hospice.

Achieving independent status allowed the organization to fundraise. Three of its biggest fundraising events each year are a Labor Day weekend concert in Mill Race Park in Columbus, a golf outing in Greensburg, and a pageant in North Vernon.

Our Hospice offers services to a patient’s loved ones as well. Its Beginning Again group meets on Tuesdays, and a children’s grief group meets twice a month. In fact, one need not have had a loved one as an Our Hospice patient to participate.

Hospice care is a subcategory of palliative care. On its own, palliative care is a relatively recent field of heath care.

Our Hospice established a palliative care service line in 2019. It is for patients who are continuing curative treatment.

“These patients are medically complex,” said Anderson. “They’re seeing a lot of specialists, each with a narrowly focused area of concern. We can synthesize all that noise.”

The palliative care team can help a patient with decisions about medical interventions. If, say, someone wants to try to live long enough to see a grandchild be born, or see a family member get married, the team can help the patient see the benefits and burdens of various courses of action that might make that possible.

Providers of palliative care such as Our Hospice face a challenge stemming from the the field’s relative newcomer status. Palliative care is only reimbursed at 14 cents on the dollar. To that end, Our Hospice is building an endowment that currently has $2 million. The program also needs $450,000 annually for operating expenses.

The challenge is acute according to Anderson, because “the needs increase as the symptoms get worse.”

Our Hospice treats patients of all ages. Children generally come from Cincinnati Children’s Hospital or the Riley or Peyton Manning hospitals in Indianapolis.

Partnerships with the medical community are important to the organization. It meets with area clinics to develop criteria for when a patient should bet referred for palliative or hospice care.

The basic premise at Our Hospice is that a patient has entered a phase of care in which quality of life has taken precedence.

As Leonard puts it, “It’s not about giving up.”

The basic premise at Our Hospice is that a patient has entered a phase of care in which quality of life has taken precedence. As president Laura Leonard puts it, “It’s not about giving up.”

Pictured: Our Hospice of South Central Indiana medical director Dr. Leigh Anderson says care is personalized for each person served. “We want to identify the patient’s goals, find out about their hopes and worries,” she says.

INTRODUCING MODERN technique

Robotic surgery yields better outcomes for prostate cancer

Dr. John Francis says robotic surgery is now commonly used to treat prostate cancer at Columbus Regional Hospital.

Robotic technology has come to the forefront of modern medical techniques to fight cancer.

Up until about three years ago, operations involving prostate cancer at Columbus Regional Hospital were done with traditional open surgery techniques. Because the surgeon was often forced to have both hands inside the body, as well as work with limited visibility, precise dissections were difficult and the patient was often left with a big incision from the naval to the pelvic bone.

However, CRH was able to address a number of those problems by hiring urologist Dr. John Francis, a Chicago native who was trained to be a physician at Rush Medical College in his hometown.

STORY BY MARK WEBBER

PHOTO SUBMITTED

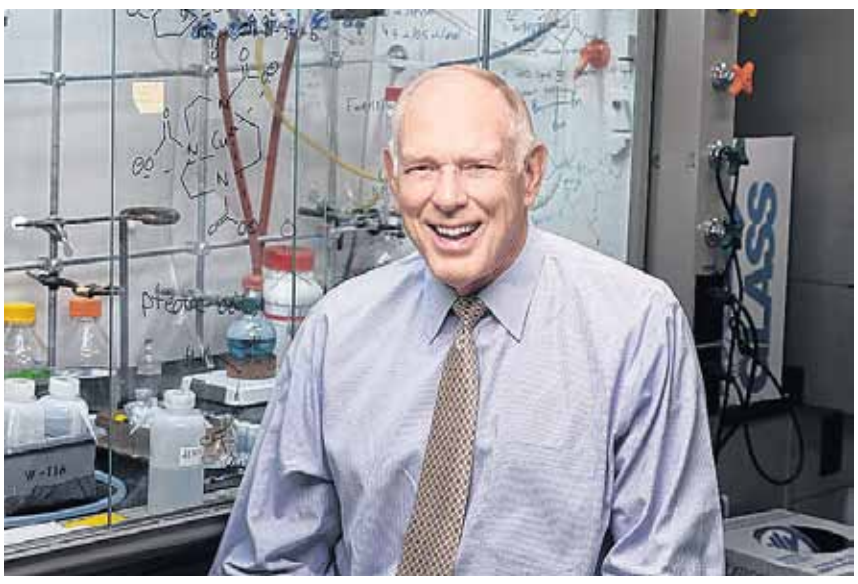
Francis said it was during his residency training at Case Western Reserve University in Cleveland that he received specialized training in robotic surgery.

After observing and later performing several robotic

(SEE **TECHNIQUE** PAGE 4)

PROGRESS AGAINST PROSTATE CANCER

Purdue research instrumental in early development of diagnosis, treatment advancements



Philip Low, Purdue University's presidential scholar for drug discovery and Ralph C. Corley distinguished professor of chemistry, contributed foundational research for new FDA-approved diagnostic and treatment for prostate cancer.

STORY BY PURDUE RESEARCH FOUNDATION NEWS
PHOTO SUBMITTED

WEST LAFAYETTE — Prostate cancer is the second-most common cancer among American men after nonmelanoma skin cancer. According to the Centers for Disease Control and Prevention, it's also among the leading causes of cancer deaths in men.

A new precision treatment that offers hope for patients with advanced prostate cancer has been granted approval by the U.S. Food and Drug Administration. In a Phase III study, it was demonstrated the treatment plus the normal standard of care had a 38% reduction in the risk of death compared with the standard of care alone.

Groundbreaking research from Philip Low, presidential scholar for drug discovery and Ralph C. Corley distinguished professor of chemistry in the Purdue University College of Science's Department of Chemistry, laid the foundation for the precision targeted therapy. After his initial research, Low disclosed it to the Purdue Research Foundation Office of Technology Commercialization.

"I just feel blessed to have had an opportunity to work on meaningful projects throughout my career and even more blessed to have had an impact on one unnecessary source of pain and morbidity," Low said. "I suspect that almost everyone knows someone who has suffered with prostate cancer, and it has been very rewarding to finally be able to impact this horrible disease."

Brooke Beier, senior vice president of commercialization at the Purdue Research Foundation, said the FDA approval of the precision targeted therapy is one of the most meaningful approvals ever for a Purdue-related innovation. Several technology transfer professionals delivered on PRF's mission by vetting, applying for protection and licensing Low's innovations.

"We are incredibly proud of Dr. Low and the overall Boilermaker contribution to the groundbreaking research and foundational intellectual property that paved the way for this precision targeted therapy, and we are elated that it has obtained FDA

(SEE **PROGRESS** PAGE 8)

TECHNIQUE

CONTINUED FROM PAGE 3

surgeries, the surgeon said he found the high-tech procedures challenging but fascinating because "you could really make an improvement on someone's quality of life."

"I brought the training I received in Cleveland to Columbus, where the urology group before us wasn't really doing many of those types of operations," Francis said.

When some folks hear about robotic surgery, they assume the patient is hooked up to a machine and the robot does all the work with minimal physician assistance, the surgeon said.

"That's a bit of a misnomer," Francis said. "It's a laparoscopic machine that I control from a console across the room. I have direct visualization into somebody's abdomen."

A laparoscopic machine means it is designed to perform minimally invasive surgery carried out through a very small incision, with special instruments and techniques including fiber optics, according to the Mayo Clinic website.

Prostate cancer screening recommendations

While the general guidelines recommend that men start PSA (prostate specific antigen) blood tests at age 55, some men should start the tests earlier.

The U.S. Preventative Services Task Force and the American Urological Association have agreed that you may need PSA blood screening between the ages of 40 and 54 if you:

- Have at least one first-degree relative (such as your father or brother) who has had prostate cancer.
- Have at least two extended family members who have had prostate cancer.
- Are African-American, an ethnicity that has a higher risk of developing more aggressive cancers.

SOURCE: The Mayo Clinic

SUBMITTED PHOTO

Dr. John Francis performs a procedure assisted by robotic surgery at Community Regional Hospital.

For men with prostate cancer, robotic surgery provides more precise dissection that will result in less pain, smaller incisions and less blood loss, the physician said. In addition, men who receive robotic surgery tend to have shorter hospital stays, better levels of urinary competence and increased sexual function compared with those who undergo a conventional operation, Francis said.

If someone is a skeptic regarding prostate cancer screening, there was once a now-outdated factual basis for the skepticism.

In 2004, conclusions from a large randomized controlled trial concluded that there was no benefit for screening for prostate cancer, Francis said. That conclusion resulted in a national recommendation that nobody should get a prostate screening with blood tests, the physician said.

But 10 years later, a flaw in the controlled trial was discovered. This was found while urologists began to see more prostate cancer cases at an advanced stage, Francis said. So widespread physician recommendations for PSA (prostate specific antigen) blood screenings are normal today.

The general guideline recommends that males start PSA blood screenings at age 55, but there are individuals who are at higher risk of developing prostate cancer than others, the urologist said.

"I've always said to guys in their late 40s to early 50s to consider a PSA blood test now," Francis said. "If it's normal, we can sit on it for two to three years until it's time to take it again. But if it's high, that might indicate an early case of prostate cancer. The earlier we detect it, the better the chances for long-term survival and better treatment options."

With the exception of melanoma (skin) lung cancer, prostate is the most common form of cancer, according to the World Cancer Research Fund. And when a medical professional tells someone they have cancer, Francis says it will likely cause fear, depression, stress, anxiety and worry.

For that reason, the physician attempts to frame discussions with a person newly diagnosed with prostate cancer in a positive way. Before the first discussion begins, he suggests that the patient bring a family member into the room.

"I first tell them that this is not a 'get your affairs in order' discussion," Francis said. "I assure them that prostate cancer is the type that is very, very manageable with good long-term outcomes. I assure them we're going to take care of them and be with them throughout the entire process. I make sure they know they are not alone in this."

The best way to encourage a positive mindset is a careful discussion of all treatment options, what the patient can expect, and — most importantly — letting the patient know that their doctor and his team are always there to support them and address any questions or concern that may arise.

While Francis does not work with colorectal diseases, he does understand why the American Cancer Society has recently started to recommend colon cancer screenings at age 45, rather than the traditional 50.

"Although it is very rare, it's my understanding that it is a disease that people can get in their 30s," Francis said.

An example cited by the physician was actor Chadwick Boseman, who died two years ago at the age of 43. The "Black Panther" star was diagnosed with stage 3 colon cancer in 2016, and battled with it for the final four years of his life.

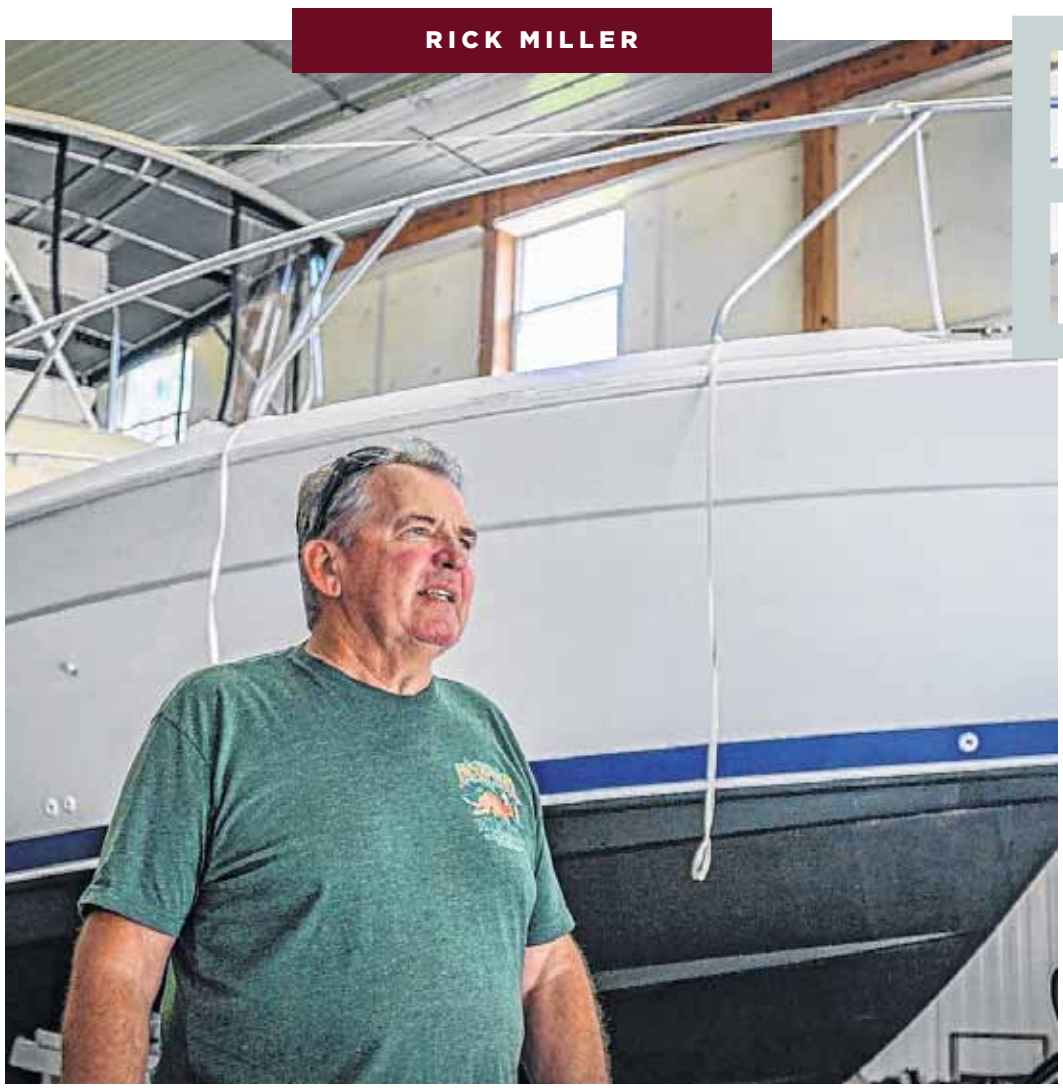
"I think his death prompted a lot of people to say that if someone as healthy and fit as Chadwick was can die of this disease, we should also take notice," Francis said.

Regular screenings every five years can find colorectal cancer when it is small, hasn't spread, and might be easier to treat, the surgeon said. Some screenings can also help find and remove pre-cancerous growths called polyps before they have a chance to turn into cancer, he added.

beating THE ODDS

Experimental treatment beats fatal brain cancer

RICK MILLER



Rick Miller stands in his boat shop near Chestertown, Maryland. Miller was diagnosed with a deadly brain tumor called a glioblastoma. He participated in a clinical trial trial three years ago that used focused ultrasound to allow chemotherapy to penetrate the blood-brain barrier.

BALTIMORE — The brain cancer diagnosis was so grim for Rick Miller that he says a social worker told him to "get my affairs in order." Glioblastomas typically kill people in about 12 to 15 months.

But that was not the end of Miller's journey. He and his wife, Diana, took a trip from their Eastern Shore home to the University of Maryland Medical Center in Baltimore to hear other options and signed up for a clinical trial.

That was three years ago.

Miller, 65, isn't just alive. There is no sign of cancer, and he's getting back to his boat maintenance business. Two months ago, he and Diana traveled to their son's wedding in Florida.

"It worked," declared a smiling Miller, standing in front of his next boat project, his own 40-footer, at his property near Chestertown.

His doctors can't say he's cured, nor guarantee the cancer won't return or even yet officially credit the treatment he received in the clinical trial for his life and health. But, they say, he and most of the 14 people who participated in the initial study are alive. After years with little progress in discovering new treatments for glioblastomas, they are in the unusual position of having hope.

Glioblastomas are the kind of brain cancer that killed US Sens. Ted Kennedy and John McCain and

STORY BY MEREDITY COHN

PHOTO BY BALTIMORE SUN

(SEE **BEATING** PAGE 9)

COLUMBUS REGIONAL HOSPITAL

FRANCISCAN HEALTH

SCHNECK MEDICAL CENTER

ST. VINCENT JENNINGS HOSPITAL

SERVICES

CONTINUED FROM PAGE 1

» Diagnostic and screening breast MRI: A supplement to mammography, magnetic resonance imaging is an advanced tool that provides more detail about a possible abnormality. Useful in determining a course of treatment. Recommended for women with a history of breast cancer and women with strong lifetime risks for breast cancer and some women with dense breast tissue.

» Breast MRI guided biopsy: For areas to be biopsied that are not seen well by mammogram or ultrasound. Biopsy performed with magnetic resonance imaging guidance.

» Diagnostic breast ultrasound: Sound waves used to detect solid or cystic lesions in the breast.

» Ultrasound guided core needle biopsy: Small pieces of breast tissue removed under ultrasound guidance and examined for cancer cells.

» Handheld vacuum-assisted ultrasound guided breast biopsy: This procedure allows the physician to use a handheld, vacuum-assisted needle to remove breast tissue under ultrasound guidance.

» Stereotactic guided breast biopsy: Tiny pieces of breast tissue removed with computer guidance and examined for cancer cells.

» Genetic high-risk education and testing: Women who report high risk for breast cancer based on family or personal history can obtain a printout of lifetime risk and also get information and genetic testing. Can help a woman and her health care provider determine her chances of getting breast cancer in her lifetime.

» Breast Health Navigator Program: A navigator nurse serves as a resource and familiar face while assisting a patient through treatment and recovery, so the patient can focus on health and recovery.

» Mammography assistance program: For people who need a mammogram but can't afford one. Those who qualify can get a mammogram for $5. To qualify, participants must be at least 40 years old; have not had a mammogram in the prior year; cannot be pregnant or breastfeeding; have no history of breast cancer or breast problems; be referred by a doctor; have a household income at or below 200 percent of poverty level; and live in Bartholomew, Brown, Decatur, Jackson, Jennings, Johnson or Shelby counties. Call the Breast Health Center to apply.

» Cancer support services: Depending upon health history, same-day biopsy may be offered on the day that a problem is detected and 24-hour pathology result are nearly always available, rehabilitation services including physical and occupational therapy, nutrition and wellness guidance.

FRANCISCAN HEALTH

Address: 123 Second St., Columbus

Key departments: Oncology, hematology

Phone: 317-859-5252

Website: franciscanhealth. org/ healthcare-facilities/ franciscan-physician-network-oncologyhematology-specialists-columbus-1626

Services offered:

» Oncology

» Cancer genetic testing

» Outpatient laboratory testing

» Hematology

» Chemotherapy

» Infusion

» Clinical trials

ASCENSION ST. VINCENT JENNINGS HOSPITAL

Address: 301 Henry St., North Vernon

Key department: Imaging services

Phone: 812-352-4200

Website: stvincent.org/locations/ hospitals/jennings

Services offered:

» Clinical breast exams are offered by providers through the St. Vincent Medical Group-Jennings, located on the second floor of the hospital. Call 352-4300 to set up an appointment with a provider.

» Screening mammography

» Diagnostic mammography

» Breast ultrasound

» Ultrasound guided core needle biopsy

» Ultrasound guided breast cyst aspiration: Fluid removed from the cyst under ultrasound guidance and examined for cancer cells.

» Breast ductograms: Used to assist in the diagnosing of abnormal breast nipple discharge.

» Breast needle localizations: A localization wire is placed in the precise location of the breast for the surgeon to know the precise location of the nodule he is removing.

» Lung scans

» Assistance programs: For assistance with Medicaid coverage call 812-352-2410.

» $49 heart scans: Call the imaging department at 812-352-4310.

SCHNECK MEDICAL CENTER

Address: 411 W. Tipton St., Seymour

Key departments: Cancer Center and Diagnostic Imaging Women's Center, Endoscopy Center.

Phone: Main, 812-522-2349; Cancer Center, 812-522-0480; Diagnostic Imaging Women's Center, 812-523-4874.

Website: schneckmed.org

Services offered:

» Board-certified medical and radiation oncologists

» Chemotherapy, immunotherapy, radiation, surgery, hematology » 4-D Computed Tomography (CT) with respiratory gaiting: Images of the patient to determine the dose intensity pattern and the precise location to be targeted.

» Linear accelerator that performs 3-D radiation therapy, intensity modulated radiation therapy and stereotactic radiotherapy: These combine to provide pinpoint accuracy needed to treat only the affected tissue without compromising surrounding healthy tissue.

» 3-D tomography

» Dedicated women's center

» Digital mammography

» 3-D mammography

» Breast ultrasound

» Breast MRI

» Same-day biopsies

» Stereotactic breast biopsy

» Ultrasound-guided biopsy

» Self-referrals for screenings

» Flexible scheduling for mammograms

» Bronchoscopies

» Endoscopies

» Colonoscopies

» Patient navigators

» Hospice and home care

» Survivorship program

» Holistic/Palliative care includes a dietitian for nutrition needs, pastor for spiritual care, social worker for financial and social concerns, and a nurse navigator to help navigate from the time of the cancer diagnosis.

» High Risk Cancer Clinic: Includes genetic testing. Provides individualized recommendations for prevention and surveillance for those at increased risk, screening tests and education about the risk of cancer.

» Screenings: Offers prostate, lung, skin, breast and cervical screenings at various times through the year. ColoCare kits for testing the stool for blood to screen for colon cancer also offered free throughout the year.

A NEW ERA OF TESTING

Genetic tests create treatment opportunities, confusion for patients

STORY BY MICHELLE ANDREWS | KAISER HEALTH NEWS

The past decade has witnessed a rapid expansion of genetic tests, including new instruments to inform patients who have been diagnosed with breast cancer about the risk of recurrence and to guide their treatment.

But the clinical significance of many of the inherited mutations that can now be identified remains unclear, and experts are torn on when and how to deploy all the new tests available. Patients are sometimes left paying out-of-pocket for exams that are not yet the standard of care, and even the most up-to-date oncologists may be uncertain how to incorporate the flood of new information into what used to be standard treatment protocols.

A quarter-century ago, Myriad Genetics introduced the first breast cancer genetic test for BRCA mutations, two genes associated with a substantially elevated risk of getting breast cancer, opening the door to a new era in genetic testing. BRCA1 and BRCA2 mutations account for as many as half of all hereditary breast cancers, and people with a problematic mutation on one of those genes have a 45% to 72% chance of developing breast cancer during their lifetimes. They may also be at higher risk for ovarian and other cancers than people without harmful BRCA mutations.

But the clinical significance is murkier for many other genetic tests.

Testing for BRCA1 and BRCA2 genes used to cost thousands of dollars. Now, for a fraction of that, doctors can order multi-gene test panels from commercial labs that look for mutations in dozens of genes. Some direct-to-consumer companies offer screening panels for a few hundred dollars, though their reliability varies.

When Jen Carbary was diagnosed with breast cancer in 2017 at age 44, genetic testing identified a mutation in a gene called PALB2 that significantly increases the risk of developing breast cancer. Guidelines suggest that breast cancer patients with a PALB2 mutation, much like those with BRCA1 and BRCA2 mutations, consider having a mastectomy to reduce the chance of a breast cancer recurrence.

"I wish genetic testing was the standard of care," said Carbary, who owed nothing for the test because

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FIGHTING

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By simply being there, Keller, 87, had himself beaten the odds.

'Unheard of'

Four years ago, at age 83, Keller was diagnosed with stage 4 kidney cancer. Dr. Chandru Sundaram at IU Hospital in Indianapolis used robotic surgery to remove Keller's cancerous kidney, beginning what is typically a long and challenging recovery journey.

Kost said the surgery was complicated and took several hours longer than anticipated because her father's cancer had moved from his kidney into the artery connecting to his heart. But because Sundaram was using robotic surgery allowing minimal incisions and extreme precision, Keller's recovery time was reduced.

And Keller soon demonstrated he was no ordinary 83-year-old stage 4 cancer patient. "Just three days after the surgery," Kost said, "he walked three laps at IU Hospital without stopping."

Dr. Stephanie Wagner, a hematologist and medical oncologist at Columbus Regional Hospital, developed a treatment plan for Keller after his surgery and subsequent treatment for growths that had metastasized to his lungs. She explained matter-of-factly about what Keller had been up against.

"Technically, right now, he would be about four years out from having stage 4 disease, and if you look at the five-year survival rate, only 8 to 12% of patients with stage 4 renal cancer will make it" to five years post-diagnosis, Wagner said.

"Immune therapy has just changed everything completely," she said.

Wagner explained that unlike traditional chemotherapy, which works on all cells in the body in order to destroy cancer cells, immune therapy activates a person's immune system, which fights off cancer cells. Immune therapy also has far fewer side effects than chemotherapy. The most common side effect is inflammation.

One difference with immunotherapy, however, is it takes longer to work. Patients must continue monthly treatments usually over the course of several months, sometimes years, Wagner said, to sufficiently boost their immune system until cancer cells are no longer present.

Pictured from top: Hundreds of luminarias line the James Covered Bridge near Commiskey during the Lights of Hope event Sept. 3 benefitting cancer research. // Dr. Stephanie Wagner of Columbus Regional Health said 87-year-old Robert Keller's recovery from stage 4 kidney cancer came after developments in his case she called "unheard of." SUBMITTED PHOTOS

Wagner started Keller on an immune therapy treatment regimen using a drug called Opdivo. Uncharacteristically, though, Keller developed signs of a possible side effect and Wagner said the regimen had to be halted after four monthly treatments.

Keller kept coming for checkups, though, and Wagner said she was amazed at what she saw soon after his treatments stopped.

"He only had four (Opdivo) treatments, and basically all his disease is gone," Wagner said. "That's really unheard of for stage 4 disease. … The last treatment he had was over two-and-a-half years ago."

Keller still checks in with Dr. Wagner and her staff for appointments every six months, and Wagner said he's doing well. Well, even better if she's being candid.

"He's wonderful. … He's a very robust 87, and just a super nice guy and has a great head of hair," Wagner said with a laugh.

Sound advice

Back at the covered bridge near Commiskey, Keller and her daughter were among hundreds of people lighting candles Sept. 3 in honor of loved ones who have lost their lives to cancer or who have been touched by the disease.

The hundreds of flickering lights lining a picturesque covered bridge included loving, solemn and encouraging personal tributes, but together they express a common hope. Each luminaria also represents a donation of at least $10. Matched by hundreds and thousands of candles flickering at hundreds of similar events nationwide, such events express a collective desire to eradicate cancer.

"Having a local event provides an opportunity for people in our community to see and experience the impact they have on fighting cancer," Kost said. "It's a way to honor and remember our loved ones who have been touched by cancer and at the same time, ask lawmakers for their support of increased funding of cancer research."

Kost also wants lawmakers in Congress to make clinical trials available to more cancer patients regardless of their economic means or where they live. She said the DIVERSE Trials Act, HR 5030, S. 2706, would do that. It also would make more clinical trials possible, because barriers of cost and geography sometimes limit the ability to conduct trials, or those barriers may result in trials that underrepresent people in certain racial and ethnic groups, older adults, rural residents and those with limited incomes.

Everyone should have the same opportunity to benefit from potential advances in cancer treatment, she said.

"If it were not for the grace of God and cancer research, Dad would not be here today," Kost said.

"We are so thankful for the great strides and advancements in cancer research, but there is still so much more work to be done. My Dad is just one of many — way too many family members and friends — who have been touched by cancer. Having seen clearly, up close and personal, how cancer research is making a positive impact on the lives of cancer patients, I want to continue to fight for increased cancer research funding as well as programs that support cancer survivors and their caregivers."

For his part, Keller said since he's recovered, he has to watch his diet, especially limiting salt and potassium. His recovery has slowed him down some, but he said he's grateful to be alive, thanks to the care and support he received.

"It has limited me in some of the things I'd like to do," he said. "I've always had a positive attitude and I just don't worry too much about things."

Having beaten staggering odds, Keller also offered advice for anyone who receives a cancer diagnosis: Seek out opinions and follow the advice of doctors you feel most comfortable with. Keller said he has been blessed with great doctors, friends and family supporting him.

Most importantly, though, Keller said someone who finds out they have cancer should act without delay in getting treatment.

"It's easier to put out a campfire than a forest fire," he said.

PROGRESS

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approval," Beier said. "PRF aims to improve the world through Purdue technologies and its graduates; this is a perfect example of achieving that mission. We are excited about the potential of this therapy to aid patients in their fight against advanced prostate cancer.

"The Office of Technology Commercialization receives over 400 invention disclosures from researchers each year and licenses over 200 technologies annually. We continue to search for commercialization partners for these technologies and work closely with them to support their efforts to translate the technology to the market to improve the world."

Low worked on this innovation at the Purdue Institute for Drug Discovery, where he was the inaugural director. The institute assists faculty in translating their discoveries into clinical trials with the ultimate goal of FDA approval. It currently supports more than 80 drugs in its development pipeline with 18 in active human clinical trials.

Zhong-Yin Zhang, the current director of the institute, said, "I am very excited to see that the FDA has approved a second drug within the past year that was based on science developed in Philip Low's laboratory within Purdue's Institute for Drug Discovery. These approvals show the strength of drug discovery and development activity within the institute and at Purdue. The Institute for Drug Discovery is proud to support Philip's and all our affiliated faculty's work in moving their basic discoveries into life-saving medicines."

The Purdue Center for Cancer Research (PCCR) has been a National Cancer Institute-designed basic research cancer center since 1978, one of only seven in the country. Timothy L. Ratliff, the Robert Wallace Miller Director of the center, is proud of the PCCR's commitment to developing new treatments for cancers.

"The FDA approval of this drug is another success story about Purdue's strengths in cancer research. Our dedicated focus to laboratory research creates the tools that others will use to treat cancer," Ratliff said. "The foundation of these basic discoveries are researchers like Philip and their strengths in chemistry, medicinal chemistry, engineering, veterinary medicine, nutrition science, pharmacy, structural biology and biological sciences.

"I am proud that the PCCR laid the foundation for the development of this first-in-class targeted radiotherapy not only through supporting the basic science but also through performing the first-in-human clinical trial that validated its ability to deliver agents specifically to prostate cancer cells."

BEATING

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Joe Biden's son Beau. They are normally treated with surgery, chemotherapy and radiation, but the tumors almost always come back. Federal figures show about 14,000 people a year are diagnosed in the United States, but as few as 5% survive five years, according to the Glioblastoma Foundation.

The foundation cites the method used on Miller, focused ultrasound, as one of only a few avenues of promising research. Others include repurposing older drugs and earlier detection.

Miller was receiving standard care when he entered the Phase 1 trial. Such trials are intended to assess safety and show whether a process works. Surgeons on the Eastern Shore already had removed a large, late-stage tumor from the right side of Miller's brain in 2019.

At the Baltimore hospital, neurosurgeon Dr. Graeme F. Woodworth and medical staff secured Miller's head with a metal halo and screws. They put him in a magnetic resonance imaging, or MRI, machine and injected a bubbling agent into his arm. Then they used ultrasound, or high-frequency sound waves, to guide the tiny bubbles to the precise site and shape of the tumor.

Woodworth watched images from the MRI on a computer screen from a control room as the commotion from the bubbles created temporary leaks in the protective layer around the brain known as the blood-brain barrier. The barrier of cells and blood vessels normally protects the brain from toxins, but it also blocks helpful therapeutics.

The openings lasted hours, long enough for Miller to return home and follow separate instructions from his cancer doctors for taking standard chemotherapy pills.

He returned monthly for more focused ultrasound treatments.

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> **DR. MARK MISHRA**

Woodworth has not yet submitted findings in a peer-reviewed journal, but he is working with pharmaceutical leaders and seeking funding for more and bigger trials to learn more about the efficacy of the technique and get it approved by the US Food and Drug Administration for wider use. They also are working to determine whether there are more effective drugs generally or that help people with different types of glioblastomas.

"All we can say now is that we did it safely," said Woodworth, also a professor and chair of neurosurgery in Maryland's School of Medicine. "Today, it feels promising. But we need more proof."

Already doctors have refined the process of shaping the opening to the tumor site and eliminated that immobilizing metal halo, which Miller called the worst part of the trial.

Focused ultrasound is a growing area of research, with more than a dozen companies investing nearly $400 million last year to potentially deliver better treatment for multiple kinds of cancers, not all in the brain, according to the Focused Ultrasound Foundation.

Woodworth is working with an Israeli medical device company, Insightec Ltd., that developed the tools for the procedure.

Three years in, the Millers couldn't be more pleased with the results, whether they're due to the trial, really successful surgery or his general good health before his cancer diagnosis.

The absence of Miller's cancer has been confirmed in regular scans by Dr. Mark Mishra, University of Maryland School of Medicine's director of clinical research and associate director for the hospital system's cancer network. He presented the trial option to the couple.

"As soon as I mentioned it, they were both very interested and were among the first enrolled," Mishra said about Miller and his wife, who is a nurse. "He stands out because he's done so well. He's not had any recurrence, but more importantly, he's maintained his quality of life and is getting back out and doing things he used to do before his cancer diagnosis."

Mishra noted the "tough talks" they had before the treatment about the diagnosis and the rarity of long-term survival. Now, he said, "Mr. Miller's case shouldn't be a unique one, and the only way to raise that bar is through clinical trials."

He said they will happen at Maryland, other universities and the National Institutes of Health, and doctors will look at different types of drugs for new or recurrent tumors, as well as for different subtypes of glioblastomas. Because there can be different molecular features at different stages in different patients, they may be treated uniquely in the future, in a move toward personalized, or precision, medicine.

There also are other focused ultrasound trials planned unrelated to Maryland's trials, including at Johns Hopkins Medicine.

Dr. Chetan Bettegowda, a Hopkins neurosurgeon-scientist, is working on those trials. He said he and Woodworth informally share some information about the technology to advance the research and are collaborating in a separate trial in another area.

Bettegowda said news of Miller's health was "truly remarkable," and said focused ultrasound had the potential to be a "paradigm shift" in treatment for glioblastomas.

"We've long understood the brain has natural mechanisms to prevent drugs from entering, and we've tried other ways, such as with catheters or polymers or local injection into the brain after surgery," he said.

"Some have shown some effects, but unfortunately not sufficient effects to cure large numbers of people," he said. "That's where having something like this that is noninvasive and can be done repeatedly and be focused and tuned to individual tumors is quite powerful. There is a lot of enthusiasm about this."

The area where Bettegowda and Woodworth are collaborating involves improving the assessment of how well treatment is working. For now, that's limited to the occasional MRI. That's because biomarkers from tumor cells, which could offer more information, are blocked by the blood-brain barrier from entering the body's circulation, where they could be picked up in a blood test.

Focused ultrasound could provide the openings for that blood test — or liquid biopsy — showing how tumor cells are responding down to their DNA to chemotherapy, radiation or other treatment.

The possibility to offer better outcomes, Bettegowda said, is what keeps him going into the operating room and the lab.

Diana and Rick Miller are glad for the research, though they hope Rick never needs another trial.

Diana Miller, who is being treated for breast cancer, remembered how her husband passed out several times while on an earlier trip to Florida, episodes she initially thought were related to his heart. After they returned home, he texted gibberish to his wife during another episode. At that point, she rushed him to an emergency room and they learned about the advanced tumor soon after.

She's thankful to the doctors on the shore and in Baltimore and also their network of friends providing support. She specifically noted those who helped move their customers' boats to and from the water for maintenance and storage.

Rick Miller plans to continue some work, but expects to sell some stock from his shop and yard and head closer to retirement. He can't manage 12-hour days anymore at Miller's Marine, the business he built over the past couple of decades between the Chester River and the Chesapeake Bay.

His mind, however, still knows his way around a boat's engine, HVAC unit and electrical systems. He'll tap that knowledge to restore the 40-foot boat he keeps in a large shed across from his house for "when he wakes up with a little more ambition."

For now, the couple's journey continues on a 17-foot boat Rick gave Diana awhile back and taught her how to operate. They often take it out to enjoy the evening together and let their dog swim.

"It's my wife's boat," he said, "but sometimes she takes me."

TESTING

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her insurer covered the cost.

Carbary, who lives in Sterling Heights, Michigan, said the test results affirmed the decision she had already made to have a double mastectomy and provided important information for family members, including her 21-year-old daughter and 18-year-old son, who will likely be tested in their mid-20s or early 30s.

But some breast cancer experts are concerned that widespread testing may also identify genetic mutations whose impact is unclear, creating anxiety and leading to further testing and to treatment of questionable value that could raise costs for the health care system.

It can also confuse patients.

"It happens a lot, that patients find their way to us after getting confusing results elsewhere," said Dr. Mark Robson, chief of the breast medicine service at Memorial Sloan Kettering Cancer Center in New York City. Robson said the cancer center has a clinical genetics service, staffed by doctors and genetic counselors, that helps people make decisions about how to manage genetic testing results.

For people diagnosed with breast cancer, many professional groups, including the influential National Comprehensive Cancer Network, or NCCN, recommend limiting testing to certain people, including those with high-risk factors, such as a family history of breast cancer; those who are 45 or younger when they're diagnosed; and those with Ashkenazi Jewish ancestry.

But in 2019, the American Society of Breast Surgeons recommended a different approach: Offer genetic testing to all patients who are diagnosed with or have a personal history of breast cancer. The recommendation was controversial.

"The NCCN guidelines (cover) most of the women who needed testing, but we wanted to get them all," said Dr. Eric Manahan, a general surgeon in Dalton, Georgia, and a member of the surgeons group's board of directors.

Mutations on other genes that are associated with breast cancer are much less common than BRCA1 and BRCA2 mutations and generally don't increase the risk of developing breast cancer as much. The cancer-causing impact of these genes may be less clear than that of the BRCA genes, which have been tested for since the mid-1990s.

And the appropriate response to the less common mutations — whether to consider a risk-reducing mastectomy or stepped-up screening — is often unclear.

"Things get sloppier and sloppier when you look at other genes," said Dr. Steven Katz, a professor of medicine and health management and policy at the University of Michigan. "The risks tend to be lower for different cancers, and less certain and more variable. You might walk away wondering, 'Why'd I have to know that?'"

After people are diagnosed with breast cancer, genetic testing can help inform their decisions about the types of surgery to pursue — for example, a high risk of recurrence or a new breast cancer might persuade some to opt for more extensive surgery, such as a double mastectomy. Testing can also provide important information to family members about their potential cancer risk.

(This type of "germline" genetic testing, as it's called, looks at mutations in the genes that people inherit from their parents. It is different from genomic tumor tests that look at specific genes or proteins in the cancer cells and can help doctors understand the rate at which the cancer cells are dividing, for example, and the likelihood of a cancer recurrence.)

Increasingly, germline genetic testing can also help guide other treatment decisions. Some patients with metastatic breast cancer who have BRCA1 or BRCA2 mutations may be good candidates for PARP inhibitors, cancer drugs that target tumors with mutations in those genes.

But genetic testing that uncovers inherited mutations in many other genes yields less clearly actionable information, even though positive results may alarm people.

At Memorial Sloan Kettering, cancer specialists focus on "therapeutic actionability," said Robson. Will testing help someone decide whether she should get a double mastectomy or provide other important guidance? "A policy of testing everyone will identify very few additional BRCA breast mutations but will cost a lot," he said.

As a result, doctors are debating how best to deploy and incorporate new genetic knowledge. Insurers are trying to figure out which to pay for.

There is both underuse of tests that science says are relevant and overuse of tests that experts say provide information that can't be interpreted with any scientific certainty.

The result may be confusion for patients newly diagnosed with breast cancer as they confront the expense of genetic tests and sometimes little guidance on the proper treatment.

Some doctors say the first step is to make sure that the small group of people who would clearly benefit are getting the genetic tests whose meaning is clearly understood. Only 15% of breast cancer patients who met select NCCN testing guidelines for inherited cancer received genetic testing, according to a 2017 study that examined data from a national household health survey between 2005 and 2015.

"I would argue that our focus needs to be on the people who are at high risk for breast cancer that aren't even identified yet," said Dr. Tuya Pal, associate director for cancer health disparities at Vanderbilt-Ingram Cancer Center and vice chair of the NCCN guidelines panel for genetic/familial high-risk assessment of breast, ovarian, and pancreatic cancers.

Patients may fall through the cracks because no one tells them they should be tested. In one analysis, 56% of high-risk breast cancer patients who didn't get genetic testing said their doctors didn't recommend it.

Even if doctors recommend genetic testing, they may lack the expertise to determine which tests people need and how to interpret the results. That's the role of genetic counselors, but their ranks are stretched thin.

The consequences can be serious. In a study of 666 breast cancer patients who received genetic testing, half of those at average risk for inherited cancer got double mastectomies based on test results that found "variants of uncertain significance," which aren't clinically actionable. As many as half of surgeons reported managing such patients the same way as those with cancer-causing mutations.

"The bulk of our research would say that there is still room for improvement in terms of clinicians getting the understanding they need," said Dr. Allison Kurian, director of the women's clinical cancer genetics program at Stanford University and a co-author of the study.

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