MD Anderson doctors are using immunotherapy to turn T cells and other lymphocytes against blood cancers.
MISSION
The mission of The University of Texas MD Anderson Cancer Center is to eliminate cancer in Texas, the nation and the world through outstanding programs that integrate patient care, research and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees and the public.

VISION
We shall be the premier cancer center in the world, based on the excellence of our people, our research-driven patient care and our science.
We are Making Cancer History®.

CORE VALUES
Caring
By our words and actions, we create a caring environment for everyone.

Integrity
We work together to merit the trust of our colleagues and those we serve.

Discovery
We embrace creativity and seek new knowledge.

On the cover: A scanning electron micrograph shows white blood cells, which include lymphocytes such as T cells and natural killer (NK) cells. MD Anderson doctors are using a variety of immunotherapies – including treatments that employ T and NK cells to attack cancer – to fight blood cancers like chronic lymphocytic leukemia, myelodysplastic syndrome, non-Hodgkin lymphoma and acute myeloid leukemia.

credit: Steve Gschmeissner

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GRANTS ENABLE INNOVATIVE APPROACHES TO PANCREATIC CANCER TREATMENT

New initiatives to improve the treatment of pancreatic cancer have earned two early-career investigators at MD Anderson multi-year support from highly competitive national grant programs.

Florencia McAllister, M.D., assistant professor of Clinical Cancer Prevention, will receive $270,000 from the American Gastroenterological Association Research Foundation over three years to explore the impact of bacteria that live in the digestive tract on immune response in pancreatic cancer.

Cullen Taniguchi, M.D., Ph.D., assistant professor of Radiation Oncology, will receive $200,000 from the Sidney Kimmel Foundation over two years to develop ways to protect the small intestine from radiation damage that can occur from the high doses required to shrink pancreatic tumors.

"Florencia and Cullen have won this coveted support from the AGA and Kimmel foundations with the type of creative and rigorous scientific proposals that we need to improve our treatment of pancreatic cancer," says Anirban Maitra, M.B.B.S., a professor of Pathology who’s the scientific director of the Sheikh Ahmed Center for Pancreatic Cancer Research and co-leader of MD Anderson’s Pancreatic Cancer Moon Shot™.

McAllister investigates the potential of cancer immunotherapy against the disease, which has proven to be resistant to most therapies. In recent years, immune checkpoint blockade drugs have produced durable responses in some patients with a variety of cancers by unleashing an immune attack on tumors. However, pancreatic cancer has been resistant to the treatment in clinical trials.

“We’ll conduct mouse studies and a pilot study in humans looking at correlations between the composition of bacteria in the gut and both innate and adaptive immune responses and how they can promote or inhibit cancer,” McAllister says.

Gut bacteria, known collectively as the microbiome, are intimately connected to immune function, and scientists are just beginning to understand their impact on health and disease.

Doubling survival time for pancreatic cancer patients

MD Anderson’s team of oncologists, surgeons and radiation oncologists has developed protocols for treating pancreatic cancer with chemotherapy and radiation before surgery, including locally advanced and borderline operable tumors. After more than 24 years of developing the approach via controlled clinical trials, the overall median survival of patients has nearly doubled – from 24 months during the 1990s to 43.4 months from 2010-14.

“We’ve had good experience at MD Anderson using higher doses of radiation in a subset of patients, with about 20% of those patients living five years or longer,” Taniguchi says.

The higher dose works for the minority of tumors that are not located right next to the patient’s small intestine, which is particularly vulnerable to radiation damage, according to Taniguchi.

His research focuses on a drug that inhibits the EGLN enzymes, which promote tissue healing. Taniguchi points out that the EGLN enzymes are found in abundance in normal tissue but not in cancer cells, which makes it less likely that this drug would help heal tumors.

“This grant is about improving our understanding of how these drugs work in preclinical studies before we move them into clinical trials so we can be more certain they will be safe in patients,” he says.

If EGLN inhibition successfully protects the small intestine, Taniguchi and colleagues will be able to increase the radiation dose to pancreatic tumors, which may improve outcomes in certain subsets of the cancer.

– Scott Merville
Guillermina Lozano, Ph.D., chair of Genetics, is a pioneer in describing the pathway for p53, a recognized tumor suppressor gene associated with cancer. She is the first to establish p53 as a transcriptional activator of other genes. Transcription is the first step in a gene’s expression of its protein. She also showed that common p53 mutants fail to launch transcription, and discovered other proteins, Mdm2 and Mdm4, which play critical roles in inhibiting p53 activity in development and cancer.

In recognition of these advances in understanding cancer, she now is a member of the National Academy of Sciences. Lozano is one of 84 new members and 21 foreign associates recently elected for their “distinguished and continuing achievements in original research.”

“I am humbled and honored to be elected to the academy,” says Lozano. “Importantly, I am proud that it recognizes what has been, and continues to be, a group effort by my team and me, and my many collaborators at MD Anderson in our shared mission to end cancer.”

The academy is the most prestigious scientific society in the U.S., established under a congressional charter signed by Abraham Lincoln in 1863. With the National Academy of Engineering, the Institute of Medicine and the National Research Council, the NAS provides science, technology and health policy advice to the federal government and other organizations.

“This is one of the highest honors that can be bestowed upon a scientist,” says Marshall Hicks, M.D., president ad interim of MD Anderson. “Dr. Lozano’s well-deserved election to the academy speaks to her significant contributions to our understanding of p53 and her continued advances in cancer science.”

MD Anderson is currently home to six National Academy of Science members.

— Ron Gilmore

MD ANDERSON AGAIN IS NAMED THE NATION’S TOP CANCER HOSPITAL

MD Anderson Cancer Center again has been ranked No. 1 for cancer care by U.S. News & World Report’s annual “Best Hospitals” survey. Since the survey began in 1990, MD Anderson has been named one of the top two cancer hospitals, and it has ranked first 13 times in the past 16 years.

“To consistently be recognized for the quality and compassionate cancer care we provide patients who come to MD Anderson seeking our innovative approaches, world-renowned expertise and decades of experience is a true honor,” says Marshall Hicks, M.D., president ad interim.

Two MD Anderson subspecialties also received high rankings in the survey. In the Ear, Nose and Throat specialty, the institution’s Head and Neck Surgery service was No. 15, while Gynecologic Oncology and Reproductive Medicine came in No. 17 in the Gynecology category. The survey also ranked MD Anderson as “High Performing” in Diabetes & Endocrinology, Orthopedics and Urology.

MD Anderson’s commitment to patients and its mission to end cancer has driven the institution for more than 75 years and continues to fuel its efforts to improve the level of cancer care all over the world. Serving nearly 135,000 patients last year in the Texas Medical Center and throughout the Houston region, MD Anderson also extends its standard of care by collaborating with community hospitals and health systems around the world. Combined with other initiatives in prevention, research and education, MD Anderson’s outreach enables millions of local, domestic and international patients to have greater access to its expertise, experience and innovation.

“This recognition from U.S. News & World Report is a reminder that patients are at the center of all we do now and all we envision for the future,” says Stephen Hahn, M.D., deputy president and chief operating officer. “Our mission is bold, but it’s through innovative care, research, education and prevention that we will fulfill our promise to end cancer. It’s what we strive for every day.”

— Julie Penne
Researchers have found that the human papillomavirus (HPV) vaccine may reduce the rate of oral HPV infections in young adults by as much as 88%. However, given the vaccine’s low rate of uptake in the U.S. – especially in males – the impact of the vaccine on oral HPV infections remains low.

This is the first study to explore the possible impact of HPV vaccination on oral HPV infections. The findings were presented by Maura L. Gillison, M.D., Ph.D., professor of Thoracic/Head and Neck Medical Oncology, in advance of the American Society of Clinical Oncology’s 2017 Annual Meeting in June. The study was conducted while Gillison was at The Ohio State University Comprehensive Cancer Center.

Studies have shown HPV is responsible for several cancer types in men and women, including cancers in the back of the throat in an area known as the oropharynx. According to the Centers for Disease Control and Prevention, HPV is linked with approximately 70% of oropharyngeal cancers, and incidence of the disease is rising dramatically in the U.S.

Unfortunately, explains Gillison, no clinical trials have prospectively evaluated whether the existing FDA-approved HPV vaccines will prevent oral infections that lead to the disease. Therefore, the vaccine isn’t approved for the prevention of head and neck cancers. It is approved for the prevention of cervical, vulvar, vaginal and anal cancers in women and anal cancers in men.

“We don’t know if there’s a potential solution to these rising rates already existing on the shelves,” Gillison says. “In the absence of that gold standard clinical trial, we looked at data from a study that we’ve been conducting in my lab to address the question as to whether or not existing HPV vaccines could be altering oral HPV infections in the U.S. population.”

Gillison and her team analyzed data from the National Health and Nutrition Examination Survey (NHANES) – a study conducted by the National Center for Health Statistics to assess the health and wellness of the U.S. population. Since 2009, Gillison and colleagues have collaborated with NHANES to study oral HPV infections and have analyzed oral rinse samples collected by mobile health facilities.

For this current study, researchers analyzed data from 2011 to 2014 in which participants self-reported whether they had received one or more HPV vaccines. Researchers analyzed responses from 2,627 young adults ages 18-33, and compared the prevalence of an oral HPV infection in those who received one more dose of the vaccine to those who did not.

At that time, about 18.3% of young adults in the U.S. reported receiving one or more doses of the vaccine by age 26, with vaccination more common in women (29.2%) than men (6.9%). Today, those rates have risen – albeit slowly – to 63% of teen girls and 50% of teen boys.

In the cohort, the researchers evaluated the prevalence of HPV type 16, 8, 6 and 11 – the four types included in HPV vaccines before 2016. The researchers observed that the prevalence of vaccine-type infections was far less common in individuals who had been vaccinated than not vaccinated. When comparing the two groups, the infection rate in the vaccinated group was about 88% lower than in those who hadn’t been vaccinated.

– Clayton Boldt, Ph.D.

MD Anderson is working with the American Dental Association to promote prevention and early detection of oral cancers through HPV vaccinations and tobacco cessation. As part of the partnership, Mark Chambers, D.M.D., professor of Head and Neck Surgery and chief of the section of Oral Oncology and Maxillofacial Prosthodontics, hopes to share knowledge with dentists in small and remote communities through mobile technology, and establish guidelines for oral interventions in cancer patients. Read the story on Page 8.
Or maybe it was because she had watched too many residents of her small-town community in upstate New York succumb to cancer too soon – and too easily.

Whatever the reason, Shiffman, then 53, felt uneasy about her prognosis for endometrial cancer. So much so that she paid for a full-body scan out of her own pocket to see if the cancer had spread since her hysterectomy and radiation therapy. It came back clear for metastatic cancer. But Shiffman needed to be 100% sure. So she sent her scans and pathology slides to MD Anderson for answers.

In contrast, Arthur Triche had confidence in his diagnosis of kidney cancer at age 51. But the producer of a popular sports radio show in Atlanta, renowned for being the first African-American director of public relations for an NBA team, didn’t relish the thought of having his entire kidney removed, as advised by his physicians.

A decade earlier, he was successfully treated at MD Anderson for a rare urological cancer. Triche called his MD Anderson oncologist, Curtis Pettaway, M.D., professor of Urology, to get his take on the surgery.

Second opinions from MD Anderson dramatically changed both patients’ lives.

In Shiffman’s case, a second opinion detected an overlooked, suspicious mass on her adrenal gland, an area where endometrial cancer rarely spreads. It was determined to be clear cell carcinoma – an aggressive form of cancer with a high rate of recurrence. The groundbreaking surgery and targeted radiation that followed at MD Anderson saved her life.

And Triche learned he was a candidate for a surgery that removed only a part of his kidney – saving him from losing a vital organ.

**Second opinions common at MD Anderson**

Surprising second opinion stories such as these aren’t out of the ordinary at MD Anderson, where pathologists review an average of 30,000 outside pathology diagnoses, and another 40,000 initial biopsies and resections, each year.

It’s not uncommon for patients seeking a second opinion at MD Anderson to receive a significantly different diagnosis, says Lavinia Middleton, professor of Pathology.

She credits the cancer center’s sophisticated multidisciplinary approach to patient care – built around subspecialization, radiologic and clinical correlation, and extensive experience with patient outcomes – for helping recognize discrepancies.

A 2011 review of some 2,700 patient cases revealed that in 25%, discrepancies between the original pathologists’ reports and MD Anderson’s were found. And a 2015 study showed clinically significant discrepancies in diagnosis in 10% of breast cancer patients at MD Anderson.

Rarely does a diagnosis change from benign to malignant or vice versa, Middleton says, although it does happen in about 5% of cases. More common are differences in the staging of a tumor, or classifications of biomarkers – molecules that subdivide tumors into groups that have different prognoses and can be used to guide the selection of the most effective therapy.
“We need second opinions to become a normal part of the health care process. We need a second opinion revolution!”

— Antonia Shiffman, cancer survivor

“The stage and the anatomical extent of the tumor will guide surgical, radiation and medical oncologists on how to approach treatment,” Middleton says. “It can determine if that patient will undergo chemotherapy first, or surgery. About 25% of the time, a patient’s treatment plan will change based on review of the outside pathology.”

Many patients also seek second opinions from MD Anderson to see if they’re eligible for innovative new therapies that aren’t available where they live.

Patients can send their scans and test results directly to MD Anderson for a second opinion, or schedule an in-person consultation. If they decide to continue treatment at MD Anderson, they meet with a multidisciplinary team of cancer specialists to determine an individualized treatment plan.

‘I owe my life to that second opinion’

In Shiffman’s case, her treatment team recommended chemotherapy followed by an innovative surgical procedure known as retroperitoneal laparoscopic adrenalectomy to remove the tumor on her adrenal gland. German surgeon Martin Walz, M.D., an international expert in minimally invasive surgery, pioneered the technique. He trained MD Anderson surgeons Nancy Perrier, M.D., Douglas Evans, M.D., and Jeffrey Lee, M.D., on the approach.

Together, they laparoscopically removed Shiffman's adrenal gland through three tiny incisions in her back, instead of the front of the body. The operation worked well for Shiffman because it allowed the surgeons to avoid cutting through scar tissue from her hysterectomy, and shifting her still-healing organs.

Shiffman was the first MD Anderson patient to undergo the procedure, which became the standard surgical treatment for removing adrenal tumors after its 2005 debut.

“We were able to remove the tumor, and the source of disease,” says Perrier, professor of Surgical Oncology and chief of Surgical Endocrinology. “In other words, she had a quick recovery, and the operation did not affect her quality of life, which was really important to her.”

Six months after surgery, Shiffman had a cancer recurrence, but a type of targeted radiation called intensity-modulated radiation therapy (IMRT) was used to knock it out. More than a decade later, she is cancer free and appreciates her second chance at life, and the opportunity to see her six grandchildren grow up.

“I owe my life to that second opinion,” says Shiffman, now 66. “And every day when I wake up, every morning, my first utterance is gratitude. Just pure gratitude.”

Preserving kidney function was important, Pettaway explains. As we age, medical conditions such as high blood pressure and diabetes accelerate the loss of kidney function, and may ultimately lead to the need for dialysis or transplant. However, many cancer patients aren’t candidates for organ transplants until they have been cancer-free for several years.

“Because Mr. Triche already had some diminished kidney function, I wanted to make sure that the kidney had to be removed, and there was no possibility of saving it,” Pettaway says.

“I’m very thankful I made the call”

Triche was enjoying one last pre-surgery celebration when he received a call back from Pettaway.

“He said, ‘Why are you not having the procedure at MD Anderson?’” recalls Triche. “I don’t think it is necessary to have your entire kidney removed.”

Because Mr. Triche already had some diminished kidney function, I wanted to make sure that the kidney had to be removed, and there was no possibility of saving it,” Pettaway says.
DOUBLE-CHECKING A DIAGNOSIS

Triche put the brakes on the surgery and traveled to Houston to meet with Surena Matin, M.D., professor of Urology, who recommended a partial nephrectomy to remove just the areas of the kidney containing cancer. While Triche's surgery called for using an open incision, the procedure also is commonly performed using minimally invasive robotic surgery.

“It’s just as effective of a cancer operation as a complete removal, but with the added benefit of preserving the kidneys,” Matin says.

Two weeks after surgery, Triche was ready to return to work and to his life in Atlanta. He’s happy he sought a second opinion from MD Anderson.

“I am very thankful that I made the call to Dr. Pettaway,” says the 55-year-old Triche. “If I hadn’t, I could be walking around right now without a kidney, and in the long term it may have meant that I would have had to go on dialysis.”

Paving the way for easier second opinions

Middleton is hopeful that telemedicine may make it easier to get a second opinion. Support for the practice is growing nationwide. In May, the Texas Legislature passed a bill eliminating the need for an in-person consultation, easing restrictions on remote diagnosis and treatment.

“Telepathology is a natural extension of telemedicine,” Middleton says. “It lets us share our expertise in a manner that is sufficient and timely for people who may not have access to experts in their local environment.”

In the meantime, Middleton encourages patients confronting cancer to seek out second opinions whenever possible.

“A cancer diagnosis and its staging are the foundation on which all future treatment will be established. You want to make sure you’re making a decision based upon accurate information. That way, oncologists can appropriately treat the tumor,” Middleton says. “If you have any doubts, or even if you have none, get an expert second opinion. The diagnosis is a life-changing event, but it doesn’t have to be a death sentence.”

How to get a second opinion

Most insurance companies reimburse the cost of a second-opinion consultation for cancer. And many insurers require a second opinion before covering some treatment costs. Patients can ask their treating physician to send their pathology slides or related materials directly to MD Anderson. To learn how, visit www.mdanderson.org and search “second opinion pathology.” Patients can also book an in-person consultation with an MD Anderson oncologist through the website.
Stage IV oropharyngeal cancer survivor Sandy Wexler had her radiation mask turned into a lasting reminder of her treatment.

photo by Wyatt McSpadden
Sandy Wexler credits a dental checkup with saving her life. During a routine visit in 2012, Wexler’s dentist noticed one of her lymph nodes was enlarged, and recommended she have it checked out by an ear, nose and throat specialist.

A biopsy revealed the lymph node was cancerous, and Wexler immediately made an appointment with MD Anderson, where doctors discovered she had stage IV oropharyngeal cancer caused by the human papillomavirus (HPV). The cancer affects the area at the back of the throat.

Wexler endured six weeks of radiation and seven weeks of chemotherapy, lost 10% of her body weight and suffered second-degree burns on much of her neck. But five years later, she’s doing well and is the type of success story that MD Anderson hopes to tell more often through a new collaboration with the American Dental Association (ADA) – the nation’s largest dental association. Announced in May, the joint effort was created to foster better working relationships between dentists and oncologists in hopes of improving patient outcomes through educational initiatives designed for dental professionals and the public.

With more than 160,000 members, the ADA makes an ideal partner because general dentists often see their patients much more frequently than other primary care physicians, and routinely perform exams of the mouth, head and neck.

“I’m so proud that dentistry and medicine are banding together for our patients. Oral health is an important part of overall health – they’re connected,” says Gary Roberts, D.D.S., president of the ADA. “By working together, we can be even stronger advocates for disease prevention and help people live healthier lives.”

Initially, the collaboration will focus on HPV-related oropharyngeal cancers, found in the tonsils, throat and at the base of the tongue.

Unlike HPV-related cervical cancers, early detection of oropharyngeal cancers is quite difficult. Therefore, childhood vaccination is the best prevention strategy, explains Erich Sturgis, M.D., professor of head and neck surgery and co-lead of the HPV-Related Cancers Moon Shot™.

“If we can educate dentists much more broadly about HPV-related oropharyngeal cancer, it’s a great opportunity for earlier diagnosis,” says Sturgis. “It’s also a great opportunity to increase childhood vaccination rates, as dentists become advocates for kids to get vaccinated.”

Although the HPV vaccine could prevent the majority of these cancers, childhood vaccination rates to protect against HPV remain low in the United States.

“I can’t imagine a parent – if they’ve known what I’ve gone through – how they could turn down a vaccine to prevent the same thing in their children,” says Wexler.

**Education and updated guidelines**

This fall at the ADA annual meeting, MD Anderson and ADA experts will host a symposium designed to educate dentists about HPV-related oropharyngeal cancers and the importance of HPV vaccination.

MD Anderson experts also have collaborated to update oral cancer screening guidelines, due to be published by the ADA this fall. As the partnership matures, efforts will broaden to address tobacco use – the leading cause of oral cavity cancer – through a variety of prevention and cessation resources.

In addition to screening and prevention, MD Anderson experts hope to improve multidisciplinary care for cancer patients by strengthening relationships between general dentists and oncologists.

“We want to educate them about personalized cancer medicine and talk about how general dentists fit into that equation,” says Mark Chambers, D.M.D., professor of head and neck surgery and chief of the section of Oral Oncology and Maxillofacial Prosthodontics.

Chambers hopes to share information more broadly with rural dentists through mobile technology, and establish guidelines for oral interventions in cancer patients. In addition, it’s important to foster a certain level of comfort between the specialties to expedite referrals to oncologists when appropriate, he explains.

“As the first echelon of providers who see many of these patients, dentists could influence outcomes substantially by getting a patient in sooner to an oncologic setting,” says Chambers.

This was certainly the case for Sandy Wexler, who applauds the partnership and looks forward to seeing how it can help more like her in the future.

“I think it’s great that MD Anderson and the ADA are working together,” she says. “I’m living proof that dentists can make a big difference.”
Celebrating immunotherapy’s ‘Most Influential’ pioneer

By Scott Merville

From inclusion in Time magazine’s The 100 Most Influential People list, to sole winner of an honor awarded every three years since 1871, appreciation spreads for the life-saving research of MD Anderson’s Immunology Chair Jim Allison, Ph.D.

By finding a way to free the immune system to attack tumors, Allison invented immune checkpoint blockade, opening up an entirely new way to treat cancer.

“We’re pleased to see the impact of Jim’s research accomplishments highlighted alongside those of other great pioneers,” says Marshall Hicks, M.D., president ad interim of MD Anderson. “We’re delighted to have Jim leading our platform efforts, which are crucial to our Moon Shots Program® and MD Anderson’s ability to advance progress in this exciting field.”

These awards acknowledge Allison’s pioneering research in the basic biology of T cells – white blood cells that serve as the immune system’s highly targeted weapons against invading infections and abnormal cells – and his subsequent work to translate discoveries into treatment.

Allison developed an antibody to block CTLA-4, a protein on T cells that shuts down immune response, unleashing the immune system to attack. From that work came ipilimumab (Yervoy), the first immune checkpoint blockade drug. Yervoy became the first drug to extend survival of patients with metastatic melanoma, with about 20% of patients surviving 10 years or more.

Other immune checkpoint blockade drugs have followed and are used in a variety of cancers, including lung, bladder, kidney, and head and neck cancers, and Hodgkin lymphoma and melanoma.

More of Allison’s recent accolades include the 2015 Lasker-DeBakey Clinical Medical Research Award, the 2014 Breakthrough Prize in Life Sciences and the 2013 AACR-Cancer Research Institute Lloyd J. Old Award in Cancer Immunology. He’s a member of the National Academies of Sciences and the National Academy of Medicine.

Recent honors include:

- Election in April to the American Academy of Arts and Sciences. Founded in 1780, the academy’s new fellows are nominated and elected by existing members who are leaders in the sciences, humanities, arts, social sciences, public affairs and business. Allison will be inducted with other members of his class this fall.

- The inaugural Sjöberg Prize for cancer research from the Sjöberg Foundation and the Royal Swedish Academy of Sciences, received in March at the academy’s annual meeting at Stockholm’s Karolinska Institute.

- The 2017 Wolf Prize for Medicine, awarded by an Israeli charity in five categories since 1976 and received in June during a ceremony at the Knesset, Israel’s parliament.

- The Warren Triennial Prize from Massachusetts General Hospital, in April, awarded every three years since 1871 to recognize “scientists who are seekers of and contributors to new knowledge in the service of medicine.”

- The first Fudan-Zhongzhi Science Award in December 2016, established by Fudan University in Shanghai and Zhongzhi Enterprise Group to recognize the global impact of scientists who have made fundamental and distinguished achievements in the fields of mathematics, physics and biomedicine.

- The 2017 Warren Alpert Foundation Prize from Harvard Medical School, announced in June to be presented in October, honors trailblazing scientists whose work has led to the understanding, prevention, treatment or cure of human disease.
Blake Bunk was an avid fisherman and only 21 when he died of colorectal cancer. Members of the Bunk family carry a genetic mutation that raises the risk of cancer.

Archive photo courtesy of John Bunk
High risk runs in their family

This genetic syndrome greatly increases the chances of developing several cancers, but those who know they have it can catch the disease early, before it’s too late

By Ronda Wendler
photos by Wyatt McSpadden

When Craig Bunk began experiencing severe abdominal pain, blood loss and fatigue, his family doctor thought a stomach ulcer was to blame. Bunk wasn’t so sure.

“My brother Blake died at age 21 from colorectal cancer,” he says. “The disease runs in our family, so I wanted a second opinion.”

Bunk knew just who to call: Patrick Lynch, M.D., a longtime professor of Gastroenterology at MD Anderson. Lynch had treated Blake before his death and identified the genetic mutation that caused the young man’s cancer. Then he’d tested Blake’s family members for the same faulty gene. The results? Blake’s brothers and father had also inherited the mutation that causes a condition known as Lynch syndrome. Named for Lynch’s physician father, Henry Lynch, who helped discover it, the genetic disorder greatly elevates cancer risk.

Genetic flaw
Lynch syndrome itself is not cancer, but a genetic flaw in one of four genes that repair potentially cancer-causing DNA damage. Normally these “fix-it” genes quickly mend problems before cancer can arise. But they malfunction in people with Lynch syndrome, leaving cancer, especially colon cancer, free to develop.

“With Lynch syndrome, depending on which of the genes is mutated, you have a 10 to 60% chance of developing colorectal cancer during your lifetime, a 10 to 40% chance of uterine cancer, and up to a 10% chance of ovarian cancer,” Lynch explains.

To a lesser extent, the syndrome also increases the risk for small intestine, urinary tract, liver, pancreas, stomach, kidney, brain and skin cancer. Not all people with Lynch syndrome will get cancer, but many will.

Craig Bunk feels lucky to be alive. At MD Anderson, doctors found that his “stomach ulcer” was actually cancer of the small intestine. He underwent surgery to wipe out the tumor before it could spread, and today he’s cancer-free.

“If I’d accepted the ulcer diagnosis,” he says, “I wouldn’t be here now.”
Constant vigilance

Bunk, now 50, was 35 when his cancer hit, typical of the young age at which most Lynch syndrome patients are diagnosed with cancer.

“Most genetically associated cancers occur by age 50 or younger,” Lynch explains. “Some patients with Lynch syndrome get the same cancer more than once, or develop different cancers at different times.”

Careful, frequent monitoring is the key to treatment.

“We want to catch cancer early when it’s curable,” Lynch says, “or even better, prevent it from happening altogether. With Lynch syndrome, constant vigilance is required.”

Lynch syndrome patients begin colonoscopies at age 20 to 25. People at average risk start at age 50. Lynch syndrome patients repeat their colonoscopies every two years until age 40, then yearly thereafter. People at average risk have colonoscopies once every 10 years.

“Studies show that Lynch syndrome patients who have colonoscopies every couple of years lower their chances of colorectal cancer by 60 percent,” Lynch explains. “During colonoscopies we can detect potentially precancerous growths known as polyps and remove them before they develop into colon cancer.”

Craig Bunk’s father, John, 76, is a testament to this regimen. He undergoes regular colonoscopies at MD Anderson and has had several polyps removed.

“My health is good,” says the semi-retired orthodontist who still sees patients once a month at his Houston-area office.

Craig’s brother, Charles, is a 53-year-old San Antonio lawyer. He was diagnosed with colon cancer at age 49 and kidney cancer at 51. When he’s in Houston for MD Anderson appointments, Charles meets his dad and brother for lunch.

“We’re all in this together,” he says. “It’s a family affair.”

Underdiagnosed

“Knowing you have Lynch syndrome is half the battle,” Lynch says. “The other half is doing something about it with frequent screenings to prevent cancer or catch it early.”

Yet most people from Lynch syndrome families don’t realize they have it.

“That’s a problem,” says Lynch, “because they’re not taking precautions that can save their lives, such as getting their colons checked more frequently and at younger ages.”

Lynch syndrome affects men and women equally, and parents with the mutation have a 50% chance of passing it on to their children.
“But if you don’t know you have the defective gene, you’re unwittingly passing it on to the next generation,” Lynch says.

Finding these unknowing Lynch syndrome carriers, he says, could save lives and countless cancer treatment dollars.

In 2009, the Centers for Disease Control and Prevention recommended that everyone diagnosed with colon cancer and their relatives be tested for Lynch syndrome.

Still, just 42% of hospitals with cancer programs routinely screen for the condition, according to a survey published in the Journal of Clinical Oncology.

“Lynch syndrome is seriously underdiagnosed,” says Lynch. “Twice as many patients are referred to MD Anderson for the investigation of possible inherited breast cancer than possible inherited colon cancer, even though the two are equally as common.”

Most people have heard of the BRCA hereditary breast cancer genes, he says, but very few have heard of Lynch syndrome.

“Even though colon cancer is the third-leading cause of cancer-related deaths in women in the United States and the second-leading cause in men, it still lacks breast cancer’s panache, high-profile fundraising events, and celebrity-driven awareness campaigns,” Lynch says.

**Against the odds**

The struggle for awareness is not new. Lynch’s father, Henry Lynch, was a medical resident in Nebraska in the 1960s when he began noticing that certain families were plagued by an unusually high incidence of colon and other cancers. He knew there had to be a genetic link in these “cancer clusters,” as he called them, but the medical community scorned this idea. Cancer at the time was believed to be caused by environmental elements like chemicals and pesticides.

Hammerin’ Hank – Lynch’s moniker after a brief stint as a teenage boxer – persisted. Despite minimal financial support, he spent decades painstakingly compiling data that demonstrated patterns of cancer through multiple generations of almost 3,000 families. With his wife, Jane, a psychiatric nurse, Lynch and staffers traveled around the nation, meeting with family members, drawing their blood, taking detailed medical and family histories and advising them.

In the 1990s he was vindicated when scientists discovered the genes behind what today is called Lynch syndrome.

“Against the odds he kept going,” says Patrick Lynch. “He bucked conventional wisdom and his research became a game-changer. He identified a link between genetics and some cancers at a time when the idea was thought to be ludicrous.”

Today, Henry Lynch, 89, still heads the Hereditary Cancer Center at Creighton University in Nebraska, where he’s been on faculty since 1967 – minus a two-year stretch as an MD Anderson faculty member in the 1960s.

**Picking up the torch**

In Houston, Patrick Lynch carries on the campaign to raise Lynch syndrome awareness. He’s working with software developers to create a program that enables family histories to be collected online, making outreach to at-risk relatives easier.

“Each patient lists email addresses and demographic information for siblings, cousins, aunts and uncles … every relative they can think of,” Lynch explains.

As the document grows, those relatives are notified by email and invited to “add to” the digital family tree by listing additional relatives, who in turn receive an email invitation.

“It’s a snowball effect,” Lynch says. “The goal is to notify as many family members as possible, and get them to the lab for testing.”

The program, called Family Connect, is still in the works and slated for completion in a year. Lynch plans to share it with other health care institutions, free of charge.

“It’s a public service that we believe has the potential to save lives,” he says.
Tomas Sandoval was about to become a father for the second time in June 2014, when he was devastated to learn he had non-Hodgkin lymphoma, a type of cancer that starts in the white blood cells. The College Station, Texas, resident underwent a stem cell transplant at MD Anderson that kept his disease in check – for a year.

In June 2015, doctors discovered a large chest mass that revealed Sandoval’s cancer had spread. With few options left, he joined a clinical trial testing CAR-T cell therapy for the treatment of lymphoma. Led by Sattva Neelapu, M.D., professor of Lymphoma and Myeloma, the study is the first multi-center trial of its kind for lymphoma.

“It saved my life. The mass disappeared within a week, and by three weeks I was in remission,” says Sandoval. “Although I knew the therapy could cause serious side effects, mine were minor. Other patients I have talked with all said they would do it again because it works.”

**How it works**

In CAR-T therapy, a person’s own T cells – disease-fighting immune cells – are removed and sent to a lab where they are genetically re-engineered to produce chimeric antigen receptors (CARs) on their surface. CARs are proteins that allow T cells to recognize cancer.

The CAR T cells are then multiplied in the laboratory until there are millions. Next, they’re sent to the hospital and infused back into the patient’s bloodstream. These “attacker” cells not only recognize and kill cancer cells, but they may remain in the body long after the infusion has been completed and guard against cancer’s recurrence.

“Patients with aggressive non-Hodgkin lymphoma whose disease has failed at least two lines of therapy have a major unmet need in terms of available therapies that can induce long-term remission, and there has been no new treatment for over 20 years,” Neelapu says. “Their prognosis is often poor with an average survival of six months. We hope this therapy will be a solution and perhaps even curative for some patients.”

So far, the CAR-T cell drug Neelapu is testing, known as KTE-C19, has shown a six-times higher complete remission rate than standard treatment. The drug is currently under review by the Food and Drug Administration.

**Healing the physician**

CAR-T cell therapy is part of a growing field of cancer treatment called immunotherapy, a broad term that covers a range of treatments that harness patients’ immune systems to fight cancer. Other forms of immunotherapy to treat cancer include monoclonal antibodies, which are designed to attach a very specific part of a cancer cell; vaccines, which stimulate an immune response against cancer; and immune checkpoint inhibitors, which take the “brakes” off the immune system so it can recognize and attack cancer cells.
Immunotherapy has proven successful in many cancers such as melanoma, lung and kidney cancer, and Hodgkin lymphoma with several drugs already FDA-approved. And with more than 65 trials underway to test immunotherapy’s effectiveness in battling blood cancers such as chronic lymphocytic leukemia, myelodysplastic syndrome, non-Hodgkin lymphoma and acute myeloid leukemia, MD Anderson is considered a leader in the field.

“Most major cancer centers have two or three leukemia trials using immune checkpoint therapy,” says Naval Daver, M.D., associate professor of Leukemia. “We have more than 15, and are very much out front. It’s an exciting area of study and we are seeing some encouraging results in patient responses.”

Immunotherapies are made even more effective by rationally combining them with other types of cancer treatment in some patients, like Thomas Lombardo of Beaumont, Texas.
Once near death, Lombardo has returned to his beloved golf game, something he thought would never be possible again. In December 2015, the 89-year-old cardiologist was diagnosed with acute myeloid leukemia. When chemotherapy failed to work, he enrolled in a clinical trial led by Daver.

“Mr. Lombardo was placed on a combination drug study using the epigenetic drug Vidaza, which interferes with the growth and spread of cancer cells, and the immune checkpoint drug nivolumab, which activates a patient’s T cells to target cancer cells without damaging normal ones,” says Daver. “He’s done very well.”

Fourteen other patients on the trial are alive and well beyond one year.

“This is outstanding, considering the median survival for relapsed AML is about four to five months,” Daver says. “We believed this could be improved by adding another immunotherapy, ipilimumab, and recently have started a triple-agent study of Vidaza with nivolumab and ipilimumab for patients with AML.”

As Lombardo continues to participate in the trial, his quality of life has already improved. He’s back to working part time in his father-son medical practice, and enjoying his three children and nine grandchildren.

“I see what goes on at MD Anderson and it’s fantastic to see how big the cancer center is, and how well everyone is treated,” Lombardo says. “The quality of care is world-renowned and that’s why I came here.”

Better together

MD Anderson has been a leader in collaborating with biopharmaceutical companies to aggregate investigations and accelerate new discoveries for cancer, an effort coordinated by the Department of Strategic Industry Ventures, led by Ferran Prat, Ph.D., senior vice president.

A few of the alliances include:

**Pfizer Inc.**

MD Anderson and Pfizer signed an agreement in 2017 to develop novel immune therapies beyond PD1 and CTLA-4 with next-generation immune checkpoints such as OX40, 41BB and combinations of these with molecular and monoclonal antibody therapies. The studies, led by Naval Daver, M.D., associate professor of Leukemia, will be the first eight-armed “octopus” trial in AML. Daver is working with Andrew Futreal, Ph.D., chair of Genomic Medicine and Ignacio Wistuba, M.D., chair of Translational Molecular Pathology.

**Affimed N.V.:**

MD Anderson and Affimed N.V., a clinical stage biopharmaceutical company, have a clinical development and commercialization collaboration to evaluate Affimed’s TandAb technology in combination with MD Anderson’s natural killer cell product. Read more on the next page.

**Astellas Pharma Inc.**

MD Anderson is working with Astellas Pharma Inc. to research and develop a new treatment for AML patients. Read more about the collaboration, which focuses on a humanized monoclonal antibody invented by Jeffrey Molldrem, M.D., on the next page.

**Bristol-Myers Squibb:**

MD Anderson announced an agreement with Bristol-Myers Squibb in 2014 to evaluate multiple immunotherapies for acute and chronic leukemia and other hematologic malignancies. The therapies include nivolumab, ipilimumab and three early-stage agents developed by Bristol-Myers. The collaboration is led by Hagop Kantarjian, M.D., chair of Leukemia, along with Jim Allison, Ph.D., chair of Immunology, and Padmanee Sharma, M.D., Ph.D., professor of Genitourinary Medical Oncology, co-leaders of the immunotherapy platform of the Moon Shots Program™. The agreement, which has already resulted in several published studies and presentations on combination immunotherapies, allowed for 10 simultaneous investigations led by different researchers.
A look at other blood cancer immunotherapy studies

MD Anderson is conducting several dozen clinical trials involving investigators from multiple departments, programs and other institutions and companies that are studying various immunotherapy agents for blood cancer.

Here are some highlights:

**Guillermo Garcia-Manero, M.D.**
professor of Leukemia

Garcia-Manero co-leads MD Anderson’s MDS/AML Moon Shot™ along with Hagop Kantarjian, M.D., chair of Leukemia. Garcia-Manero is studying various combinations of immunotherapy drugs such as azacitidine (AZA), nivolumab and ipilimumab in patients with previously treated or untreated MDS. Hypomethylating (HMA) agents such as AZA have been a front-line therapy for patients with higher-risk MDS, but are not always effective. Garcia-Manero and other MD Anderson investigators are studying whether combination immunotherapy can be more effective. He found that PD-1 blockade in combination with AZA in untreated MDS patients is associated with tolerable side effects and clinical activity. His studies have shown that ipilimumab alone induced responses in previously treated patients, while nivolumab alone did not show clinical activity. Garcia-Manero is working closely with Bristol-Myers Squibb in a collaboration involving a number of clinical trials for different types of leukemia, including MDS.

**Jeffrey Molldrem, M.D.**
professor of Stem Cell Transplantation

Molldrem identified an HLA-restricted peptide called PR-1, which is expressed on leukemia cells, and has created a humanized monoclonal antibody called h8F4, which targets a peptide expressed in cancer cells and cancer stem cells. h8F4 is under study as a safer yet more potent therapy for aggressive AML. He’s working with Carlo Toniatti, M.D., Ph.D., executive director of MD Anderson’s Oncology Research for Biologics and Immunotherapy Translation (ORBIT) platform, and through a collaboration with Astella’s Pharma Inc.

**Katayoun Rezvani, M.D., Ph.D., and Elizabeth Shpall, M.D.**
professors of Stem Cell Transplantation

Rezvani and Shpall are studying natural killer (NK) cells, white blood cells that monitor the body for infectious and cancerous cells. The technology to grow NK-cells from umbilical cord blood was developed at MD Anderson. In January 2017, MD Anderson teamed with Affimed N.V. to leverage Rezvani and Shpall’s expertise in NK-cells and translational medicine and Affimed’s capabilities to develop tumor-targeting bi-specific TandAb immune cell engagers. The investigators will study whether the combination of their expertise in NK cells and Affimed’s technology will result in a novel cellular therapy for Hodgkin Lymphoma. AFM13 is being developed both as monotherapy and in combination with other therapeutics.
To treat or not to treat?

Active surveillance may be a better choice for some men with prostate cancer

Earl Ritchie had a decision to make. Newly diagnosed with prostate cancer, he needed to select a treatment. One option was aggressive medical interventions that included life-altering side effects. Or he could choose gentler, more conservative therapies that might fall short and allow his cancer to spread.

The stakes were high.

Ritchie's training as an engineer kicked in as he methodically reviewed each treatment option and created detailed graphs and spreadsheets charting the pros and cons of each.

"Some people get emotional when they hear they have cancer," he says. "I looked at it as just another problem to solve."

Ritchie sought advice from doctors who didn't always agree. He interviewed friends who'd undergone treatment. He scoured countless scientific articles. And when he was finished, he decided to do something radical in modern cancer care: Wait and see.

Instead of treatment, Ritchie opted for active surveillance. It's an approach offered to men whose prostate cancer is low-risk, meaning it hasn't spread outside the prostate gland. Doctors perform tests at regular intervals to keep an eye on the cancer. If it advances into the danger zone, they shift from surveillance to active treatment.

"We're always watching for that red flag," says Jeri Kim, M.D., Ritchie's oncologist and a professor of Genitourinary Medical Oncology at MD Anderson. "When and if it happens, we're ready."

Blood test, then biopsy

Ritchie first learned he had cancer after taking a blood test that measures prostate specific antigen (PSA) – a protein that's produced by the prostate gland and released into the bloodstream. An elevated level suggests possible cancer, but it can also result from a less dangerous enlarged prostate or urinary tract infection. Only about one-fourth of men whose elevated PSA levels lead to further testing actually turn out to have cancer.

"The PSA test is not perfect," Kim says, "but at this point, it's the best screening tool we have."

Because Ritchie's PSA levels went up, he agreed to a biopsy, a procedure where doctors insert a thin, 12-gauge needle through the rectal wall and into the prostate. The needle returns a dozen or so samples of prostate gland tissue that are about a half of an inch long. By analyzing the tissue under a microscope, doctors can tell whether or not cancer is present.

The bad news? The microscope can't reliably distinguish lethal prostate cancer cells from slow-growing ones that can be safely left alone.

The good news? The vast majority of prostate cancers grow too slowly to ever threaten a man's life or health.

Tortoises and sloths

Prostate cancer is the second most common type of cancer among American men, following skin cancer. Yet it's so slow-growing that it accounts for only 9% of cancer deaths in the U.S. According to the American Cancer Society, the 10-year survival rate of all stages of prostate cancer combined is 98%. The 15-year survival rate is 96%.

Kim compares most cases she sees to "tortoises" and "sloths."

"You're much more likely to die with, not of, prostate cancer," she says. "But too many men hear the 'C' word and panic. They say, 'Get it out of me now,' though their cancer is in fact harmless."

Most men would live just as long, and be happier, Kim says, if they never found out they had prostate cancer.
Earl Ritchie returned to college in the midst of prostate cancer treatment and, at age 69, earned a master’s degree in construction management after a 35-year career in the oil and gas industry.
**Impotence and incontinence**

Men who opt for treatment instead of active surveillance undergo surgery to remove the prostate gland or radiation to kill the cancer cells inside. Both treatments can lessen quality of life.

“About half of all men treated will have impotence, urinary incontinence or both,” Kim says. “The treatment may be worse than the disease.”

The walnut-sized prostate gland, which helps produce semen, is lodged deep below the bladder. It surrounds the urethra, through which urine and semen flow, and borders the rectum. The nerves that control erections lie along the prostate like delicate threads. Cut them, and a man becomes impotent. Sometimes drugs like Viagra can help, provided one of the nerves remains intact.

Surgically removing the prostate also removes a valve that controls the flow of urine, which can cause incontinence.

Despite these risks, 60% of the 230,000 men diagnosed with prostate cancer this year in the United States will choose surgery or radiation.

“Because we can’t tell them how aggressive or laid-back their cancer is, they’re afraid,” Kim says. “Fear propels them into immediate treatment.”

Active surveillance, she says, could have preserved their quality of life and prevented unnecessary treatments, or conversely, sounded the alarm if treatment became necessary.

**Earl’s story**

After seven years under the watchful eyes of MD Anderson doctors, Earl Ritchie’s low-risk cancer was upgraded to high risk.

“The red flag went up,” he says, “and I shifted from active surveillance to treatment.”

Instead of traditional radiation, Ritchie opted for proton therapy, which delivers a high dose of radiation with pinpoint accuracy to attack the specific shape, size and location of the tumor. Because the radiation beam is tightly controlled, less damage occurs in nearby healthy tissues, and side effects are minimized.

Five days a week, for two months, Ritchie began treatment at 4:30 a.m.

In the wee hours of the morning, the waiting room at MD Anderson’s Proton Therapy Center became a makeshift men’s club, where Ritchie bonded with fellow prostate patients.

“We developed a real camaraderie after seeing each other for so long,” he says. “We were all in the same boat, dealing with the same issues.”

Ritchie, who seems to be aging in reverse, returned to college in the midst of treatment and, at age 69, earned a master’s degree in construction management after a 35-year career in the oil and gas industry. At his graduation ceremony, University of Houston President Renu Khator publicly applauded him for being the oldest student in his class.

Today he teaches an introductory course about the oil industry in UH’s College of Technology, and contributes to a blog about energy hosted by UH and Forbes.

In hindsight, does Ritchie still believe active surveillance was the right choice?

“Absolutely,” he says. “I had seven wonderful, symptom-free years. Today I have minimal side effects and my prognosis is good.”

**Active surveillance**

More and more men are gradually warming up to the idea of active surveillance, Kim says. A decade ago, only 10% said OK to the strategy. Today, 40% are embracing it.

“There’s increasing acceptance of this less-invasive approach, which includes regular PSA testing, repeated rectal exams and biopsies to monitor the cancer, rather than aggressive treatment,” she explains.

Kim is leading an MD Anderson study to determine active surveillance’s effectiveness in managing prostate cancer. More than 1,100 patients are participating in the clinical trial which launched 11 years ago. None have died from prostate cancer.

Ron Schwartz, 71, is one of the participants. Diagnosed in 2012, his tumor remains low-risk. He monitors his condition with two PSA tests a year and annual biopsies.

“That’s it. No surgery. No radiation,” he says.

He found his way to MD Anderson after a local doctor wanted to surgically remove his prostate.

“I never visited that doctor again,” says Schwartz, who collects, repairs and restores antique fountain pens. An avid proponent of active surveillance, he leads an MD Anderson support group for men with prostate cancer.

“I tell them to slow down and not do anything drastic,” Schwartz says. “MD Anderson is looking out for them. They can stop worrying and relax.”
Should you be screened for prostate cancer?

This past spring, the United States Preventive Services Task Force, a panel of independent experts on prevention and evidence-based medicine that advises the federal government, updated its position on prostate cancer screening.

The panel’s draft recommendation states that “men between the ages of 55 and 69 should discuss the PSA test’s potential benefits and harms with their doctors and make decisions based on their own values and preferences.”

This is a turnaround of the panel’s 2012 position, which advised against routine PSA screening for all men, regardless of age. The panel’s latest recommendation leaves in place its 2012 suggestion that men age 70 and older forgo screening altogether.

The latest proposed guidelines are based on several studies that have reinforced not only the benefits of PSA tests but also ways to lessen the harms of screening, which include unnecessary biopsies and treatments.

One of the studies that influenced the committee’s decision was published last October in the New England Journal of Medicine. The study demonstrated that doctors could safely monitor a patient’s prostate cancer – largely through repeated PSA checks – without rushing to treat it.

In the study, only about 1% of men died of prostate cancer over 10 years, with no significant differences between those who were treated and those who were followed with active surveillance.

Five years ago when the 2012 recommendation not to screen was issued, screening rates dropped dramatically.

“Our hope is that with this new recommendation, patients will be diagnosed when their disease is still low-risk,” MD Anderson oncologist Jeri Kim, M.D., said. “Prostate cancer causes no symptoms until it’s advanced, so screening is very important to find life-threatening cancers in time for a cure.”

Kim also hopes the panel will issue more specific guidelines for high-risk patients, including African-Americans and those with a family history of the disease.

Other medical groups have mixed recommendations. The American Urological Association recommends shared decision-making between physicians and patients aged 55 to 69, while the American Academy of Family Physicians advises against routine prostate cancer screening. The American Cancer Society recommends starting the conversation between doctor and patient at age 50, and even younger if patients are high risk.

The latest prostate cancer screening recommendations from the U.S. Preventive Services Task Force are still in draft form, while panel members review public feedback. The final recommendation will be published at a yet-to-be-determined date.
On a Monday in early 2012, Cathie Lusby went to see her general practitioner about a troublesome and persistent illness playing havoc with her digestive tract.

By Friday, at the end of a head-spinning week of lab tests and scans, she was meeting an oncologist at MD Anderson’s Katy location and confronting one of the most difficult diagnoses: pancreatic cancer.

Remembering the shock of the week and her early encounters at MD Anderson, Lusby recalls how nurses, staff and oncologist Nikesh Jasani, M.D., associate professor of General Oncology, made her feel welcomed and reassured.

"Nobody ever promised, 'You're going to be cured.' But they said, 'We'll do our best and get you as far through this as possible.'

"I’m cancer-free, five years as of July 5," Lusby says.

**Moon Shot builds on progress**

Nationally, only about 9% of people diagnosed with pancreatic cancer survive five years. In most cases, the disease has spread to other organs by the time it’s discovered.

Surgery is the standard of care when the tumor is surgically removable, but even then the median survival for such patients is about 22 months.

At MD Anderson, it's 43 months, the result of a shift toward routine presurgical treatment and steady improvements in imaging, surgery, radiation, chemotherapy and other specialties built through multidisciplinary teamwork in research and clinical trials over the past 25 years. Now, MD Anderson’s Pancreatic Cancer Moon Shot™ adds analytical capabilities.
“Improved imaging and clinical staging have helped us get better at figuring out what treatment a patient should get and in what order,” says Matthew Katz, M.D., associate professor of Surgical Oncology and co-leader of the Moon Shot. “Even though a patient’s tumor is technically resectable – its size and location make it surgically removable – that doesn’t necessarily mean we just take the tumor out right away.”

How to make surgery more successful
Less toxic chemotherapy combinations and targeted radiation before surgery can improve the prospects of patients whose tumors might once have gone to surgery first, says Robert Wolff, M.D., professor of Gastrointestinal Medical Oncology, also a Moon Shot co-leader and Sheikh Zayed Bin Sultan Al Nahyan Distinguished University Chair in Medical Oncology.

Safer and more effective surgical techniques as well as improvements in care right before, during and after surgery have been critical in improving survival.

“Our mortality within 90 days of surgery is essentially 0% of patients, and our length of hospital stay after surgery is six days,” Katz notes.

Nationally, the surgery-related death rate is about 8%, and the postsurgical hospital stay is over 10 days.

Presurgical treatment also is used to shrink more locally advanced tumors to make them removable, Wolff says. Careful assessment helps ensure the disease has not spread to other organs, because surgery is futile then.

Taking time to prepare and recover
Lusby’s tumor was locally advanced, with nearby lymph nodes affected but no organs beyond her pancreas, Katz says.

So she began a five-drug chemotherapy infusion called FOLFIRINOX every two weeks for four sessions, followed by 10 sessions of targeted radiation and oral chemotherapy. Next came PET and CT scans to make sure the cancer had not spread.

The scans yielded other excellent news.

“Dr. Katz was very happy with how much the tumor had shrunk,” Lusby recalls.

But that didn’t mean she was ready for the operating room. It’s important for patients to have some recovery time from earlier treatment and to get in better shape for the rigors of surgery and recovery, Katz says. His team conducts studies of exercise programs tailored for patients.

Lusby took six weeks off treatment before surgery, working out at the gym and spending lots of time on her bicycle, building up to 10-mile round trips.

Full recovery after surgery took months, Lusby says. It included another four rounds of FOLFIRINOX and a feeding tube inserted below her stomach to allow that organ to recover faster.

She and her husband Randy began to walk at Katy Mills Mall.

“It’s 0.85 mile around the mall, and I remember walking it the first time with my feeding tube and my chemo pump, making it halfway around once,” she recalls.
But they persisted, and now the habit remains, five laps around the mall, five days a week.

**What works and why just for some**

Understanding why patients like Lusby do well and why treatment is less effective for others is central to improving results for patients with non-metastatic disease. Deep molecular analysis of blood and tumor samples will help the team address these issues.

“We aim to bring novel clinical trials to these patients and conduct correlative studies to understand factors involved in response to, or resistance to, treatment,” says Anirban Maitra, M.B.B.S., professor of Pathology, co-leader of the Moon Shot and director of the Sheikh Ahmed Center for Pancreatic Cancer Research.

The newest member of the team is Joseph Herman, M.D., a professor and division head ad interim of Radiation Oncology and an expert in an abbreviated radiation treatment for the pancreas known as stereotactic body radiation therapy (SBRT). SBRT has a similar or sometimes better effect than conventional radiation but is administered over five days instead of six weeks, allowing for shorter stays for MD Anderson's out-of-town patients. The therapy delivers high doses of radiation, using several beams of varying intensities aimed at different angles to precisely target the tumor.

“This precise targeting of the tumor has less effect on surrounding organs, so there’s limited toxicity,” Herman says. “Conventional radiation requires concurrent chemotherapy and can lead to more toxicity because it usually includes a larger volume of radiation over time. SBRT uses a smaller, more focused volume and therefore can be easier on patients’ immune systems.

“Through the Moon Shot, we’ll be looking to improve SBRT for pancreatic cancer,” says Herman, a pioneer in the use of the targeted radiation for the disease.

Herman and Cullen Taniguchi, M.D., Ph.D., assistant professor of Radiation Oncology, are collaborating on a clinical trial that tests the use of higher doses of SBRT along with a drug designed to protect the small intestine from the effects of radiation.

Adding treatment of earlier stage, surgically removable disease takes advantage of the superior approach developed at MD Anderson and seeks to extend it with greater efficiency to more patients.

“MD Anderson leads in treatment of these patients, but we can and must do even better,” says Maitra.

Pancreatic Cancer Moon Shot

The Pancreatic Cancer Moon Shot™ is one of 13 cancer Moon Shots seeking to reduce deaths from cancer by accelerating development of new treatments, early detection and prevention methods based on scientific discoveries.

In addition to the initiative to target surgically removable, early- and middle-stage tumors of the pancreas before the disease has spread to other organs, the Moon Shot focuses on:

**Early detection**

Development of blood tests to identify pancreatic cancer before symptoms are noticed is proceeding to larger validation studies to advance earlier findings. Anirban Maitra, M.B.B.S., and Sam Hanash, M.D., leader of the Moon Shots Program™ proteomics platform, lead this effort to assemble a panel of blood-borne molecules and proteins that act as a “liquid biopsy” and identify the disease. They’ve found several blood markers with predictive power, but are searching for more to complete the test, which will take several years to validate.

Even with a liquid biopsy, an important next step would be successful imaging of the pancreas to confirm disease. Work is underway with Eugene Koay, M.D., Ph.D., assistant professor of Radiation Oncology, to hone imaging algorithms that can pick out lesions in the pancreas that might be missed with the traditional visual analysis of CT scans and MRIs, including cysts that are likely precursors of cancer.

A high-risk clinic has been established to more closely monitor people who have a family history of the disease or genetic mutations that raise the risk of developing pancreatic cancer. Florencia McAllister, M.D., assistant professor of Clinical Cancer Prevention, leads the new clinic. Pancreatic cancer risk is higher in those whose parents, siblings or children developed the disease, particularly at a young age, and in those who have any of 10 genetic mutations, including a mutation in the BRCA2 gene, which is better known for raising the risk of breast cancer.

**Advanced disease**

Pancreatic cancer that has spread to other organs is swiftly lethal. The Pancreatic Cancer Moon Shot seeks to bring new targeted therapies and immunotherapies to clinical trials for those with metastatic disease. Working with MD Anderson’s Institute for Applied Cancer Science, new therapies that target tumor metabolism and genetic regulation are in the preclinical pipeline. Immunotherapy projects are developing new ways to deploy T cells, the targeted troops of the immune system, against the disease.
Happy campers

Many young patients at MD Anderson Children’s Cancer Hospital aren’t well enough to head off to camp during the summer. To ensure they don’t miss out on the camp experience, the children’s hospital brought camp to them in July with Camp For All 2U. For an action-packed week, patients and their siblings enjoyed all the fun of camp, including canoeing, arts and crafts, scavenger hunts, a petting zoo, archery and much more.
LOCATIONS
MD Anderson has Houston-area locations in the Texas Medical Center, Bay Area, Katy, Sugar Land, The Woodlands, Bellaire and West Houston (diagnostic imaging), Memorial City (surgery) and The Woman’s Hospital of Texas (gynecologic oncology). MD Anderson physicians also provide cancer care to Harris County’s underserved patients at Lyndon B. Johnson Hospital. In addition, there are two research campuses in Bastrop County, Texas. The institution also has developed a network of national and international locations.

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