

# CONQUEST

THE UNIVERSITY OF TEXAS  
**MDAnderson**  
**Cancer Center**  
Making Cancer History®

FALL 2015 VOL 30 ISSUE 1



## IS THE COMMON COLD THE CURE FOR CANCER?

MD ANDERSON DOCTORS ARE USING THE COLD VIRUS TO BATTLE GLIOBLASTOMA, WHICH IS NOW A TARGET OF THE MOON SHOTS PROGRAM



## 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:** For 15 years, husband-and-wife researchers Juan Fueyo, M.D., and Candelaria Gomez-Manzano, M.D., have been laboring over what they call their “big idea.” Their idea was to genetically modify the adenovirus that causes the common cold, transforming it instead into a cancer-seeking missile that attacks brain tumors. The altered virus is injected through a hole in the skull, directly into a patient’s tumor.

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#endcancer



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Conquest also is available at [www.mdanderson.org/conquest](http://www.mdanderson.org/conquest).

# CANCER FRONTLINE



📷 Wyatt McSpadden

## IMMUNOTHERAPY TRAILBLAZER JIM ALLISON WINS LASKER AWARD

**For his groundbreaking work in immunotherapy, Jim Allison, Ph.D., chair of Immunology at MD Anderson Cancer Center, was awarded the nation's highest honor for clinical medical research.**

Allison, who invented a completely new way to strike cancer by unlocking a shackled immune system attack, was named the 2015 winner of the Lasker-DeBakey Clinical Medical Research Award from the Albert and Mary Lasker Foundation. The Lasker awards, in their 70th year, honor major achievements in basic science, clinical research and public service around the world.

"I'm honored and grateful to receive the Lasker award. As a basic scientist, I was pleasantly surprised, really kind of stunned, to receive the clinical award," Allison says. "This award is also important recognition of the early success of cancer immunotherapy and its great potential to extend survival of cancer patients for decades and ultimately to cure some types of cancer."

**"The Lasker Award highlights Jim's genius, creativity and passion to make an impact, all of which contributed to one of the most important therapeutic advances in a generation."**

— MD Anderson President Ronald DePinho, M.D.

Lasker recipients are chosen by a distinguished international jury to recognize major advances in the understanding, diagnosis, treatment, cure and prevention of human disease.

Allison's research into the biology of T cells, white blood cells that serve as the immune system's customized guided weapons, led him to develop an antibody that blocks an "off switch" on those cells, unleashing an immune response against cancer.

Drugs using this approach, called immune checkpoint blockade, now are approved for treating late-stage melanoma and lung cancer. Hundreds of clinical trials worldwide are underway in earlier stages of the disease and against other cancers.

"It is a rare medical scientist who makes a fundamental discovery and then propels that discovery all the way to a clinical breakthrough. That is what Jim Allison has done, and that is why he is receiving the 2015 Lasker Clinical Medical Research Award," said Nobel Laureate J. Michael Bishop, Ph.D., of the University of California, San Francisco, while presenting the award at a ceremony in New York.



The first drug developed from Allison's research became the first treatment ever shown to extend the survival of patients with late-stage, untreatable melanoma. Long-term studies show 20% of such patients treated with ipilimumab, marketed as Yervoy, survive for at least 10 years, previously unheard of results for the disease.

"The Lasker Award highlights Jim's genius, creativity and passion to make an impact, all of which contributed to one of the most important therapeutic advances in a generation. One that continues to change the practice of oncology around the world," says MD Anderson President Ronald DePinho, M.D. "As we explore the full potential of immunotherapy, countless cancer patients already have experienced renewed promise and health, thanks to this groundbreaking advance, and we remain hopeful for so much more."

After an early career posting at MD Anderson, Allison returned in 2012 to lead its immunology department and establish the cancer immunotherapy platform, a combination of expertise and infrastructure that brings together scientists and clinicians to better understand and advance cancer immunotherapy.

The platform is part of MD Anderson's Moon Shots Program, which is designed to harness scientific knowledge and develop new technologies that will dramatically reduce cancer deaths through prevention, early detection and treatment.

"Jim once described his motivation as 'the selfish desire to be the first person on the planet to know something,'" Bishop said. "He has satisfied that desire in spades and, as a result, the planet promises to become a far better place for cancer patients. Bravo, Jim!"

— Scott Merville

## THE LASKER AWARD

Founded in 1942, the Lasker Foundation seeks to improve health by accelerating support for medical research through recognition of scientific excellence, public education and advocacy. Mary Lasker, who led the foundation for decades, was a prominent activist for public investment in medical research and is widely credited with motivating Congress and several presidents to expand federal funding, particularly through the National Institutes of Health.



## FORMER FOUR-STAR ADMIRAL TAPPED AS MOON SHOTS LEADER

**MD Anderson has appointed former U.S. Public Health Service four-star Admiral Joxel Garcia, M.D., as the inaugural executive director of the cancer prevention and control platform, part of MD Anderson's Moon Shots Program.**

"I'm honored to join the No. 1 cancer center in the nation," says Garcia. "It's truly exciting to join the MD Anderson family and work with world-class leaders, researchers and clinicians."

The cancer prevention and control platform implements and disseminates evidence-based, community-focused programs to advance cancer prevention, screening, early detection and survivorship.

"Dr. Garcia is an internationally recognized health care leader with proven experience and success in a variety of health care settings," says Giulio Draetta, M.D., Ph.D., professor of Genomic Medicine and Molecular and Cellular Oncology and co-leader of the Moon Shots Program. "We're excited to have someone of his caliber on board and know he will contribute a great deal to the platform and the program overall."

The platform focuses on providing policy, education and services to achieve a measurable and sustainable reduction in the cancer burden, especially in the underserved population, for which cancer and cancer risk factors pose a particular threat. This effort is taking what's known about diet, exercise, sun protection, tobacco avoidance and human papillomavirus (HPV) beyond MD Anderson to reach people throughout Texas, the nation and the world.

Garcia began his medical career as an obstetrician/gynecologist and then became the commissioner for the State of Connecticut Department of Public Health. After serving as the deputy director for the Pan American Health Organization/World Health Organization in Washington, D.C., he moved into the corporate sector. There he worked as a senior vice president and senior medical officer at Maximus Federal Services Inc.

President George W. Bush appointed Garcia as the 13th U.S. assistant secretary for health. At the same time, he was appointed as a four-star Admiral for the United States Public Health Service and as the U.S. Representative to the World Health Organization. During this time, and as the highest ranking medical and public health official in the U.S., Garcia led more than 6,220 U.S. Public Service Commissioned Corps officers in the U.S. and in 88 countries for the protection, promotion and advancement of health.

— Clayton Boldt, Ph.D.



# CANCER FRONTLINE

## GENERIC HEART MEDICATION MAY IMPROVE OUTCOMES FOR OVARIAN CANCER PATIENTS

In a first-of-its-kind study, researchers at MD Anderson have demonstrated a benefit in overall survival among epithelial ovarian cancer (EOC) patients receiving generic heart medications known as beta-blockers.

Survival was shown to be greatest among those prescribed first-generation nonselective beta-blockers. According to investigators, the drugs block the effects of stress pathways involved in tumor growth and spread. With further research, they may also prove beneficial in conjunction with other treatment regimens and across other cancer types.

This study builds on a large body of research by principal investigator Anil Sood, M.D., professor of Gynecologic Medical Oncology and Cancer Biology at MD Anderson. It shows that stress hormones fuel progression of ovarian and other cancers, and beta-blockers — among the most proven drugs in cardiovascular medicine — might be a new way to stifle that effect.

“Beta-blockers treat a variety of conditions, such as heart disease, high-blood pressure, glaucoma and migraines. They target a receptor protein in heart muscle that causes the heart to beat harder and faster when activated by stress hormones,” Sood says. “Our research has shown that the same stress mechanisms impact ovarian cancer progression, so these drugs could play a new role in cancer treatment.”

According to Sood, the usefulness of beta-blockers was unclear until now. “The ability to show improved survival using nonselective agents, which inhibit a specific stress pathway, is the culmination of years of research into ovarian cancer biology and pathogenesis.”

Although further study is needed, Sood says these results highlight the importance of the beta-2 adrenergic receptor, a signaling pathway important to ovarian carcinogenesis and targeted by nonselective beta antagonists (NSBBs) versus the beta-1 adrenergic receptor pathway targeted by selective agents (SBBs).

Sood talked to Cancer Frontline about the new findings, how they relate to his earlier research and what this new discovery means for patients.

**Your earlier research has shown that stress hormones fuel progression of ovarian and other cancers, and beta-blockers might be a way to slow or stop that. How does this study build on that research?**

In the present study, we examined whether the type of beta-blocker matters with regard to clinical outcomes. Consistent with the previous research from our group and others, broad (nonselective beta antagonists) beta-blockers were associated with better clinical outcomes.

**How does stress affect tumor growth?**

Chronic stress and related hormones — the so-called fight-or-flight hormones — can stimulate tumor growth via beta adrenergic receptors, which are key to ovarian carcinogenesis and targeted by NSBBs.

**What would you tell ovarian cancer patients who ask about taking beta-blockers? Is it too soon to recommend ovarian cancer patients take beta blockers?**

It's too soon to prescribe beta-blockers for routine use, but feasibility studies are ongoing.

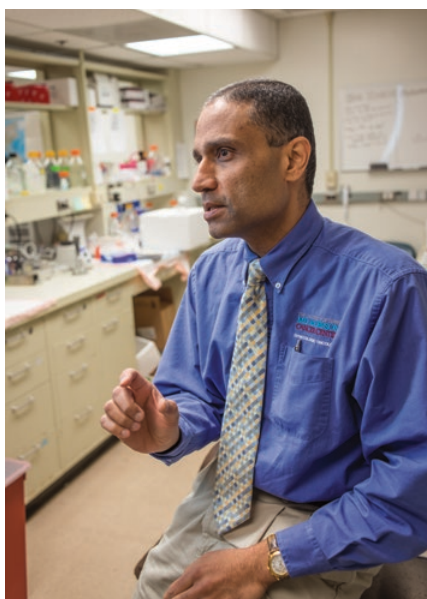
**What other cancer types could this potentially benefit?**

Other cancers that express beta-adrenergic receptors could also be relevant here. Those include colon, breast and other cancers.

**Where does your research go from here?**

Clinically, we're carrying out prospective feasibility studies at present. Following these studies, we would like to conduct others to understand the effects of these drugs on specific biomarkers before starting larger-scale studies. Preclinically, there's still a lot to understand. For example, we're looking at the role of nerves that deliver the stress hormones to the tumor. We want to determine what role the nervous system plays in the spread of cancer.

— Laura Sussman





## SOOD'S FINDINGS:

Published in the journal *CANCER*, the findings are the result of a multi-institutional retrospective analysis of the medical records of 1,425 women with ovarian cancer treated between 2000 and 2010.

Researchers compared overall survival among patients with documented beta-blocker use during chemo and those without. Among the 269 patients who received beta-blockers, 193 (71.7%) received SBBs and the remaining patients received NSBBs. The research team found:

For patients receiving any beta-blocker, the median overall survival was 47.8 months versus 42 months for nonusers.

Median overall survival based on beta-blocker receptor selectivity was 94.9 months for those receiving NSBBs versus 38 months for those receiving SBBs.

Even among patients with hypertension, a longer median overall survival was observed among users of NSBBs compared with nonusers (90 months versus 38.2 months).

## IMMUNOTHERAPY DRUG EXTENDS SURVIVAL FOR KIDNEY CANCER PATIENTS

For the first time, a new drug from the field of immuno-oncology has proven to extend survival for patients with advanced kidney cancer, a patient population with limited treatment options.

In an MD Anderson study, patients taking nivolumab, marketed as Opdivo, had a median survival of 25 months — 5.4 months longer than patients given the drug everolimus, the current standard of care for patients with metastatic kidney cancer.

Opdivo is an immune checkpoint inhibitor — a drug that takes the brakes off the immune system and allows it to attack cancer. It's currently used to treat metastatic melanoma and advanced non-small cell lung cancer. Scientists have long believed that immunotherapy had the potential to make an impact in kidney cancer.

"Until now, we haven't been able to demonstrate such a significant survival benefit in patients with advanced kidney cancer. We have a real opportunity to change clinical practice for these patients when other therapies have failed," says principal investigator Padmanee Sharma, M.D., Ph.D., professor of Genitourinary Medical Oncology and Immunology.

The findings of the trial provide definitive evidence that an immune checkpoint inhibitor is a valid treatment strategy for patients with advanced kidney cancer, and supports a change in the standard-of-care treatment, Sharma says.

In addition to demonstrating increased overall survival, the trial showed that the number of patients who responded to nivolumab was higher than those treated with everolimus.

Of the 821 patients enrolled, 25% responded to nivolumab versus 5% of those treated with everolimus. Among these patients, partial responses were observed in 24% of those treated with nivolumab and 5% of patients treated with everolimus; complete responses were observed in 1% (four patients) treated with nivolumab and fewer than 1% (two patients) treated with everolimus.

Further, among patients who showed a response, the impact was "durable," according to Sharma. For some patients, even after treatment with nivolumab ended, response to the drug continued.

"The immune system has a memory, so even when treatment has stopped, the body continues to exhibit a long-term response — meaning these patients can live normal lives without progressive disease," says Sharma.

Finally, the investigators observed fewer treatment-related adverse events, including fatigue and nausea, and improved quality of life, with nivolumab.

These results were so significant that the trial was halted early and the FDA granted "breakthrough therapy designation" to nivolumab, meaning the FDA will expedite its review of the drug for use in patients with advanced kidney cancer.



**Padmanee Sharma, M.D., Ph.D.**

— By Clayton Boldt, Ph.D.

Read about the latest progress in Making Cancer History® at [cancerfrontline.org](http://cancerfrontline.org).




# LESS IS MORE



By Laura Sussman





Paul Brown's research shows the dangers of whole-brain radiation for patients.  Eric Kayne

## People who have cancer that spreads to the brain from other sites in the body may soon undergo a change in medical care.

A study presented at this year's American Society of Clinical Oncology conference found that, contrary to prior belief, attacking tumors by radiating the whole brain harms patients' thinking, memory and speech, and does not improve their survival.

"Our study shows that the negative effects of whole-brain radiation far outweigh the positive," says study author Paul Brown, M.D., professor of Radiation Oncology at MD Anderson.

Conventionally, cancer that spreads to the brain is treated with radiosurgery — ultra-focused beams of radiation aimed at the tumor with millimeter precision, followed by whole-brain radiation to reduce the likelihood of future tumors cropping up.

Radiosurgery usually involves a one-time-only, highly focused treatment with a tool such as a Gamma Knife. Whole-brain radiation therapy, on the other hand, exposes the entire brain to 20-minute doses of less-intense radiation once a day for 10 to 15 days.

At MD Anderson, Brown led a study of 213 patients with one to three brain tumors to determine whether the risks of whole-brain radiation are worth its benefits for controlling cancer. Half the patients had radiosurgery only, while the other half had radiosurgery followed by whole-brain radiation.

Three months later, almost all — 92% — of patients who received both treatments had cognitive decline, versus 64% of those who had radiosurgery only.

Patients who underwent whole-brain radiation also experienced significant declines in their quality of life compared with radiosurgery patients. Hair loss, skin redness, dry mouth, fatigue and thinking problems are typical side effects of whole-brain radiation, Brown says. Radiosurgery's side effects are minimal.

"Our study confirms that giving less treatment offers the best results for our patients with brain tumors that have spread from other locations," Brown says.

An estimated 400,000 patients in the U.S. each year have cancer that spreads to the brain, usually from the lungs, breasts or other sites. Brown predicts that, based on this study, doctors likely will begin recommending radiosurgery alone for many of these patients, combined with close monitoring. If patients develop new tumors, targeted radiation will zap the tumors as they occur, without ever resorting to whole-brain radiation.

"Whole-brain radiation will be reserved for patients whose cancer is more advanced," he says.



# Thinking outside the Silo

SPORES bring  
allies together  
to do more  
in the war on  
cancer

By Ron Gilmore

For years, scientists conducting lab experiments and clinical researchers doing patient studies had very little interaction with one another. But the National Cancer Institute (NCI) tore down these silos in 1992 when it created its Specialized Programs of Research Excellence, or SPORES.

“The SPORES’ very purpose is to move new drugs and therapies to patients as promptly as possible by combining knowledge from laboratory and clinical researchers,” says Robert Bast, M.D., vice president of Translational Research at MD Anderson. “The end goal is to improve survival and quality of life.”

Initially, the NCI funded eight SPORES to address three cancers. Today, the program has mushroomed to 42 SPORES investigating 18 cancers in 21 states.

Among academic medical centers, MD Anderson has had the highest number of SPORES in the nation with its eight programs in myeloma, leukemia, ovarian, uterine, bladder, brain, skin and prostate cancers. It shares two SPORES for lung and thyroid cancers with other institutions.

SPORES often mirror the goals of MD Anderson’s Moon Shots Program, Bast says, with both programs aiming to fast-track patient therapies.

At the heart of the SPORE program is a requirement to collaborate. “Collaboration can be among academic institutions, government organizations, industry, foundations or clinical trials groups,” says Nancy Hubener, project director for Translational Research, the office that oversees MD Anderson’s SPORE programs.

MD Anderson SPORES have collaborations with the University of Colorado, Johns Hopkins University, the University of Pennsylvania, Texas A&M University’s Health Science Center, the Mayo Clinic, and The University of Texas’ Health Science Center in Houston and Southwestern Medical Center in Dallas.

“SPORE faculty share data because findings from one type of cancer may impact other cancers,” says Bast, whose office awards \$250,000 in pilot grants to support development of SPORES and other projects enlisting four or more investigators.

Nationwide, SPORES have generated revolutionary cancer solutions such as therapies for late-stage prostate cancer, novel drugs for multiple myeloma, new diagnostics for non-small cell lung cancer and detection methods for papillary thyroid cancer.

The federally funded Science and Technology Policy Institute, which advises the White House and the National Science Foundation on science and technology issues, reports that 93% of SPORE projects nationwide led to clinical trials or other studies.

“At MD Anderson and throughout the nation, SPORES will continue to be of paramount importance in the rapid and efficient movement of basic scientific findings into the clinical setting,” says Bast.

**TEXAS HAS 11 SPECIALIZED PROGRAMS OF RESEARCH EXCELLENCE (SPORES) — MORE THAN ANY OTHER STATE. AND MD ANDERSON LEADS THE NATION WITH EIGHT SPORES.**



Robert Bast preaches the importance of collaborative research in improving survival and quality of life for patients.

📷 Wyatt McSpadden

2

BAYLOR COLLEGE OF MEDICINE

8

MD ANDERSON CANCER CENTER

UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER

1





Loretta Preston, who smoked for 40 years, was helped by MD Anderson's Tobacco Treatment Program. Life is good for Preston and her two dogs, Ms. Kizzy and Dallas (foreground), now that she's "free from those nasty cigarettes."

📷 Wyatt McSpadden



# QUITTERS NEVER WIN?

## SOMETIMES THEY DO

By Clayton Boldt, Ph.D.

### MD ANDERSON'S TOBACCO TREATMENT PROGRAM IS HELPING SMOKERS BEAT THE PHYSICAL AND PSYCHOLOGICAL ASPECTS OF ADDICTION

**L**oretta Preston kicked her cigarette addiction two years ago. "Quitting wasn't easy," she says. "I'd smoked for 40 years." Then, the unthinkable happened. Her beloved pit bull, Tip, who she'd raised from a puppy, was stolen in a carjacking.

"I thought my life was over," she says.

Unable to cope with the pain, the MD Anderson patient and four-time cancer survivor started smoking again.

Breaking a tobacco addiction isn't easy. Quitting tobacco while dealing with the stress of battling cancer is twice as hard.

Tobacco is the single most preventable cause of cancer, and is responsible for more than 30% of all cancer-related deaths. Each year, smoking causes one of every five deaths in the United States.

In cancer patients, tobacco use can limit treatment effectiveness, complicate healing and lead to relapse or additional cancers.

"I decided I was tired and I didn't want to die," Preston says.

The program helped her stop smoking two years ago, and she would use it again to help her quit after losing Tip.

The Tobacco Treatment Program was established in 2006 to help all MD Anderson patients who use tobacco to quit, free of charge. It's also open to patients' families as well as MD Anderson employees and their dependents.

All patients who list themselves as current smokers or recent quitters are automatically referred to the program.

"This is a radical shift from traditional programs that require patients to be referred by a physician," says Paul Cinciripini, Ph.D., the program's director.

The patient's journey begins with a phone call from a program staffer who discusses the benefits of tobacco cessation and gauges the patient's interest in participating in the program.

Some may be ready to kick the habit right away. Those who are more hesitant receive sustained support with regular follow-ups and phone calls.

"One way or another, we touch the lives of all these patients," says Cinciripini, who also is chair of Behavioral Science.

New patients first receive an in-person consultation, followed by six to eight counseling sessions, with medications given to ease withdrawal symptoms and help participants stick to the program. Those unable to participate in person may phone in.

"We do everything possible to help people quit smoking," says Maher Karam-Hage, M.D., the program's associate medical director. "That includes regular phone calls and aggressive medication management. We want to give every participant the best possible chance to quit."

"If you're willing to work, you can have success," says Preston. "They gave me the tools that I needed and a number to call to talk



**Paul Cinciripini is the director of the Tobacco Treatment Program.**  
**Eric Kayne**

to someone if I wasn't feeling complete. They called, they checked on me, and they made sure I was OK."

Psychological support is key to the program's success. Medications ease cravings, but counselors teach patients how to cope with behavioral triggers that stimulate cravings.

"We leave patients with tools to use after their medications are completed," explains Karam-Hage, an addiction psychiatrist.

Some patients participate in clinical trials that help researchers identify new and improved interventions.

Since the program began, more than 6,400 patients have received in-person or phone-based counseling, with an average of eight follow-up appointments each. Almost 10,000 more have benefited from literature and other resources distributed through the program. All totaled, that's nearly 70,000 patient contacts in just over nine years.

Thirty-five to 46% of people remain tobacco-free nine months after treatment ends. Most others have cut their tobacco use by more than half.

"That's as good as, or better, than the best-reported outcomes from pivotal clinical trials in tobacco cessation," says Cinciripini.

Participants who are unsuccessful the first time are able to try again.

When Preston relapsed, she was welcomed back. After her second round, she's once again tobacco-free. And she has a new pit bull named Dallas.

She urges others never to give up hope.

"After smoking for almost 40 years, life is good. I have a new puppy, and I'm finally free from those nasty cigarettes."



# All Over THE MAP

By Ron Gilmore

Azerbaijan.  
Wyoming.  
Winkler County, Texas.  
These places seem to have little,  
if anything, in common.

**B**ut they're among the local, national and international locations that MD Anderson patients call home.

Last year, patients traveled from more than 100 countries, 228 Texas counties, 49 states, Washington, D.C., and the U.S. Virgin Islands for the very best in cancer care. Whether it's Muleshoe, Memphis, North or South Korea, the institution's patients seek out the expertise of America's No. 1-ranked cancer center.

Just ask Eileen Sullivan, who's been coming to MD Anderson for four years. Originally diagnosed with chronic myeloid leukemia in her hometown, the 91-year-old Huntsville, Alabama, native was referred to MD Anderson in 2011 when her cancer progressed.

Houston and the often overwhelming city-within-a-city that is the Texas Medical Center were an immediate challenge for Sullivan and her caretaker, Amy Shadoin, who is also her daughter.

"We contacted Patient Travel Services and they made everything seamless," says Shadoin. "It was such a blessing because there are so many moving parts at MD Anderson."

Shadoin marvels at how her patient travel representative, William Perla, immediately recognizes her voice over the phone.

"He doesn't even have to ask who it is," she says. "He knows my voice. I've also heard his co-workers

ask how people's grandbabies are doing. They're that familiar with their patients."

That level of familiarity was a comfort to Sullivan during the past three years when she was enrolled in a clinical trial. With that completed, she now returns every three months for regular follow-ups.

## HELPING TO NAVIGATE

Patient Travel Services is just one of the offices available to help patients during a stressful transition. Gwen Hurst, a program manager in Finance, Accounts Payable and Travel, understands how scary things can be for patients when their chief concern is their health, not how they'll get to Houston or where they'll stay.

"We have two full-time travel agents who help patients find lodging, offer recommendations for things to do, work with airlines to waive fare-change fees for patients whose schedules are unpredictable, and provide other services," Hurst says. "We help patients better understand the scope of just how big MD Anderson is. And, in general, we're just there for them throughout their visits."

Other offices, such as the International Center and Social Work, also provide assistance to patients traveling to Houston for care.

**MD Anderson is a four-hour drive from Robert McAlister's ranch in Hico, Texas.**  
 **Wyatt McSpadden**







“The International Center has helped smooth things over with paperwork, physician referrals, airport logistics, assistance with wheelchairs, and, of course, translation. They even recommended a good place to get barbecue.”

— Xiaobing Ding, a patient from Guangzhou, China



## GLOBE-TROTTING PATIENTS

Coming to MD Anderson can be daunting for patients traveling from other states or small Texas towns. For international visitors, it can be downright mind-boggling. Not only are they adjusting to a new geographical location, they are immediately immersed in an unfamiliar culture.

Enter the International Center, which offers a menu of services, including helping patients obtain their first appointment, pre-arrival preparation, visa and other arrangements, airport and transportation needs, referrals to banking and business services, lodging, financial inquiries, religious and dining queries, and more.

Martha Coleman, who has been a nurse manager at the International Center for nearly a decade,

Last year, MD Anderson welcomed more than 1,200 international patients from across the world. The “top 10” are United Arab Emirates, Saudi Arabia, People’s Republic of China, Qatar, Mexico, Kuwait, Ecuador, Canada, Peru and Venezuela.

“We’re seeing a surge in patients coming from India, however,” says Coleman. “And recently we’ve had inquiries from Cuba.”

Xiaobing Ding, an electrical engineer from Guangzhou, China, has experienced firsthand the International Center’s services. Diagnosed in China with lung cancer, he and his wife, Ping Wang, came to Houston after researching top cancer hospitals.

“I was diagnosed this February with an advanced metastasis in the adrenal gland and was given two cycles of chemotherapy in China,” says



**The Physicians Network’s Patricia Moore is the “go-to” person for many MD Anderson patients who travel from out of town for treatment. 📷 Eric Kayne**

knows exactly what drives patients to travel thousands of miles to MD Anderson.

“It’s simple. They want to go to the best,” she says. “They hear about us through word-of-mouth from other family members and friends and from our global reputation.”

Coleman describes how one Lebanese patient even wrote a book about her positive experiences when being treated for breast cancer here.

“She was instrumental in getting the word out and helping other women talk about breast cancer, something not so common in the Middle East,” says Coleman.

Ding. “But when we came to MD Anderson in April, my physician confirmed that the cancer was not metastatic.”

Ding has received treatment at MD Anderson and has been impressed with International Center staff such as Meiling Zhuang, an international patient assistant who also served as Ding’s translator. Neither he nor his wife speaks English.

“The International Center has helped smooth things over with paperwork, physician referrals, airport logistics, assistance with wheelchairs, and, of course, translation,” Ding says. “They even recommended a good place to get barbecue.”

**Xiaobing Ding, an electrical engineer from Guangzhou, China, has experienced firsthand the International Center’s services.**

**📷 Adolfo Chavez III**



## GOING THE DISTANCE FOR THE BEST CURE

### A NEED FOR NETWORKING

Patients often find help through representatives from the MD Anderson Physicians Network®, a multidisciplinary network of providers offering MD Anderson-branded oncology services to local hospitals in the U.S.

Janice Kitchens, a department manager with the Physicians Network, says patients arrive at MD Anderson for many reasons.

“They may want a second opinion or be participating in a clinical trial, or their physician may refer them because they aren’t able to offer the subspecialty care required,” she says. “For example, we get referrals for proton therapy because it’s not widely available.”

Robert McAlister, 76, a rancher who drove to MD Anderson from Hico, Texas, feels he was fortunate to have met the Physicians Network’s Patricia Moore.

“I came to Anderson after I had been feeling sick,” he says. “My doctor ran some tests and after a biopsy, said I had prostate cancer. I sought a second opinion at MD Anderson.”

Shortly after arriving from his 450-acre ranch in Central Texas, McAlister was contacted by Moore, who he says “quarterbacked everything.”

“She was just outstanding and I felt we were kindred spirits,” says McAlister. “I came to look at Patricia as my ‘go-to’ person for trouble spots.”

With Moore’s help, McAlister was quickly referred to MD Anderson’s Brian Chapin, M.D., assistant professor of Urology.

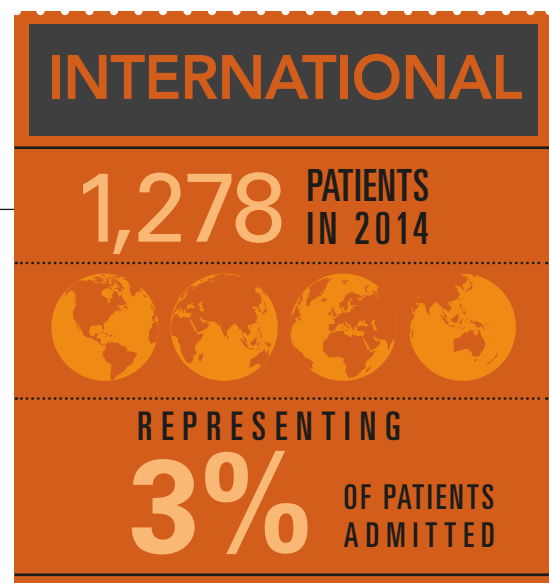
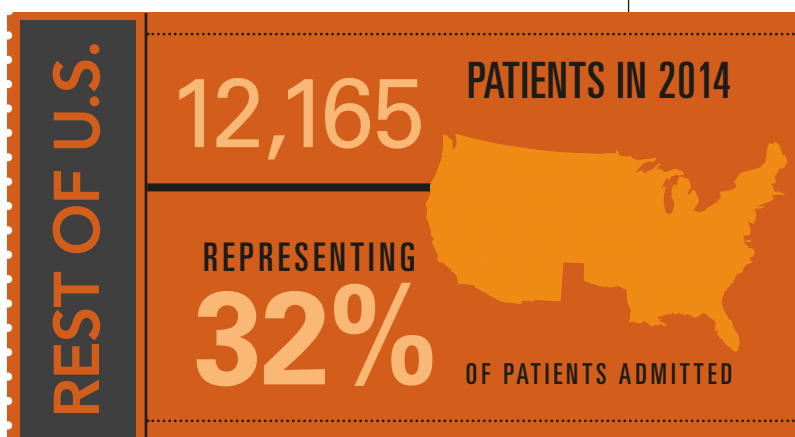
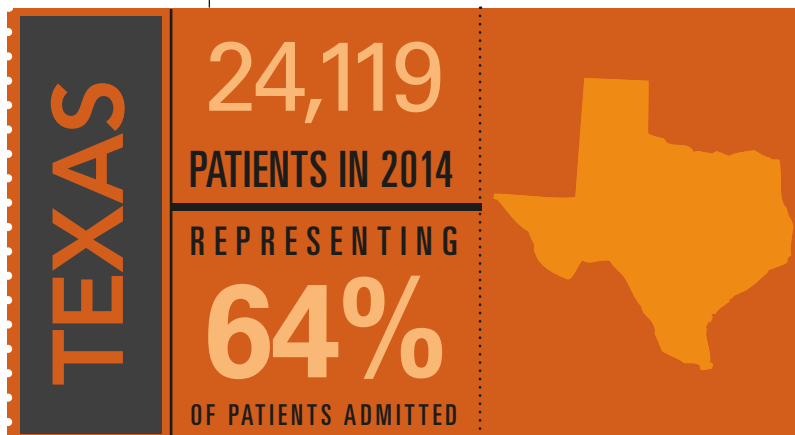
“He just sat down and started talking with me with no laptop, no notebook,” McAlister says. “He said I didn’t need surgery and that the cancer was not aggressive. He recommended a biopsy in six months and put me on a ‘watch’ program.”

Moore, who has been at MD Anderson for 18 years, was glad she could help McAlister.

“We’re often able to help patients cut through a lot of things,” she says. “The processes can be cumbersome and we establish a relationship with patient access specialists in each clinic area so we can help them more efficiently.”

While patients often develop close day-to-day relationships with the MD Anderson staff who help them while they’re here, it’s often a mutual benefit.

“These patients become like our family members,” Moore says. “We watch over them nonstop.”



# Innovations in the OR

**Surgeon scientists are testing unconventional therapies in the operating room**

By Jacqueline Mason

A cadre of elite surgeons is making a mark as pioneering researchers at MD Anderson. In the operating room, they're not just excising tumors, they're testing innovative therapies to stop cancer in its tracks.

The surgeons you're about to meet have dedicated their careers to curing and preventing cancer, often through less-invasive procedures. Curiosity spurs their motivation: Can doing less to patients — or something dramatically different — allow doctors to manage their disease and return them to a reasonable quality of life?

To get answers, their patients have enrolled in clinical trials that unfold in the operating room and are often over in just minutes or hours.



## ROBOTIC SURGERY OR RADIATION?

Neil Gross, M.D., associate professor of Head and Neck Surgery, wants to know how well patients regain normal function after treatment for cancers affecting the back of the throat, the base of the tongue or the tonsils — an area known as the oropharynx. He's comparing patients who had surgery to those who had radiation.

It's an especially timely question, because these cancers, called oropharyngeal cancers, are up 225% since the late 1980s. Researchers associate this rise with the spread of the human papillomavirus (HPV) — the most common sexually transmitted virus in the United States.

Radiation and chemotherapy traditionally have been used to treat oral cancers, and patients' prognoses are generally good, Gross says. But long-term side effects of radiation include scarring, tightness in the throat, trouble swallowing and loss of saliva.

Before 2009, surgery wasn't a commonly used option because it meant splitting the jaw to access the cancer. That's when the Food and Drug Administration approved the use of robotic surgery for head and neck cancers.

Gross became one of the first surgeons to perform the less-invasive surgery.

In his latest study, Gross is collecting data from patients who've undergone either robotic surgery or radiation to treat early-stage oropharyngeal cancer. Participants wear a Fitbit-style band that tracks their daily activity and provides Gross with a better understanding of the impact various treatments have on patients' quality of life.

"Operative robotic technology has improved. So now we can access these areas surgically that we couldn't access very well before," he says. "My hope is to offer patients as many options as possible and then help them choose the best treatment."

## A LESS-DISRUPTIVE SURGERY FOR ENDOMETRIAL CANCER

Women who have advanced or difficult-to-treat cancer in the lining of the uterus face the dangerous risk of the cancer spreading from the uterus to the lymph system in the pelvic and abdominal area.

To determine if this has happened, doctors typically remove all the lymph nodes in that region at the time of initial staging surgery. However, the surgery can cause complications for women who are obese, and for those who have diabetes or high blood pressure.

Pamela Soliman, M.D., associate professor of Gynecologic Oncology and Reproductive Medicine, is leading a study to pinpoint precisely which lymph

## NEIL GROSS WAS AN EARLY ADOPTER OF ROBOTIC SURGERY TO TREAT HEAD AND NECK CANCERS.

nodes are the most likely to be invaded by cancer of the endometrium — the lining of the uterus.

In the operating room, participants undergo sentinel lymph node mapping followed by a full lymph node dissection, the current standard of care. Early findings suggest that in the future, surgeons may need to remove only patients' sentinel nodes — the first few lymph nodes into which a tumor drains — as opposed to all their lymph nodes in the affected region.



This shift away from complete lymph node removal has been proven when treating melanoma, breast cancer and vulva cancer, Soliman says.

"It's a little more challenging in endometrial cancer because the lymphatic drainage in the uterus appears to be multi-channeled. It doesn't follow one pattern," she says. "But, at least so far, we've had a good accuracy rate."

## SMART BOMBING BRAIN TUMORS

For some patients of Frederick Lang, M.D., getting a virus is just what they need.

The Neurosurgery professor is working to wipe out brain tumors using an active and highly virulent adenovirus — the kind that causes the common cold.

**Above and previous page:** Robotic surgery allows Neil Gross to surgically access areas he couldn't without the help of the technology.

**F. Carter Smith**



**Kelly Hunt is seeking less-invasive ways to treat breast cancer.**

📷 Eric Kayne

“We go to the operating room and inject the virus into the tumor for 10-15 minutes,” says Lang. “The patient theoretically doesn’t have to do anything more. There’s no chemotherapy after it.”

The virus has been engineered to multiply and attack cancer cells while leaving healthy cells alone. In some patients, it even alerts the immune system to fight the tumor, a concept called antigen spread.

In a recent clinical study, the virus — combined with antigen spread — completely eliminated glioblastomas in three of Lang’s patients. Although the tumors later returned, the patients lived three to four years longer than what’s typical. Other patients in the study lived an average of nine months longer.

For Lang, the question now becomes: How do we create antigen spread in everyone?

Juan Fueyo-Margareto, M.D., professor of Neuro-Oncology, and Candelaria Gomez-Manzano, M.D., associate professor of Neuro-Oncology, may have the answer.

The duo created the amped-up adenovirus used in Lang’s clinical trials. Now, they’re using discoveries by James Allison, Ph.D., chair of Immunology, to further modify the virus to prompt an immune response.

“If we can make the virus activate the immune system the way we want, then we’ve got the solution all packaged in the virus,” Lang says.

For more on this approach, see “Unleashing the cold virus to kill cancer” on page 20.

## WHEN LESS IS MORE

Kelly Hunt, M.D., *ad interim* chair of Breast Surgical Oncology, envisions a future where some breast cancer patients avoid surgery altogether.

“That’s where the field is going,” she says, pointing out the evolution from pre-1970s radical mastectomies to today’s breast-conserving therapies.

Hunt helped lead a study that confirmed women with early-stage breast cancer don’t need to undergo aggressive lymph node removal to stop the cancer’s spread. The study led to a new standard of care for breast cancer patients worldwide.

“We’re now starting to look at the same paradigm in women with more advanced breast cancers,” Hunt says.

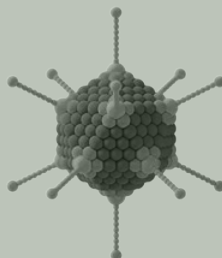
Along with physician researchers like Henry Kuerer, M.D., Ph.D., and Abigail Caudle, M.D., in her department, Hunt is offering candidate patients who have advanced breast cancer the option of removing fewer lymph nodes.

“Because the standard treatment has been performed for so many years, it’s hard for physicians and patients to accept that you’re going to take something away and do something less radical and still get the same outcomes,” Hunt says. “That’s why trials are needed to prove this had to be done.”



# UNLEASHING THE COLD VIRUS TO KILL CANCER

By Ronda Wendler



MEDICALLY SPEAKING, PHIL BAUMANN SHOULDN'T BE ALIVE. FOUR YEARS AGO, AT AGE 47, HE WAS DIAGNOSED WITH A FAST-GROWING AND INCURABLE FORM OF BRAIN CANCER CALLED GLIOBLASTOMA.



**Phil Baumann prepares to take a spin in the 1967 Ford Mustang he bought and restored in high school. Baumann, who owns a successful paint and body shop, is battling brain cancer. 📷 Wyatt McSpadden**

“I’d been having some pretty bad headaches,” says Baumann, now 51. “Then one night, I had the worst headache of my life.”

The pain convinced the usually stoic paint-and-body shop owner to seek care at a freestanding emergency center, where doctors ordered a CT scan.

Phil’s wife, Misty, remembers what happened next “like it was yesterday.”

“The doctor showed us Phil’s scan. It revealed a tangerine-sized mass on the right side of his brain.”

Baumann sought treatment at MD Anderson where surgeons removed the tumor and doctors prescribed aggressive radiation and chemotherapy. As predicted, in six months the tumor came roaring back.

“You can’t escape glioblastoma,” Baumann says. “My doctors warned me it would return, and it did. It’s scary stuff.”

## ‘GROW AND GO’

Glioblastomas, or malignant gliomas, are sometimes called “grow-and-go” tumors. They make their own blood supply, which fuels the tumors’ rapid growth and helps them hatch satellite tumors. Each tumor sends out tentacles that infiltrate and dig deep into normal brain tissue.

“My doctor told me a glioblastoma is like a weed that keeps sprouting runners or tendrils,” Baumann says.

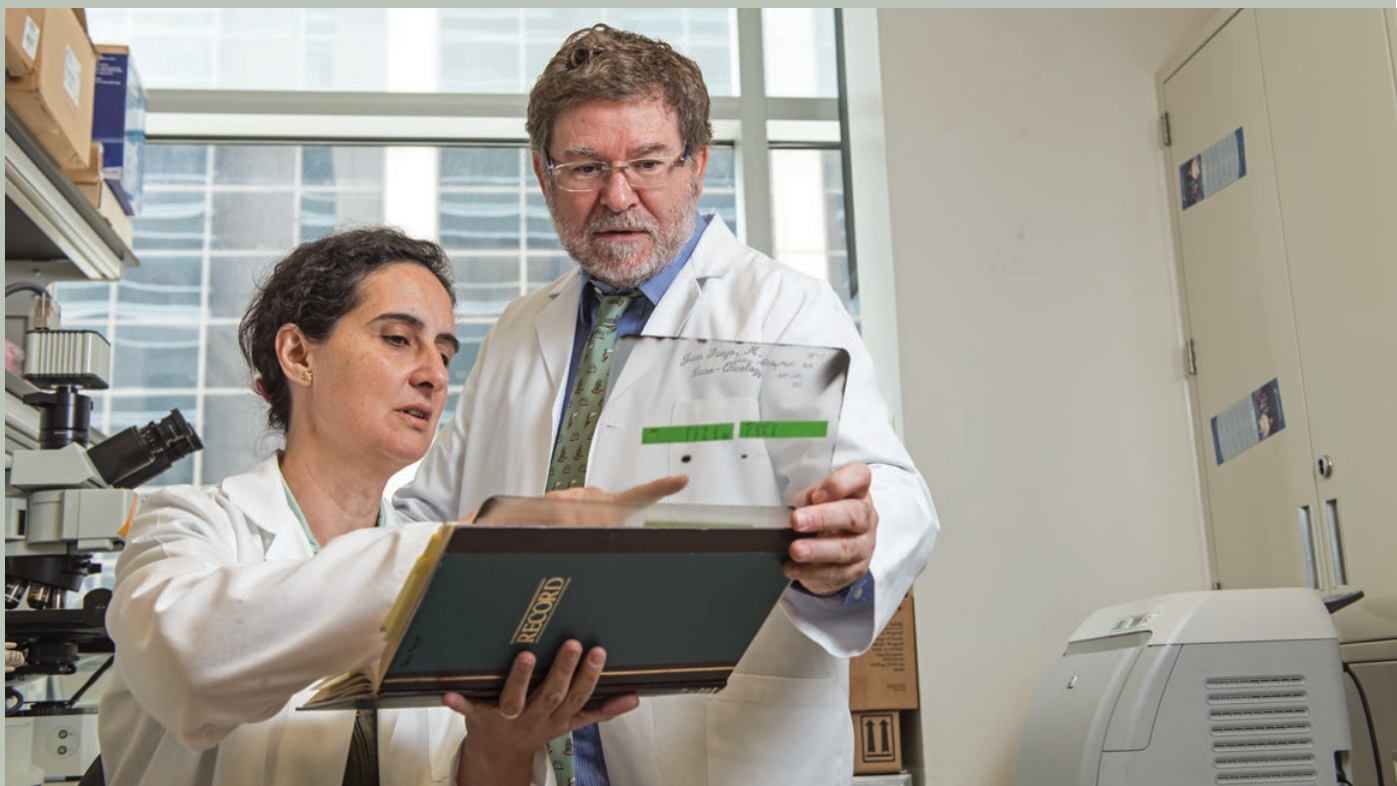
Without treatment, a glioblastoma tumor doubles in size every two to three weeks.

Neurosurgeons may seemingly remove the entire tumor, but hidden cancer cells remain seeded in the brain and, inevitably, the tumor comes back.

When glioblastoma returns, time is short. Even with treatment, survival time following diagnosis is 14 months. Baumann was faced with those dismal odds and worried he’d become one of the 12,000 Americans who die from the disease each year. The brain cancer has been named a target of the Moon Shots Program (see page 24).

Worry turned to hope when he was offered the opportunity to enroll in an MD Anderson clinical trial that uses the common cold virus to battle glioblastoma.





**Husband-and-wife researchers Candelaria Gomez-Manzano and Juan Fueyo found a way to turn the virus that causes the common cold into a cancer-seeking missile. They named it Delta 24.  Wyatt McSpadden**

“This was my last chance, so I jumped at it,” he says. “It’s an aggressive tumor, so I wanted an aggressive therapy.”

### CANCER-SEEKING MISSILE

The experimental therapy is the brainchild of husband-and-wife researchers Juan Fueyo, M.D., and Candelaria Gomez-Manzano, M.D., who have been laboring over what they call their “big idea” for 15 years.

Working in a secured laboratory at MD Anderson, they found a way to genetically modify the adenovirus that causes the common cold, transforming it instead into a cancer-seeking missile that attacks brain tumors.

“We could have experimented with any virus,” Fueyo says, “but we chose the cold virus because it doesn’t need to be re-engineered much to make it safe for patients, yet it’s effective against cancer.”

The altered virus is injected through a hole in the skull, directly into the patient’s tumor. It’s the first time the cold virus has been used in this way.

Some called the couple medical explorers. Others called them crazy.

“At first, everybody had doubts,” says Fueyo, research director in MD Anderson’s Brain Tumor Program. “They didn’t understand the concept and they thought it was dangerous. We’re talking about a live virus, injected into patients in enormous doses.”

Gomez-Manzano remembers being unable to sleep the night the first patient was injected.

“I was so apprehensive,” she recalls, “and very relieved to learn the next morning that the patient suffered zero side effects.”

Fueyo and Gomez-Manzano named their virus Delta 24 — a moniker shared with a type of submarine that seeks out targets and blasts them with ballistic missiles.

“Our virus behaves similarly,” Fueyo says. “It’s engineered to be safe for cancer patients by targeting proteins that exist only in cancer cells, while leaving healthy tissue alone.”

When the virus detects a cancer cell, it enters the cell and begins making copies of itself nonstop. The malignant cell fills with viral particles, then explodes. With each explosion, the Delta 24 viral particles burst forth and move forward in a wave-like motion to infect other cancer cells. This continues until all tumor cells have burst.

If a patient’s cancer comes back, as glioblastoma almost always does, Delta 24 continues to recognize and attack it.

“We’re almost creating a vaccine inside the brain, specifically against the tumor,” says Frederick Lang, M.D., a professor of Neurosurgery at MD Anderson who helped move the therapy beyond the lab and into clinical trials for patients.

### OUTWITTING CANCER

Virus-based cancer treatments, sometimes referred to as “virotherapy,” are generating a tremendous amount of excitement in the oncology world, says Lang, who also is director of clinical research in MD Anderson’s Neurosurgery department.

“All human cancers develop a protective shield that makes them invisible to the immune system,” Lang explains. “Viruses deactivate this shield in a very sneaky way.”

By infecting a tumor with the Delta 24 cold virus, the immune system is tricked into thinking, “there’s a common cold here, let’s go kill it.” Immune cells rush to the tumor and unleash an all-out attack against the cold virus. The tumor,



**Neurosurgeon Frederick Lang helped take Delta 24 from the lab to the operating room. 📷 Adolfo Chavez III**

caught up in this “war,” becomes “collateral damage” as it is destroyed in the same attack.

Delta 24, working with the immune system, delivers a one-two punch to knock out cancer cells.

“Cancer can be wily because it does everything possible to dodge destruction,” Lang says. “But viruses are equally tricky in their mission to invade cells and propagate.”

### UNCHARTERED TERRITORY

Six weeks after Baumann was injected with Delta 24 — and against all odds — his brain scan showed his tumor stopped growing. Eventually the tumor vanished and Baumann remained cancer free for four years — until this fall when the tumor reappeared.

Doctors are discussing the next steps for Baumann, who Lang says has made history by living cancer free longer than any other participant in the trial.

“I’m extremely blessed that I’ve been given extra time to be a husband to Misty and a father to our 12-year-old son, Colby,” Baumann says.

Like Baumann, two of the other 25 patients enrolled in the trial to test Delta 24’s effectiveness also saw their tumors vanish, though both relapsed, and one has died.

Half the remaining patients experienced what doctors call a “partial response.” Their tumors shrank but didn’t disappear, and they lived longer than expected. The other half simply didn’t respond to the virus. Overall, the trial’s results are medically significant, says Lang. “To have these kinds of results in an early-stage trial — where half of patients exceeded life expectancy, and three saw their tumors vanish — is beyond all expectations.

Lang shared the trial’s initial results at the Society for Neuro-Oncology’s annual meeting this past November, where he said we’ve reached “a turning point in cancer care.”

To bring the therapy to more patients faster, and to make it even more effective, the Delta 24 virus is now being tested in combination with other drugs at several sites throughout the world. Studies testing new ways to deliver the virus are also in the works, Lang says.

One will use a new type of catheter that prevents Delta 24 from leaking out of the tumor — a problem of the current procedure — while another will use stem cells to deliver the virus.

“We’ll load Delta 24 into stem cells, inject those stem cells through a puncture in the groin, and then those loaded stem cells will snake their way upward through the network of veins and arteries until they home in on the tumor,” Lang explains. “Instead of injecting the tumor in just one spot, we’re painting the entire tumor with a cancer-fighting virus.”

But the most intriguing challenge, Lang says, is to pinpoint what’s unique about the immune systems of Baumann and the other two patients whose tumors disappeared after the virus was injected.

“Can we make patients who didn’t respond look like the three who did? This is what we’ll be working on.”



**Phil Baumann, his wife, Misty, and their son, Colby, started CureFest to raise money for brain cancer research. 📷 Wyatt McSpadden**

### PAYING HOPE FORWARD

To raise money for brain cancer research at MD Anderson, Phil and Misty Baumann, with help from family and friends, host an annual non-profit event known as CureFest ([www.curefest.com](http://www.curefest.com)).

Held each spring at the Humble Civic Center, CureFest features a dozen live bands performing on two stages, a classic car exhibition, more than 75 vendor booths offering community services, retail items and handcrafted goods, and a live and silent auction. Favorite auction items in the past have included autographed memorabilia from NFL players such as Troy Aikman, exotic fishing trips, Texans tickets, and even a tricked-out golf cart custom-painted by Phil Baumann.

Children’s activities include an inflatable moonwalk, face painting, an obstacle course, rock wall climbing and more.

Recently, the Baumanns expanded CureFest by adding fundraising golf and tennis tournaments, held separately throughout the year.

“Friends have asked, ‘What can we do, what do you need?’” says Phil Baumann. “All I ask now is that you help us pay the hope forward to help other families in need of a cure.”

Since launching in 2012, CureFest has raised more than \$500,000 for brain cancer research at MD Anderson.



# MOON SHOTS MISSION ESCALATES TO CONFRONT SIX MORE CANCER TYPES

By Scott Merville

MD Anderson's Moon Shots Program has expanded its targets, adding some of the most intractable cancers to its campaign to more rapidly convert scientific discoveries into life-saving advances.

The innovative program's transdisciplinary team-science approach and transformative professional platforms now pursue meaningful progress against B-cell lymphoma, glioblastoma (brain cancer), HPV-associated cancers (caused by the human papilloma virus), high-risk multiple myeloma, colorectal and pancreatic cancers.

These join the original moon shots launched in 2013 to address breast/ovarian cancer, chronic lymphocytic leukemia, lung cancer, melanoma, myelodysplastic syndrome/acute myeloid leukemia and prostate cancer.

"Our multidisciplinary, goal-oriented moon shots programs, enabled by the deep expertise and advanced technology of our execution-oriented platforms, are poised to accelerate declines in mortality for some of the most common types of cancer," says MD Anderson President Ronald DePinho, M.D. "After the first two years, we're transitioning from the foundational phase to the results phase, and some moon shots already are making practice-changing advances in the clinic and in cancer prevention and control."

All 12 moon shots have planned or opened novel clinical trials of new immunotherapies, drugs that free the immune system to attack tumors, as well as targeted therapies and drug combinations.

In the longer term, collaboration with moon shots platforms and basic scientists will heighten understanding of the molecular details of cancers, treatments and how the two interact. Ten platforms provide expertise and technology in the areas of cancer prevention and control, drug development, and big data-driven patient care and research. Many moon shots include prevention and early detection projects.

## EXTERNAL SCIENTIFIC REVIEW

The six new moon shots began life as pilot projects that were chosen by external reviewers during the summer of 2014 from among 14 proposals. Leaders received initial funding to plan and develop their ideas a year ago.

Both pilots and inaugural moon shots were again peer-reviewed this summer by the program's external Scientific Advisory Board, which scored all 12 based on criteria that included potential to measurably reduce cancer mortality, breadth and depth of multidisciplinary teams and quality of scientific plans. The board's feedback helped mold priorities and funding for fiscal year 2016.

## B-CELL LYMPHOMA

*Leaders: Michael Wang, M.D., professor of Lymphoma/Myeloma and Richard Champlin, M.D., professor and chair of Stem Cell Transplantation and Cellular Therapy*

About 80,000 new cases of this group of blood cancers are diagnosed annually. The cure rate is 30%. This moon shot will focus on overcoming resistant disease by developing new predictive tools, finding new targets for therapy and using new immunotherapy drugs, targeted therapies and engineered immune system T cells to attack these lymphomas.

## COLORECTAL CANCER

*Leaders: Scott Kopetz, M.D., Ph.D., associate professor of GI Medical Oncology; Stanley Hamilton, M.D., division head of Pathology and Laboratory Medicine; and Ernest Hawk, M.D., vice president and head of Cancer Prevention and Population Sciences*

This cancer is the second-leading cause of U.S. cancer-related deaths — 49,700 in 2015. Projects focus on improving early detection and prevention as well as testing personalized treatment with immunotherapies before surgery. Another program builds on leadership by MD Anderson investigators to classify colorectal cancers by subtype based on integrated molecular and genomic analysis to improve targeted treatment.

## PANCREATIC CANCER

*Leaders: Robert Wolff, M.D., chair ad interim of GI Medical Oncology; Jason Fleming, M.D., professor of Surgical Oncology; and Anirban Maitra, M.B.B.S., professor of Pathology*

An estimated 49,000 people receive a pancreatic cancer diagnosis each year, and only about 6% of patients survive five years. This moon shot focuses on early detection methods, development of predictive biomarkers to guide presurgical targeted therapy and testing of new immune T cell-based therapies.

## HIGH-RISK MULTIPLE MYELOMA

*Leaders: Robert Orlowski, M.D., Ph.D., professor of Lymphoma/Myeloma; Donald Berry, Ph.D., professor of Biostatistics; and Richard Eric Davis, M.D., associate professor of Lymphoma/Myeloma*

Patients with high-risk disease make up about 20% of the estimated 27,000 people expected to receive a diagnosis in 2015. While new drug combinations and blood stem-cell transplants have improved survival for patients, prospects for those with high-risk disease have lagged. This moon shot will work to develop risk-prediction models and immunotherapeutic approaches to hit high-risk disease at earlier stages and to treat advanced disease.

## HUMAN PAPILLOMAVIRUS-RELATED CANCERS

*Leaders: Erich Sturgis, M.D., professor of Head and Neck Surgery; Bonnie Glisson, M.D., professor of Thoracic/Head & Neck Medical Oncology; Lois Ramondetta, M.D., professor of Gynecologic Oncology and Reproductive Medicine; Cathy Eng, M.D., professor of GI Medical Oncology; and Kathleen Schmeler, M.D., associate professor of Gynecologic Oncology and Reproductive Medicine*

An estimated 17,500 women and 9,300 men yearly develop a cancer caused by this sexually transmitted virus. One moon shot goal is to boost HPV adolescent vaccination rates to 80% to prevent cervical, throat, anal and other cancers. Other projects extend cervical cancer screening to women in medically underserved communities, seek to develop HPV-related cancer screening for men and aim to more fully characterize HPV-related tumors across multiple disease sites to develop targeted drugs and immunotherapies.

## GLIOBLASTOMA

*Leaders: Amy Heimberger, M.D., professor of Neurosurgery; Frederick Lang, M.D., professor of Neurosurgery; and John de Groot, M.D., associate professor of Neuro-Oncology*

Of the 15,000 people who receive a diagnosis of this most lethal brain cancer, only 5-10% survive to five years. This moon shot will examine existing and experimental immunotherapy drugs and customized T cells designed to attack specific targets. Other projects include further development of an engineered, cancer-killing virus (see page 20) and identification of new targeted therapies.

**SO FAR, THE MOON SHOTS PROGRAM HAS RECEIVED \$290 MILLION IN PRIVATE PHILANTHROPIC COMMITMENTS.**



# They are survivors. They are still fighting.

If you think cancer ends with surviving, think again

By Ronda Wendler

When Bill Baun finished the 15 rounds of radiation needed to treat his prostate cancer this summer, the mood was celebratory.

Onlookers applauded and cheered as he rang the brass bell in MD Anderson's Radiation Oncology Department — a longstanding tradition that signals the end of treatment.

But in some ways, the most challenging part of the cancer experience begins when treatment is done.

"Cancer changes everything in your life," says Baun, who's not only a patient but also a wellness consultant at MD Anderson. His role is to help patients cope with their diagnoses and live life as fully as possible.

"Some patients have a simple diagnosis, sail through treatment and return to their everyday lives," Baun says. "But for most of us, cancer is a game changer that impacts every aspect of who we are and who we'll become during and after our cancer journey."

"Some patients have a simple diagnosis, sail through treatment and return to their everyday lives. But for most of us, cancer is a game changer that impacts every aspect of who we are and who we'll become during and after our cancer journey."

— Bill Baun, prostate cancer survivor

During treatment, patients are surrounded by the world's best army of cancer fighters. Brilliant medical professionals and supportive family and friends work tirelessly to help them heal.

"But when treatment ends, the constant flood of doctors' appointments, medical tests and phone calls from concerned family and friends dwindles to a slow trickle," Baun says. "Patients who are done with cancer care sometimes feel a void and struggle to figure out who they are."

A growing body of evidence suggests that cancer patients continue to wrestle with medical, financial and psychological issues long after treatment ends. For some, the experience is transformative and provides a renewed sense of purpose and appreciation for life. But many who try to rebuild their lives after something as devastating as cancer find the experience to be deeply disorienting and destabilizing, says Baun, who likens the experience to post-traumatic shock.

"You may no longer be sick, but you're not well," he says. "You need help navigating the road back."

## THE SURVIVORSHIP MOVEMENT

One of the first medical professionals to recognize this unmet need was Fitzhugh Mullan, M.D., a pediatrician who helped form the National Coalition for Cancer Survivorship advocacy group in the 1980s. Having survived cancer himself, Mullan recognized that the unmet physical, emotional and psychosocial needs of survivors needed to be addressed by the cancer community.

In an essay in the *New England Journal of Medicine*, he shared his own cancer experience and wrote "survivorship begins from the moment of diagnosis — because that is when cancer



**Bill Baun and his wife, MaryBeth, say their dual cancer diagnoses have helped them get more out of life. 📷 Wyatt McSpadden**

patients must first confront their mortality — and lasts for the rest of a patient's life.”

Mullan described what it's like for patients to pass through “the three seasons of survival”: diagnosis and treatment, watchful waiting after treatment ends while hoping cancer doesn't return, and permanent survival. The latter being a nebulous term that generally describes those who are cancer-free five years after diagnosis.

Since then, the definition of survivorship has expanded to include those living long-term with cancer with the help of new treatments that keep tumors at bay, and those who have cancer that goes away and comes back, sometimes more than once.

“A number of patients at MD Anderson fall into those categories,” says Paula Lewis-Patterson, D.N.P., executive director of Cancer Survivorship at MD Anderson.

Like many new concepts in medicine, Mullan's survivorship movement was slow to gain acceptance. Numerous studies were published over the years to prove its worth, and finally in 2006 the Institute of Medicine issued a report recommending that every cancer patient receive a plan that is individualized to his or her care at the end of treatment.

To promote survivorship, MD Anderson regularly offers conferences for health care professionals, funding for survivorship studies, and educational and recreational activities for patients and caregivers.

“An increasing number of cancer treatment centers have now begun offering post-treatment care and support groups for survivors,” Lewis-Patterson says. “But many patients, especially in rural areas, continue to fall through the cracks.”





### IT'S NOT OVER WHEN IT'S OVER

MD Anderson patients who show no evidence of cancer are monitored in 12 survivorship clinics, each one specializing in a particular type of the disease. Nurse practitioners manage the clinics and check for recurrence of cancer, lingering side effects or signs of psychological or emotional stress. When needed, patients are referred to physicians, nutritionists, social workers or psychologists.

The American Cancer Society estimates 14.5 million cancer survivors live in the U.S. today. With new treatments that extend lives, that number is expected to rise to 19 million by 2024.

"We have a responsibility," says Lewis-Patterson, "to step up our efforts and meet the needs of this rapidly growing population."

Cancer is a two-part journey, says Alma Rodriguez, M.D., vice president of Medical Affairs at MD Anderson.

"It's physical, it's emotional, and it's never over when treatment's over," says Rodriguez, who developed and oversees the cancer center's Survivorship Program.

On the physical side, chemo, radiation and other treatments can cause cardiac problems, reduced lung capacity, nerve damage, infertility, debilitating fatigue and a host of other problems years after treatment ends. The impact of these late effects, as they are called, can vary and depend on how old the patient was when diagnosed, frequency and dosage of chemo and radiation, parts of the body exposed, types of surgery performed and types of medication taken, as well as the severity of the cancer itself.

Depression may take over as survivors face life with a body image altered by surgery or ongoing physical

**Alma Rodriguez (left) and Paula Lewis-Patterson are instrumental in promoting survivorship at MD Anderson.**

**Eric Kayne**



limitations. Patients may struggle financially if they're too fatigued to hold down a steady job or if their coffers have been drained by costly out-of-pocket expenses not covered by insurance. Relationships with spouses may suffer if sexual function is lost. Survivors often blame themselves for these challenges and suffer crushing guilt.

"The good news is there are many ways to rally your resilience," says MaryBeth Baun, who, like her husband, Bill, is a cancer survivor and wellness coach. After treatment for stage 2 breast cancer, she was left with nerve and joint pain, "monster" hot flashes and chills, and foggy thinking and memory problems.

Months of physical and occupational therapy, faith and patience have helped Baun cope with her symptoms and regain function. It's also helped to have an understanding husband and a new puppy who adds joy to her days.

### THE WAIT

Perhaps the greatest concern shared by all survivors is the fear of relapse. When treatment ends, "the wait" begins. Patients whose cancer is in remission wait for the other shoe to drop, and worry that an ache or pain, or even a nagging cough, is a sign the cancer has returned.

In the wee hours of the night, some survivors lay awake, contemplating what they'll do if the cancer comes back. Bill Baun counsels his clients to transform that fear into energy-producing fuel.

"You know that trip you've been planning to take someday? Do it now. Live in the present. Start living your dreams"

Baun calls himself a cancer "thrivor," not a cancer survivor.

"I'm much more aware of my mortality on a minute-by-minute basis than I ever was," he says. "Realizing your future may be foreshortened expands your present. There's a sense of preciousness of the moment. The sky is bluer, flowers smell sweeter, time with family is more cherished. I wake up each morning grateful for another day and mindful of the gifts I've been given."

### THE NEW CANCER SURVIVORS

Baun, like many survivors, is living with advanced cancer. Until the introduction of radiation therapy and chemotherapy, advanced cancer was a veritable death sentence. But new and innovative treatments in recent years have radically improved the outlook for many cancer patients, and fundamentally changed what it means and feels like to have the disease.

"In many cases, we've seen cancer turn from a deadly illness into something that patients live with and manage for many years," says Rodriguez.

Cancer for these patients is a chronic illness. They've far outlasted the prognosis they were handed years ago, and are living beyond limits. Their tumors are controlled, but not eliminated. Or, like Baun, whose

cancer was diagnosed eight years ago, their tumors go through continuous cycles of remission and recurrence.

"There's a knack to living with the unknown," says Baun. "I think about how lucky I am to be alive instead of how unlucky I am to have cancer."

Patients with chronic cancer take pills to keep tumors at bay, and have monthly blood tests and imaging scans. This limbo state can be exhausting. Balancing treatment, job and family while living with uncertainty takes a toll.

Yet as researchers learn more about the character of people who are managing their disease for years or even decades, they're realizing that these long-term survivors are masters at balancing the negative aspects of cancer with the positive ones.

Some people, like Baun, actually flourish. Cancer changes their lives for the better. They get more out of life, and they relish every second.

In their ability to live fully in the present, people in cancer's limbo send a powerful message to people who are always focused on the imagined future.

"We're all terminal," says Baun. "No one lives forever. Starting my day with that thought helps me change my priorities and perspective. I have an intense appreciation for the here and now."

## PASSPORT TO HEALTH

MD Anderson patients are provided with a Passport to Health — a master plan for the patient's care. The passport includes a history of the patient's disease; the treating physicians' names, addresses and phone numbers; a summary of all treatments received; potential late effects that might be caused by the cancer treatments; a schedule of screening tests to monitor for cancer recurrence; a list of lifestyle, behavioral and nutritional guidelines that may help prevent the cancer from returning; and referral to specialists for those patients experiencing physical or emotional problems due to the treatments they received.

"Patients are encouraged to share their passports with their primary care physicians," says Paula Lewis-Patterson. "This is especially important for patients who live in another city, state or even another country. Our MD Anderson doctors want to keep lines of communication open with patients' doctors back home. Our goal is to work together as a team to provide the best possible care."



# The veteran volunteer

For 40 years, Jan Wallace has been fighting cancer through her service to MD Anderson's patients

By Andy Olin

**"G**od bless Jimmy Carter. Isn't he a trooper?" Jan Wallace is referring to the former president's recent cancer diagnosis. "I think he's an inspiration. He gives people hope, and his attitude is incredible. He just says, 'Whatever will be, will be,'" she says.

At 40 years, Jan Wallace is MD Anderson's longest-serving volunteer. She's put in close to 8,800 hours of time to make life easier for patients.

Her service predates Carter's presidency by two years. Gerald Ford was in office in January 1975 when Wallace and her best friend and former roommate from SMU decided they wanted to do something to make a difference.

"Forty years ago a lot of women didn't work outside the home. So we decided we wanted to do volunteer work. Something that was worthwhile," she says. "We decided we needed to help people with cancer. And cancer was so terrible. So, first week of January, we got in the car, drove down to MD Anderson and walked through the front — the old clinic entrance — and said, 'We want to volunteer.'"

"They gave us two jackets and sent us upstairs to the information desk."

Back then the well-known blue jackets volunteers wear today were "real bright orange and white," a nod to The University of Texas.

Her first assignment? Making sure patients were the ones who got the available chairs in the waiting room.

"It would get really, really crowded in the waiting room. People were sitting on the floor ... sitting outside," she says. "My friend, who stood nearly 6 feet tall, would go stand in the middle of the room and tell the crowd of patients and visitors, 'Everyone who's not a patient, get out of the chairs.'"

People listened.

Over the years, Wallace has worked in patient advocacy, the pharmacy, Camp AOK ("It's amazing, the spirit of the children. It's just an upper.") and, for the past six years, the third-floor information desk near Garage 10. There she sees that patients coming into the Main Building find their way and does all she can to assist them. That includes just being there to chat or listen.

It may not sound like a lot, but, as Wallace will tell you, it is.

"Years ago, somebody said to a friend of mine, 'What does Jan Wallace do besides put on a jacket and walk around and talk?'"

But she says talking to patients is one of the most important things volunteers do — it always has been. It's one of the few things that haven't changed about MD Anderson in the past 40 years.

What are some differences?

**"Jan has been an inspiration to all volunteers!"**

— Susan French, associate vice president for Volunteer Services and Merchandising

## The 40-year volunteer: then and now

A brief look at some of the differences four decades have made at MD Anderson, which, in 1975, was known as The University of Texas System Cancer Center:

President: R. Lee Clark, M.D.			
1975	~ 500	82,089	112,971
President: Ronald DePinho, M.D.	Number of volunteers	Total hours donated	Number of patients treated since 1944
2015	1,080	164,970	>1million



One of the most beneficial changes for patients Wallace has seen over the years is the development of technology.

“The most wonderful thing that’s happened, really, are all of these handheld gadgets,” she says, referring to smart phones and tablets that provide much-needed diversion for patients during long waits. “They help people pass the time.”

And, oftentimes, she says, they allow caregivers — a spouse or a friend — to work remotely so they can be at their loved ones’ side.

“It lets them be together, which is so wonderful.”

And what hasn’t changed since 1975? She points to the kindness of the staff and the determination of the patients. She tears up a little thinking back through the years about so many of the wonderful people she’s met.

“I so admire the people who work at MD Anderson every day. Their attitudes and kindness are incredible,” she says. “I have been blessed to be able to volunteer here. It’s been a blessing in my life. I’ve met so many wonderful people. It’s a special place.”

Something else that hasn’t changed is the disease itself. “Cancer is mean. No two ways about it.”

Wallace was never more aware of that fact than in 2013, when her youngest daughter died of lung cancer at age 50.

Devastated by the loss, Wallace found solace in her work at MD Anderson.

“When my daughter died, someone asked, ‘How can you keep volunteering at MD Anderson when you see so many suffering from that disease?’ And I said, ‘Well, it’s the only way I have to fight cancer.’

“What else can I do?” she says. “But if I can help someone just a little bit, that’s all I can do right now. I’m not a doctor. It’s the last thing my daughter would want me to stop. Quitting isn’t going to help anything.”

Wyatt McSpadden

**3,800**

Number of  
employees

**20,357**

**7,974**

Hospital  
admissions

**27,761**

**291**

Number of  
beds

**654**

**12.7 days**

Average length  
of hospital stay

**7.3 days**

**8,308**

New patients  
registered

**37,563**



# Beyond "the fork in the road"

By Katrina Burton



Martha Askins (left) launched the Adolescent and Young Adult Career and Vocational Counseling Program more than 20 years ago.

Adolfo Chavez III



Vocational counselor Sandra Medina-George

Adolfo Chavez III

Filling out college or job applications is a normal part of life for most teens and young adults. But for cancer survivors wanting to start college or a career, it can be a daunting task.

"These patients may have conquered cancer, but now they face a whole new challenge," says Sandra Medina-George, vocational counselor at MD Anderson Children's Cancer Hospital. "Transitioning into college, trade schools or the workplace can be a difficult adjustment."

The Adolescent and Young Adult Career and Vocational Counseling Program, launched more than 20 years ago under the leadership of Martha Askins, Ph.D., associate professor of Pediatrics, helps patients move beyond cancer by connecting them with educational and career counseling.

"Treatment is much more advanced today, and children with cancer benefit from comprehensive behavioral, psychosocial support programs like this one," says Askins, who is also a clinical psychologist in Pediatrics.

Through the program, patients focus on pursuing higher education and transitioning into a job that fits their desired career path. As a vocational counselor in the program, Medina-George has helped many patients follow their dreams with the help of strategic roadmaps designed specifically for them.

Medina-George doesn't just guide patients through the college application process. She also finds schools that best fit each patient's needs, and provides resources to help them master college entrance exams and navigate the financial aid process.

"We guide patients to a career path or field of study that they are most likely to

enjoy and in which they'll be successful," said Medina-George.

Julian Vasquez was diagnosed with acute lymphoblastic leukemia when he was 7. After receiving vocational counseling at MD Anderson, Vasquez, now 27, enrolled in the Bridge to Career Human Services Program at Texas A&M University. The two-semester program trains students who have developmental disabilities for careers helping others who are disabled.

"I have two passions," says Vasquez. "Making music that has a very positive message and giving back to the community that serves the rehabilitated. I'm grateful for the opportunity to pursue these goals."

Other services available through vocational counseling include transitioning patients into the workforce, teaching job-seeking skills and interview techniques, and critiquing résumés.

"Some cancers and even treatments may affect a patient's abilities to think or process information," says Askins. "This could be devastating to some patients who envisioned specific career paths that may no longer be realistic to pursue."

Askins says the assessment tools used in the program, such as the Myers-Briggs personality test that helps identify strengths, can help determine if the patient's desired career is in their best interest. The assessment tools and vocational counseling can also help guide patients who are unsure of what they want to do.

"The ability to see that there is quality of life after cancer is an important part of recovery for any patient," says Askins. "Our program gives patients the confidence to move beyond treatment and pursue normalcy in their lives."

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MD Anderson has Houston-area locations in the Texas Medical Center, Bay Area, Katy, Sugar Land, The Woodlands, Bellaire (diagnostic imaging) and Memorial City (surgery). MD Anderson physicians also provide cancer care to patients at Lyndon B. Johnson Hospital in Houston. In addition, there are two research campuses in Bastrop County, Texas. The institution also has developed a network of national and international locations.

MD ANDERSON CANCER NETWORK®

[www.mdanderson.org/cancernetwork](http://www.mdanderson.org/cancernetwork)

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