cancer can’t.

we can.
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.
cancer can’t.

we can.

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cancer can’t
match our resolve

cancer can’t
outrun us

cancer can’t
escape our reach

cancer can’t
surprise us
Cancer Can’t. We Can.

When it comes to cancer, plenty of statistics get thrown around. The number of new cases diagnosed each year in the United States: 1,665,540. The number of deaths annually: 585,720. These figures can be startling, especially when worldwide projections for the next decade are considered: more than 19 million new cases and almost 11.5 million deaths each year.

Cancer can strike fear in us. Cancer can, at times, perplex us. It can sadden, frustrate and anger us. But cancer can’t stop us.

It can’t eclipse the courage shown each day by our patients and their loved ones. Patients who are people, not statistics. Each one represents a life turned upside down by this disease, and each one inspires us to do more.

They are the brothers and sisters, mothers and fathers and friends who have fought or are fighting cancer with our 20,000-strong team of physicians, scientists and employees. Theirs are the faces we see each day in our clinics and when we close our eyes and focus on our mission of Making Cancer History®.

They are the people we serve.

They inspired us to create the Patient and Family Advisory Council, which gives patients, families, caregivers and survivors a platform upon which to share ideas and offer creative solutions to help MD Anderson improve our patients’ experience. Our patients’ time is precious, so we’re advancing the systems that support our efforts, and we’re committed to providing anyone who enters our doors a positive overall experience.

We are the people who serve.

Cancer can’t stop our determined fighters who confront the disease every day, at every level. From the transportation representatives who shuttle patients across the skybridge, to the oncology nurses who care for and educate patients; from the researchers who push the envelope of knowledge to develop novel, more effective therapies, to the surgeons who enlist leading-edge technology to eradicate tumors, each one of us plays a special role in our efforts to end this disease.

Our reputation in Texas, the United States and around the world is second to none. Thanks in large part to our exceptional faculty, we continue to be the most impactful cancer institution in the world. We have extraordinary reach because of our expert team, including Guillermina Lozano, chair of Genetics, and David Piwnica-Worms, chair of Cancer Systems Imaging, who were elected to the Institute of Medicine this past October. Nine members of our faculty now belong to that elite institution. And just recently, eight members of our faculty were named as fellows by the American Association for the Advancement of Science, bringing our total to an impressive 32.

The gravitational pull of our esteemed faculty has attracted several significant recruits, including V. Craig Jordan, the father of tamoxifen; Debu Tripathy, our new chair of Breast Medical Oncology; David Tweardy, the new head of Internal Medicine — one of the largest divisions in the nation; and Stephen Hahn, who now leads Radiation Oncology — the premier program in the world.

And I can’t mention the people who serve without calling special attention to the more than 1,000 volunteers who collectively gave 165,000 hours of service last year, and our Board of Visitors, whose stewardship and support enable our mission. We all can learn from the example set by these generous and caring folks.

We are achieving decisive discoveries through science that enables.
In the past year, we continued to demonstrate MD Anderson is a research powerhouse, a fact highlighted throughout this report. We invested more than $735 million in research, and received more than $47 million in funding from the Cancer Prevention and Research Institute of Texas. Research investment has also served as a valuable tool in attracting superstar faculty recruits at the junior level such as Cullen Taniguchi in Radiation Oncology and Florencia McAllister in Clinical Cancer Prevention.

Also fueling our research is philanthropic support, which totaled more than $230 million in cash, pledges and planned gifts — more than double the amount raised a decade ago. Big or small, every gift is important in our fight.

We’re racing to make the next great cancer discoveries, and to turn what we learn in our labs, clinics and the community into new standards of care for our patients. Through the Moon Shots Program, our colleagues have made exceptional progress, such as the practice-changing treatment algorithm developed by the Breast and Ovarian Cancer Moon Shot team. You’ll read about survivor Leslie Russell, who benefited from this new protocol, as well as the many gains we’ve made in our mission.

We put our patients first, but we also work to eventually put ourselves out of business by promoting prevention in our community. Topping the list of giant leaps we’ve made in the past year through our cancer prevention and control efforts is the EndTobacco program, which addresses public health enemy No. 1: preventable death and disease caused by tobacco use. By helping smokers quit and reducing smoking among young people, we can make a measurable impact on the cancer burden.

We’re also focused on HPV and working to ensure those eligible for this “cancer vaccine” receive all three doses. Almost every sexually active person will acquire HPV at some point in their lives, and the virus is linked to a number of cancers. Major efforts by our faculty are underway to improve screening and prevention in underserved areas and increase awareness and access to the vaccine.

Our work is never done; sustainability is always top of mind.

As an institution, MD Anderson has never accepted the status quo. We’re constantly exploring new ideas and anticipating change. We know, in the face of America’s shifting health care system, standing still won’t get us where we want to go.

From collaborative partnerships with four major pharmaceutical companies to develop new ways for the immune system to destroy tumors, to the launch of a pilot program with UnitedHealthcare that is exploring a bundled payment model for head and neck cancers, we have fantastic opportunities to cultivate our innovative efforts.

Our ability to impact cancer care around the globe is unparalleled. MD Anderson Cancer Network® continues to grow through partnerships with Lyndon B. Johnson Hospital’s Oncology Program and Memorial Hermann’s breast imaging and diagnostic services. And our expanded efforts in Brazil at Albert Einstein Hospital, in India at Tata Memorial Centre and with other sister institutions continue to generate impressive results for patients in many nations around the world.

This past year was filled with outstanding accomplishments, and I’m so proud of the tireless effort shown by everyone associated with MD Anderson — our employees, patients and their families, advocates, volunteers, donors, legislators and beyond. Together, we are relentless in the pursuit of our mission.

Cancer won’t win. We will.
clinical care

cancer can’t
match our resolve
Improving survival with a new surgical protocol for ovarian cancer

By Scott Merville

Triathlete and marathoner Leslie Russell teaches reading to children with dyslexia in the Spring Branch Independent School District. It’s a job she loves in the community where she grew up.

In the summer of 2013, Russell was blindsided when she learned what she thought was an exceptionally tenacious intestinal bug was actually stage 3 ovarian cancer.

After multiple trips to the doctor, including a gynecological exam, her misery led to an emergency room visit, a CT scan and, at last, a diagnosis.

“I would never have believed I have cancer,” Russell says. “I lead a pretty healthy lifestyle. It was a surprise.”

Russell came to MD Anderson, where she benefited from an early treatment innovation developed under the Moon Shots Program, the institution’s ambitious effort to dramatically reduce cancer deaths.

About the time Russell first met with Kathleen Schmeler, M.D., an associate professor of Gynecologic Oncology and Reproductive Medicine, the 21 oncologists in the department who treat ovarian cancer had agreed to follow a new algorithm to guide treatment.

Personalized surgery

Previously, most new patients had surgery to explore the extent of their disease and remove as much of it as possible. Worldwide, this practice results in 20 to 30% of patients achieving “complete gross resection,” or removal, of all visible tumor. At MD Anderson, the rate was about 25%.

Using the new algorithm, all patients receive a minimally invasive laparoscopic evaluation during which two surgeons independently rank the distribution and spread of the disease to other organs. If the score is less than 8, patients proceed to surgery. If it’s greater, they receive chemotherapy before surgery.

Ovarian cancer is hard to assess with imaging alone, Schmeler explains. “Ovarian cancer spreads almost like a coating across the organs, so it’s hard to see on CT scans. Laparoscopy really helps assess how much disease there is and where it is.”

In the first 155 cases that used the algorithm, complete resection was achieved 89% of the time, whether the patient had surgery or chemo first. Achieving that surgical milestone is strongly tied to improved long-term survival.

“Our algorithm allows us to take a more personalized approach to surgery with better results for our patients,” says Anil Sood, M.D., professor of Gynecological Oncology and Reproductive Medicine and co-leader of the Breast and Ovarian Cancer Moon Shot.

Russell’s score indicated a need for chemo first. “I had sprinklings of tumors all over my abdominal cavity,” she says.

Nine weeks of a chemo-drug combination of carboplatin and taxol greatly reduced the tumor burden, and the surgery that followed achieved complete removal of all visible cancer. Russell then had nine more weeks of chemo as a precaution.

The chemo slowed her a bit — she still worked out and ran, but didn’t enter races. “I also continued to teach, and being able to work with my students was hugely beneficial,” she says.

There was also fatigue and her hair thinned enough to make a baseball cap part of her daily wardrobe, but now she’s back on the bike, and running and swimming competitively.

“I was fortunate how well I responded. I feel really blessed,” she says.
The good news is death rates continue to decline for the most common types of cancer, including lung, colon, breast and prostate.

The bad news is a far less common head and neck cancer is rising sharply. Since the late 1980s, cases of oropharyngeal cancers that attack the back of the throat, the base of the tongue and the tonsils have jumped 225%. According to the Centers for Disease Control and Prevention, almost three-fourths of the cases are linked to HPV, the human papillomavirus.

“Smoking and alcohol were the main causes of oropharyngeal cancers prior to this millennium, but HPV infections linked to the sexual revolution are now causing most of these cancers,” says Steven Frank, M.D., associate professor of Radiation Oncology.

Even when diagnosed in late stage, most oropharyngeal cancers can be cured. But the radiation therapy traditionally used to treat head and neck cancers can cause debilitating side effects, including mouth and gum ulcers, difficulty swallowing, loss of appetite and the need for feeding tubes and hospitalization.

“Radiation destroys the cancerous cells,” Frank explains, “but it also destroys healthy cells, which can cause painful and difficult side effects.”

In 2010, MD Anderson’s Proton Therapy Center, where Frank serves as medical director, became the first site in North America to treat patients with intensity modulated proton therapy (IMPT). The technique uses an intricate network of magnets to aim a narrow proton beam at a tumor and “paint” the radiation dose onto it layer by layer. Healthy tissue surrounding the tumor is spared, and side effects are reduced.

A second MD Anderson study treated 15 head and neck cancer patients with an advanced form of IMPT, known as multi-field optimization intensity modulated proton therapy (MFO-IMPT). The treatment maps the location, size and dimensions of hard-to-reach, complicated tumors, then sends a potent dose of protons to attack the tumors in the “nooks and crannies” of the head and neck or skull base where they live, says Frank, the lead investigator of both studies.

Two years and four months after the study concluded, 93% of participants remained cancer free. During treatment, all reported that side effects were greatly reduced, prompting some radiologists to label IMPT the “holy grail” for head and neck cancers.

With these promising findings, MD Anderson, in collaboration with Massachusetts General Hospital’s Francis H. Burr Proton Therapy Center, has been awarded a $20 million grant from the National Institutes of Health to further study the role of IMPT in the treatment of head and neck cancers. The first randomized study has been opened to patients, with additional trials expected later this year.

Designed to greatly improve patients’ wait experiences

In keeping with a nationwide hospital trend to create softer, less clinical surroundings for patients and families, MD Anderson’s Facilities Management team is renovating waiting rooms throughout the cancer center.

“We’re creating spaces that resemble someone’s living room,” says Carey Miller, facilities designer and planner. “The goal is to provide a welcoming environment for patients, families and staff by reducing environmental stressors such as noise and harsh lighting, providing positive distractions like artwork and aquariums, and offering amenities such as wireless Internet connections.”

The new waiting rooms feature comfortable recliners, soft lighting, multiple electrical outlets, Wi-Fi service, coffee and snack bars, and more. Some have large windows overlooking lush gardens, while others feature large aquariums stocked with tropical fish.

“Research shows that people have a deep need to connect to nature, and that even a brief view of a garden or interaction with a water element, for example, can have immediate physiological benefits in terms of reducing stress and anxiety,” says Tim Peglow, associate vice president of Patient Care Facilities.

Before renovations are made, patient focus groups assemble to rate the proposed furniture and design mockups.

“The focus groups give us an idea of what being comfortable actually means to patients and their families,” says Miller. “The program’s overall goal is finding a way to make these renovations really meaningful.”
Steven Frank, medical director of MD Anderson’s Proton Therapy Center, is seeing success in treating oropharyngeal cancer patients with intensity modulated proton therapy. The approach spares healthy tissue surrounding the tumor and reduces side effects.

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Finding the least disruptive solution to get patients back on their feet

By Ron Gilmore

Tucked in the elbow crook of Louisiana’s eastern border with Mississippi lies the small town of Independence.

Home to 1,700 people, its claim to fame, according to the Tangipahoa Parish tourist information center, is the annual Sicilian Heritage Festival — complete with meatball-throwing contest — a nod to the town’s Italian immigrant roots. It was originally known as Uncle Sam.

It seems especially meaningful that one of its residents, Cathy Helminiak, has gained her “independence” as a survivor of pelvic sarcoma, a form of cancer in the bone and soft tissue of the hip. She can be seen with or without her prosthetic leg, in or out of her wheelchair, busily tending to her garden, fishing from her boat or joyfully visiting with her grandchildren.

As a cancer survivor treated at MD Anderson, she’s something of a town crier as well, always up for talking with a new patient who has the same fears she faced only four years ago. Her husband, David, knows only too well the path she’s traveled.

“She stood up hours after surgery and it was one of the most beautiful things I’d ever seen,” he says.

Helminiak is one of the many MD Anderson pelvic sarcoma patients who have undergone a procedure known as a hemipelvectomy, which involves surgically removing part of the pelvis, with or without removal of the corresponding leg. A multidisciplinary team of surgeons, led by Valerae Lewis, M.D., chair ad interim of Orthopedic Oncology, performs the procedure.

The ‘cans’ and ‘shoulds’ of pelvic cancer surgery

Though pelvic cancer is rare, Lewis and her team perform 35 to 50 hemipelvectomies each year. Surgeries vary depending on the location and size of the tumor.

In some patients, the entire half of the pelvis and leg are removed. In others, one or more of the pelvic bone’s three sections are removed.

Some patients opt to have their pelvic bone reconstructed after surgery.

“The patient’s own bone, a cadaver bone or a prosthesis can be used to reconstruct the pelvis,” Lewis says. “The decision whether to perform reconstructive surgery is made by patients in consultation with their families and physicians.”

Experts from many disciplines participate in the care of hemipelvectomy patients, Lewis says.

“This is absolutely vital as pelvic tumors can affect any of the organs in the pelvic region, such as the kidneys, bladder, intestine, prostate or vagina, and can impact muscles, bones, nerves and arteries.”

Lewis prefers to offer the least disruptive solution, which involves removing the tumor while saving as much normal bone as possible. Beyond this strategy, Lewis believes it’s not a question of “Can we?,” but rather “Should we?”. It’s a question that can determine a patient’s level of post-surgery mobility.

Surgery for pelvic tumors involves either external hemipelvectomies (amputation of the whole leg plus part of the pelvis on one side) or internal (removal of the pelvis on one side without leg amputation). Patients who have internal hemipelvectomies may have reconstruction of the surgically removed portions of their pelvis.

The pelvis contains three main sections: the ilium (upper portion), the ischium (lower portion) and, sandwiched in between, the hip joint. If the tumor must be removed from two of the main sections, it’s unlikely the leg can maintain good function, and amputation is recommended.

Regardless of the type of surgery, Lewis is always asked the same question: “When will I be able to start walking again?”

While the recovery and mobility vary with each patient, Lewis says most are back to their activities within six months to a year.

“Patients who’ve had their hemipelvis removed, with or without the leg, can often return to their daily activities with the help of aggressive physical therapy,” says Lewis.

“Our job isn’t over when patients leave the OR,” adds Lewis. “It’s over when they’re walking again and back to their normal life activities.”

Valerae Lewis and her team in Orthopedic Oncology perform 35 to 50 hemipelvectomies each year on pelvic sarcoma patients. The surgeries, which involve removing part of the pelvis, vary depending on the location and size of the tumor. 📷 Wyatt McSpadden
In early-stage breast cancer, a less aggressive approach can be just as effective

By Laura Sussman

When treating women with breast cancer, less is sometimes more.

A study conducted recently at MD Anderson confirmed that most women with early-stage breast cancer who undergo less aggressive lymph node removal fare just as well as those who undergo more extensive removal.

This finding is important because for years women with breast cancer underwent either a mastectomy or a lumpectomy to remove the tumor, followed by another procedure to remove 10 or more lymph nodes from under the affected armpit.

Known as axillary nodes, they drain lymph fluid from the breasts and surrounding areas into the lymphatic system, which can then spread the breast cancer cells to other parts of the body.

“The thought in the past was if you remove the axillary nodes, you can stop the cancer’s spread,” says Kelly Hunt, M.D., professor of Surgical Oncology.

But a groundbreaking study conducted in 2011 by the American College of Surgeons Oncology Group revealed that early-stage breast cancer patients whose axillary lymph nodes were removed were just as likely to be alive and cancer-free five years later when compared to women who had only their sentinel lymph nodes removed. Sentinel nodes are the first few lymph nodes into which a tumor drains.

“Researchers attribute this to chemotherapy or radiation, which are often prescribed to shrink a tumor before surgery. They believe the chemo and radiation probably killed the cancer cells in the axillary lymph nodes,” explains Hunt.

This was good news for cancer patients. Axillary node removal can cause debilitating, lifelong side effects such as arm swelling, numbness, nerve damage and range-of-motion problems.

But the question remained: Could this change in practice really impact a substantial portion of breast cancer patients?

To arrive at an answer, MD Anderson recently conducted a study of almost 900 patients with early-stage (stage I or II) breast cancer. Some patients underwent sentinel node removal, while others had axillary nodes removed. In addition, some patients opted for breast-conserving therapy (lumpectomy with radiation), while others opted for total mastectomy.

After adjusting for tumor stage, the research team found no significant differences in survival between women undergoing sentinel node removal versus axillary node removal. Furthermore, outcomes were similar for women who had undergone a mastectomy versus breast-conservation therapy.

“Armed with data from the 2011 trial and this new trial, we can say if no more than one or two sentinel lymph nodes test positive for cancer, you can have breast-conservation therapy and avoid axillary node removal, because we know your survival will not be impacted by leaving the rest of the nodes intact,” explains Hunt, co-author of the study. “We’re not saying that axillary node removal should be eliminated, but we should use it more wisely so that a huge percentage of patients don’t have to suffer the long-term complications of such an aggressive procedure.”

In terms of mastectomy versus breast conservation, Hunt says women sometimes assume mastectomy is the safer option.

“Usually they say it offers them more peace of mind, but we now know survival is not different between the two procedures for women with early-stage breast cancer.”

Kelly Hunt helped lead a study that showed women with early-stage breast cancer don’t need to undergo aggressive lymph node removal to stop the cancer’s spread. Extensive removal of the lymph nodes can cause debilitating, lifelong side effects.

Eric Kayne
Anxieties are eased by talking to someone who’s been there

By Amanda Swennes

When Marshall Loosier was diagnosed with rectal cancer and underwent a colostomy 15 years ago, he worried about how the surgery would change his life.

“I thought my activities would be very limited, and I’d have to stay on the sidelines,” he says.

But today, Loosier is playing golf, riding horses, chasing cows and enjoying life.

“The colostomy was an adjustment, but it wasn’t nearly as bad as I imagined.”

To perform a colostomy, a surgeon creates an opening called an ostomy in the abdomen, then brings the end of the large intestine through the opening. This provides a new path for waste materials to leave the body while avoiding the rectum. A pouch worn beneath a person’s clothing collects waste.

Initially, Loosier was self-conscious about how he looked and anxious about being in public. He assumed everyone would notice that he was wearing a pouch. But the truth was, most people couldn’t tell.

“And if they did figure it out, they didn’t care,” he says.

Today, Loosier has formed a two-person support team to assist other MD Anderson patients who’ve undergone colostomies. Loosier and fellow volunteer and cancer survivor Billie Bond traverse the hospital hallways, meeting with patients before and after their surgeries to answer questions and offer reassurance.

“If we can walk into a room looking normal, it helps put people’s fears at ease,” Loosier says.

Those one-on-one interactions give him the opportunity to provide for others what he wishes had been available to him: someone to talk to.

Patient to patient

Natalie Gallagher, a nurse who teaches patients how to care for ostomies, says the patient-to-patient connection Loosier and Bond provide is a gift.

“Patients ask me, ‘What if my pouch falls off while I’m asleep?’ I tell them they’ll get used to the pouch and begin to trust it, but they don’t necessarily believe me,” Gallagher says. “But if they hear it from Marshall, they’ll know it’s true because he lives with it every day.”

That kind of connection can make the difference between someone getting back to living life and living in fear, Gallagher says.

“When we think about the future after this type of surgery, we tend to imagine the worst,” Loosier says.”But I’m still chasing my grandkids and having fun.”

Patients are given a voice so they can be heard

By Lindsay Lewis

A truly patient-centered organization is one that involves patients and families in the planning, delivery and evaluation of the care experience.

Through meaningful partnerships, patients and their families can help providers shape policies, programs, facility design and care delivery in ways that can lead to better outcomes, along with increased efficiency and satisfaction.

Last year, MD Anderson launched its first institutional patient and family advisory council, giving patients and families the opportunity to share their stories, review its process and offer creative solutions to some of the biggest challenges. Made up of more than 25 patients and family members, the advisers help identify ways to improve the patient experience.

“We need input from patients and caregivers to fix systems that aren’t reliable and to set higher standards for care delivery,” says Barbara Summers, Ph.D., vice president and chief nursing officer. “By giving them a voice, we can identify what matters the most to them.”

A decade ago, the Institute of Medicine named patient-centered care as one of six major health care industry goals for the 21st century. And while different care delivery models have emerged, involving patients and families at the institutional level and in point-of-care decision making is one of the most fundamental aspects of the shift to patient-centered care.

“To be patient-centered, we must put the patient at the center of everything we do,” says Kay Swint, director of Patient Experience, Nursing. “This requires a change from the mindset of doing things to and for patients to doing things with them.”

The council focuses on identifying global issues that impact patients across the continuum of care. They’ve provided their perspective on how to improve institutional communications, wayfinding and health education. They’ve even weighed in on the institution’s strategic plan.

“Every time we meet, we learn something new,” says Swint. “Their involvement gives us an extraordinary perspective into what our patients experience and the small things we can do to greatly improve that experience.”
Since 2003, rectal cancer survivor Marshall Loosier has logged more than 3,300 hours as an MD Anderson volunteer. He received the 2014 Joseph T. Painter Award for his contributions to patient support, and recently helped create a face-to-face program to help patients who’ve had a colostomy.

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Like many first-time parents, Gerardo and Dilma Camarillo worried when their 9-month-old daughter, Ivana, was running a fever. Pediatricians, friends and family reassured them.

“She’s probably just teething,” they said. But the fever persisted, and so did the Camarillos’ trips to the doctor.

After repeated visits to local hospitals, they were referred to MD Anderson Children’s Cancer Hospital, where Ivana was diagnosed with infant acute lymphoblastic leukemia, or infant ALL, a rare form of cancer. That was in 1999, when the disease had a 10% survival rate.

“When you hear you have cancer, you think that’s the worst news,” Gerardo says. “But when you hear your child has cancer, that’s when the nightmare starts.”

Ivana began receiving chemo the day after her diagnosis. When she turned 1 1/2 years old, her team of specialists recommended a relatively novel treatment: a stem cell transplant. Stem cells would be taken from a newborn donor’s umbilical cord blood and injected into Ivana, just like a blood transfusion. From there, the stem cells would travel to Ivana’s bone marrow where they’d begin making healthy blood cells to replace Ivana’s diseased blood-forming cells.

“We said ‘yes, let’s do it,’” Gerardo says. “It was that or do nothing, and it was not an option for us to just go home and wait.”

The transplant worked.

Today, the survival rate for infant ALL is closer to 40% and cord blood transplants are a standard part of treatment.

Now a bubbly 10th-grader, Ivana is active in her school choir and thinking about college.

“I want to go to college out of state,” she says as her dad rolls his eyes the way only dads of teenage girls can. “But my goal is to come back here and teach.”

Ivana wants to teach in MD Anderson’s Pediatric Education Program.

Sharing their experience

Both Ivana and her dad regularly share their story. They want to help others facing a similar diagnosis navigate the physical, social and emotional complexities of childhood cancer and caregiving.

“This is an experience that’s easier to share with others who’ve been through it,” Gerardo says. “We all long for the feeling of being accepted and understood, and when you meet someone who’s gone through the same thing, there’s an instant connection.”

These days, the two help new patients find their way around the hospital and navigate the world of childhood cancer.

Gerardo is a member of the Children’s Cancer Center Family Advisory Council, the Candlelighters Childhood Cancer Family Alliance and the Anderson Network Steering Committee. Together, these groups support families of children with cancer in the form of weekly on-site support groups, a quarterly educational newsletter, practical assistance such as parking passes, gas cards, meal passes and grocery store gift cards, family activities and camps, and academic scholarships for patients. Ivana serves on the Family Advisory Council’s IMPACT committee, which is specifically for adolescent and teen patients.

“Sometimes it’s easier to hear things from your peers,” Ivana says. “You can say, ‘Yeah, I went through the same thing,’ or ‘I know what it’s like to be stared at or bullied.’”

Growing up, she says making friends was difficult because the demands of her treatment forced her to miss so much school.

Today, after being cancer-free for a decade, she’s more accepting of who she is and speaks out passionately against bullying.

“I don’t need makeup to feel beautiful,” she says. “I try to tell people to find their true beauty.”

Her biggest worry these days?

“Boys,” she says with a giggle. And again, her dad rolls his eyes.

Clinical care
As a baby, Ivana Camarillo was diagnosed with infant acute lymphoblastic leukemia, a rare form of cancer. On the recommendation of her doctors at MD Anderson Children’s Cancer Hospital, her parents, Gerardo and Dilma, decided she should undergo a stem cell transplant. Today, the 10th-grader is active in her school choir and making plans for college.

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research

cancer can’t outrun us
Tiny, virus-sized particles released by cancer cells may be the next big thing in the world of cancer biology. Exosomes, derived from cells and blood serum of patients, have been shown to detect pancreatic cancer and, possibly, breast cancer, and are also linked to increased cancer progression and tumor growth.

They achieve this by manufacturing microRNA molecules with the help of proteins such as Dicer. New research led by MD Anderson’s Raghu Kalluri, M.D., Ph.D., chair of Cancer Biology, suggests Dicer may serve as a biomarker for breast cancer and could open up new avenues for diagnosis and treatment.

Exosomes are small vesicles consisting of DNA, RNA and proteins enclosed in a membrane made of two lipid layers. They perform specialized functions such as coagulation, intercellular signaling and cell “waste management.” They’re shed into bodily fluids, forming a source of disease-specific nucleic acids and proteins. Increasingly, exosomes are studied for their potential as both indicators of disease and as a prospective new treatment approach.

All exosomes contain a cellular stew of smaller components such as proteins, messenger RNA and microRNA. Kalluri’s team reported that breast cancer-associated exosomes have specific miRNAs associated with a multi-protein complex known as RNA-induced silencing complex (RISC).

In addition to RISC, the breast cancer exosomes house Dicer and two other proteins, AGO2 and TRBP, all of which combine to promote tumor growth.

“The role of microRNA associated with exosomes in cancer progression is largely unknown. Many studies have suggested the presence of microRNA in exosomes and speculated on their function,” Kalluri says. “We demonstrated that inhibiting Dicer’s action in cancer exosomes significantly impairs tumor growth, raising the possibility that microRNA in exosomes contribute to cancer progression.”

Kalluri’s study indicated that the interplay between Dicer and its “host” exosome may allow cancer cells to develop an “oncogenic field effect” by manipulating surrounding cells via exosomes. Think of a child blowing a dandelion’s spores into the wind, where they float over a freshly mown lawn, and one can envision how this molecular mixer easily spreads the disease to surrounding tissue.

“We believe analysis of exosome DNA taken from blood samples can help determine the presence of a cancerous tumor somewhere in the body, as well as identify mutations without the need for a tumor sample.”

— Raghu Kalluri, M.D., Ph.D.

A simple blood test

Thanks to exosomes, which contain the entire genetic blueprint of cancer cells, Kalluri and his team believe it’s possible that a simple blood test could be developed to determine if gene mutations associated with pancreatic cancer exist without locating and testing tumor tissue. By decoding this genomic data and looking for deletions and mutations associated with cancer, the discovery could result in a test for detecting cancer.

“There’s no single blood test that can screen for all cancer-related DNA defects,” Kalluri says. “In many cases, protocols require a tumor sample to determine whether gene mutations and deletions exist and, therefore, determine if the tumor is cancerous or benign. To procure tumor tissue, one needs to know that a tumor exists and, if so, is it accessible for sample collection or removal? Finally, there are always risks and significant costs associated with surgical procedures to acquire tumor tissue.”

Scientists have long known that exosomes contain portions of a person’s DNA, but it was Kalluri’s team that discovered a patient’s entire double-stranded genomic DNA spanning all chromosomes — including those mutated chromosomes that cause various cancers — can be found in exosomes. They also found that DNA derived from exosomes carries the same cancer-related genetic mutations compared to the cancer cells taken from tumors.

“Because different forms of cancer are associated with different chromosomal mutations, we believe analysis of exosome DNA taken from blood samples can help determine the presence of a cancerous tumor somewhere in the body. It can also identify mutations without the need for a tumor sample,” Kalluri adds. “We believe this ‘fingerprint’ will help lead us to the likely site of the tumor in the body.”

Kalluri acknowledges that further study is necessary to develop a blood test, but having such a tool would increase physicians’ abilities to detect cancer earlier and, therefore, increase chances for effective treatment.
Raghu Kalluri and his research team in Cancer Biology are exploring the role of virus-sized particles called exosomes in cancer progression.

Wyatt McSpadden
Grants fuel tomorrow’s cancer breakthroughs
By Ron Gilmore

A state of Texas program designed to expedite innovations in new cancer treatments has helped MD Anderson recruit several new faculty members during the past year.

Cullen Taniguchi, M.D., Ph.D., an assistant professor of Radiation Oncology, came to MD Anderson from Stanford University Medical Center. The double-doctorate Harvard alumnus and Rhodes Scholar was recruited with funding from the Cancer Prevention and Research Institute of Texas (CPRIT). The institute was established in 2007 when Texas voters approved a constitutional amendment authorizing the state to issue $3 billion in bonds to fund groundbreaking cancer research and prevention programs here in Texas.

“CPRIT funding was critical for my recruitment,” says Taniguchi. “It allowed me to pursue bold science right from the start of my career.”

New faculty member George Eisenhoffer Jr., Ph.D., assistant professor of Genetics, credits CPRIT funding with playing an important role in his decision to join MD Anderson.

“During this critical juncture in my career, the CPRIT First-Time Faculty Recruitment Award will allow me to pursue innovative research that I believe will have a direct impact on cancer treatment,” says Eisenhoffer.

Another faculty member, Jonathan Kurie, M.D, professor of Thoracic/Head and Neck Medical Oncology, received one of CPRIT’s multiple investigator research awards, or MIRAs. These awards unite multiple researchers from various disciplines to tackle a project that will advance cancer treatment and detection. Kurie’s MIRA grant will boost scientists’ understanding of the tumor microenvironment that drives metastasis.

In 2014, MD Anderson received more than $47 million from CPRIT for research, prevention, recruitment and training. In total, it has received more than $192 million from CPRIT since its formation.

Another grant program offered by The University of Texas System is also helping MD Anderson and other UT institutions recruit and retain faculty. The UT STARS program awards funding to purchase state-of-the-art research equipment and make laboratory renovations. The STARS Plus Program funds “startup” resources that go beyond equipment and renovation needs.

V. Craig Jordan, Ph.D., who joined MD Anderson in October as a professor of Breast Medical Oncology and Molecular and Cellular Oncology, recently received UT STARS and STARS Plus awards totaling $1.25 million. Jordan is a scientist specializing in drugs for breast cancer treatment and prevention. Known as the “Father of Tamoxifen,” he was the first to discover the breast cancer prevention properties of the drug.
MD Anderson’s expertise in cancer immunotherapy attracted the interest of four major pharmaceutical companies, which signed three-year collaborative agreements in early 2014 to develop new ways for the immune system to destroy tumors.

The agreements with the institution’s immunotherapy platform provide for each company to establish a joint research committee with MD Anderson experts that will guide scientific and clinical research collaborations.

“These partnerships provide outstanding opportunities to build on the early successes of immunotherapy and push ahead with this approach and save more lives,” says James Allison, Ph.D., chair of Immunology and executive director of the platform, which encompasses the infrastructure, technology and expertise needed to advance immunotherapy.

Projects can include new drugs to stimulate the immune system or block the off switches that hinder immune attack on tumors, biomarkers to guide treatment, preclinical analysis of drugs and targets and combination therapies.

MD Anderson’s partnerships include: Pfizer, through its Rinat biotech unit; Johnson & Johnson Innovation, LLC, and its affiliate Janssen Biotech Inc.; MedImmune, the global biologics research and development arm of AstraZeneca; and GlaxoSmithKline.

Allison, the father of immune checkpoint blockade, an approach that treats the immune system rather than tumors directly, was recruited to MD Anderson in late 2012. The immunotherapy platform under Allison’s leadership has enhanced and increased the institution’s capabilities in the field.

“Our new collaborations with pharmaceutical and biotech companies through our immunotherapy platform are different from traditional agreements because they allow both parties to work on any project they deem appropriate without additional budgets,” explains Ferran Prat, Ph.D., J.D., who negotiated the agreements.

“We provide our pharma and biotech collaborators access to state-of-the-art facilities, novel research protocols for clinical trials open to our large and diverse patient population, and an opportunity to work with leaders in immunotherapy,” says Prat, MD Anderson’s vice president of Strategic Industry Ventures.

In return, MD Anderson gains access to the drug development expertise of highly accomplished pharmaceutical companies and their pipelines of investigational drugs.

Allison’s research on T cell biology led to an entirely new method of treating cancer by blocking receptors on the surfaces of T cells — the attack dogs of the adaptive immune system — that shut down immune response. The effect is to free the T cells to find and destroy tumor cells.

This approach, first demonstrated in the drug ipilimumab (Yervoy), which was developed from Allison’s discoveries, has grown to include additional drugs that target other immune checkpoints and is considered the most promising area of cancer research.

In the meantime, about 22% of patients with metastatic or inoperable melanoma treated with ipilimumab develop long-lasting remissions for 10 years and longer, results that were previously unheard of in melanoma patients.

Ferran Prat, MD Anderson’s vice president of Strategic Industry Ventures, has negotiated a number of agreements between the institution and major pharmaceutical companies to further develop cancer immunotherapy, which is showing great promise for patients.
Developing a drug to starve cancer cells

By Scott Merville

The first experimental drug to be produced by MD Anderson’s drug discovery and development institute will kill cancer cells in a new way — by depriving them of the fuel necessary for growth and survival.

Named after MD Anderson’s Institute for Applied Cancer Science (IACS) where it was developed, IACS-10759 blocks the conversion of nutrients into the energy that fuels cancer cells. The drug does this by blocking the function of mitochondria. Often called “powerhouses” of the cells, mitochondria generate the energy cells need to function. Certain cancer cells cannot survive if this mitochondrial function is blocked.

“Most cancer drugs target dividing cells,” says Giulio Draetta, M.D., Ph.D., IACS director. “With this new approach, we may hit both dividing and non-dividing cells that play a key role in tumor survival.”

The IACS scientists prepared and evaluated more than 800 compounds before finally arriving at IACS-10759, designing multiple attributes into the molecule to enable it to function effectively in patients. IACS-10759 has potent activity against cultured human cancer cells and in mouse models of human cancer. Last year, mandatory preclinical safety studies of the drug began, the last step before seeking approval from the Food and Drug Administration to take a drug into Phase I clinical trials.

Draetta expects the first-in-human Phase I trials to open in late 2015.

A team of IACS drug development experts with extensive industry experience identified and developed IACS-10759. They collaborate with the Acute Myeloid Leukemia (AML)/Myelodysplastic Syndromes Moon Shot, which will oversee the first clinical trial of the drug in AML patients.

Additional phase I trials for solid tumors and other blood cancers are also planned.

“We now have active collaborations across the institution, including lymphoma, melanoma and colorectal cancers,” Draetta says.

Swift development

Advancing this drug marks a significant milestone for IACS, established by MD Anderson President Ron DePinho, M.D., shortly after his arrival in late 2011 to bridge the gap between academic scientific discoveries and industrial drug development.

The institute’s goals include having an IACS-discovered drug in clinical trials at MD Anderson within the first five years.

Phil Jones, head of Drug Discovery, notes that IACS now has more than 60 scientists, most with extensive industry experience, developing novel cancer therapeutics.

“Our drug discovery experts collaborate day in and day out with MD Anderson’s outstanding disease centers,” Jones says. “To our knowledge, there’s no other group like this in the United States, and maybe only one other in the world — in the United Kingdom.”
Moon Shots Program: Tracking the trajectory | 2014

In its first full year, MD Anderson’s Moon Shots Program has launched new approaches to ovarian cancer surgery, as well as targeted therapies and drug combinations for leukemia, prostate and lung cancer. And there’s more to come. Here are some updates on the institution’s work and collaborations with others that will dramatically accelerate the pace of converting scientific discoveries into clinical advances and significantly reduce cancer deaths.

1,658,370
New cases of cancer expected in the U.S. in 2015

Breast and ovarian cancer

220%
Percentage increase in the rate of complete surgical removal of ovarian cancer using a new surgical protocol that improves survival

100%
Percentage of high-grade serous ovarian cancer and triple-negative breast cancer patients now offered screening for BRCA1 and 2 gene mutations. The screening helps identify family members with risk-increasing mutations.

Melanoma

419,000
New cases of skin cancer linked to tanning bed use each year

85%
Rate of increased risk of melanoma for people who use indoor tanning before age 18

11
Number of states that currently ban the use of tanning beds by people under age 18
Acute myeloid leukemia (AML) / Myelodysplastic syndromes (MDS)

2
Clinical trials opened to test ways of thwarting resistance to drugs that treat AML/MDS

>3,500
Number of AML/MDS samples genomically sequenced to help scientists understand how these diseases develop and resist treatment

within 5 years
Timetable for deep DNA, RNA, protein and epigenetic analysis of AML/MDS, which should uncover most of the secrets of these cancers

Prostate cancer

2
Drugs that can now be used in a new combination to target testosterone, which fuels most prostate cancers

30%
Portion of patients who’ve been identified as resistant to these drugs and, therefore, better treated with chemotherapy

Chronic lymphocytic leukemia (CLL)

Then: 48%
Now: 15%
In two years, the percentage of new CLL patients treated with debilitating chemotherapy combinations has been reduced by almost 70%

70%
Percentage of CLL patients that doctors may cure with immunotherapy drugs and targeted therapies

90-95%
The percentage of CLL cells killed by ibrutinib, an immunotherapy drug

3
Number of first-in-human clinical trials at MD Anderson testing the use of targeted immune cell treatment against the disease

Almost
900
Number of days since the launch of the Moon Shots Program

$217,266,765
Total amount raised by the moon shots as of Dec. 31, 2014
In 2011, MD Anderson received a $150 million gift — the largest in its history — from the Khalifa Bin Zayed Al Nahyan Foundation for the construction of the Sheikh Zayed Bin Sultan Al Nahyan Building for Personalized Cancer Care. The 12-floor, 615,000-square-foot facility was completed in January 2015, and the activation process began in early February with the Sheikh Ahmed Bin Zayed Al Nahyan Center for Pancreatic Cancer Research. The building will also be home to the Sheikh Khalifa Bin Zayed Al Nahyan Institute for Personalized Cancer Therapy, an international center of clinical excellence where researchers use the latest advances in genetic testing to develop safer, more effective treatments for patients on a case-by-case basis. The building is scheduled to be fully occupied by October 2015.

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Uncovering a protein’s key role in the spread of ovarian cancer

By Scott Merville

A protein beacon on the surface of runaway ovarian cancer cells guides them to a sanctuary organ where they take hold and spread.

MD Anderson researchers discovered that these circulating tumor cells (CTCs) rely specifically on the HER3 protein to home in on the omentum, a sheath of fatty tissue that covers and supports abdominal organs.

“This completely new way of thinking about ovarian cancer metastasis provides new potential avenues to predict and prevent recurrence or spread,” says Anil Sood, M.D., professor of Gynecologic Oncology and Reproductive Medicine and Cancer Biology.

HER3, the human epidermal growth factor receptor 3, is a sibling to the more famous HER2, active in 20 to 25% of breast cancer cases and a target for the drug trastuzumab, or Herceptin. HER3’s heavy presence on ovarian CTCs makes it both a potential indicator of metastasis and a new target for therapy.

Sood, the study’s senior author, first author Sunila Pradeep, Ph.D., an instructor in Gynecologic Oncology and Reproductive Medicine, and colleagues reported their findings in the journal Cancer Cell.

The team used mouse model experiments to show that CTCs spread to the omentum, and more than 95% of those cells heavily expressed HER3. They also found that the protein that activates HER3 by fitting into it like a key in a lock was also heavily present in omental metastases.

This activating protein, called NRG1, was found to be more prominently expressed in and around the omentum than on neighboring organs.

“The NRG1 ligand expressed in the omentum attracts the HER3-positive CTCs,” Sood says.

Anil Sood and his research team have discovered that certain ovarian cancer cells rely on a protein called HER3 to home in on the omentum, a sheath of fatty tissue that covers and supports abdominal organs. From there the cells spread.

Blocking HER3 might increase survival

In tumor samples from 11 ovarian cancer patients, 90% of cells were HER3-positive. Tumor cells found in the omental blood vessels of five patients also had strong HER3 expression.

In a cohort of 217 advanced-stage patients, lower HER3 expression correlated with improved overall survival of almost five years, compared with just over three years for high-HER3 tumors. Researchers found HER3 expression to be significantly higher in stage III and IV tumors compared with stage I and II tumors.

Sood notes the team’s findings could lead to use of HER3-positive cells as a biomarker for recurrence in patients or for occurrence in women at high risk for developing ovarian cancer. Maintenance anti-HER3 therapy after treatment could prevent or delay recurrence.

Drugs are being developed to block HER3. Its similarity to HER2 might make it vulnerable to drugs that hit that target. Clinical trials are underway for pertuzumab, an antibody that blocks HER2, to explore if it might thwart both proteins in ovarian and breast cancers.
When Marietta Cline, a pediatrician with a busy practice in Dickinson, Texas, learned she had breast cancer, she sought care at MD Anderson in the Bay Area. Located close to where she lives and works, Cline was able to access the institution’s world-class cancer care without having to travel to the Texas Medical Center.

*Wyatt McSpadden*
Marietta Cline is one busy woman. As a doctor with four children who loves to travel and build custom furniture, she’s a go-getter with little time to spare.

So when a recent mammogram showed a lump in her left breast, Cline wondered, “how will I make time to deal with this?”

The answer: MD Anderson in the Bay Area, just a stone’s throw from Cline’s busy pediatric practice in Dickinson, Texas. There, patients can access the same level of world-class cancer care available at MD Anderson’s Texas Medical Center campus — but without the commute.

“I was very reassured to know I had a cancer-fighting dream team in my own neighborhood,” Cline says.

She fought hard, and after chemo, radiation and surgery, she’s cancer-free.

“It was a whirlwind,” she says, “but combating cancer on my own turf was a godsend.”

**Peace of mind**

Cline’s cancer journey began when a routine mammogram performed at an imaging center in Dickinson revealed the lump. A biopsy was taken and sent to MD Anderson for analysis. Cline says knowing MD Anderson pathologists were reading her slides gave her great peace of mind.

“As a physician, I know how important it is to get the right diagnosis from the start,” she says. “Your diagnosis determines the road map for your entire course of care.”

MD Anderson confirmed the tissue was indeed cancerous, and enrolled Cline as a patient at its Bay Area location, which was established in 2007 on the campus of CHRISTUS St. John Hospital in nearby Nassau Bay.

**Power in numbers**

But not all pathology reports are as accurate as Cline’s. Lavinia Middleton, M.D., a professor of Pathology at MD Anderson, led a recent study that revealed the second opinions provided by MD Anderson pathologists found errors in pathology read by others up to 25% of the time.

A separate study showed that MD Anderson pathologists pinpointed errors 10% of the time in breast biopsies alone.

Sometimes, erroneous readings reported that surgery had removed all of a patient’s cancer, yet MD Anderson pathologists detected cancer cells that had been left behind. Other times, cancers were misdiagnosed as the wrong type of cancer. But the happiest discoveries came when MD Anderson pathologists could correct a tumor’s diagnosis from malignant to benign.

MD Anderson pathologists aren’t smarter or better than their counterparts, Middleton says, but MD Anderson pathologists do have an advantage.

“Because MD Anderson has such a large patient volume, our pathologists have the luxury of sub-specializing,” she explains. “One group looks at breast cancer slides only, all day, every day. Another group analyzes brain and spinal tissue slides, exclusively. Yet another group interprets skin cancer slides. When you do the same thing day in and day out, you get really good at it. You understand all the nuances of what you’re seeing, and you catch subtleties others may miss.”

And because MD Anderson is a large organization, its pathology staff is large, too. Sixty faculty members staff the Pathology Department.

“We consult and bounce things off each other,” Middleton says. “We ask our colleagues to weigh in.”

A lone pathologist working in the community has a very difficult job, she adds.

“When you work alone, you have to recognize everything. One minute you’re analyzing breast tissue, the next minute you’re analyzing a colon polyp,” Middleton explains. “We have a lot of respect for the community-based pathologist who has to know it all.”

Eliminating ‘double work’

Because of MD Anderson’s reputation, the cancer center’s pathology department is often asked to provide second opinions for slides read by others. In pathology, this practice is called “over-reading.”

To eliminate this “double-work,” MD Anderson is partnering with imaging centers like the one Cline visited in Dickinson. Instead of asking the institution to provide second opinions for patients’ pathology reports, the partnering centers send samples straight to MD Anderson.

“Removing redundancy means patients can enroll in MD Anderson more quickly, and begin treatment faster,” says Richard Ehlers, M.D., medical director of MD Anderson in the Bay Area.

“When you have cancer, that’s important.”

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**The road to recovery, minus the traffic**

By Ronda Wendler
A recent study led by Lavinia Middleton, a professor of Pathology, revealed that second opinions provided by MD Anderson pathologists found errors in pathology results read by others up to 25% of the time.

© Eric Kayne
Mark Cripe, D.O., is a surgeon with the nonprofit OhioHealth network in Columbus, Ohio. But attached to the lapel of his white coat is a pin bearing the name of MD Anderson in Houston.

It’s a shiny symbol of OhioHealth’s designation as a certified member in the MD Anderson Cancer Network® — designed to bring MD Anderson’s clinical expertise to community hospitals and advance cancer care across the country.

Certified member institutions provide the caregivers and facilities, while MD Anderson provides its expertise and evidence-based guidelines to help elevate cancer care.

Though MD Anderson physicians are not on site and do not meet with patients one-on-one, they weigh in on patient care by consulting with peer physicians.

To date, 13 hospitals and health systems in 11 states are certified members, including OhioHealth’s Grant Medical Center, where Cripe is a general surgeon who cares for breast, endocrine and melanoma cancer patients. Health systems and hospitals must pass rigorous reviews and credentialing processes to earn the certified member designation from MD Anderson.

“As a certified member in the network, I know I can call on MD Anderson’s clinical expertise when needed,” Cripe says. “And my patients who have an especially rare or complex cancer can stay closer to home in Ohio and be assured that their care plan has been reviewed, discussed and validated by MD Anderson specialists in Houston.”

During the past year, 32 MD Anderson physicians provided some 500 consultations to certified member physicians. That number is expected to increase as the certified member program continues to grow.

Certified members and the dates they joined the program:
As a youngster growing up in São Paulo, Diogo Bugano Diniz Gomes was fascinated by how things worked and how to fix them when they broke.

“I grew up wanting to be an engineer,” he says, “but soon I realized that technology is boring if you don’t interact with people.”

So he combined the best of both worlds by choosing medicine as a career.

“As a doctor I still need to know how things work and how to fix them — but in a different way,” he says.

Bugano completed medical school and an internal medicine residency in São Paulo, then entered into an oncology fellowship at the city’s Hospital Israelita Albert Einstein — ranked the No. 1 hospital in South America by business magazine America Economia.

It was during this fellowship that Bugano’s education took a life-altering turn, thanks to a collaboration between the hospital and MD Anderson.

The two institutions had just signed a 10-year agreement in which MD Anderson would help Albert Einstein develop its oncology program into the best in South America. The agreement would provide South American patients with the same high level of care delivered at MD Anderson, while advancing the institution’s mission of ending cancer globally.

As part of the collaboration, an international fellowship was created in which physicians from Albert Einstein could travel to Houston and train at MD Anderson.

Bugano wasted no time. In July 2013, just six months into his fellowship at Albert Einstein, he flew to Houston and became the first international fellow accepted under the terms of the new agreement.

“I’ve admired and respected MD Anderson for years,” he says. “The opportunity to gain experience here is invaluable.”

Bugano is spending two years rotating through all areas of medical oncology at MD Anderson. On Fridays, he treats oncology patients in the outpatient clinic at Harris Health’s Lyndon B. Johnson Hospital — part of MD Anderson’s local outreach initiative to provide cancer care for the underserved. The rest of the week, he conducts clinical research and works with physicians in various MD Anderson clinics.

“All areas of academic medicine are covered in this very comprehensive fellowship,” says Bugano, who will graduate in July and return to Brazil as a Medical Oncology staff physician at Albert Einstein.

The way cancer care is delivered to patients in Brazil is being revolutionized by MD Anderson’s collaboration with Hospital Israelita Albert Einstein, says Amy Hay, MD Anderson’s vice president for Global Business Development.

“For the first time in Latin America, patients have access to a multidisciplinary, multispecialty cancer center with outpatient care, advanced treatment technologies and a full range of support services all in one location,” Hay says. This is a novel approach to cancer management in Latin America, Bugano says.

“In Brazil, all oncologists are general oncologists who treat solid tumors,” he explains. “The same doctor who treats a brain tumor may also treat a gynecologic tumor. Leukemia, myeloma, myelodysplastic syndrome and lymphomas are treated by hematologists.”

In 2014, the institutions expanded their collaborative relationship and Hospital Israelita Albert Einstein became the first clinical extension of MD Anderson in South America, as well as the first international associate member of the MD Anderson Cancer Network® — a select group of hospitals and health systems with access to best practices, education, research and treatment protocols developed at MD Anderson.

Through its partnership with MD Anderson, Albert Einstein is creating multidisciplinary teams of medical professionals who specialize in treating and providing support for specific cancer types. One patient may have a medical oncologist, radiation oncologist, nurse, dietitian, pharmacist and others on his or her treatment team, all specifically trained to treat the patient’s type of cancer.

MD Anderson is also providing Albert Einstein with treatment algorithms (step-by-step, decision tree approaches to assessing and treating various types of cancer), order sets (prepackaged doctors’ orders detailing how to treat a specific diagnosis), faculty and staff education and training, access to clinical trials and research collaborations.

An exchange program brings the best to Brazil

By Ronda Wendler

Diogo Bugano Diniz Gomes will take the training he’s received at MD Anderson back to Brazil’s Hospital Israelita Albert Einstein.

© Eric Kayne
A call to action in South Texas

By Ronda Wendler

Since its introduction in the 1940s, the Pap test has been successfully detecting abnormal cells in the cervix that, if left untreated, could lead to cancer. In fact, that success has led to a 70% drop in cervical cancer rates in the United States.

But in Texas’ four southern-most counties lining the Texas-Mexico border, the cervical cancer death rate is 30% higher than the rest of the state. Lack of resources is the culprit, says Kathleen Schmeler, M.D., associate professor in Gynecologic Oncology and Reproductive Medicine.

“Seventy percent of the population in the region is uninsured, and the number of public hospitals serving the uninsured is zero,” says Schmeler. “Residents there are at a huge disadvantage.”

It’s especially tragic when women in these underserved Rio Grande Valley counties are diagnosed with incurable cervical cancer, Schmeler says, because the disease is almost always 100% preventable when detected early with a simple Pap test or another test developed in 2011 that detects the presence of the human papillomavirus (HPV) — the cause of almost all cervical cancer cases.

“But due to lack of insurance and health care facilities for the poor,” Schmeler says, “only five percent of women in South Texas avail themselves to these simple and lifesaving screening tests.”

To bridge this gap, the Cancer Prevention Research Institute of Texas (CPRIT), which provides state funding for cancer research, prevention and product development programs, has awarded MD Anderson a grant in excess of $1.4 million to increase cervical cancer screenings and preventive treatments for women living along the border. Efforts will target Cameron, Hidalgo, Willacy and Starr counties, which have 40% fewer physicians and half as many nurse practitioners as the rest of Texas.

The CPRIT grant funds two programs that will bring additional health care workers and services to the region. The first program, Cultivando La Salud (Cultivating Health), will employ lay health educators in the Hispanic community called promotoras to teach low-income women about cervical cancer screenings and HPV vaccinations, which block transmission of the HPV virus.

The second program is Project ECHO (Extension for Community Healthcare Outcomes), which uses a Skype-like video conferencing program to link MD Anderson faculty in Houston with Rio Grande Valley clinicians. Houston doctors connect on screen and in real time with Valley providers to discuss patient cases and teach medical techniques.

With this latest round of funding, Houston doctors will teach Rio Grande Valley clinicians how to perform three medical procedures commonly employed when a patient’s Pap or HPV tests are abnormal: colposcopy (examination of the cervix with a special magnifying device), cervical biopsies (removal of a small sample of tissue from the cervix for further examination), and LEEP (loop electrosurgical excision procedure), which uses a thin, low-voltage electrified wire loop to cut out precancerous tissue.

“There are very few providers in the lower Valley who perform these procedures in medically underserved patients,” says Ellen Baker, M.D., Project ECHO director.

The Project ECHO initiative will also enlist the services of Su Clinica Familiar — a Federally Qualified Health Clinic serving the poorest segment of the Rio Grande Valley population; the University of Texas School of Public Health’s Brownsville campus, which operates a mobile health van for the medically underserved along the border; and the University of Texas Medical Branch in Galveston, which sends a doctor to its McAllen outreach clinic one day a month to perform LEEP procedures.

Project ECHO was originally developed in 2003 at the University of New Mexico to help rural practitioners care for patients with Hepatitis C. Since then, the program has expanded to help caregivers treat multiple diseases at numerous sites throughout the U.S. and around the world. Cultivando La Salud was developed in 2004 at the University of Texas School of Public Health, and has aided Hispanic female farmworkers in communities along the Texas-Mexico border and in California’s Central Valley.
The physician assistant will see you now

By Ronda Wendler

Jenny Dahl was within a semester of graduating with a nutrition degree when an invitation changed her mind — and her future.

“My friend invited me to shadow him as he made patient rounds working as a physician assistant,” says Dahl, who worked as a certified nursing assistant at the same hospital. “Seeing how he connected with patients and their families was so rewarding. By the end of the day, I was hooked. I wanted to be a physician assistant.”

Dahl earned her nutrition degree, then shifted gears. She enrolled in the highly regarded Physician Assistant Program at Philadelphia University, where she was awarded a master’s degree. Next, she applied and was accepted to MD Anderson’s Oncology Physician Assistant Fellowship program — the only physician assistant oncology fellowship in the country.

The one-year program prepares physician assistants, or PAs, for a career in adult medical, surgical and radiation oncology.

At MD Anderson, Dahl rotated through more than 12 specialty clinics, including Breast Oncology, Leukemia and Lymphoma, Head and Neck Oncology, and Stem Cell Transplant.

Supervised by physicians and mentored by staff PAs and other health care professionals, she received daily, hands-on training in various settings, including hospital wards, the emergency room, the operating room and outpatient clinics.

“I rotated through all the major departments at MD Anderson and worked under the world’s leading oncologists,” says Dahl, who now works as a PA in the Leukemia Center. “In that fast-paced, whirlwind year, I gained the confidence and skills needed to become successful as an oncology PA.”

A highly competitive program

MD Anderson’s Oncology Physician Assistant Fellowship program is highly competitive, says Maura Polansky, who founded the program in 2001.

Only two fellows are accepted each year from a pool of applicants from all over the country.

“Our PAs are far ahead of others just entering the field,” says Polansky, Physician Assistant Education program director. “That one, intense year of training is the equivalent of several years of work experience.”

The day to day of a PA

A day in the life of a PA is much like a day in the life of a physician. PAs take medical histories, examine patients, order and interpret tests, diagnose medical problems, develop treatment plans, prescribe medications, and educate patients and families about illnesses and treatments.

Many assist in surgical procedures, perform outpatient procedures such as lumbar punctures and bone marrow biopsies, and participate in clinical research studies.

Supervised by physicians, PAs are sometimes called mid-level providers — a category that also includes nurse practitioners and certified nurse anesthetists.

“PAs aren’t just assistants to physicians,” notes Polansky. “The physicians who work with PAs count on them to provide patients with the same level of care a physician would provide, and to get the physician involved when needed.”

In demand

A recent study commissioned by the American Academy of Medical Colleges predicts a shortage of 4,000 medical oncologists by 2020. This translates to 10 million visits by cancer patients that can’t be handled due to physician shortage.

“As our population ages and life expectancy increases, cancer cases will rise,” Polansky says. “Oncology PAs will be in high demand.”

This year, U.S. News and World Report listed physician assistant as No. 13 on its “100 Best Jobs” list, citing strong demand and low unemployment. Beyond job security, the profession offers personal fulfillment, Polansky says.

“In the course of cancer treatment, you develop valuable relationships with patients and their families. Every patient is special, and the PA’s job is to make each day of their cancer journey a little better.”

Jenny Dahl rotated through 12 specialty clinics during her year in the Oncology Physician Assistant Fellowship program, the only program of its type in the country. © Eric Kayne
Wilderness doctor Matt Lewin, M.D., Ph.D., has traveled to the ends of the Earth treating scientists who work in remote and dangerous locations.

As an expedition doctor with the California Academy of Sciences, he’s handled dehydration in the Gobi Desert, poisonous spider bites in Papua, New Guinea, and altitude sickness in Argentina.

But one of the biggest challenges, Lewin says, is saving victims of venomous snakebites, which he deems “the world’s most neglected tropical disease.” Neglected, he says, because 75% of snakebite victims who die never make it to a hospital.

“When you’re deep in a rainforest or high atop a mountain on a scientific expedition, medical treatment can be hours or even days away,” Lewin explains.

When a venomous snake bites, it can send paralyzing neurotoxins coursing through the victim’s veins. The nervous system becomes progressively disabled, and death comes when neurotransmission ceases. With no instructions to breathe, the muscles of the diaphragm are stilled and the victim asphyxiates.

Hospitalization can provide anti-venom and respiratory support to counter these effects, but in the most remote regions of the globe, there often is no anti-venom, no respirator and, sometimes, no way out.

To protect scientists on future expeditions, Lewin invented a portable, field-friendly nasal spray that contains an antidote to some snake venoms that cause paralysis. Typically, anti-venom is administered through an intravenous (IV) injection, but Lewin thinks clinical trials will prove the nasal spray to be quicker, cheaper and likely equally as effective.

“It’s easy to administer in the field,” he says, “because no needles are required. And unlike IV anti-venom, it doesn’t have to be refrigerated.”

Lewin tested the treatment on himself in an experiment that took place at the University of California San Francisco Medical Center. Surrounded by several anesthesiologists and an emergency room doctor, he was paralyzed while still awake with a toxin that mimics cobra venom. The team then administered the nasal spray, and within 15 minutes Lewin completely recovered, though the paralyzing toxin was still being delivered into his bloodstream.

In India, where an estimated 1 million people are bitten by snakes every year, the nasal spray was successfully used to treat a patient who did not respond to anti-venom therapy. The spray has also been successfully tested in laboratory mice that were injected with high doses of cobra venom. Clinical trials are in the works, and when made widely available, the spray is expected to save tens of thousands of lives each year.

**Shaping scientists**

As a student, Lewin honed his science skills at the University of Texas Graduate School of Biomedical Sciences, where he graduated in 1999. Nestled in the heart of the Texas Medical Center and located in MD Anderson’s George and Cynthia Mitchell Basic Sciences Research Building, the school offers graduate-level degrees to students preparing for careers as biomedical scientists. Master’s and doctorate degrees are available in fields such as cancer biology, experimental therapeutics, immunology, human and molecular genetics, and clinical and translational sciences. Students can earn a Ph.D., M.S. or, like Lewin, a combination M.D./Ph.D. degree.

“We’re training the next generation of scientists passionate about tackling problems in human diseases through laboratory research conducted at the cellular and molecular levels,” says Michelle Barton, Ph.D., one of the school’s two deans.

In a unique collaboration, the school is run by two institutions — MD Anderson and The University of Texas Health Science Center at Houston. Faculty and deans (Barton and Michael Blackburn, Ph.D.) come from both institutions.

Since its founding in 1963, the school has produced a steady stream of science “superstars” who make important discoveries that advance cancer care and knowledge of other diseases and conditions.

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**Graduate School of Biomedical Sciences students**

- 70% United States
- 13% China
- 5% Taiwan
- 9% India
- 3% South Korea

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“I still lean heavily on what I learned at the Graduate School of Biomedical Sciences. The environment was, and continues to be, fabulously supportive. I graduated 15 years ago, and I still consult my mentors there about scientific matters.”
Suzanne Fuqua, Ph.D., ’82
Fuqua answered a question that puzzled scientists for years when she discovered why the drug tamoxifen stops working in some breast cancer patients. Certain breast cancers use the hormone estrogen as “fuel.” The more estrogen the cancerous tumors are exposed to, the more they grow and spread. Tamoxifen works by blocking estrogen, thereby depriving tumors of their “fuel.” Unfortunately, tamoxifen’s anti-tumor effect dwindles in about half of patients treated with the drug. Fuqua, who is a professor in Baylor College of Medicine’s Lester and Sue Smith Breast Center, discovered that women who have inadequate levels of a protein known as Rho GDI are more likely to resist tamoxifen and similar drugs, which can allow cancer to spread. This discovery is being used to develop new drugs that stop new tumors from forming.

John Kopchick, Ph.D., ’80
Kopchick specializes in human growth hormone research. His discoveries led to the development of a drug named Somavert, which treats acromegaly, a form of gigantism. In this condition, the body makes too much human growth hormone (HGH), which causes organs and bones to grow overly large. If not treated, acromegaly can cause disfigurement or death. Lately, as a distinguished professor of molecular biology at Ohio University, Kopchick has been working to find a biomarker that can be used to detect illegal use of HGH in athletes. Because HGH is virtually undetectable, it is thought to be the “drug of choice” among athletes who take performance-enhancing substances.

Hugo Barrera-Saldana, Ph.D., ’82
Barrera-Saldana learned first-world science in the U.S. and Europe, then took what he learned back to his native Mexico, where scientists often struggle for recognition and funding. After completing his undergraduate education at the Autonomous University of Nuevo Leon in Mexico, Barrera-Saldana made his way to Texas and became the first student from that country to enroll at the GSBS. After earning a Ph.D., conducting postdoctoral research in Europe and publishing a string of scientific papers, Barrera-Saldana was primed for a successful science career in the U.S. Instead, he headed back to Mexico to offer the next generation of students the benefit of his science education. Today, he’s a professor of Biochemistry and Molecular Medicine, head of the Genomic Science Laboratory, and secretary of science and technology at the Autonomous University of Nuevo Leon’s Medical School. He founded a medical biotech company and is helping modernize human genetics research centers throughout Mexico, Colombia, Venezuela and Peru.

Danny Welch, Ph.D., ’84
Welch discovered six of the 30 known metastasis suppressors — proteins that act to slow or prevent the spread of cancer. Work is underway to translate his discoveries into drugs that “hold” cancer cells in a dormant state. Instead of requiring total elimination of all cancer cells for a cure, these suppressor drugs could make metastatic cancer a chronic, controllable disease. As Welch explains it, “it may not be necessary to corral the horse in the stable as long as it can be kept from running amok beyond the pasture.” Welch is a professor and chair of the Department of Cancer Biology at the University of Kansas Medical Center. "The esprit de corps at the graduate school was as much a part of my scientific and personal growth as the formal training. The Friday beer busts were a great chance to interact with everyone, including the dean. There was never any pretense. Rather, there was a sense of camaraderie. I knew my fellow students and faculty had my back if I ever wanted to try something scientifically risky. They’ve still got my back, and I theirs.”

Daniel Welch, Ph.D.

Illustrations by Adam Cruft
The center that provides veterinary and preclinical research services to support MD Anderson has received new, leading-edge laboratory equipment, thanks to a $20,000 gift from Torchy’s Tacos in Austin.

“Cancer has affected so many lives. We want to help that number decline,” says Michael Rypka, Torchy’s founder and executive chef.

Rypka and the Torchy’s management team recently toured MD Anderson’s Keeling Center for Comparative Medicine and Research, which is located on 381 acres near Bastrop, Texas. The center conducts cancer-related research benefiting people and animals, and helps educate the next generation of scientists.

“Visiting the facility and meeting its devoted team of researchers solidified our commitment to funding cancer research,” says Rypka, whose mother died in 2008 after battling ovarian cancer. “We stand behind the researchers’ efforts one hundred percent and are glad to see our investment contributing to their great impact over time.”

The Torchy’s gift funded two laboratory purchases:

- A Hematek 3000 System automated slide stainer that infuses cells studied under a microscope with color, allowing scientists to better differentiate normal cells from cancerous ones
- A Countess II Cell Counter that counts and identifies cancer cells more quickly and accurately than ever, helping scientists pinpoint which drugs work best to kill cancer cells

Christian Abee, D.V.M., director of the Keeling Center and chair of Veterinary Sciences, says the new equipment strengthens the Keeling Center’s programs.

“The Torchy’s leadership team has a strong sense of social responsibility,” Abee says. “We’re very thankful for their investment in research that holds great promise for helping reduce and, eventually, cure cancer.”

“The Torchy’s leadership team has a strong sense of social responsibility,” Abee says. “We’re very thankful for their investment in research that holds great promise for helping reduce and, eventually, cure cancer.”

— Michael Rypka

Achieving a win-win-win

By Adelina Espat

Good things come in threes — like MD Anderson’s corporate alliances initiative.

The program teams MD Anderson with corporations that conduct customer transactions, with a portion of those transactions benefiting cancer care and research.

“MD Anderson increases its fundraising dollars and national awareness, while corporations move toward their business or marketing goals, and consumers contribute to a cause that’s important to them, most often through products they were going to purchase anyway. It’s a three-way win,” says DeDe DeStefano, executive director for Corporate Alliances. “Good corporate alliances benefit all involved.”

In the past year, MD Anderson initiated two new corporate alliances that achieved major win-win-wins.

The first alliance teamed the cancer center with delicatessen restaurant group Jason’s Deli to raise funds for the Breast Cancer Moon Shot. For every co-branded water bottle it sold, Jason’s Deli donated 10 cents, raising $250,000. The alliance grew to include sales of bandanas featuring the MD Anderson cancer strikethrough logo.

“Many in our Jason’s Deli family have been touched by cancer,” says Jamie Cohen, chief branding officer at Jason’s Deli. “We want to do more to help the communities we serve. We want to raise awareness about cancer and help MD Anderson so future generations won’t experience this disease.”

Last spring, Jason’s Deli created a healthy menu item with help from MD Anderson nutritionists. The Wild Salmon Salad was a hit, and Jason’s Deli is working with nutritionists on a second menu item, Quinoa and Mango Salad.

“The success of this campaign has been overwhelming,” Cohen says. “Water bottle sales are up and the salmon salad sales have exceeded expectations.”

MD Anderson also teamed with Stripes Convenience Stores to raise funds for MD Anderson Children’s Cancer Hospital during Pediatric Cancer Awareness Month this past September.

In its Stripes Stores Celebrates Tomorrows campaign, Stripes employees and customers purchased $1 pinups to help kids with cancer. The initiative raised more than $1.4 million. The James B. and Lois R. Archer Charitable Foundation and Triumph Over Kid Cancer Foundation matched all donations, doubling the final contribution to more than $2.8 million.

“The funds raised will benefit MD Anderson Children’s Cancer Hospital, allowing the hospital to offer more hope and healing for many children,” says Eduardo Pereda, Stripes vice president of marketing.
Thanks to a $20,000 gift from Torchy’s Tacos founder and executive chef Michael Rypka, MD Anderson’s Keeling Center for Comparative Medicine and Research in Bastrop is now better equipped to support research and fight cancer.

© Cort McPhail/ Torchy’s Tacos
This past summer, Emmy Laursen and other University of Texas students rode from Austin, Texas, to Anchorage, Alaska, in the annual Texas 4000. The ride provides hope for cancer patients, promotes knowledge of the disease and raises money for research.

Wyatt McSpadden
When doctors told Mariana Torrado she had breast cancer, she didn’t believe them at first. “I thought, ‘no way, I’m only 30 years old,’” says Mariana, a project accountant for a real estate development company in Houston. But the pieces of the puzzle began to fall into place when Mariana and her sister Paola, 31, tested positive for a mutation in the BRCA1 breast cancer gene. People who test positive have a significantly higher risk of developing breast and ovarian cancers, as well as passing on the mutation to future generations. “When my sister and I got the same test results, we realized there’s a pattern here,” says Mariana.

Doctors at MD Anderson agreed, and set the wheels in motion to not only battle Mariana’s cancer, but also to help Paola and other family members avoid cancer in the future. The two sisters met with genetic counselors at MD Anderson’s Clinical Cancer Genetics Program to discuss their options.

Know your risks
“Genetic counseling helps people assess their genetic risk for certain cancers, most commonly breast and ovarian,” says Banu Arun, M.D., a professor of Breast Medical Oncology and co-director of the Clinical Cancer Genetics Program. Counselors help those who either have cancer themselves or a high incidence of cancer in their families get tested, understand the results and make decisions about what to do next.

Arun says some patients discover through counseling that they’d prefer not to know if they carry a BRCA mutation. Ultimately, the decision is the patient’s. “But knowing you’re at increased risk because of family history is empowering,” Arun says. “Through various options, you can reduce your chance of getting cancer by up to 95%.” Some women considered to be at high risk will undergo alternating mammograms and MRIs every six months (as opposed to standard yearly mammograms). Others will take anti-cancer drugs or adopt healthier lifestyles. Yet others will choose to have their ovaries, Fallopian tubes and/or breasts removed — an option known as preventive or prophylactic surgery.

Actress Angelina Jolie spotlighted this most aggressive route for managing cancer risk when, in 2013, she underwent a preventive double mastectomy. Jolie decided to have the procedure after she tested positive for a BRCA1 mutation. Her mother died of ovarian cancer, and Jolie learned she herself had up to an 87% chance of getting the disease. Some breast cancer experts noted that the “Angelina Jolie effect” — the dramatic surge in testing for breast cancer genes that followed her story — was a good thing. It raised awareness of a problem and gave women the power to take charge of their health and their future.

Paola is screened every six months and identifies with the term “previvor.” The label has been adopted by many BRCA mutation carriers who have taken preventive measures — surgeries, drugs or vigilant screenings — to dramatically reduce their risks of developing cancer. Paola is considering her options, and says she’ll likely choose to undergo a preventive double mastectomy.

Mariana identifies with the term “survivor.” She plans to marry and have children when she beats cancer. “I know my MD Anderson doctors will be following me closely,” she says.
Since 2003, rectal cancer survivor Marshall Loosier has logged more than 3,300 hours as an MD Anderson volunteer. He received the 2014 Joseph T. Painter Award for his contributions to patient support, and recently helped create a face-to-face program to support patients who’ve had an ostomy.

After breast cancer patient Mariana Torrado and her sister Paola tested positive for the BRCA1 mutation, they met with genetic counselors at MD Anderson’s Clinical Cancer Genetics Program to discuss their treatment options.

© Wyatt McSpadden
EndTobacco begins at MD Anderson

More than 42% of adults in the United States were smokers back in 1964, when the Surgeon General’s Report on Smoking and Health definitively linked smoking to lung cancer and other pulmonary diseases.

Fifty years later, the smoking rate has fallen to 18% — 42 million people less than in 1964. Despite that significant reduction, far too many Americans continue to smoke.

“The public seems to think we’ve won the battle against tobacco, but the 18% population usage has been difficult to improve in recent years,” says Ernest Hawk, M.D., vice president and head of Cancer Prevention and Population Sciences.

Motivated in large part by the daily suffering of patients and their families stemming from tobacco use, a cross-functional team led by Hawk, who is also co-leader of the Moon Shots Program’s cancer prevention and control platform, and Mark Moreno, vice president for Governmental Relations, developed the EndTobacco program.

This comprehensive program brings MD Anderson and other leaders in prevention and tobacco control together to more rapidly decrease tobacco-related cancers and help end tobacco use through policy, education and community-based clinical services. Aligned with principles of the World Health Organization and the Centers for Disease Control and Prevention, EndTobacco has already taken important steps.

“We must play a more active, intentional and productive role in making tobacco history, just as we strive to make cancer history,” says Hawk. “Nothing else we do could have a greater contribution to our mission at the population level.”

MAJOR GOALS INCLUDE:

REDUCE SMOKING AMONG YOUNG PEOPLE

FACT: NEARLY 16% OF AMERICAN HIGH SCHOOL STUDENTS SMOKE. AT THE CURRENT RATE, 5.6 MILLION OF THOSE YOUNGER THAN 18 WILL DIE PREMATURELY FROM A SMOKING-RELATED ILLNESS.

SAMPLE STRATEGIES:

• Collaborate with Comprehensive Cancer Centers, schools of public health, Bloomberg Foundation, the Centers for Disease Control and Prevention (CDC), American Cancer Society and others to expand similar efforts in other states
• Educate state and national legislators, employers and Fortune 100/500 companies on the EndTobacco initiative
• Lower youth exposure to marketing and promotion to tobacco products
• Raise the price of tobacco products
• Restrict sales of electronic cigarettes to young people

REDUCE EXPOSURE TO SECONDHAND SMOKE

FACT: CIGARETTE SMOKING IS RESPONSIBLE FOR MORE THAN 480,000 DEATHS PER YEAR IN THE U.S., INCLUDING AN ESTIMATED 41,000 DEATHS RESULTING FROM EXPOSURE TO SECONDHAND SMOKE. ALMOST 40% OF KIDS BETWEEN THE AGES OF 4 AND 17 ARE EXPOSED TO SECONDHAND SMOKE.

SAMPLE STRATEGIES:

• Strengthen MD Anderson’s tobacco-free campus policy
• Work with health and academic institutions in Texas and beyond to establish campus-wide tobacco-free policies
• Educate lawmakers and employers about the hazards of secondhand smoke

INCREASE COUNSELING AND SMOKING-CESSATION ATTEMPTS AMONG CURRENT SMOKERS

FACT: WHEN QUITTING SMOKING, THE YOUNGER, THE BETTER. BUT QUITTING IS BENEFICIAL AT ALL AGES. ON AVERAGE, NONSMokers LIVE 10 YEARS LONGER THAN SMOKERS.

SAMPLE STRATEGIES:

• Increase cessation support to MD Anderson employees, the Board of Visitors, patients and their families
• Provide cessation expertise and support across all Texas health care institutions
• Galvanize health care institutions in providing cessation services to the general public, with an initial emphasis on special populations disproportionately affected by tobacco use
• Promote local tobacco-free workplaces until a statewide ban can be enacted. MD Anderson launched its own tobacco-free hiring policy in January.

1. More than 16,000,000 people in the U.S. currently suffer from smoking-related illness.
2. Tobacco use is responsible for 1 in 5 deaths in the U.S., and 1 in 3 cancer deaths.
3. Lung cancer is the leading cause of cancer death in the U.S., killing almost 160,000 people last year. It’s also the most preventable type of cancer.
4. Smoking kills more people than alcohol, AIDS, car accidents, illegal drugs, murders and suicides combined.
COSTS OF SMOKING:
Each year, the cost of smoking and exposure to tobacco in the U.S. is

$300 BILLION

- at least $130 BILLION in direct medical costs
- more than $150 BILLION in productivity losses
- $5.6 BILLION for lost productivity due to exposure to secondhand smoke

(2006 data, the most recent available)

SMOKING IS DOWN, BUT NOT OUT

511,300,000,000

cigarettes smoked in 1964, the year the Surgeon General’s Report on Smoking and Health was released

314,500,000,000

cigarettes smoked in 2012 (the most recent figures available)

SPENDING ON TOBACCO PREVENTION IN TEXAS*

* Estimates for FY2014, according to the Campaign for Tobacco Free Kids

$1.9 BILLION: tobacco-generated revenue

$264.1 MILLION: CDC recommends spending on tobacco prevention

$11.2 MILLION: actual spending on tobacco prevention

That’s only 4.2% of the CDC-recommended spending
Baby boomers — Americans born between 1945 and 1965 — grew up in one of the wealthiest, most idealistic and physically fit generations in history.

Today, boomers account for close to 30% of the U.S. population. As this group gets older, public health officials are examining how they have and will transform health care.

One area of concern is the hepatitis C virus, a serious liver disease transmitted through contaminated blood and blood products, often spread through shared needles or contaminated medical and body-piercing equipment.

“Baby boomers are five times as likely to have hepatitis C,” says Jagpreet Chhatwal, Ph.D., assistant professor of Health Services Research at MD Anderson. “This generational group accounts for 75% of at least 2.7 million people infected in the U.S. And at least half of those with the virus don’t know they’re infected.”

The reason baby boomers have high rates of hepatitis C is not completely understood. It’s possible that many became infected from contaminated blood and blood products before widespread screening began in 1992 and universal precautions were adopted. Because people with the disease can live for decades without symptoms, many baby boomers unknowingly live with an infection they contracted years ago.

Chhatwal says hepatitis C is responsible for more than 15,000 deaths each year in the U.S., and is the leading cause of liver cancer in the nation. Therefore, it’s more important now than ever to identify those at risk and improve access to care and treatment.

In 2012, the Centers for Disease Control and Prevention implemented guidelines for a one-time hepatitis C screening of all baby boomers with the intent to avoid major increases in liver diseases such as liver cancer, which is a risk associated with hepatitis C.

New hepatitis C drugs that are taken orally and have fewer side effects than older drugs became available in 2013. With these new drugs, treatment duration has decreased from 48 weeks to 12 weeks. More new drugs are expected to hit the market in the near future, Chhatwal says.

In a study published in the Annals of Internal Medicine, Chhatwal, along with collaborators at the University of Pittsburgh Graduate School of Public Health and others, predicted present and future hepatitis C disease trends. They developed a mathematical model using data from more than 30 clinical trials and national surveys.

The researchers predict that a one-time screening of baby boomers will help identify 487,000 cases of hepatitis C during the next 10 years. Such a screening, they say, could make hepatitis C a rare disease in the next 22 years. Furthermore, the researchers predict a one-time universal screening of all adults will identify 933,700 hepatitis C cases. In turn, this will eliminate 161,500 liver-related deaths and 96,300 cases of liver cancer, and prevent the need for 13,900 liver transplants.

“Screening can help identify people who are infected so they can receive timely treatment,” says Chhatwal. “There are drug therapies available that can eliminate the virus before it becomes a disease and causes major liver damage, cirrhosis and liver cancer.”

Should you be screened for liver cancer?

By Katrina Burton

Screening tests are powerful cancer prevention tools that can detect pre-cancerous conditions early, sometimes before symptoms arise. However, screening tests don’t exist for all types of cancer, and some are advised only for people who have specific traits that increase their risk.

MD Anderson has developed its own set of evidence-based screening guidelines, which, like those from the U.S. Preventive Services Task Force and the American Cancer Society, recommend that people be screened regularly for certain cancers.

In addition, MD Anderson recommends liver cancer screening for high-risk patients.

“There are no national guidelines for liver cancer screening, partly because no clinical trial has been conducted to assess its effectiveness,” says Therese Bevers, M.D., medical director of MD Anderson’s Lyda Hill Cancer Prevention Center. “But emerging evidence suggests there may be benefits to screening populations at high risk.”

MD Anderson considers people to be at high risk for liver cancer if they have hepatitis B or C, or if they’ve been recommended for hepatitis B or C screenings. The viruses attack the liver and can cause liver cancer, cirrhosis (scarring) and liver failure.

For others who don’t meet this high-risk definition, screening benefits may not be as clear. Screening can even have negative consequences, such as false-negative or false-positive test results.

“Cancer screening is always about understanding and balancing the benefits and harms, and making sure there’s a favorable outcome for the patient,” says Bevers. “Your doctor can advise you about your risk for liver cancer and your need for screening tests.”
Jagpreet Chhatwal, along with collaborators at the University of Pittsburgh Graduate School of Public Health and others, has predicted that a one-time screening of baby boomers will help identify 487,000 cases of hepatitis C during the next 10 years. Such a screening, they say, could make hepatitis C a rare disease in the next 22 years.

Eric Kayne
More than 3,500 local women who are low income and uninsured have received free mammograms through an MD Anderson community outreach initiative.

Project VALET — an acronym for Providing Valuable Area Life-Saving Exams in Town — brings MD Anderson’s mobile mammography van to nine community clinics in Harris and Fort Bend counties.

Several times each week, the van rolls into a clinic parking lot to provide eligible women ages 40 to 69 with this important and lifesaving screening. Many of those screened have never had a mammogram because they are uninsured, can’t afford it or have no transportation.

“The program overcomes barriers of cost and transportation by bringing high-quality mammography screenings to women in their own familiar communities,” says Diane Benson, associate director of Health Policy and head of the Project VALET program.

Project VALET started in 2008 with seed money from the National Breast Cancer Foundation, a Texas-based organization that funds early detection initiatives. In its first year, the project delivered 114 free mammograms. By 2014, that number had increased 10 times over.

“With the high volume of underserved women in our area, there’s a clear need for programs like this,” Benson says.

Before getting a mammogram through Project VALET, women must first attend classes taught by participating clinic staff. The project provides the educational materials. Topics discussed include what to expect during a mammogram and why early detection is important.

The goal is to help women feel comfortable and encourage them to come back for screenings each year, Benson explains.

MD Anderson’s mobile van provides screening mammograms, which are routinely administered to detect breast cancer in women who have no apparent symptoms.

Women whose screening mammograms indicate further testing is recommended are referred to a facility that partners with Project VALET to provide more in-depth testing, such as a diagnostic mammogram, ultrasound or both.

Whether a woman is scheduling her first mammogram, educational classes, advanced diagnostic testing or, if needed, treatment services, patient navigators at participating community clinics and MD Anderson are on hand to guide her through the process. And help is available in multiple languages.

Due to increased demand, Project VALET recently purchased a second mammography van that will service four additional clinics in 2015.

**Clinics in Harris County that partner with Project VALET include:**
- El Centro de Corazon, 7037 Capitol St.
- Hillendahl Clinic, 1615 Hillendahl Blvd, Suite 100
- La Nueva Casa De Amigos Health Center, 1809 North Main
- Northside Health Center, 8504 Schuller
- Pitner Clinic, 8575 Pitner Rd.
- Sunnyside Health Center, 9314 Cullen
- West Houston Clinic, 19333 Clay Rd.

**Participating Fort Bend County clinics are:**
- AccessHealth, 400 Austin St., Richmond
- Shifa Clinic, 10415 Synott Rd., Sugar Land
A survivor is saving lives through early detection

By Miriam Spradling

It was 1980 when Janelle Hail of Frisco, Texas, discovered a small lump during a self-breast exam. A visit to the doctor resulted in an early breast cancer diagnosis. The then-34-year-old mother of three feared for her life. Today, she attributes her survival to early detection.

Before the Internet, patients had few resources to learn about their disease, so they relied almost exclusively on their physicians. Hail’s doctor recommended a mastectomy. She’s since learned a lumpectomy would’ve been just as effective. The experience made Hail acutely aware of the lack of available information and fueled her mission to educate women about breast cancer and early detection.

Breast cancer survivor’s dream is a worldwide reality

With help from her husband and family, she founded the National Breast Cancer Foundation Inc. In 2000, it made its first gift: $10,000 to fund breast cancer research at MD Anderson.

“It wasn’t much, but it was a lot for us,” Hail recalls. “We knew our giving would grow in relation to what we took in as a foundation, and it has.”

She was right. Today, the foundation’s contributions have reached nearly $5 million.

Fuel to end cancer

The foundation allocates the majority of its support to breast cancer research, including the Breast and Ovarian Cancers Moon Shot.

“The Moon Shots Program is innovative, targeted and specific,” Hail says. “I love the whole approach of what they’re doing because they’ve taken things that were on the verge of success and pushed them over the top.”

Mien-Chie Hung, Ph.D., a moon shots leader and chair of Molecular and Cellular Oncology, uses the funding to conduct promising research that doesn’t yet have the track record required by government funding agencies.

“Through the foundation’s funding, my group has discovered biomarkers that can predict resistance to anti-cancer drugs,” says Hung. “Many of the biomarkers have great potential to help breast cancer patients, but without preliminary results, it would’ve been difficult to obtain government funding.”

Special delivery

The foundation also provided the seed money for MD Anderson’s Project VALET (Providing Valuable Area Life-Saving Exams in Town) in 2008. (See story on page 48.) The project brings MD Anderson’s mobile mammography van to community clinics where underserved women receive free mammograms and early detection education. Project VALET is part of the foundation’s National Mammography Program, which has provided more than 350,000 mammograms to underserved women across all 50 states.

Going global

Thanks to efforts that educate women about the importance of early detection, breast cancer survival rates in the U.S. are at 90%. However, survival rates in parts of Asia, Africa and Europe are decreasing. Hail and MD Anderson saw a critical need to expand globally, and partnered with the institution’s Global Academic Programs; Worldwide Innovative Networking in Personalized Cancer Medicine, a global collaboration of cancer care and research organizations headquartered in Paris; and Pink Ribbon Red Ribbon in Africa. These partnerships have resulted in:

• The WINTHER Trial: the first clinical trial to offer biologically guided therapy for 100% of participants. The trial currently is underway at MD Anderson and three institutions in France, Spain and Israel
• 13 additions to MD Anderson’s Sister Institution Network, a collaboration of 29 institutes from 22 countries conducting research and education to lessen the world’s cancer burden
• Exchange visits that bring Zambian doctors to Houston to study MD Anderson’s state-of-the-art cancer treatment, and send MD Anderson doctors to Zambia to share expertise with colleagues on the ground

Hail believes when you dream big, nothing can stop you.

“There are organizations larger than ours, but none with a greater vision to send light around the world. The message is working, but we have to continue until the survival rate is 100%, or the disease is cured.”

Breast Cancer survivor Janelle Hail founded the National Breast Cancer Foundation Inc. to educate women about breast cancer and early detection. Wyatt McSpadden
4,000 miles in 70 days — and the ride of her life is just beginning

By Andy Olin

“Life is like a 10-speed bike. Most of us have gears we never use.”

That quote from “Peanuts” creator Charles Schulz doesn’t apply to the life of 22-year-old Emmy Laursen. The University of Texas senior used every gear she had — literally and figuratively — while cycling more than 4,000 miles from Austin, Texas, to Anchorage, Alaska, this past summer. (That’s roughly the equivalent of biking from Houston to Miami, north to New York City and then across the U.S. to Los Angeles.)

Laursen and 28 fellow UT students rode an average of 70 miles each day for 70 days along the Ozarks Route of the Texas 4000, the world’s longest annual charity bike ride. Founded 11 years ago by a UT undergrad who survived childhood cancer, the ride shares hope for patients, knowledge of the disease and funds raised for research. Assigned to one of three routes, which also include one along the West Coast and another through the Rockies, all 80 or so riders share a passion to battle cancer.

“I didn’t really know what the ride was going to do for me, but I knew I needed to do it,” Laursen recalls.

“They always say, ‘Don’t let the Texas 4000 be the best thing you ever do.’ And I definitely know what they mean now. You come off of this high and you’re like, ‘I gotta keep going, this is not the end.’”

— Emmy Laursen

After being treated by an oncologist in Grapevine, a city just north of the Dallas-Fort Worth metroplex, Michael Laursen was sent to MD Anderson in 2010, where he saw Christopher Garrett, M.D., professor of Gastrointestinal Medical Oncology. In early 2011, he underwent selective internal radiation therapy, which can be very effective in patients with colorectal liver metastases. Tiny microspheres of radioactive material were injected into the arteries that supplied blood to the tumor. Unfortunately, in the months following the treatment, CT scans showed the tumor growth on his liver wasn’t slowed. He returned to North Texas and continued chemo treatments there.

Meanwhile, Laursen had graduated from high school and entered college in Austin, where she was studying art, a passion she shared with her father. She returned home to visit him often, but without a car, she couldn’t visit as much as she would’ve liked. That changed when he bought her a Honda Fit in August 2012. She went home every weekend to see him.

But Laursen also felt like she was living two separate lives, jumping back and forth between being a caring daughter and being a normal 19-year-old.

“Going to college during the week and then on the weekends having this completely different life, it was really hard to put on a smile all the time,” she says. “No one ever knew what was going on in my life. And I wasn’t very honest with people about how bad my dad was doing.”

Laursen was so busy providing support for her father, brother and family back home in Keller that she wasn’t getting the help she needed for herself in Austin. Then she found the Texas 4000.

“Looking back now, I couldn’t have predicted what kind of healing it would bring,” she says. “But at that time I realized I needed the support of people who knew what it was like to have family fighting cancer.”

Laursen would need that support more than she would know. On Oct. 30, 2012, five months after her father watched her brother receive his high school diploma, her aunt called with the news that he had died. Laursen returned home for the memorial service on Nov. 4. The following day, she learned she’d been selected for the Texas 4000.

So began 18 months of preparation for the ride that took her and her teammates through eight states and six Canadian provinces. In addition to training on the bike, each rider is required to do 50 hours of volunteer work and raise a minimum of $4,500 (a dollar for every mile of the ride). In the end, most surpass that goal.

“People raise whatever they can,” Laursen says. “Most people set their goal at $4,500, and once they reach that, they’re like, ‘well, dang, let’s just try to double that.’”

Laursen’s journey didn’t end on Day 70 in Anchorage. What she set out to do in honor of her father and others facing life with cancer became an experience that opened her own eyes and revealed an adventurous side she says she won’t be able to get away from.

“They always say, ‘Don’t let the Texas 4000 be the best thing you ever do.’ And I definitely know what they mean now,” she says. “You come off of this high and you’re like, ‘I gotta keep going, this is not the end.’”

“The cyclical, routine, busy life is not all there is. There are more inspirational things out there happening than this ‘busyness’ that we’re in every day, I’m hungry for it. I’m hungry for more. I’m anxious to see what’s next.”
Emmy Laursen biked more than 4,000 miles in honor of her father and others facing life with cancer. The ride brought out her adventurous spirit, which she says she won’t be able to get away from.

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partners in making cancer history

From left: Texas Congressman Mike McCaul, former MD Anderson President John Mendelsohn, M.D., Linda Mays McCaul and former Canadian Prime Minister Brian Mulroney were among more than 800 guests attending A Conversation With a Living Legend in Washington D.C.
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Former San Antonio Spurs center David Robinson, left, is interviewed by former teammate and longtime friend Sean Elliott at the fourth annual A Conversation With a Living Legend in San Antonio. The luncheon raised more than $260,000 for ovarian cancer research and other patient care initiatives.
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* As of Sept. 1, 2014

md anderson annual report 2014
THE ANDERSON ASSEMBLY

Since its inception in 1989, The Anderson Assembly has recognized those whose support and financial contributions have enabled MD Anderson’s continued growth and progress. Listed here are members who have committed $1 million or more through cash gifts, documented cash pledges, irrevocable planned gifts and/or charitable remainder trusts to support MD Anderson programs.
Professional golfers Johnny Miller, left, and Dave Stockton sign MD Anderson’s Strike Through Cancer Wall at the Insperity Invitational golf tournament in The Woodlands, Texas. MD Anderson was an official sponsor of the tournament, which attracted thousands of spectators and pro golfers.
MONROE DUNAWAY ANDERSON SOCIETY


Established in 1995, the Monroe Dunaway Anderson Society recognizes individuals and families who have selected the programs at MD Anderson to benefit from a planned gift such as a bequest, life insurance policy or other similar vehicle. Listed here are new members of the society who recently named the institution in their estate plans.

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Marcia and Daniel Forbes Family Living Trust
Margaret and Joe (deceased) Foster
Dean and Marilyn Greenberg
Ms. Teresa O. Heck
Mr. Charles B Hurt
Mr. Theodore Johnson
Colonel and Mrs. Bobby Knapp
Mrs. Lorraine Krucks
Dr. Mary Ruth Lewis
Dr. Jean Ann Marangu and Dr. Craig Marangu
Mrs. Gaye McCutchen
Karen and Toby Mongan
Mr. Timothy F. Murray
Donna and Charles Oglesby
Susie and Bruce Peeden
Ms. Celina Peterle
Ms. Claire J. Ramberg
Terry L. and Diana C. Ragsdale
Ms. Patricia M. Seabury
Mr. and Mrs. Joseph A. Shewski
Mrs. Sue Bice Smith
Mr. and Mrs. Greg Sones
Jamie Villegas
Mr. and Mrs. Craig White
Mrs. Helen N. White
Ms. Joyce Welby Wills
Jan and Steve Wright
Mr. and Mrs. Jack Zbar

Mr. and Mrs. Richard O. Hunton Sr. (Hunton Group)
Sheila Burleson Hurley
Mr. Terry Hurley
Barbara and Charles Hurwitz
Susan and Martin Hurwitz
The Hurwitz Family/MAAXAM Inc.
Ms. Yasmin K. Hussain
Mr. and Mrs. William L. Hutchinson
Ms. Nina C. Hwang
Dr. Jessica P. Hwang and Mr. Brent Hwang
Mr. Don Hyatt
Mr. Daniel A. Hyde
William L. Hyde, Jr. and Claire C. Hyde
Mr. and Mrs. Alie G. Hyden
Hysong USA, Inc.
Colonel Franklin H. Hyten

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J. R. Gerrits Middle School
Jack’s Ride
Mrs. Barbara L. Jackson
Mr. and Mrs. Carl R. Jackson
Mr. and Mrs. James M. Jackson
Mr. and Mrs. John C. Jackson II
Jackson Spenberg McCarthy & Townsend LLP
Jackson-Meriky Contractors, Inc.
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Mr. and Mrs. Jack F. Jacobs
Mr. Thomas W. Jacobs
Emma Jacobs Breast Cancer Foundation
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Catherine H. Jacobus
Mr. and Mrs. A. J. Jacques
Dr. and Mrs. Steven L. Jaife
Mr. and Mrs. Michael V. Jaggers
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Mr. and Mrs. J. E. Jakula
Mr. and Mrs. Frank M. James
Mr. and Mrs. Richard L. James
Jamie’s Hope
Ms. Marian Jameson and Mr. David M. Eakas
Mr. John C. Jansing
Jansing-Cook Foundation
Ms. Adele Jara
Ms. Jennifer Jarrett
Jason’s Deli
Mr. and Mrs. Ermi Edward Jaster
Eric Javits Family Foundation
Mr. and Mrs. L. Weldon Jaynes
Mr. Michael J. Jeaneonnge
Jeffries & Company, Inc.
Mrs. Penny Jenkins
Swend A. Jensen
Nancy Glamile Jewell
Spanish Community Foundation
Jewish Community Foundation of Greater Phoenix, Inc.
Jewish Federation of Greater Atlanta
Jewish Federation of St. Louis
Joe Still Building Company
Mr. and Mrs. Thomas T. Johannsen
Mr. and Mrs. Stanley M. Johannsen
John A. Newman, Inc.
John Daughtery Realtors
Mr. and Mrs. Bert G. Johnson
Ambassador Brenda LaGrange Johnson and J. Howard Johnson
Mr. and Mrs. Carlos D. Johnson
Mr. and Mrs. Charles Douglas Johnson
Mr. and Mrs. Clyde J. Johnson III
Mr. and Mrs. Darrell D. Johnson
Mr. David J. Johnson
Eric Johnson
Eric Johnson
Mr. and Mrs. Eric Johnson
Mr. and Mrs. Gary H. Johnson
Ms. Karen Johnson
Mr. and Mrs. Leslie W. Johnson
Lucie Barnes Johnson and Ian Turpin
Mr. and Mrs. Matt Johnson
Mr. and Mrs. Paul H. Johnson
Mr. and Mrs. Robert W. Johnson
Mr. and Mrs. Ross Johnson
Ms. Ruth Johnson
Mr. and Mrs. Scott W. Johnson
Mr. Theodore Johnson
Mr. and Mrs. Tom Johnson
Mr. William F. Johnson
Mr. William T. Johnson
Johnson & Johnson Foundation
The Johnson Family Foundation
J. Howard & The Honorable Brenda LaGrange Johnson Family Fund
The Tom & Edwina Johnson Foundation
Ms. Jo-Lynn Johnston
Mr. and Mrs. Mark F. Johnston
Eula J. Johnston Foundation
Richard and Joylene Jolly
Mrs. Virginia H. Jolly
Mr. and Mrs. A. V. Jones, Jr.
Mr. and Mrs. Alfred B. Jones, Jr.
Mr. and Mrs. Bob Jones
Mr. Clark Jones

Ms. Elizabeth Jones
Mr. J. Paul Jones
Mr. Jack G. Jones
The Honorable and Mrs. James R. Jones
Mr. and Mrs. Jeffrey A. Jones
Mr. and Mrs. Jon Rex Jones
Mr. and Mrs. K. C. Jones
Mrs. Margie K. Jones
Mrs. Mary Elizabeth Jones
Mrs. Mary Kay Jane Jones
Richard B. and Linda Wallace Jones
In Memory of Susan Baughman for the Baughman Family Lung Cancer Fund
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Mr. and Mrs. Stephen R. Jones
Mr. Terry W. Jones
Mr. and Mrs. Wayne Jones
Mr. Will Thomas Jones
Fred Jones Family Foundation
The Dodge Jones Foundation
Ms. Juel H. Jones-Moss
Mr. and Mrs. James T. Jongeblod, Sr.
Mr. John E. Jonietz
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Mr. and Mrs. George R. Jordan, Jr.
Mr. and Mrs. Gerald R. Jordan, Jr.
Mr. and Mrs. John W. Jordan, II
The Gerald R. Jordan Foundation
Mr. and Mrs. Gene Jorgensen
Mr. and Mrs. Lenor M. Josey II
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JPMorgan Chase & Co.
Employees of JPMorgan Chase & Co.
JPMorgan Chase Foundation
Mr. Lenin Juarez
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Mrs. Marilyn Murray Justson
Mr. and Mrs. Ailes J. Jungelius, Jr.
The Junior League of Houston, Inc.
Mr. Donald Jurow
Mr. and Mrs. A. Joe Justice
Mr. and Mrs. James F. Justiss, Jr.
Justus Oil Company, Inc.
JWC Covenant, Inc.

K
Kadzki Creative, Ltd.
Mr. and Mrs. Michael and Lady Kadzor
Mr. and Mrs. William R. Kaelin, III
Mr. Clarence J. Kahilii
Mr. and Mrs. Alan R. Kahn
Mr. and Mrs. W. Barry Kahn
Mr. and Mrs. Robert M. Kahn
Mr. Ridge Matthew Kaiser
Mr. Ross E. Kam
Mrs. Virginia Lee Kanaly
Glenda and Jerry Kane
Ms. Margaret Kane
Mr. Spikes Kangenga
Kansai City Southern Industries, Inc.
Dennis C. and Lori Feinberg Kany
Estates of Dorothy Kapeslanski
Mr. and Mrs. Marvin Kaplan
The Abraham H. Kaplan Foundation
Mr. and Mrs. Jerry Kapor
Ms. Seema V. Karande
Fred and Karen Karle
Ms. Robin L. Karr
Mr. and Mrs. Ronald Kasik
Mr. and Mrs. Joe E. Kasperek
Mr. Bruce M. Kasper
Frazier Wilson, vice president of the Shell Oil Company Foundation and manager of Social Investment for Shell, and Peggy Montana, executive vice president of Shell’s U.S. Pipelines and Special Projects, announced a $3 million gift from Shell to the cancer control and prevention platform, a key component of MD Anderson’s Moon Shots Program.

...
partners in making cancer history

Team Propaganda, featuring, from left, Mason Primm, Paul Hobby, Brad Scherer and Shane Rice, earned the silver trophy at the 28th annual Polo on the Prairie tournament. The springtime event transforms a Texas prairie into a polo field where amateur and world-ranked professionals compete in a U.S. Polo Association-sanctioned tournament. Proceeds benefit MD Anderson.

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Mr. and Mrs. Glenn R. Smith
Mr. and Mrs. Harvey W. Smith, Jr.
Mrs. Heather Smith
Dr. and Mrs. James A. Smith
Mrs. Jeanette Smith
Mrs. Jimmie Miller Smith
Mr. and Mrs. L. R. Smith
Larry J. and Marsha Smith
Mr. Lawrence L. Smith
Mr. and Mrs. Lester H. Smith
Mr. Marquis M.D. Smith, Jr.
Mr. and Mrs. Michael A. Smith
Onnie Leach Smith
Mr. and Mrs. Paul Smith
Mr. and Mrs. Randy D. Smith
Mr. Randlow Smith
Mr. Robert Smith
Mr. and Mrs. Robert L. Smith
Mr. Rodney A. Smith
Mr. Russell Smith
Mr. Stephen F. Smith
Mr. Terence J. Smith
Thomas and Deborah Smith
Mr. William C. Smith III
Mr. and Mrs. Kenneth F. Spitler
The Joel & Brenda Spira Foundation
Peggy and Bob Spencer
Mary John Spence
Mr. William T. Speller
Spectra Energy Foundation
Spectra Energy Corporation
Mr. Bob Spears
Ruth Parr Sparks Foundation
Mr. and Mrs. Allen C. Staggers, Jr.
Mr. F. J. Stahrman III
Mr. and Mrs. Fred E. Stabler
Mr. and Mrs. Joe H. Staley, Jr.
Stand Up To Cancer Laura Ziskin Prize
Mr. and Mrs. Thomas R. Standish
Mrs. Jo Ellen Starfield
Mr. John Starfin
Mary J. and Paul D. Stang
Mr. and Mrs. Shaughn Stanley
Mr. and Mrs. Rodney Stanton
Mr. Michael L. Stanwood
Dr. Roman Starkov
Lois and George Stark
Dr. John H. Starkie
The Starr Foundation
Estate of Dolores Stadium
Dr. and Mrs. C. Richard Stanney
State Employee Charitable Campaign
State Farm Agents, Employees, and Retirees
Dr. Stanley D. Stearns
Stearns Family Foundation Inc.
Steel Painters, Inc.
Mrs. Ida Louise Clement Steen and The Honorable John T. Steen, Jr.
Mr. Jeff Steen
Sharon Stein
Spurs Sports & Entertainment
Patcharee Siriswadi
SFS Foundation
St. Andrew's Episcopal Church
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Mr. Jack B. St, Clair
James P. Stabler
Stache & Associates LLC
Ron and Ticha Stading
The Stading-Younger Cancer Research Foundation
Ms. Heike Stadler
Mrs. Claudia J. Stafford
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Mr. Hugh J. Stahrman III
Mr. and Mrs. Fred E. Stabler
Mr. and Mrs. Joe H. Staley, Jr.
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Mr. Michael M. Stoege
Gayle and Paul Stoffel
Mr. and Mrs. James Cif Stone
Mr. and Mrs. Richard Stone
Sheri Hirschfield Stone
Mr. and Mrs. Herb F. Stonehocker, Jr.
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Mr. and Mrs. John W. Storms
Mr. and Mrs. N. E. Stouder
Mr. and Mrs. Edward L. Stout
Mr. and Mrs. Norman D. Stovel, Jr.
Mr. and Mrs. George W. Strake, Jr.
Strake Foundation
Stratford High School
Mr. and Mrs. Scott Stratton
Bill and Lindy Street
Jannette and Gerald Streit
Mr. Jason Strelow
Mr. Van Strength
Ms. Suzanna Strickling and Mr. Robert G. Rubin
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Dr. and Mrs. David R. Strome
Strong As Steele Cancer Foundation
Deana McHorton Srum and Paul Srum
Styker Cisionalplaxfacial
Styker Orthopaedics
Mr. Michael D. Stuart
Mr. Timothy L. Stuart
Nancy Studeck
Mr. and Mrs. Stanley S. Studer, Jr.
Mr. and Mrs. James E. Stueve
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Dr. Janet P. Stukalin and Dr. Ronald Stukalin
Mrs. Mike P. Sturdivant, Sr.
Mr. William T. Sturgis
Mr. and Mrs. Philip J. Stutes
Mr. Jason H. Styles
Mr. and Mrs. John H. Styles, Sr.
Meihua Su
Mr. and Mrs. Randy L. Subers
The Bekinda Sue Fund
Duane and Denise Sussex
Rabbi and Mrs. Alvin M. Sugarman
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Mr. Charles Sunderland
The Sunderland Foundation
Mr. and Mrs. Mark T. Sunwall
Mrs. Dolores L. Sura
Susquehanna Institute
Mr. and Mrs. Sam L. Susser
The Suturak Foundation
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Dr. Peggy E. Swanson
Gretnah Swanson Family Foundation, Inc.
SWB Foundation
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Mr. and Mrs. Stephen G. Sweet
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Mr. and Mrs. Robert L. Swickley
Mr. and Mrs. Phelps Swift
Mr. Van P. Swift
Mr. and Mrs. Virgil N. Swift
Mr. Kent M. Swig
Mr. Kimberlee Swig
Roseylene Chromium Swig
The Swig Foundation
Mr. and Mrs. Mark S. Swint
Swingle, Collins & Associates
SWN International Inc.
Mrs. Juanita E. Sword
Mr. and Mrs. David S. Sykes
Gerald and Nancy Syler
Mr. Charles W. Synnamon
Mr. and Mrs. Antonio M. Szabo
Mr. and Mrs. Kevin Szopinski
Mr. Charles W. Szulak
T. Rowe Price Program for Charitable Giving
Mr. and Mrs. Albert S. Tabor, Jr.
Mr. and Mrs. George K. Taggart III
Mrs. Mary Lynn Tallot-Davidson
Mr. William F. Davidson
Mr. and Mrs. Tony L. Talbott
Mr. and Mrs. David M. Talia
Tallas Insurance Agency
Mr. Alan H. Talley
Mr. G. Richard Talley
Bob Talman’s Charities, Inc.
Penny Garrett’s sarcoma battle inspired her family to raise awareness and funds for rare cancers. Though she died in December 2014, Penny’s spirit lives on through The Creeper Trail to End Cancer (C-TREC), a bike ride and 5K run she and her family founded. C-TREC runs through the family’s hometown in Virginia and has raised more than $450,000 for cancer research. The Garrett family — Todd, from left, Penny, Madison and Peyton — is pictured at the event.

Mr. and Mrs. H. Ronald Weissman
Herb and Donna Weitzman
Betty Marie Welch
James and Jane Welch Foundation
The Robert A. Welch Foundation
Mrs. Barbara K. Weidler
Mr. and Mrs. Patrick H. Weider, Jr.
Mr. Cecil Wellborn
Mr. and Mrs. M. Weller
Mr. Steven E. Wellman
Carole and D. Brent Wells
Ms. Linda S. Wells
Mr. P. Michael Wells
The Wells Alliance
Wells Fargo Advisors, LLC
Wells Fargo Foundation
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Mr. and Mrs. Edward J. Welsh, Jr.
Mrs. Phyllis A. Wenglen
Mr. and Mrs. Eugene Werlin, Jr.
Mr. and Mrs. Douglas E. Werner
Ms. Joan S. Werner
Mr. and Mrs. Lon T. Werner
Mr. Robert L. Werner
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SuEllen and John Wilson
Wilson Wolf...
Fiscal Year 2014
financial and statistical data
# SOURCES OF REVENUE (unaudited)

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
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<tbody>
<tr>
<td><strong>Patient Revenue</strong></td>
<td></td>
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<tr>
<td>Gross patient revenue</td>
<td>$5,167,618,550</td>
<td>$5,544,009,390</td>
<td>$6,144,132,636</td>
<td>$6,582,112,827</td>
<td>$6,994,996,215</td>
</tr>
<tr>
<td>Deductions from gross patient revenue</td>
<td>$2,675,088,480</td>
<td>$2,813,830,643</td>
<td>$3,185,346,342</td>
<td>$3,403,247,816</td>
<td>$3,659,313,782</td>
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<tr>
<td><strong>Net patient revenue</strong></td>
<td>$2,492,530,070</td>
<td>$2,730,178,747</td>
<td>$2,958,786,294</td>
<td>$3,178,865,011</td>
<td>$3,335,682,434</td>
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<td>** Restricted grants and contracts, philanthropy**</td>
<td>$414,066,098</td>
<td>$436,638,273</td>
<td>$426,455,579</td>
<td>$505,144,559</td>
<td>$421,761,275</td>
</tr>
<tr>
<td><strong>State-appropriated general revenue</strong></td>
<td>$179,818,473</td>
<td>$168,730,376</td>
<td>$170,383,019</td>
<td>$154,562,093</td>
<td>$185,393,182</td>
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<tr>
<td><strong>Auxiliary income</strong></td>
<td>$30,700,522</td>
<td>$33,232,458</td>
<td>$36,957,473</td>
<td>$40,674,618</td>
<td>$41,502,690</td>
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<tr>
<td><strong>Other income</strong></td>
<td>$46,491,784</td>
<td>$52,954,731</td>
<td>$56,151,131</td>
<td>$75,564,178</td>
<td>$99,702,455</td>
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<tr>
<td><strong>Investment and other non-operating income</strong></td>
<td>$141,230,275</td>
<td>$239,483,083</td>
<td>$87,098,290</td>
<td>$180,428,432</td>
<td>$328,881,907</td>
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<td><strong>TOTAL REVENUE</strong></td>
<td>$304,837,222</td>
<td>$3,661,217,668</td>
<td>$3,735,831,786</td>
<td>$4,135,238,891</td>
<td>$4,412,923,943</td>
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</tbody>
</table>

1 Amounts discounted from established rates as a result of agreements with third-party payors, including Medicare, Medicaid and insurance companies. Also includes deductions associated with indigent care and bad debt.
2 Funds received from parking fees, valet services, dining facilities, hotel charges, gift shop sales and vending machine sales.
3 Includes tuition and student fees, Children’s Art Project sales, management fees and other sources.
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</tr>
<tr>
<td>Deductions from gross patient revenue</td>
<td>1 2,675,088,480</td>
<td>2,813,830,643</td>
<td>3,185,346,342</td>
<td>3,403,247,816</td>
<td>3,659,313,782</td>
</tr>
<tr>
<td>Net patient revenue</td>
<td>$2,492,530,070</td>
<td>$2,730,178,747</td>
<td>$2,958,786,294</td>
<td>$3,178,865,011</td>
<td>$3,335,682,434</td>
</tr>
<tr>
<td>Restricted grants and contracts, philanthropy</td>
<td>$414,066,098</td>
<td>$436,638,273</td>
<td>$426,455,579</td>
<td>$505,144,559</td>
<td>$421,761,275</td>
</tr>
<tr>
<td>State-appropriated general revenue</td>
<td>179,818,473</td>
<td>168,730,376</td>
<td>170,383,019</td>
<td>154,562,093</td>
<td>185,393,182</td>
</tr>
<tr>
<td>Auxiliary income</td>
<td>30,700,522</td>
<td>33,232,458</td>
<td>36,957,473</td>
<td>40,674,618</td>
<td>41,502,690</td>
</tr>
<tr>
<td>Other income</td>
<td>46,491,784</td>
<td>52,954,731</td>
<td>56,151,131</td>
<td>75,564,178</td>
<td>99,702,455</td>
</tr>
<tr>
<td>Investment and other non-operating income</td>
<td>141,230,275</td>
<td>239,483,083</td>
<td>87,098,290</td>
<td>180,428,432</td>
<td>328,881,907</td>
</tr>
<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td>$304,837,222</td>
<td>$3,661,217,668</td>
<td>$3,735,831,786</td>
<td>$4,135,238,891</td>
<td>$4,412,923,943</td>
</tr>
</tbody>
</table>

1. Amounts discounted from established rates as a result of agreements with third-party payors, including Medicare, Medicaid and insurance companies. Also includes deductions associated with indigent care and bad debt.
2. Funds received from parking fees, valet services, dining facilities, hotel charges, gift shop sales and vending-machine sales.
3. Includes tuition and student fees, Children's Art Project sales, management fees and other sources.
4. Includes support for parking, food and gift shop services, as well as general institutional support (e.g. information technology, human resources, administration, development activities, etc.).

### USES OF REVENUE

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>$463,104,671</td>
<td>$520,582,209</td>
<td>$546,836,560</td>
<td>$588,664,553</td>
<td>$631,944,987</td>
</tr>
<tr>
<td>Instruction, academic support and public service</td>
<td>147,158,551</td>
<td>153,409,591</td>
<td>164,580,132</td>
<td>209,633,502</td>
<td>195,958,381</td>
</tr>
<tr>
<td>Patient care</td>
<td>1,579,735,295</td>
<td>1,704,851,239</td>
<td>1,880,230,560</td>
<td>2,013,554,826</td>
<td>2,055,617,566</td>
</tr>
<tr>
<td>Facilities and depreciation</td>
<td>400,068,414</td>
<td>427,461,242</td>
<td>460,445,328</td>
<td>471,935,938</td>
<td>486,793,306</td>
</tr>
<tr>
<td>Institutional support, auxiliary and other</td>
<td>226,601,396</td>
<td>248,601,648</td>
<td>280,844,123</td>
<td>305,390,616</td>
<td>312,865,408</td>
</tr>
<tr>
<td>Allocation to capital plan (for future projects to replace and improve facilities and technology)</td>
<td>488,168,895</td>
<td>806,311,739</td>
<td>402,895,083</td>
<td>546,059,455</td>
<td>729,743,695</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES</strong></td>
<td>$3,304,837,222</td>
<td>$3,661,217,668</td>
<td>$3,735,831,786</td>
<td>$4,135,238,891</td>
<td>$4,412,923,943</td>
</tr>
</tbody>
</table>

**FY 2014 USES OF REVENUE**

- **4.4%** Instruction, Academic Support and Public Service
- **7.1%** Institutional Support, Auxiliary and Other
- **14.3%** Research
- **46.6%** Patient Care
- **11.0%** Facilities and Depreciation
- **16.6%** Allocation to Capital Plan

**FY 2014 GROSS REVENUE BY PAYOR CLASSIFICATION**

- **33.9%** Medicare
- **54.6%** Managed Care
- **5.7%** Other
- **4.3%** Medicaid
- **1.5%** Indigent

*Includes support for parking, food and gift shop services, as well as general institutional support (e.g. information technology, human resources, administration, development activities, etc.)*
## Clinical Profile

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admissions</td>
<td>23,995</td>
<td>25,230</td>
<td>26,726</td>
<td>27,905</td>
<td>27,761</td>
</tr>
<tr>
<td>Patient days</td>
<td>178,651</td>
<td>180,354</td>
<td>191,735</td>
<td>202,553</td>
<td>202,636</td>
</tr>
<tr>
<td>Average daily census</td>
<td>498</td>
<td>504</td>
<td>536</td>
<td>569</td>
<td>571</td>
</tr>
<tr>
<td>Average length of stay</td>
<td>7.4</td>
<td>7.1</td>
<td>7.2</td>
<td>7.3</td>
<td>7.3</td>
</tr>
<tr>
<td>Average number of inpatient beds</td>
<td>546</td>
<td>594</td>
<td>616</td>
<td>635</td>
<td>654</td>
</tr>
<tr>
<td>Outpatient clinic visits, treatments, procedures</td>
<td>1,132,338</td>
<td>1,190,568</td>
<td>1,281,489</td>
<td>1,338,706</td>
<td>1,363,008</td>
</tr>
<tr>
<td>Pathology/laboratory medicine procedures</td>
<td>10,754,560</td>
<td>10,937,213</td>
<td>11,619,591</td>
<td>11,718,405</td>
<td>12,005,766</td>
</tr>
<tr>
<td>Diagnostic imaging procedures</td>
<td>538,514</td>
<td>515,999</td>
<td>497,660</td>
<td>501,887</td>
<td>523,297</td>
</tr>
<tr>
<td>Surgery hours</td>
<td>61,873</td>
<td>63,230</td>
<td>66,241</td>
<td>70,221</td>
<td>68,506</td>
</tr>
<tr>
<td>Total active clinical protocols</td>
<td>1,009</td>
<td>1,048</td>
<td>1,078</td>
<td>1,065</td>
<td>1,101</td>
</tr>
</tbody>
</table>

## FY 2014 Workforce

- **19,973** employees
- **1,685** faculty
- **1,080** volunteers
- **164,970** on-site volunteer hours

MD Anderson provided more than **$196 million** in uncompensated care to Texans with cancer in FY14.*

*This figure includes unreimbursed costs of care for patients who either have no insurance or are underinsured, or whose care was not fully covered by government-sponsored health programs.
FY 2014
TOTAL PHILANTHROPIC GIFT SUPPORT BY TYPE

<table>
<thead>
<tr>
<th>Cash gifts</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporations</td>
<td>$8,455,514</td>
</tr>
<tr>
<td>Foundations</td>
<td>26,459,458</td>
</tr>
<tr>
<td>Individuals</td>
<td>42,716,972</td>
</tr>
<tr>
<td>Organizations</td>
<td>2,248,741</td>
</tr>
<tr>
<td>Trusts and estates</td>
<td>10,531,375</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$90,412,060</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pledge gifts</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporations</td>
<td>$20,291,869</td>
</tr>
<tr>
<td>Foundations</td>
<td>53,332,230</td>
</tr>
<tr>
<td>Individuals</td>
<td>11,174,547</td>
</tr>
<tr>
<td>Organizations</td>
<td>7,495,363</td>
</tr>
<tr>
<td>Trusts and estates</td>
<td>56,153,595</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$148,447,604</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gifts-in-kind</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporations</td>
<td>$262,267</td>
</tr>
<tr>
<td>Individuals</td>
<td>97,558</td>
</tr>
<tr>
<td>Organizations</td>
<td>21</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$359,846</strong></td>
</tr>
</tbody>
</table>

**TOTAL**                  | **$239,219,510**

FY 2014
TOTAL PHILANTHROPIC GIFT SUPPORT BY PURPOSE
(in millions)

- **5.0%** Annual/unrestricted/undesignated $12.0
- **91.0%** Research $217.6
- **4.0%** Education/prevention/patient assistance $9.6

1These dollars fund institutional peer-reviewed research.
2 Donor-targeted gifts to research conducted in all mission areas.
### SOURCES OF RESEARCH EXPENDITURES

#### External funding for research

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal grants, contracts</td>
<td>$206,664,447</td>
<td>$236,413,656</td>
<td>$196,753,104</td>
<td>$182,970,502</td>
<td>$158,986,303</td>
</tr>
<tr>
<td>Private industry grants, contracts</td>
<td>$50,712,121</td>
<td>$59,582,449</td>
<td>$68,413,794</td>
<td>$65,579,036</td>
<td>$75,307,463</td>
</tr>
<tr>
<td>Philanthropy, foundations</td>
<td>$81,666,207</td>
<td>$98,150,749</td>
<td>$100,794,491</td>
<td>$101,642,898</td>
<td>$147,016,586</td>
</tr>
<tr>
<td><strong>Total external funding</strong></td>
<td><strong>$339,032,775</strong></td>
<td><strong>$394,146,854</strong></td>
<td><strong>$365,961,389</strong></td>
<td><strong>$350,192,436</strong></td>
<td><strong>$381,310,352</strong></td>
</tr>
</tbody>
</table>

#### State funding allocated for research

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>State-appropriated general revenue</td>
<td>$14,752,806</td>
<td>$14,767,719</td>
<td>$11,618,126</td>
<td>$11,776,785</td>
<td>$13,636,669</td>
</tr>
<tr>
<td>Tobacco settlement receipts</td>
<td>$8,451,929</td>
<td>$10,654,928</td>
<td>$8,854,774</td>
<td>$5,837,249</td>
<td>$11,175,016</td>
</tr>
<tr>
<td>CPRIT</td>
<td>$8,670,289</td>
<td>$19,546,278</td>
<td>$24,262,525</td>
<td></td>
<td>$25,072,890</td>
</tr>
<tr>
<td><strong>Total state funding</strong></td>
<td><strong>$23,204,735</strong></td>
<td><strong>$34,092,936</strong></td>
<td><strong>$40,019,178</strong></td>
<td><strong>$41,876,559</strong></td>
<td><strong>$49,884,575</strong></td>
</tr>
</tbody>
</table>

#### Internal funding allocated for research

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital operating margins</td>
<td>$161,708,956</td>
<td>$175,424,228</td>
<td>$215,527,886</td>
<td>$182,770,342</td>
<td>202,607,346</td>
</tr>
<tr>
<td>Institutional grants*</td>
<td>$23,088,278</td>
<td>$20,239,439</td>
<td>$26,032,444</td>
<td>$95,730,271</td>
<td>102,391,157</td>
</tr>
<tr>
<td><strong>Total internal funding</strong></td>
<td><strong>$184,797,234</strong></td>
<td><strong>$195,663,667</strong></td>
<td><strong>$241,560,330</strong></td>
<td><strong>$278,500,613</strong></td>
<td><strong>$304,998,503</strong></td>
</tr>
</tbody>
</table>

#### TOTAL RESEARCH EXPENDITURES

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$547,034,744</strong></td>
<td><strong>$623,903,457</strong></td>
<td><strong>$647,540,897</strong></td>
<td><strong>$670,569,608</strong></td>
<td><strong>$736,193,430</strong></td>
<td><strong>$797,283,485</strong></td>
</tr>
</tbody>
</table>

*Philanthropic donations to the institution internally designated to support research and PRS funds internally allocated to support research activities. Source: THECB Report (Research Finance)

### EDUCATION PROFILE

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical residents, fellows</td>
<td>1,109</td>
<td>1,141</td>
<td>1,187</td>
<td>1,231</td>
<td>1,276</td>
</tr>
<tr>
<td>Research trainees</td>
<td>1,612</td>
<td>1,629</td>
<td>1,714</td>
<td>1,743</td>
<td>1,853</td>
</tr>
<tr>
<td>Observers, visitors, special programs</td>
<td>401</td>
<td>429</td>
<td>431</td>
<td>507</td>
<td>452</td>
</tr>
<tr>
<td>Nursing trainees</td>
<td>2,776</td>
<td>2,320</td>
<td>2,531</td>
<td>1,306*</td>
<td>1,238*</td>
</tr>
<tr>
<td>Student programs participants</td>
<td>930</td>
<td>1,102</td>
<td>1,317</td>
<td>1,396</td>
<td>1,204</td>
</tr>
<tr>
<td>School of Health Professions students</td>
<td>214</td>
<td>248</td>
<td>316</td>
<td>291</td>
<td>318</td>
</tr>
<tr>
<td><strong>TOTAL TRAINEES</strong></td>
<td><strong>7,042</strong></td>
<td><strong>6,889</strong></td>
<td><strong>7,496</strong></td>
<td><strong>6,474</strong></td>
<td><strong>6,341</strong></td>
</tr>
</tbody>
</table>

*Total includes academic credit clinical placement only. Previous data included outreach and CPRIT education programs.
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www.mdanderson.org/cancernetwork

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• MD Anderson Cancer Center at Cooper (New Jersey)

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• 13 health systems and hospitals in 11 states

ASSOCIATE MEMBER
• Hospital Israelita Albert Einstein (São Paulo)

AFFILIATES
• MD Anderson Cancer Center Madrid (Spain)
• MD Anderson Radiation Treatment Center at American Hospital (Istanbul)
• MD Anderson Radiation Treatment Center at Presbyterian Kaseman Hospital (Albuquerque, N.M.)

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Jim Newman, director, External Communications

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Andy Olin, program director, External Communications

DESIGNER
Michael Clarke

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