Man on a mission

Retired NASA doctor to the astronauts, Charles Berry, M.D., takes on cancer
SMOKE AND MIRRORS
E-cigarettes are marketed as a safer option than traditional cigarettes. But are they?

THE ASTRONAUT’S DOCTOR
As NASA medical director, Charles Berry, M.D., monitored ‘patients’ in orbit instead of at the bedside. Now, he’s the patient.

BEYOND SKIN DEEP
Most people think of melanoma as an aggressive type of skin cancer, but 5% of melanomas originate in the eyes.

A DAY IN THE LIFE
Volunteer Heli Kimhi juggles multiple tasks as she goes about her volunteer duties.

RETURN JOURNEY
Caitlyn Morsus overcame cancer 10 years ago at MD Anderson Children’s Cancer Hospital. Today, she works there as a nurse.

ARTISTS IN RESIDENCE
For 46 years, the MD Anderson Children’s Art Project has given pediatric cancer patients the opportunity to channel their emotions through artwork.

THREE-TIME CHAMPION
Robby Witt battled a rare cancer in 2013, 2015 and 2017. Since then, he’s shown no signs of disease.

OPPORTUNISTIC INVADERS
Treatments can weaken patients’ immune systems and increase their chances of getting fungal infections.

VACCINE VS SARCOMA
Neetah Somaiah, M.D., is testing a vaccine that enlists the body’s immune system to battle cancers that arise in bones and connective tissues such as fat, muscles, tendons or cartilage.

MUSIC AS MEDICINE
Music therapy can reduce potential cancer treatment side effects, including depression, anxiety, pain, nausea and feelings of social isolation.

A DEADLY MIX
As obesity rates rise, nonalcoholic fatty liver disease is causing a surge in liver cancers.

ON THE COVER
Two-time Nobel Prize nominee Charles Berry, M.D., is photographed in his home by Wyatt McSpadden.
very day brings new headlines about e-cigarettes, from reports of seizures to the first death linked to lung problems after vaping. Between 2011 and 2015, e-cigarette use surged 90% among middle- and high-school students in the United States, according to the Centers for Disease Control and Prevention.

“By some ways, e-cigarettes sneak up on everybody, especially the explosion in youth use,” says Jason Robinson, Ph.D., associate professor of Behavioral Science.

In November 2018, the Food and Drug Administration took steps to limit youth access to e-cigarettes and in December 2018, the U.S. surgeon general released an advisory on the e-cigarette “epidemic” among youth.

Long-term risk unknown

While most experts, as well as some e-cigarette manufacturers, agree that youth e-cigarette use is bad, e-cigarettes are still marketed as a safer option than traditional cigarettes for current adult smokers. The website for one popular e-cigarette brand claims their product is a “satisfying alternative to cigarettes” with a mission to “eliminate cigarettes.”

Although e-cigarette vapor contains less toxins than tobacco cigarette smoke, the long-term risks of e-cigarette use are still unknown. Scientific evidence hasn’t consistently shown that current adult smokers will safely and successfully quit traditional cigarettes in favor of e-cigarettes, either.

“A lot of people become dual users, meaning they use both products, which is not actually healthier for you. In fact, it’s probably making your nicotine dependence worse,” Robinson says. “Smoking is the single most preventable cause of cancer, and e-cigarettes are not classified as therapeutic products by the Food and Drug Administration. This would require submitting an Investigational New Drug (IND) application to the FDA. Without the IND, researchers cannot submit proposals to study e-cigarettes as a potential therapeutic or cessation tool,” Robinson explains.

In early 2019, the FDA released a draft guidance to address this issue. Until the recommendations are finalized, researchers are limited to studying whether or not current smokers can safely “switch” to e-cigarettes, rather than whether or not e-cigarettes can help adults quit smoking.

“Under current regulatory guidelines, we can’t study cessation – that has been left to researchers in other countries,” Cinciripini says.

He points to a study from the United Kingdom which showed smokers who used e-cigarettes to help quit smoking tobacco cigarettes were still using e-cigarettes a year later.

“This suggests continued dependence on nicotine,” Cinciripini says. “We still don’t know their long-term risks and benefits.”

The research race

Studying the impact of e-cigarettes on current smokers’ behavior is challenging on several fronts. One of the biggest issues is that scientific research struggles to keep pace with the fast-growing e-cigarette industry. In 2009, the Tobacco Control Act gave the FDA authority to regulate tobacco products, including levels of nicotine – the addictive component of cigarettes. Reducing nicotine content might seem like an easy choice to reduce the appeal of smoking. But if it caused people to compensate by smoking more or inhaling more deeply to get the same amount of nicotine, it could actually increase the amount of dangerous toxicants they inhale. In 2013, MD Anderson was part of a multisite study to find out if the nicotine levels in cigarettes could be reduced safely.

“We got all the way down to a really low dose, which was about 3% of the nicotine in a commercial cigarette, and current smokers were able to tolerate it and reduce their smoking without compensating,” Robinson says.

By the time the results were published and confirmed by a follow-up study in 2018, the e-cigarette epidemic was well underway. As the landscape changed, Robinson and Paul Cinciripini, Ph.D., chair of Behavioral Science, developed a study to evaluate smokers’ behavior when given access to both very low-content nicotine cigarettes and e-cigarettes.

They designed the study using a popular e-cigarette product at the time. The product in their study is now considered outdated, so another arm of the study using today’s No. 1-selling e-cigarette brand is in the works.

“This has really been happening over the last few years, and with the nature of research, it’s so hard for us to keep up with it,” Robinson says. “It’s also fascinating,” he says, “because we have a chance to make a mark by providing the FDA with the evidence they need to enact a regulation about limiting the amount of nicotine in tobacco products. In that sense, it’s really exciting.”

Regulatory restrictions

While studies so far have looked at various aspects of cigarette and e-cigarette use, none have broached whether e-cigarettes are effective as a smoking-cessation aid. That’s because to conduct such a study, e-cigarettes would first need to be classified as “therapeutic products” by the Food and Drug Administration. This would require submitting an Investigational New Drug (IND) application to the FDA. Without the IND, researchers cannot submit proposals to study e-cigarettes as a potential therapeutic or cessation tool.

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The science of vaping

Researchers look at effects of e-cigarettes vs. traditional cigarettes

By Meagan Raeke
Missions accomplished

After participating in 30 successful space missions, this retired NASA medical director takes on a more Earthly challenge

By Lany Kimmons

A T age 96, Charles Berry, M.D., has had some out-of-this-world experiences.

A pioneer in the field of aviation medicine, he’s monitored the health of astronauts in space, helped foreign countries develop aviation medicine programs, and received more than 50 national and international awards, including two nominations for the Nobel Prize in Physiology or Medicine.

“I’ve had some tremendous opportunities that came at the perfect time,” says Berry, who this summer attended NASA’s 50th anniversary celebration of the Apollo 11 moon landing.

A more Earthly challenge

Two years ago, Berry’s zeal for life slowed when he was diagnosed with chronic lymphocytic leukemia, a cancer of the blood and bone marrow. He was referred to the Geriatric Clinic at MD Anderson, where clinic physicians work with MD Anderson cancer specialists to design personalized treatment plans for older adults with cancer.

“Although age is the reason most patients are referred to the Geriatric Clinic, age alone is not a good predictor of how someone will do with their cancer treatment,” says Tacara Soones, M.D., assistant professor of Internal Medicine. “I look at the whole person and their treatment goals to understand how to tailor their cancer treatment in a way that respects their wishes.”

At the clinic, patients complete a geriatric assessment – a series of tests that evaluate physical and mental ability along with emotional and social well-being. The tests also help pinpoint the patient’s wishes for treatment and their quality of life.

“Our overall goal is to avoid over-treatment or under-treatment,” says Soones, who also holds a master’s degree in public health.

A clinic social worker serves as a resource not only to patients but also to patients’ caregivers, who typically are family members.

“I spend a lot of time talking with caregivers to make sure they have appropriate breaks and respite during their caregiver duties,” says Tiffany Raczy, social work counselor. “I also help them consider whether they’re prepared to take on increased duties in the future and assist them in identifying other resources that can provide additional support.”

Raczy then follows up to make sure patients and caregivers have all they need, and that their questions are answered. Berry is pleased with the care he’s received.

“Dr. Soones and the clinic staff provide very personalized treatment and make me feel respected,” he says. “They’re very attentive and help me manage everything going on in my life.”

From family practice to astronaut doctor

The son of a butcher from Rogers, Ark., Berry experienced repeated bouts of tonsillitis as a child. After frequent visits to the family doctor, he announced at age 7 that he wanted to become a physician.

In September 1941, he enrolled as a pre-med student at the University of California at Berkeley. Just three months later, the Japanese attack on Pearl Harbor occurred, and American students over age 18 were given a choice – enlist now and the military will let you finish college, or decline and take your chances with the draft. Berry enlisted in the Navy, then...
remained in California and attended medical school at the University of California – San Francisco. Before his senior year of medical school, the Navy discharged him with no further obligation. Berry received his medical degree in 1947 and entered into private practice.

Soon, the Korean War broke out, and Berry felt it was his duty to enlist. He joined the Air Force, but only three months later was invited to participate in additional training in a new field called aviation medicine. Instead of heading to the North Pacific, he flew to San Antonio as one of 25 members of the first class of the U.S. Air Force School of Aviation Medicine. After a year of training, the Air Force sent him to Panama, where he spent three years flying air rescue missions and helping Central and South American countries develop their own aviation medicine programs.

Berry returned to the United States and completed a public health residency – a requirement of his training with the U.S. Air Force school – at Harvard University’s School of Public Health.

In 1956, he returned to San Antonio and became chief of the Department of Flight Medicine at the Air Force school. There, he conducted experiments on military pilots by sending them to various elevations, all the way up to the edge of the atmosphere, to see how their bodies would respond to altitude.

“Look at the whole person and their treatment goals to understand how to tailor their cancer treatment in a way that respects their wishes.”
— Tacara Soones, M.D.

New guidelines for older patients

Cancer can develop at any age, but it’s much more common in older adults. According to the National Cancer Institute, 60% of cancer patients are age 65 or older. “Advancing age is the single biggest risk factor for cancer,” the NCI website says.

Cancer treatment can be more challenging and complicated for older adults, who are more likely to have chronic health conditions, like heart disease or diabetes. To improve cancer care for older patients, the American Society of Clinical Oncology this year began recommending that all patients age 65 and older receive a geriatric assessment when considering chemotherapy.

The goal is to better identify which patients can tolerate intensive chemo and which patients may need modified treatment regimens because of underlying conditions, such as cognitive impairment, that often go undetected by oncologists. The new guideline, ASCO’s first in the field of “geriatric oncology,” may have significant potential to change medical practice, the organization says.

Two years later, the U.S. government authorized the creation of NASA. The Soviets had launched the first man-made satellite into space the previous year, and the U.S. was ready to enter the space race.

Berry and a handful of other doctors from around the country received military orders to fly to Washington where they would help select test pilots who would ride a military rocket into outer space.

The orders referred to these test pilots as “astronauts.” “What’s an astronaut?” Berry recalls asking.

Building on technology the military had developed for relaying data back to the ground from passing planes, Berry and his fellow doctors devised ways to test these future astronauts to determine who could best withstand the demands of space travel and to monitor their vital signs in outer space.

Berry by this time had retired from the Air Force and gone to work for NASA. He played an instrumental role in selecting the country’s seven original astronauts. Throughout his career, he would help send 42 individuals into space and safely bring them home over the course of 30 manned missions, including the Apollo 11 mission during which Neil Armstrong became the first man to walk on the moon.

“That was a particularly exciting time,” says Berry, who today strives to stay fit and healthy by maintaining a balanced diet, taking leisurely walks with his daughter, and “visiting MD Anderson regularly and following my doctor’s advice.”
How a pair of broken reading glasses saved one man’s life

Little did Mark Hood know how life would change the day his reading glasses broke.

“I was at the office, juggling a million things,” says the busy software executive from Austin, Texas, “when my prescription glasses snapped in two.”

He drove to Costco to order a new pair. While there, the optometrist performed a cursory checkup.

“I'd been putting off my annual eye exams for several years because my vision wasn't changing,” says Hood, 54.

The optometrist completed his exam, then shared some somber news.

“You have a small area of abnormal tissue in your left eye, and it may be cancerous. You need to see a retinal specialist tomorrow.”

The next day, a stunned Hood sat in the office of Austin retinal surgeon Shelley Day Ghafoori, M.D., who held his hand and delivered the diagnosis: “I know this is difficult to hear, but you have cancer.”

She sent Hood to MD Anderson’s Chief of Ophthalmology, Dan S. Gombos, M.D., for a second opinion. With that visit, all doubt was removed.

“Yep, this is melanoma of the eye,” Gombos concurred, “and we’re going to take care of it.”
Two different diseases

Most people think of melanoma as an aggressive type of skin cancer, but 5% of melanomas originate in the eyes. The cancer forms in melanocytes—the cells that make the pigment known as melanin that gives color to skin, eyes and hair. Eye melanomas behave much differently than skin melanomas and can be much more challenging to treat.

“Even though people want to lump eye and skin melanomas together, they’re very different diseases. A lot of the treatments for skin melanoma don’t work for eye melanoma. The genes involved in the two cancers are significantly different,” explains Gombos, who is president of the American Association of Ophthalmic Oncologists and Pathologists, and vice president of the International Society of Ocular Oncology.

Beyond the eye

Most eye melanomas, like Hood’s, develop in the uvea (you-vee-uh)—a layer of tissue beneath the white of the eye. Though exceedingly rare, the remainder occur on the conjunctiva—the outermost tissue layer, or on the skin that surrounds the eyeball.

When melanoma doesn’t spread beyond the eye, the five-year survival rate is 80%. But half of uveal melanoma patients develop metastatic disease that spreads mainly to the liver, and sometimes to the lungs or bones. When this happens, the five-year survival rate drops to just 15%.

“For patients whose cancer has spread, treatment options are limited,” Gombos says. “That’s why a significant amount of uveal melanoma research focuses on understanding and preventing metastasis.”

Out of the blue

Uveal melanoma is classified as an “orphan” disease—a rare condition that affects only a small number of people. A mere 2,500 individuals are diagnosed with the disease each year in the United States. Many, like Hood, have no family history of the disease.

“Most cases appear out of the blue, and are uncovered during a routine eye exam,” Gombos explains. “Patients are caught off-guard.”

Hood remembers that experience: “In the span of five short days, I went from ‘I’m healthy, happy and life is great!’ to ‘I have cancer—I will lose my vision, will I lose my life?’”

Those who do have symptoms report blurry vision or loss of peripheral vision in one eye; a change in the shape of the pupil in the other eye; a growing dark spot in the colored part of the eye called the iris, or flashes of light or “floaters” in their field of vision.

“These often are the first signs of trouble,” Gombos says. “Get checked promptly by an ophthalmologist, because an earlier diagnosis means a better chance for recovery and more treatment options.”

Cancer-killing radiation

Hood was lucky. His broken glasses led him to a doctor before his tumor had time to grow.

“My cancer was caught early,” he says, “but without those damaged glasses … I shudder to think. Divine intervention was definitely happening that day.”

On a scale of small, medium and large, pathologists classified Hood’s tumor as small. It was only two millimeters wide, the width of two pencil leads. And it hadn’t spread.

This made Hood a perfect candidate for a treatment known as plaque brachytherapy, a procedure where a plaque, or disc—think tiny holey cap—is stitched to the back of the eye, directly over the tumor. The plaque is embedded with radioactive seeds that deliver concentrated doses of cancer-killing radiation directly to the tumor, while sparing nearby healthy tissue and maintaining the patient’s vision. For four to seven days later, the procedure is complete and the plaque is removed.

“Plaque brachytherapy offers a greater than 90% likelihood of controlling the disease in the eye,” says Gombos.

Thank you, ruthenium

Radioactive iodine has long been the most common source of radiation used in plaque brachytherapy. But MD Anderson is among a handful of hospitals in the United States that have access to a radioactive form of platinum called ruthenium, widely used in Europe.

“Ruthenium gives a very high radiation dose to a very small area—even more so than iodine—so the toxicity to normal tissues tends to be less,” Gombos says.

But because of its shallow depth of penetration, ruthenium can only be used for very small tumors, those less than 5 millimeters. Gombos says that describes the majority of uveal melanomas tumors seen at MD Anderson.

“Iodine is still a very good treatment,” he says, “but for patients with very small tumors, ruthenium seems to be even better.”

Hood, for one, is a devoted ruthenium fan. The personalized license plates on his car read “R34T7Y” – “R” for ruthenium, “44” for ruthenium’s atomic number on the periodic table of elements, and “TY” for thank you.

He’s also an ardent admirer of Gombos and his entire MD Anderson treatment team.

“I had all these experts assembled in one place—doctors, imaging technicians, nurses, appointment schedulers, and more, who helped me focus on staying positive.”

Shifting priorities

“It’s been three years since Hood’s diagnosis, and he’s still cancer free. He returns regularly to MD Anderson to be checked for signs of recurrence. Gombos handles the ophthalmology duties, while Hood says oncologist Sapna Patel “monitors the rest of me to make sure cancer doesn’t pop up somewhere else.”

Each visit, Hood says, serves as a reminder that “life is a timed event, so we should focus on what really matters.”

“I’ve been forever changed by the events of the last three years, and my priorities have shifted,” he explains. “I was a busy and on-the-go executive—but now I’ve learned to enjoy the little things. My story began with me seeking clearer vision, and I’ve found it, in more ways than one!”

CONQUEST

A day in the life of a volunteer

Helhi Kimhi finds value in giving

Three years ago, Helhi Kimhi accompanied her husband from their native Israel to Houston, when he accepted a physician-scientist fellowship at MD Anderson. With a low degree and a master’s degree in public health, Kimhi was used to working and making a difference in Israel. But U.S. visa restrictions prevented her from seeking employment, so she looked for opportunities to volunteer.

“The more I learned about MD Anderson,” she says, “the more I wanted to be a part of it.”

Now, Kimhi volunteers in the inpatient and surgical waiting room areas, helping patients, their family and friends. Whether she’s delivering encouraging words, warm blankets or cheerful bouquets to inpatients, or keeping waiting families updated about their loved one’s progress, she values the opportunity to contribute.

“I would come here every day, if I could,” she says. Meeting her husband after work is another bonus, she says. Moran Amit, M.D., Ph.D – Kimhi’s husband is now an assistant professor of research in the Head and Neck Surgery department.

“After a day of working and volunteering, we have so much to talk about,” Kimhi says.◆
Caitlyn Mortus overcame cancer a decade ago at MD Anderson’s Children’s Cancer Hospital. Now she works there as a nurse.

By Katrina Burton

Caitlyn Mortus learned she had cancer the second day of spring break in the seventh grade. The 13-year-old had been hit in the face with a soccer ball, and when the pain and swelling didn’t improve, she knew something was wrong.

A biopsy revealed Burkitt lymphoma, a fast-growing cancer of the lymphatic system. Mortus was admitted to MD Anderson Children’s Cancer Hospital where she received five rounds of intense chemotherapy over six months.

Now 23 and cancer free, she credits that experience with her decision to become a pediatric oncology nurse at MD Anderson. Recently, Mortus celebrated her one-year anniversary working at the hospital.

“My journey with cancer is 100% the reason I became a nurse,” she says. “All through nursing school, my goal was to return to MD Anderson so I could support kids with cancer, the same way my nurses supported me. They helped me through such a hard time in my life, and I wanted to do the same.”

During her time as a patient, Mortus participated in a number of activities designed to keep young patients active while receiving cancer care. She particularly enjoyed art classes offered through MD Anderson’s Children’s Art Project, which sells merchandise like greeting cards, ornaments and apparel inspired by patients’ art. Sales benefit programs that support pediatric cancer patients.

“The classes made my hospital stay more bearable and gave me something to look forward to each day,” she recalls. “They were the one thing that got me out of bed – I did not want to miss art class.”

One of her best memories is when she and another patient became fast friends, and created colorful art projects together at a hospital camp for kids battling cancer. The girls spent many hours drawing and painting, and Mortus was delighted when their artwork was featured on cards and gifts sold by the Children’s Art Project. To this day, Mortus’ ladybug art continues to be a hit, and is featured on the latest Children’s Art Project products.

Working as a registered nurse where she was treated as a child is “a blessing,” Mortus says, and gives her special insight into how kids are feeling.

“I can relate, because I’ve been there myself,” she says. “I know what good days look like, and I know what bad days look like.”

As a patient, Mortus formed special bonds with many of her nurses. To this day, she keeps in touch with some of those who cared for her a decade ago. When she was hired, Mortus paid a surprise visit to one of her favorite nurses from her patient days to say “thank you.”

As a nurse, she has the same opportunity each day to form similar lasting relationships with the patients in her care.

“The relationships that MD Anderson nurses form with patients are one of the things that make this place so special,” she says. “Every day, I come here to help children and young adults and give them hope – that’s my favorite thing.”

“All through nursing school, my goal was to return to MD Anderson so I could support kids with cancer, the same way my nurses supported me.”

— Caitlyn Mortus

“Cheering Them On”

Caitlyn Mortus was a cheerleader in middle school. Now she’s a nurse cheering on pediatric patients as they go through treatment.
When 8-year-old Lara Amer was hospitalized with an aggressive and rare cancer called Burkitt lymphoma, she became distraught and wouldn’t leave her room at MD Anderson Children’s Cancer Hospital for days. Then, an art teacher arrived with art supplies and encouraged Lara to create paintings and drawings that expressed her feelings.

That’s when the young girl’s attitude began to change. She began taking walks around the floor, meeting other hospitalized children, and participating in activities, including Children’s Art Project classes. Led by program supervisor Kasey Marsh, the classes teach children to create colorful freestyle or theme-driven art.

“A child’s sense of self can become diminished during treatment,” Marsh says. “Art is an empowering and effective means of expression, and studies show it can improve mood, outlook and sometimes even physical health.”

Lara was first diagnosed in January 2018 after becoming ill during the winter break. Her mother, Mai Ramadan, remembers how upset Lara became after learning of her diagnosis.

“She was angry, sad and in a lot of pain,” Ramadan says. “Her grandmother was treated at MD Anderson, so she knew about cancer.”

The hospital offered activities for patients, but Lara wasn’t interested—until the art teacher visited.

“I like art because it was really fun and it took my mind off being sick,” Lara says.

Several of Lara’s creations are featured in MD Anderson’s Children’s Art Project, which sells merchandise like cards, gifts and apparel, all inspired by the artwork of pediatric patients. Products are available in select retail stores, in MD Anderson’s gift shops or online at childrensartproject.org. Proceeds support programs for pediatric cancer patients. The Children’s Art Project recently celebrated its 46th anniversary.

After completing six cycles of chemotherapy, Lara, now 10, shows no evidence of cancer. Every two months, she returns to MD Anderson for checkups. Her appointments are coordinated to coincide with art classes, which she still attends.

An active fifth-grader, she joined the neighborhood softball league and is a talented violin player. But art is still one of the activities she loves best.

“We’re happy to see art continue to make a positive impact on Lara’s life,” Ramadan says. “And we’re thrilled to see her artwork featured on cards and gifts. But mostly, we’re grateful for the treatment that saved her life.”

Children’s Art Project brightens the day, and the stay, for hospitalized kids

By Katrina Burton
Robby Witt knows about hope. In the last six years, he has gone through more highs and lows than most people experience in a lifetime. The 38-year-old former high school quarterback has faced olfactory neuroblastoma three times. This extremely rare cancer occurs in the upper part of the nasal cavity, and sometimes on the cribriform plate, a bone deep in the skull between the eyes that separates the nasal passage from the brain. It originates in the nerves that affect the sense of smell.

The cancer is so rare that Witt’s ear, nose and throat doctor in San Diego immediately referred him to MD Anderson, where a team of doctors specialize in treating rare tumors like Witt’s. During the last decade, MD Anderson has treated almost 150 patients with olfactory neuroblastoma. That’s a significant number given that only 1,000 cases have been diagnosed since 1924, when it was first identified.

Heading to Houston

Witt learned of his diagnosis in 2013, just three months after earning a doctorate degree in pharmacy and two months after getting married. The diagnosis came as a shock. “I had never heard of MD Anderson, but we were in Houston within days,” says Witt. “I like to meet things head on, so I read as much as I could about this cancer. I knew that getting to a cancer center where they were more familiar with olfactory neuroblastoma was my best choice.”

His trip to Houston in 2013 proved successful. During his first appointment, Witt met with head and neck surgeon Ehab Hanna, M.D., to discuss his treatment plan. Following two surgeries, his cancer went into remission.

When the cancer returned in early 2015, Witt again underwent four surgeries and six weeks of daily proton therapy, which helped put the cancer in remission again. But his second remission was sadly overshadowed by the Witt’s loss of twin boys in a premature delivery.

Another recurrence

By summer 2015, Witt was back in San Diego where he began his career as a pharmacist at Scripps Mercy Hospital. In August 2016, the Witts became parents to a healthy baby girl, Briley, now 3 years old. For six months after her birth, the family seemed to at last be getting past the tragedies that had befallen them.

But in March 2017, Witt learned during a routine MRI follow up at MD Anderson that his cancer had returned. This time, the cancer had spread to the lymph nodes in his neck. That April, he began treatment that included six weeks of high-dose proton therapy.

He remained in Houston through the summer and on into September for speech therapy and to prepare for another surgery. But just two weeks before his surgery date, the apartment where Witt was staying with his wife and daughter flooded during Hurricane Harvey. After finding temporary housing, he was able to undergo surgery on Sept. 15.

Cause for celebration

Since then, Witt has shown no evidence of disease. He travels to MD Anderson every four months for checkups. So far, all the news has been good. And last summer, his wife gave birth to their second daughter, Skylar.

Through both their setbacks and these more recent reasons to celebrate, the Witts have maintained a remarkable outlook that they credit to their faith and their commitment to living in the moment. A favorite coffee cup in their kitchen bears a slogan that speaks to one way they’re able to remain positive: “Life is not waiting for the storm to pass. It’s about learning to dance in the rain.”

Overcoming adversity

Robby Witt battled a rare cancer three times, and won

By Ron Gilmore
Ross Rommel knows about pursuing the enemy. For decades, he served as a Harris County prosecutor and later entered the private legal sector. But over the past 12 years, he has defended himself against a cancer diagnosis and another pernicious predator—an invasive fungal infection.

In 2007, Rommel was diagnosed with prostate cancer. He underwent a radical prostatectomy—an operation to remove the prostate gland and the tissues surrounding it, followed by radiation treatment.

Ten years later, Rommel, now 72 and retired, began to experience debilitating pain in his pelvis. “I was in so much pain, I could barely walk,” Rommel recalls.

The radiation he had a decade earlier had damaged his bladder which led to an infection in his pelvic area. The former marathoner dropped 50 pounds in two months.

Rommel’s MD Anderson prostate cancer doctor, Christopher Logotheti, M.D., turned to Dimitrios Kontoyiannis, M.D., Sc.D., Ph.D. (Hon), professor of Infectious Diseases, for help. Kontoyiannis discovered Rommel had osteomyelitis, a bone infection in his pelvis.

Weighing the options

When Rommel failed to improve on antibiotics that target only bacteria, Kontoyiannis, an internationally recognized expert in mycology, or fungal infections, suspected that Rommel had a mixed bacterial and invasive fungal infection caused by a yeast called Candida.

Fungi can thrive as harmless colonizers on the mucous membranes that line various cavities in the body, such as the mouth and nose, and cover the surfaces of internal organs. In healthy people, the fungi typically cause no problems. But for cancer patients like Rommel, an immune system weakened by chemotherapy or surgery is fertile ground for opportunistic fungi to take over and invade the body.

“Commonly, the fungi thwart the ability of doctors to deliver life-saving chemotherapy,” Kontoyiannis explains. “This can sometimes, directly or indirectly, result in failure of the chemo treatment or even death, particularly in patients with blood cancers like leukemia and those who have had stem cell transplants.”

For the past 20 years, Kontoyiannis and his research team have studied all the main fungi that afflict cancer patients. As a result, they’ve introduced several concepts and strategies designed to control these frequently
“We need to find more robust antifungals. But more importantly, we need to develop strategies that strengthen the patient’s immune system response, which will allow them to fight the fungus better.”

— Dimitrios Kontoyiannis, M.D., Sc.D., Ph.D. (Hon)

Kontoyiannis and colleagues “persistently and tenaciously” treated Rommel for several months with one of the most potent antifungal drugs on the market. During this time, Rommel also underwent surgery to remove dead or contaminated tissue from his infected bone. The treatment worked.

“Mr. Rommel had a beautiful recovery,” Kontoyiannis says, “and is now living a full life with no problems.”

On the attack

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Alabama automotive executive ‘back on his feet’ after clinical trial

Chris Miller’s soft-tissue cancer was treated and eliminated in his home state of Alabama. When the cancer returned, he sought treatment at MD Anderson.

When Chris Miller visited his doctor in 2011 with a swollen and painful leg, little did he realize the seriousness of his symptoms. Miller’s left calf felt deeply bruised, but two separate ultrasounds disclosed nothing. With his pain worsening, Miller sought another opinion. This time, the doctor biopsied tissue from his leg. The diagnosis: myxoid liposarcoma, a rare soft-tissue cancer with a high risk of recurrence after treatment.

Standard treatment followed Miller’s diagnosis – six weeks of daily radiation to shrink the tumor, then surgery to remove it. When the cancer returned in 2013, a colleague at Kia Motors Manufacturing in Georgia, where Miller is vice president, recommended MD Anderson Cancer Center.

Miller and his wife flew to Houston, and at MD Anderson, they met Neeta Somaiah, M.D., associate professor of Sarcoma Medical Oncology.

Somaiah is conducting clinical trials with a sarcoma vaccine that contains a tumor-specific antigen – a protein found only on cancer cells and not on normal cells. This antigen can stimulate the body’s immune system to attack the antigen directly. The cancer cells become collateral damage, and are killed in the attack against the antigen.

In the case of sarcoma, an antigen named NY-ESO-1 seems
particularly well suited for a vaccine. In patients with myxoid liposarcoma, over 90% express, or make, NY-ESO-1, compared to only about 10% with lung cancer.

“Because the rate of expression of NY-ESO-1 is so high, it’s a great option for sarcomas,” Somaiah says. “The neat thing about this antigen is that it’s not expressed on the surface of your normal cells. It becomes a great immune target. You can attack it, and you won’t have side effects to your heart or any other place in your body because you don’t have that antigen presented anywhere else.”

The initial clinical trial, in which Miller participated, tested LV305, an engineered harmless virus that is injected into the skin of patients with locally advanced, returning or metastatic cancer. LV305 promotes production of the NY-ESO-1 protein, which, in turn, stimulates the immune system to send cancer killing T cells to destroy the NY-ESO-1-positive cancer cells. The treatment was injected every three weeks for four doses.

After treatment, Miller has had no recurrence of his cancer. “I’ve gone from quarterly examinations at MD Anderson to semiannual evaluations. I have no limping, and I walk four to five miles each day with my responsibilities at the Kia plant,” he says.

Safe and well-tolerated

In the next phase of the trial, patients received LV305 – which worked so well for Miller – followed by G305, which functions as an immune response booster.

This two-component vaccine is named CMB305. Results indicated that both treatments – the LV305 alone and the LV305 plus G305 – were safe and well-tolerated. Fewer than half the patients had side effects – fatigue, injection-site reaction or muscle pain – and those were low-grade reactions.

“I did not have anybody who had trouble tolerating it,” Somaiah says. “Patients from out of town were just flying in to get their vaccine and flying out. They, in fact, felt much better because they were coming off chemotherapy and all those side effects.”

Both treatments induced the desired immune response.

Reducing lag time

Research continues for the best combination of approaches to kill the tumor and keep it away.

“The potential downside of a vaccine is that it takes a couple of vaccinations before we can get your body to generate enough T cells,” Somaiah says. “There’s a time lag before getting an effective therapeutic response.”

A new clinical trial is testing a way to reduce the time lag by starting with a large infusion of T cells generated outside the body, followed by the vaccine to prolong the persistence of T cells and the level of immunity.

“So far, we’ve shown that the vaccine works, generates an immune response and stabilizes tumors,” Somaiah says. “Hopefully these studies will lead to FDA approval and make this vaccine a treatment option in the very near future.”
Healing rhythm

Music therapy has been shown to reduce cancer treatment symptoms including depression, anxiety, pain and nausea

By Kelly Calagna

In a sunlit room in MD Anderson’s Integrative Medicine Center, patients and caregivers gather to express themselves without words. The rhythmic beat of their African drums becomes their individual voices, as they share an experience other than the one that brought each of them there: a cancer diagnosis.

Group drumming is one of several music-therapy interventions offered at MD Anderson. The class gives patients and caregivers a place to escape from the stresses of battling cancer and connect with others going through similar experiences.

“When you’re here, you’re in the moment,” says Jason Leung, who was diagnosed with prostate cancer. “You’re not thinking about a surgery that may be happening next week.”

Jason’s wife Bonnie also is a patient at MD Anderson—she’s being treated for leukemia. The couple, both accomplished Tai Chi instructors, say that thriving after a cancer diagnosis includes staying active and sharing your experience with others.

The group drumming class allows them to do both.

“Many people hide themselves and their illnesses—sharing an experience is important,” says Jason.

“I was over here for another appointment when I heard the drumming,” says Nancy Raimondi, a myeloma patient who has been coming to the drumming class since she discovered it in May. “This is the one thing I do when I’m here at MD Anderson that I really feel is just for me, for rejuvenating my spirit. I usually have a mask on because my immune system is not that good, so you can’t tell, but I’m smiling the whole time.”

“Music can be a powerful way to express feelings, and draw people outside of themselves,” says Sarah Folsom, the music therapist who leads the drumming class. “It offers an escape from stress or a way to connect with others. For cancer patients at MD Anderson, music therapy can be a meaningful part of their treatment plan.”

Music as medicine

“A lot of people’s perceptions of what music therapy is, is ‘Oh, you’re going to go play music for someone and they’ll feel better,’ and that is not the case,” says Folsom. “We go through a lot of training as music therapists to assess and create a treatment plan.”

Music therapy is more than passively listening to music, she explains. Instead, it’s an interactive, evidence-based therapy tailored to each individual patient. Board-certified music therapists are trained to assess and address patients’ emotional needs by using targeted musical interventions.

“Music can be a powerful way to express feelings, and draw people outside of themselves.”

— Sarah Folsom

In addition to group drumming, Folsom uses other music therapy interventions with her patients, including songwriting sessions, active music making, lyric discussions and guided meditation, which enlists imagery and music for relaxation and distraction from pain.

“I play a progression on my guitar and talk through any number of relaxation or mindfulness techniques like breathing or progressive muscle relaxation,” she explains. “Or I might do a guided imagery where I have patients close their eyes and imagine a special place that is peaceful for them.”

In songwriting sessions, Folsom helps patients chronicle their cancer journey in a song. Some who are near end-of-life find comfort in creating a song to leave as a legacy for their loved ones.

“Sometimes my job is just to remind them that music has a place in their lives,” says Folsom, who strives to reconnect patients with songs from their past that elicit feelings of joy and normalcy. “Music does powerful things. It communicates nonverbally and it touches the soul.”

At the end of each drumming class, the rhythmic thump of the drums gives way to excited chatter. Patients laugh together, make plans to meet at future classes or exchange stories about how cancer is impacting their lives.

For the hour of class, the sunny room in the Integrative Medicine Center has provided a sanctuary of normalcy.

“We come here to learn something new. This is our life, we want to keep going, keep fighting,” said Bonnie Leung as she was leaving a drumming class. “It’s special.”
When Gary Price joined a clinical trial testing a new drug for patients with advanced bladder cancer, he knew his odds weren’t good. His doctors had told him he had just a few months to live, but still, he decided to give it a shot. That was more than three years ago.

Price was first diagnosed with bladder cancer in 2013 after noticing blood in his urine. A series of tests with his primary care doctor confirmed his fears. “Nobody wants to hear the words, ‘you have cancer.’ I immediately worried this would be my death sentence,” said Price, an oil well supervisor. “But back then, my doctor assured me the cancer was treatable and my outlook was good.”

A few days later, a surgeon removed Price’s tumor. He then began receiving Bacillus Calmette-Guerin, or BCG, an immunotherapy drug for early bladder cancer, delivered directly into the bladder. Immunotherapy is used to prompt the immune system to attack cancer cells. But small tumors kept reappearing in Price’s bladder that each required a new surgery. “Over that next year or so, I had five or six additional surgeries to remove the tumors that kept growing,” he says. “My doctor told me the new tumors were not as aggressive as the original cancer, but it was also time I visit MD Anderson.”

Surgery and chemotherapy

Surgeons at MD Anderson recommended removing Price’s bladder, right kidney, right ureter and prostate as his best chance for keeping cancer away. Despite knowing the surgery would leave him with an ostomy bag that, in the absence of a bladder, reroutes urine into a collection pouch outside the body, Price had the surgery in June 2015.

Unfortunately, a routine follow-up scan the following April found a suspicious spot in an old scar on his side. A biopsy confirmed his cancer had spread.

It was then that Price met Arlene Siefker-Radtke, M.D., professor of Genitourinary Medical Oncology and an expert in treating bladder cancer. She prescribed an aggressive course of chemotherapy, which required Price to be hospitalized for several days.

However, his tumor continued growing, and Siefker-Radtke explained that few treatment options remained. “Chemotherapy has long been the standard of care for patients with bladder and other urothelial cancers, but it’s an aggressive treatment with many side effects, and only a small percentage of patients see real benefit,” explains Siefker-Radtke. “The recent emergence of immunotherapy has improved outcomes for some, but new treatments remain a major unmet need for these patients.”

Targeting a mutation

Siefker-Radtke learned that Price’s tumor carried a mutation in a gene named FGFR3. The mutation causes cancer cells to proliferate and grow rapidly. About 15 to 20% of patients with advanced bladder cancer and up to 35% of patients with other urothelial cancers have mutations in FGFR genes.

It just so happened that Siefker-Radtke was launching a clinical trial that would test a new drug called erdafitinib (trade name Balversa). The drug was designed to turn off the mutation that causes the tumor cells to proliferate.

Price was the first MD Anderson patient to enroll. The drug, an oral medication taken at home, proved largely effective, and Price’s tumor has been stable for the past three years.

This year, Siefker-Radtke and colleagues published the...
Forty percent of patients enrolled in the trial saw their tumors shrink, remain stable or disappear. In April 2019, the Food and Drug Administration approved Balversa, making it the first targeted therapy ever approved for patients with advanced urothelial cancers. Targeted therapy drugs block specific proteins or genes that help cancers grow and spread.

"With this approval, we have an additional drug to add to our toolbox," says Siefker-Radtke. "My hope is we’ll be able to continue our research and bring its benefits to more and more patients."

Today, Price’s tumor remains roughly the size of a pea. He knows he’s not cured, but he also never expected to be here today. Though it keeps his tumor at bay, Balversa does come with its share of side effects. Price has severe pain in his feet and hands, which keep him from one of his favorite pastimes – playing guitar. He’s also lost most of his sense of taste.

"I make the best I can of every day, and I’m grateful I had as many days as I have," says Price. "I hope my story will inspire others and make more people aware of the need for researching new bladder cancer therapies. I’m proof that new treatments can change everything."

By Meagan Raeke

A new program is training more doctors to use it when new patients with advanced melanoma arrive in Kelly Nelson’s clinic, she notices that many share the same story: they had insurance and even a primary care doctor, but their melanoma wasn’t caught early because no one examined their skin.

"Opportunities have been lost," says Nelson, an associate professor of Dermatology. "Melanoma has the highest death rate of all skin cancer types. But when it’s detected in its earliest stages, it’s profoundly curable."

One of the most effective tools for early detection is the dermoscope – a brightly lit, handheld magnifier that helps doctors visually inspect moles and other pigmented skin lesions. When used correctly, dermoscopes have reduced false positives which occur when normal moles are unnecessarily biopsied, and false negatives which occur when cancerous skin lesions are incorrectly diagnosed as normal. But dermoscopy, as it is called, is not a universal skill, even among dermatologists.
“Dermoscopy is not an easy skill to master by self-study,” says Stephanie Savory, M.D., assistant professor of Dermatology at The University of Texas Southwestern Medical Center in Dallas. “Diagnostic accuracy is highly correlated with the user’s amount of training. Unfortunately, an effective dermoscopy education curriculum for medical residents has not been standardized”

Creating a standardized training program

That’s why in 2017, Savory and Nelson, along with Janice Wilson, M.D., from The University of Texas Medical Branch at Galveston, launched Dermatologic Telemonitoring for Early Melanoma Diagnosis (DERM:EMD). The program is part of MD Anderson’s Melanoma Moon Shot® primary prevention and early diagnosis flagship — a project designed to save lives by preventing melanoma and diagnosing it early. The DERM:EMD program uses the Project ECHO (Extension for Community Healthcare Outcomes) telemonitoring model to deliver a year-long dermoscopy education course to dermatology residents. The ECHO model was developed to connect primary care physicians from rural and underserved areas with specialists from academic medical centers to share best-practice management of complex health conditions. Nelson has used ECHO to share dermoscopic knowledge among other specialists.

“We have our curriculum apart from typical dermoscopy education because we not only provide the foundational knowledge during our introductory training sessions, but we also pair it with challenging case conferences which give the residents an opportunity to practice discussing specific individual cases,” Nelson says. “And that gives them the head start of using those skills and practicing them in a small educational setting.”

Before the first-of-its-kind program began, no standard metrics existed to measure dermoscopy knowledge or skills. So the team created and validated their own metrics, which they plan to publish in a dermatology journal this year.

More than 175 dermatology residents received dermoscopy training during DERM:EMD’s first two years. At many schools, faculty also attend lectures and lead case conferences. This year, the program will be offered at all 32 dermatology residency programs in Texas that are accredited by the Accreditation Council for Graduate Medical Education, the body responsible for accrediting most of the graduate medical training programs for physicians in the United States. DERM:EMD also will be offered at several National Cancer Institute-designated cancer center sites nationwide.

“There aren’t enough dermoscopy experts in the U.S.,” Nelson says. “Part of my personal mission is to support the development of other experts with those collaborative relationships.”

Expanding access

The next phase of DERM:EMD is to expand the program to the primary care physicians, including family and general practitioners, and internists.

“For patients who don’t have a dermatologist, primary care physicians are well-positioned to perform dermoscopy and catch melanoma early — if trained to do so,” Nelson says.

Nelson’s team worked with the family medicine residency program at Texas Tech University Health Sciences Center El Paso to develop a new version of the curriculum, launching in November 2019, specifically designed for primary care providers in regions where the number of dermatologists is low.

“We serve a particularly vulnerable and underserved population in El Paso, who face barriers to obtaining timely dermatologic care,” says Gerardo Vasquez, M.D., assistant professor and assistant residency program director in Family and Community Medicine at Texas Tech El Paso.

For those who lack insurance in rural areas of Texas, access to a dermatologist can be difficult, if not impossible, to find at home. Catching melanoma at its earliest, most treatable stages is even harder for this population. We thought about the enormity of Texas, we wanted to consider the geographic and racial diversity of the state from the beginning,” Nelson says. “We felt that El Paso would be a good starting point for our collaboration.”

Demographics of melanoma

Caucasian men of low socioeconomic status who live alone are at greatest risk of dying from melanoma in the U.S. However, Texas and California have far more Hispanic patients with melanoma than other states.

“We’re partnering with the Texas Cancer Registry to understand the demographics of melanoma for the state of Texas,” Nelson says. “We also want to understand which regions of our state have higher melanoma death rates and higher numbers of advanced cases when first detected.”

This will allow the DERM:EMD team to target future outreach to the areas where it’s needed most. Ultimately, Nelson hopes all Texans will have the opportunity to receive dermoscopy care within their own communities.

“We’re empowering these communities to provide the best care they can,” Nelson says. “When I teach other physicians a clinical skill, I have the opportunity to save more lives than I could caring only for those patients who walk through my clinic door.”

Melanoma has the highest death rate of all skin cancer types. But when it’s detected in its earliest stages, it’s profoundly curable.”

— Kelly Nelson, M.D.

Amid obesity epidemic, liver cancer deaths rise

Liver cancer deaths increased by 43% since 2000, with fingers pointing to America’s widening waistlines

By Ronda Wendler

First, the good news. The American Cancer Society reports the overall cancer death rate in the United States has been dropping steadily for 25 years. Now, the bad: Liver cancer isn’t included in this downward trend. Liver cancer rates have more than tripled since the mid-1970s, making it the country’s fastest-growing cause of cancer deaths today.

Why this dramatic rise?

“In the past, liver cancer has been associated with hepatitis B and C virus infections, but that’s changing,” says Darren Sigal, M.D., program director of Gastrointestinal Oncology at Scripps MD Anderson Cancer Center in San Diego — a member of MD Anderson Cancer Network. “Today, fewer than 5% of liver cancer cases in the United States are caused by hepatitis B, primarily because children have routinely been vaccinated against the virus since 1982. And although there’s no vaccine for hepatitis C, powerful new drugs are curing 90% of patients.

“Viral hepatitis is becoming less important as a cause of liver cancer in the U.S.,” Sigal says.

Obesity-driven disease

Instead, a major culprit behind today’s skyrocketing liver cancer rates is a condition known as non-alcoholic fatty liver disease.

Characterized by a buildup of excess fat in the liver, the disease strikes people who drink minimally or not at all (hence “non-alcoholic”). It’s distinctly separate from another type of fatty liver disease caused by alcohol abuse.

Non-alcoholic fatty liver disease is linked to a high-calorie, low-exercise lifestyle.

“Because 70% of American adults are overweight or obese, the nation is experiencing a ‘tidal wave’ of non-alcoholic fatty liver disease cases,” Sigal says, “which in turn is causing record numbers of liver cancer diagnoses.”

According to the National Cancer Institute, 30% of Americans have some form of fatty liver disease. That number is poised to reach 50% by 2030. “In 10 years, half of all Americans will have fatty liver disease,” Sigal explains. “Up to 27% of those fatty liver disease cases will progress to liver cancer.”
Two-drug combination
To combat this epidemic, Sigal is leading a study of a new liver cancer drug that is derived from ocean algae and enlists a patient’s own immune system to attack cancer cells.

Developed at Scripps Research in collaboration with the biotechnology company Abvax, the drug, named ABX196, stimulates a type of white blood cell called an invariant natural killer T cell. These cells exist in extremely small numbers in the blood stream, and kill on contact by binding to tumor cells, and then releasing a lethal burst of potent chemicals. “ABX196 is a very unique immune treatment,” Sigal says. “It’s available nowhere else outside this study.”

Participants may enroll at the main trial site at Scripps MD Anderson Cancer Center in San Diego or at MD Anderson Cancer Center in Houston.

In the clinical trial, patients receive ABX196 in combination with an existing drug named nivolumab (brand name Opdivo). “Sometimes, cancer cells are able to disguise themselves from T cells. If this happens, the cancer cells inactivate the T cells to prevent them from attacking,” explains Ahmed Kaseb, M.D., associate professor of GI Medical Oncology at MD Anderson in Houston and leader of the Houston study site. “Opdivo blocks cancer’s ability to disguise itself, which allows T cells to be active and attack.”

Opdivo alone is highly effective in combating some cancers, particularly lung cancer. But the drug works in only about 15% of liver cancer patients, and even then, only lasts about four months.

“By adding ABX196 to the treatment mix along with Opdivo, this new clinical trial is designed to make Opdivo more effective,” Kaseb explains. “The goal is to see if the synergy between these two drugs can lead to improved outcomes for patients with this deadly cancer.”

Helping those who need it most

Previous tests over the last two years confirmed the therapy worked to activate the immune systems of mice and healthy humans.

Now the two-drug regimen is being tested in patients with liver cancer, which carries a particularly poor prognosis. The five-year survival rate for people with localized liver cancer is 31%, and for those with advanced disease that has spread to distant parts of the body, it’s only 3%.

“Liver cancer is not often found early, because signs and symptoms usually don’t appear until the disease is in its later stages.” Kaseb says. “We very much need to find a treatment that works.”

STATISTICS FROM THE NATIONAL INSTITUTES OF HEALTH ARE TROUBLING

70%
Americans age 20 years or older who are overweight or obese

30%
American youth ages 2 to 19 who are overweight or obese

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