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# CONQUEST

**Drug Discovery**  
A fully integrated approach

THE UNIVERSITY OF TEXAS

**MDAnderson  
Cancer Center**

Making Cancer History®

## MISSION

The mission of The University of Texas MD Anderson Cancer Center is to eliminate cancer in Texas, the nation, and the world through outstanding programs that integrate patient care, research and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees and the public.

## VISION

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

We are Making Cancer History®.

## CORE VALUES

### Caring

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

### Integrity

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

### Discovery

We embrace creativity and seek new knowledge.



**On the cover: Barbara Czako, Ph.D., medicinal chemist in MD Anderson's Institute for Applied Cancer Science, synthesizes the next generation of cancer therapeutics as part of the institute's integrated drug discovery programs.**



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# FRONTLINE



Jan Burger, M.D., Ph.D.

**“For a certain subset of high-risk patients with chronic lymphocytic leukemia, standard treatment often fails, and remissions, if they’re achieved, are short. We’re encouraged that the majority of these patients are responding to this two-prong approach and can continue treatment.”**

— Jan Burger, M.D., Ph.D., associate professor, Department of Leukemia

## HITTING CLL WITH TWO PRONGS

Recent findings address the need for more targeted therapies for patients with chronic lymphocytic leukemia. A two-prong approach combining ibrutinib and rituximab (Rituxin®) produced profound responses with minor side effects in a Phase II clinical trial. Although this study has a short follow-up time, investigators are encouraged that the vast majority of patients are responding and can continue on treatment.

**PRINCIPAL INVESTIGATOR: JAN BURGER, M.D., PH.D., ASSOCIATE PROFESSOR, DEPARTMENT OF LEUKEMIA**

**REPORTED IN DECEMBER 2012 AT THE 54TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF HEMATOLOGY.**

## ‘TROJAN HORSE’ ASSAULT ON ALL

The findings from a “Trojan horse” assault on cancer cells have led to a new MD Anderson clinical trial for acute lymphocytic leukemia (ALL) patients older than 65. One of the biggest complications in treating older patients for this disease is that treatments cause myelosuppression, which makes patients more vulnerable to infection. Older patients are particularly susceptible to this and other complications. The idea is to take a very well-tolerated antibody and combine it with low-dose chemotherapy. That way, oncologists might not need to use full-dose chemotherapy and can reduce side effects.

**PRINCIPAL CO-INVESTIGATOR: SUSAN O'BRIEN, M.D., PROFESSOR, DEPARTMENT OF LEUKEMIA**

**REPORTED IN DECEMBER 2012 AT THE 54TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF HEMATOLOGY.**

## LINK FOUND BETWEEN STATINS AND IBC

Researchers have discovered that statins, the commonly used drugs to lower cholesterol, improved progression-free survival in patients with inflammatory breast cancer (IBC).

The retrospective study follows a previously reported Danish study indicating there is some evidence to suggest the anti-inflammatory properties of statins could reduce the risk of breast cancer recurrence. Investigators also wanted to know if IBC was truly an inflammatory disease. In comparison with the patients who had no record of statin use, the greatest improvement in disease-free survival was noted in patients with past hydrophilic (water-soluble) statin use. These patients showed about 50% recurrence risk reduction compared with non-statin users. MD Anderson researchers are now planning prospective randomized studies in IBC patients to better evaluate the potential survival benefits of statins.

**CORRESPONDING AUTHOR: NAOTO UENO, M.D., PH.D., PROFESSOR, DEPARTMENT OF BREAST MEDICAL ONCOLOGY, EXECUTIVE DIRECTOR OF THE MORGAN WELCH INFLAMMATORY BREAST CANCER RESEARCH PROGRAM AND CLINIC**

**REPORTED IN DECEMBER 2012 AT THE CANCER THERAPY AND RESEARCH CENTER-AMERICAN ASSOCIATION FOR CANCER RESEARCH SAN ANTONIO BREAST CANCER SYMPOSIUM.**

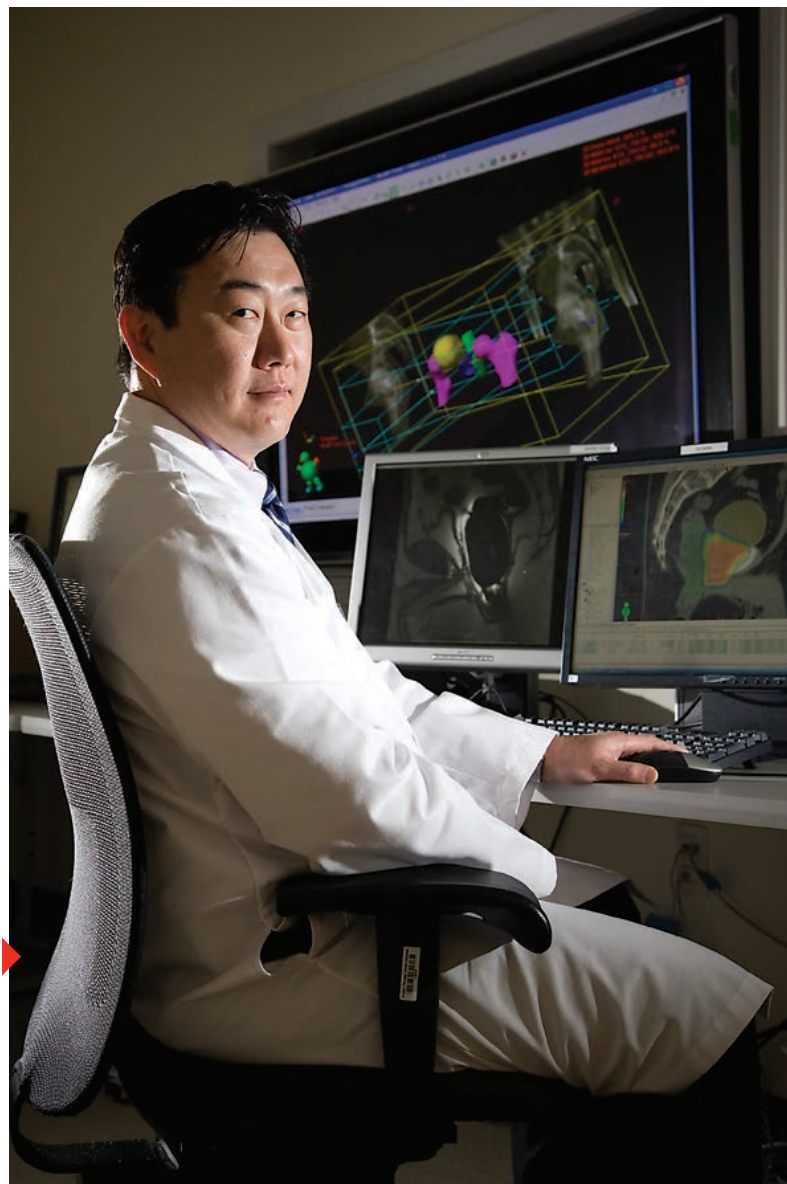
## PRESERVING QUALITY OF LIFE FOR PROSTATE CANCER PATIENTS

Two studies have found that proton therapy preserves quality of life, specifically urinary and bowel function, in men treated for prostate cancer. The first study was multi-institutional, one of the largest quality-of-life studies of its kind ever conducted in such a patient population. More than 1,000 patients were treated with proton therapy for various stages of prostate cancer. Information was gathered directly from men who actually underwent the therapy, rather than from their treatment providers. In the post-treatment analysis, researchers found that prostate cancer patients treated with proton therapy reported excellent urinary and bowel summary scores, similar to the healthy men in the control group.

The second study focused only on prostate cancer patients treated with proton therapy at MD Anderson. The findings complement those of the multi-center study. All of the men were treated for localized prostate cancer between 2006 and 2009, receiving different doses of proton therapy with or without hormone therapy. No meaningful difference in quality-of-life changes was found between the groups. Three years post-treatment, both groups reported high satisfaction rates with their proton therapy.

**INVESTIGATOR: ANDREW K. LEE, M.D., ASSOCIATE PROFESSOR, DEPARTMENT OF RADIATION ONCOLOGY**

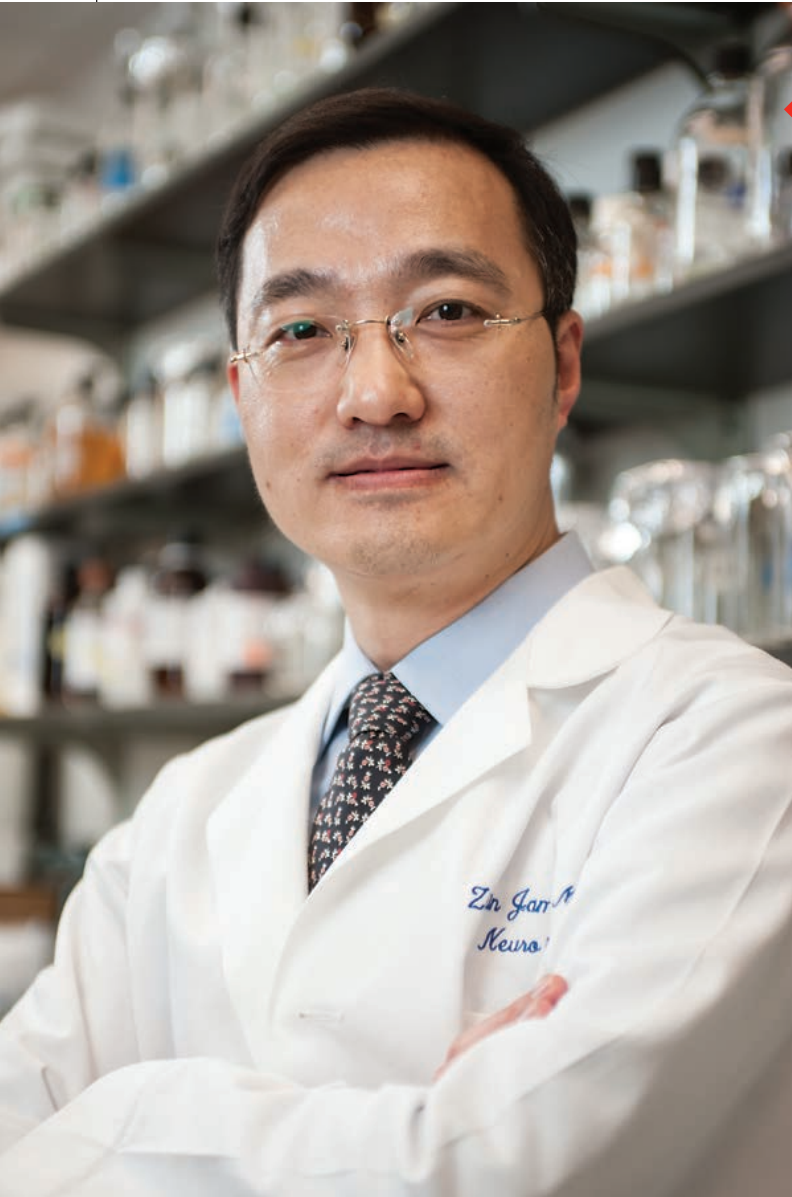
**REPORTED AT THE 54TH ANNUAL MEETING OF THE AMERICAN SOCIETY FOR RADIATION ONCOLOGY.**



**Andrew K. Lee, M.D.**

**“As oncologists, we obviously want good cancer control outcomes, but we also want to ensure that patients maintain a strong sense of continued quality of life after treatment, which can be very personal and subjective for each patient.”**

— Andrew K. Lee, M.D., associate professor, Department of Radiation Oncology



Zhimin Lu, M.D., Ph.D.

## BRAIN TUMORS MAY HAVE AN ACHILLES' HEEL

Researchers have tracked down a cancer-promoting protein's pathway into the cell nucleus — and discovered how, once there, it fires up a glucose metabolism pathway on which brain tumors thrive. They also found a vital spot along the protein's journey that can be attacked with a type of drug not yet deployed against glioblastoma multiforme, the most common and lethal form of brain cancer. PKM2 (pyruvate kinase M2) is very active during a person's infancy, when rapid cell growth is desired, but eventually it turns off.

Tumor cells turn PKM2 back on, and it is overexpressed in many types of cancer. To activate genes involved in cell proliferation and the processing of glucose into energy, PKM2 must get to the nucleus. If a drug can keep PKM2 out of the nucleus, it would block the cancer-promoting pathways, making PKM2 an Achilles' heel for cancer.

**SENIOR AUTHOR: ZHIMIN LU, M.D., PH.D., ASSOCIATE PROFESSOR, DEPARTMENT OF NEURO-ONCOLOGY**

**REPORTED IN NOVEMBER 2012 IN THE ONLINE EDITION OF THE JOURNAL NATURE CELL BIOLOGY.**

## CHEMOTHERAPY AND HEART HEALTH

Doxorubicin has long been known to damage heart muscles, especially at higher accumulated doses. Yet, the 50-year-old chemotherapy drug remains an effective agent, used mainly in combination with other drugs against malignancies, including breast, lung, ovarian and bladder cancers, as well as leukemia and lymphoma. However, its use is limited by its toxicity to the heart, which can lead to heart failure.

Now, scientists have discovered that topoisomerase 2b (Top2b) actually drives the drug's attack on heart muscle. This new finding provides a new approach for identifying patients who can safely tolerate doxorubicin and for developing safer drugs. Clinical study is under way to determine whether the amount of the Top2b protein in the blood can be used to identify patients who are more sensitive to doxorubicin. Identification of high-risk patients, hopefully, will lead to close follow-up and early protection of their hearts to minimize doxorubicin's ravage.

**SENIOR AUTHOR: EDWARD T.H. YEH, M.D., PROFESSOR AND CHAIR, DEPARTMENT OF CARDIOLOGY**

**REPORTED IN THE OCT. 28, 2012, EDITION OF THE JOURNAL NATURE MEDICINE.**

**“We want to make sure that cancer patients will have healthy hearts to enjoy their lives after successful cancer treatment.”**

— Edward T.H. Yeh, M.D., professor and chair,  
Department of Cardiology



## NEW HOPE FOR PATIENTS WITH RESISTANT CML

A previously invincible mutation in chronic myeloid leukemia (CML) has been thwarted by an investigational drug in a Phase I clinical trial. All 12 patients in the trial with chronic phase CML and the T3151 mutation had a complete hematologic response (absence of CML cells in the blood) after treatment with ponatinib.

Eleven had a major reduction in CML cells in the bone marrow and nine achieved a complete cytogenetic response (no cells in the marrow). This is a promising new treatment for patients who have run out of options. Its activity against a wide variety of mutations and in patients with no known mutations suggests a broad range of efficacy.

**PRINCIPAL INVESTIGATOR: JORGE CORTES, M.D., PROFESSOR, DEPARTMENT OF LEUKEMIA**

**REPORTED IN THE NOV. 28, 2012, EDITION OF THE NEW ENGLAND JOURNAL OF MEDICINE.**

## AFRICAN-AMERICAN BREAST CANCER PATIENTS GET OLDER TREATMENTS

Disparity in breast cancer treatment leads to disparity in outcomes, according to a recent study. Researchers found that African-American women with early stage, invasive breast cancer were 12% less likely than Caucasian women with the same diagnosis to receive a minimally invasive technique, axillary sentinel lymph node biopsy. This procedure was accepted as standard of care for the staging of breast cancer in 2002 and became the preferred practice by 2007 when the National Comprehensive Cancer Network and other national organizations endorsed the minimally invasive procedure.

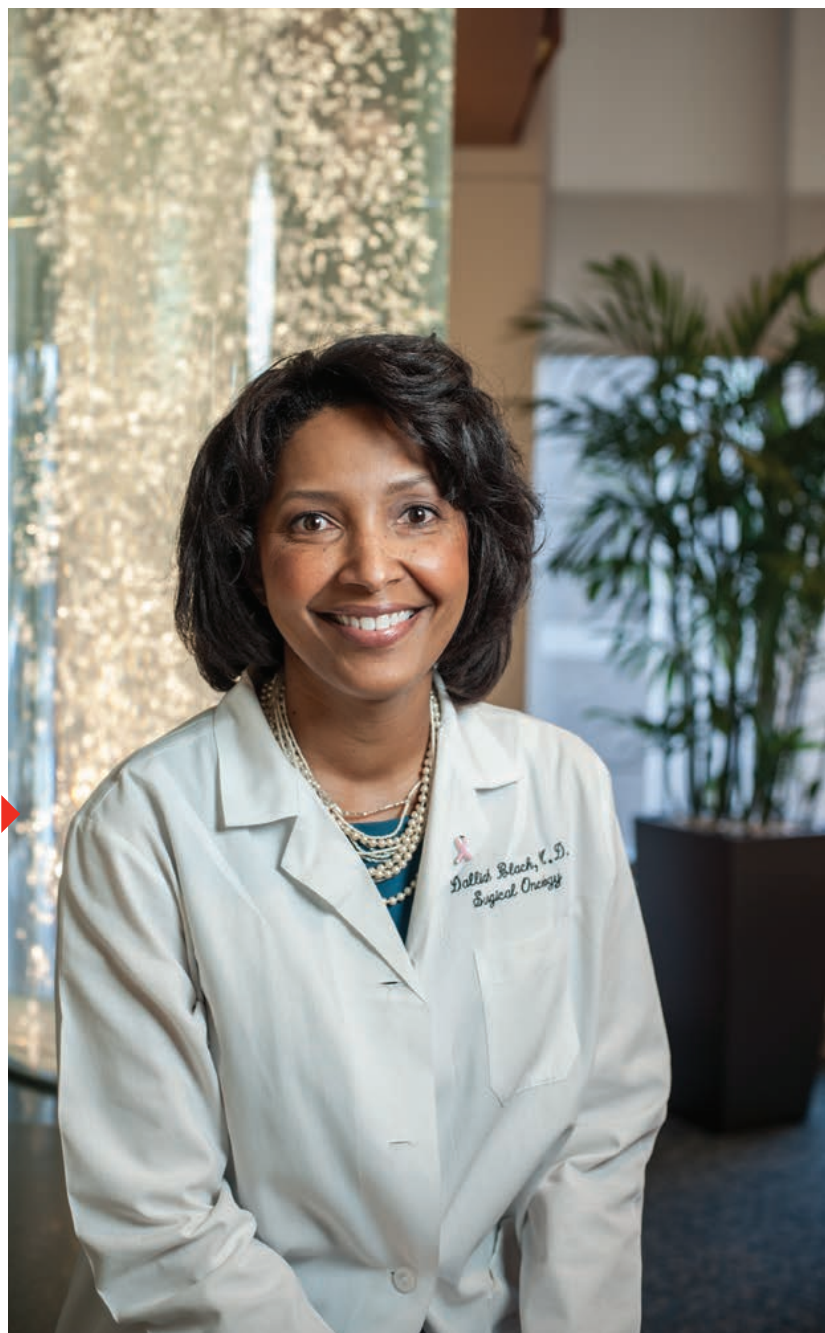
The study also found that black women who underwent the older, more invasive complete lymph node dissection had higher rates of lymphedema. Caused by blockage of the lymphatic channels, this condition can lead to significant chronic symptoms, such as arm swelling and pain.

**FIRST AUTHOR: DALLIAH MASHON BLACK, M.D., ASSISTANT PROFESSOR, DEPARTMENT OF SURGICAL ONCOLOGY**

**REPORTED IN DECEMBER 2012 AT THE CANCER THERAPY AND RESEARCH CENTER-AMERICAN ASSOCIATION FOR CANCER RESEARCH SAN ANTONIO BREAST CANCER SYMPOSIUM.**



*Scan this QR code, or visit [www.mdanderson.org/conquest](http://www.mdanderson.org/conquest), to listen to a podcast with Dallah Mashon Black, M.D., about her research on the treatment provided African-American breast cancer patients.*



**Dallah Mashon Black, M.D.**

**See MD Anderson's online Newsroom** ([www.mdanderson.org/newsroom](http://www.mdanderson.org/newsroom)) and Cancer Frontline ([www2.mdanderson.org/cancerfrontline](http://www2.mdanderson.org/cancerfrontline)) for more information on these and other basic, translational and clinical research findings at MD Anderson.

By Julie Penne

# A most personal gift

More choices for transplant mean more patients benefit



Dylan Smart

## Lives interrupted. Lives reset.

Dylan Smart was a star baseball player who had just celebrated his 16th birthday when doctors discovered his brain tumor.

Darshe Edge had just completed her third year of medical school and was studying for the boards when she learned she had acute myelogenous leukemia.

Cesar Talamantes was a hard-working bulldozer operator at a Louisiana construction site when he was diagnosed with lymphoma.

Laura McKensie was studying for her CPA exam and had just become a grandmother for the first time when she got the news of her leukemia diagnosis.

Newlywed Cristina Rodriguez was a popular Zumba instructor and sang in her church choir when her lymphoma was confirmed.



A cancer diagnosis may have put the brakes on the lives of these people, and more than 13,000 adult and pediatric patients since 1991, but a bone marrow, stem cell, cord blood or rescue transplant literally and figuratively reset their futures.

MD Anderson is home to the largest hematopoietic (the formation of blood or blood cells in the body) transplant program in the world, last year doing 848 adult transplants, just shy of its record 865 transplants in 2011. The number of procedures last year was nearly triple the 293 transplants in 1991, which marked the beginning of the surge in progress that continues today.

Even before the early 1990s, MD Anderson was a leader in developing the procedure, performing the first bone marrow transplant in 1975 when the service was part of the Department of Hematology. By the end of the 1980s, MD Anderson had grown to the second largest program in the nation.

## MORE THAN JUST STATISTICS

The incredible progress in hematopoietic transplantation reflects myriad back stories that have led to great advances, including:

- clinical collaborations,
- basic research findings,
- translational development of new, less toxic and more effective pretransplant chemotherapy programs,
- extraordinary multidisciplinary clinical teams,
- sophisticated processes for cell preparation,
- new technologies for finding matches around the globe and, most recently, to use “alternative donors” who are not perfect tissue-type matches,
- outstanding nursing care and an improved inpatient environment,
- better infection control and improved drugs to treat complications, and especially
- courageous patients.

“We now are at a point in time where we have a transplant option for virtually every patient who could benefit,” says Richard Champlin, M.D., professor and chair of the Department of Stem Cell Transplantation and Cellular Therapy.

“When I came to MD Anderson, we were transplanting only young patients under age 45 with certain types of leukemia, and only using a tissue-type matched family member as the donor. Today, we can transplant patients with a wide range of cancers, particularly those of the blood and lymphatic system. We can now perform transplants in older patients up to 75 years old and successfully perform transplants using HLA [human leukocyte antigen] tissue-type mismatched donors.”



Richard Champlin, M.D.

**“We now are at a point in time where we have a transplant option for virtually every patient who could benefit.”**

– Richard Champlin, M.D.,  
professor and chair, Department  
of Stem Cell Transplantation and  
Cellular Therapy

## PERSONALIZED CHOICES

Research during the past two decades has produced a number of new approaches for transplants. The field began with bone marrow transplants, but now most transplants use blood-forming stem cells from the peripheral blood or from umbilical cord blood.

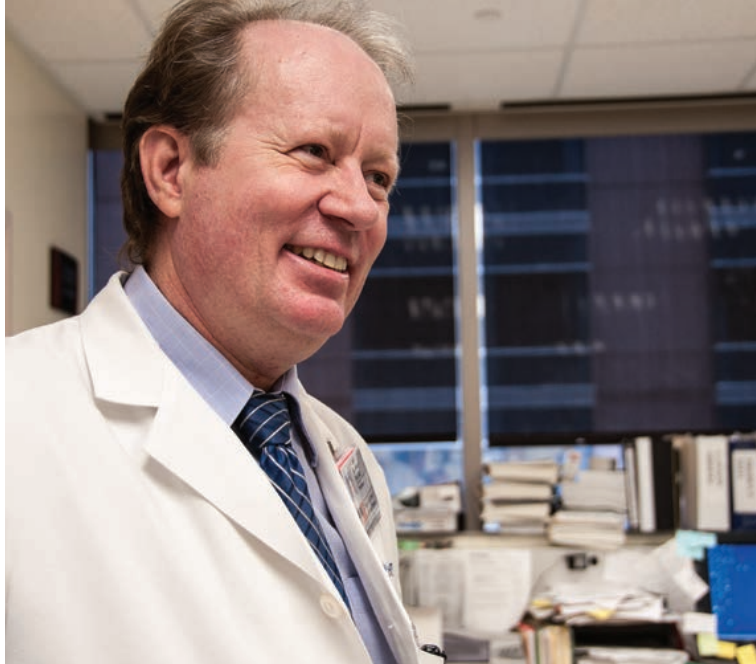
As in so many other disciplines in cancer care today, the choices are more personalized. These choices are based on the patient's disease, condition and outlook, overall health, the availability and health of a family member or unrelated donor to be a match, and other clinical factors.

With these approaches emerging and improving, more patients have a better chance at not only getting a transplant, but also of surviving it and curing the disease.

- Autologous stem cell transplants extract a patient's own stem cells, through a simple process called apheresis, and cryopreserve (freeze) them before re-infusing them into the patient. This is a successful treatment for many forms of lymphoma, multiple myeloma and germ cell cancers.
- Allogeneic stem cell transplants take stem cells from a normal donor. This is effective treatment for leukemias, other hematologic malignancies and severe nonmalignant diseases of the blood or immune system.
- Bone marrow transplants extract stem cells from the marrow in a donor's pelvis or hip, treat and infuse them into the patient.
- Peripheral blood stem cell transplants involve blood-forming stem cells collected from the blood using apheresis, the same procedure used to collect platelet transfusions.
- Cord blood uses stem cells from a donated placenta and umbilical cord.
- Mini- or non-myeloablative transplants use lower dose, less toxic chemotherapies in advance of the transplant. This has improved the safety of hematopoietic transplantation.
- Haploidentical transplants infuse stem cells from a less than perfectly matched related or unrelated donor.

In addition, combining IV Busulfan, developed in-house by Borje Andersson, M.D., Ph.D., with a newer class of chemotherapy agents, has produced full-dose-reduced toxicity pretransplant conditioning programs. These programs have set a new standard for how to safely and effectively perform stem cell transplants in leukemia patients.

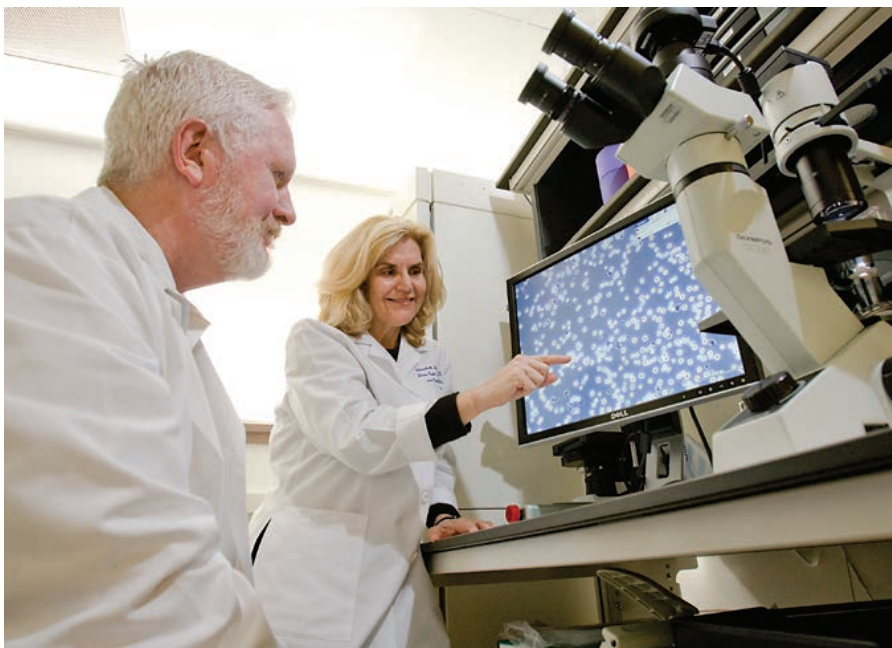
"It's impossible to express the relief and satisfaction of having so many effective and safe options for so many more patients," says Andersson, professor in the Department of Stem Cell Transplantation and Cellular Therapy. "In the early days of transplant about half of our patients died, which was tragic.



**Borje Andersson, M.D., Ph.D.**

**"It's impossible to express the relief and satisfaction of having so many effective and safe options for so many more patients."**

– Borje Andersson, M.D., Ph.D., professor,  
Department of Stem Cell Transplantation and  
Cellular Therapy



Now, in the most favorable scenarios, about 90% survive and stay in remission. Still, our patients grapple with some tough obstacles and complications, and we must do better for them.”

### COMMON SIDE EFFECT: GRAFT VERSUS HOST DISEASE

A major remaining hurdle with allogeneic hematopoietic transplants is graft versus host disease (GVHD). This condition occurs when immune cells from the donor attack the recipient’s normal tissues. GVHD can appear suddenly within the first 100 days after a transplant and a chronic form can develop within the first year. Symptoms may range from rash, diarrhea and hepatitis to nausea and dry eyes. Methods for prevention and treatment of GVHD have markedly improved in recent years.

While treatable, GVHD is one of the chief reasons patients must be closely monitored and kept in the hospital for an extended time. It is most common in patients who have an unrelated donor, which is about 50% of transplants now, with the percentage expected to rise in the coming years as our population diversifies even more.

Preventing GVHD is a top research priority for MD Anderson because of the impact the condition can have — and has had for many years — on patient outcomes and quality of life. By preventing or minimizing the condition, patients can be spared one more health threat and additional treatment, which may extend their recovery from a transplant. However, some drugs given to treat it can suppress successful engraftment of the stem cells.

A study by Stefan Ciurea, M.D., assistant professor in the Department of Stem Cell Transplantation and Cellular Therapy, showed that giving patients cyclophosphamide after their haploidentical transplant prevented GVHD by about 70%. This figure is almost equivalent to the rate of this side effect in patients who have transplants using matched, related donors. This approach significantly improves the outcomes of haploidentical transplant patients, making results comparable with matched transplants, and allows clinicians to extend transplantation to virtually all patients in need.

**L**ast December, Elizabeth Shpall, M.D., and Ian McNiece, Ph.D. (pictured above), both professors in the Department of Stem Cell Transplantation and Cellular Therapy, published a paper in the *New England Journal of Medicine* showing that donated umbilical cord blood establishes a new blood supply in patients more quickly after transplantation when it is first expanded in the lab on a bed of cells that mimics conditions in the bone marrow.

**Cord blood has become an increasingly vital source of cells for patients who need a transplant but may not have a donor. The difficulty has been the low volume of cells in the cord blood, which leads to a longer engraftment period and leaves patients vulnerable to infection and bleeding.**

**To increase the number of these cells, Shpall, McNiece and their team took blood from one of two donated umbilical cords and expanded it in the lab on a bed of mesenchymal cells. The expansion increased the number of total cells transplanted 12-fold and key engraftment cells by 40-fold. As a result, the cells engrafted and built a blood supply faster, which means a safer transplant.**



Champlin says that engrafting donor immune cells rebuilds the immune system. The high doses of chemotherapy given before the transplant kills most, but usually not all, of the cancer. The immune reaction of the donor cells against residual cancer cells is what ultimately cures the malignancy.

## PROTECTION FROM INFECTION

Following a hematopoietic transplant, the immune system is very weak for the first several months, and severe infections can occur.

Twenty years ago, MD Anderson patients were isolated for more than a month in tiny rooms in the “protected environment” — at the time, a pioneering approach to protect immunocompromised patients from infection. Today, physicians have extended the important features of the protected environment with advanced HEPA-filtered air with positive-pressure ventilation to the entire Albert B. and Margaret M. Alkek Hospital where transplant patients are cared for.

Now, stem cell transplant patients stay in normal-appearing hospital rooms. Family members can also stay comfortably with them in a large, bright room complete with artwork and computer access. There is even a small gym and structured exercise programs on the unit that not only help patients restore their strength and stamina, but also encourage socializing.

## NURSES PLAY A CRITICAL ROLE

Transplants today have spurred changes in the hospital environment, nursing care and the patient experience. Still, transplant can be a grueling physical and emotional challenge, and support is vital to keeping patients motivated. MD Anderson has a group of outstanding nurses, dedicated to the care of stem cell transplant recipients. Transplant nursing has also evolved, led by many advances made by the institution’s nursing staff.

MD Anderson’s 2,800 nurses are among the nation’s most skilled critical thinkers, caregivers, educators and advocates for their patients. Nurses who work in the transplant clinic and unit find their patients’ clinical and emotional needs can be even more magnified.

Joyce Neumann, clinical nurse and program manager of the Bone Marrow Transplant Unit, has worked in transplant for 21 years and manages 20 mid-level providers. She says that caring for transplant patients is distinctive.

“Nursing is important with any population, but especially with this group of patients,” Neumann says. “We give them a very intense treatment for a lethal cancer that presents a huge physical and emotional burden for patients and their caregivers.



**Advanced Practice Nurse Joyce Neumann, who has worked in transplantation at MD Anderson for 21 years, reviews a patient’s progress with Clinical Nurse Aidee Neumann, who not only works on the inpatient transplant unit, but also happens to be her daughter-in-law.**

## How to support transplant patients at MD Anderson, elsewhere

### DONATE BLOOD AND PLATELETS

Patients require frequent transfusions throughout the first 100 days of their transplant and beyond. The blood and platelets boost counts, help fight infection, prevent bleeding and aid recovery.

[www.mdanderson.org/how-you-can-help/donate-blood/](http://www.mdanderson.org/how-you-can-help/donate-blood/)

### REGISTER AS A POTENTIAL DONOR

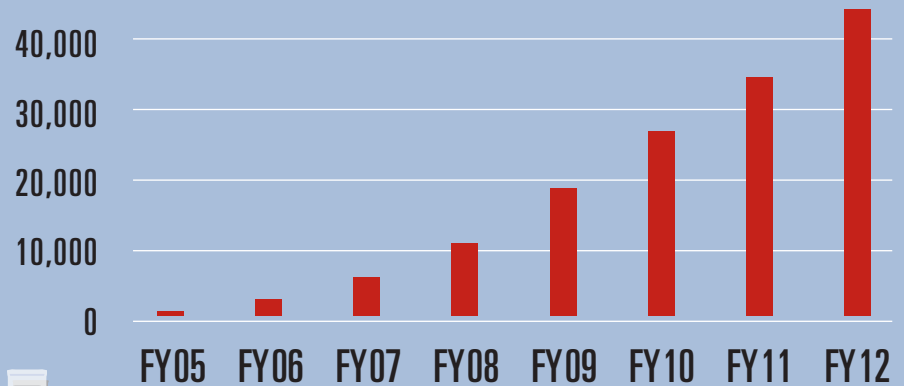
Contact the National Marrow Donor Program (NMDP) for more information about how to register as a potential donor. The NMDP's "Be the Match" Program compiles a global database for institutions like MD Anderson searching for matches. Donors representing minority populations are especially needed.

[www.marrow.org](http://www.marrow.org)

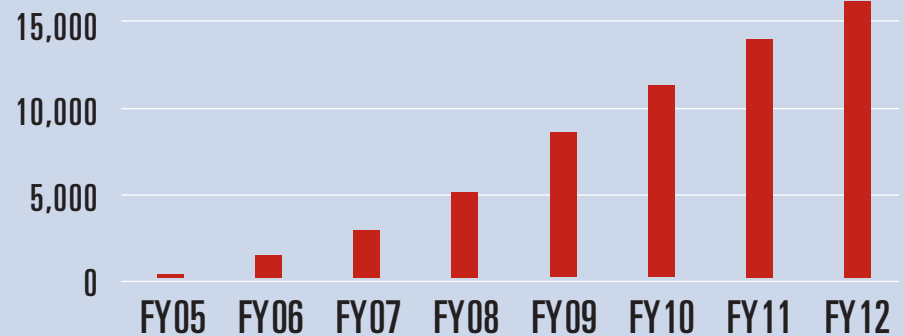
### CORD BLOOD BANK DONATIONS

For more information, call 866-869-5111, or email [cordbloodbank@mdanderson.org](mailto:cordbloodbank@mdanderson.org).

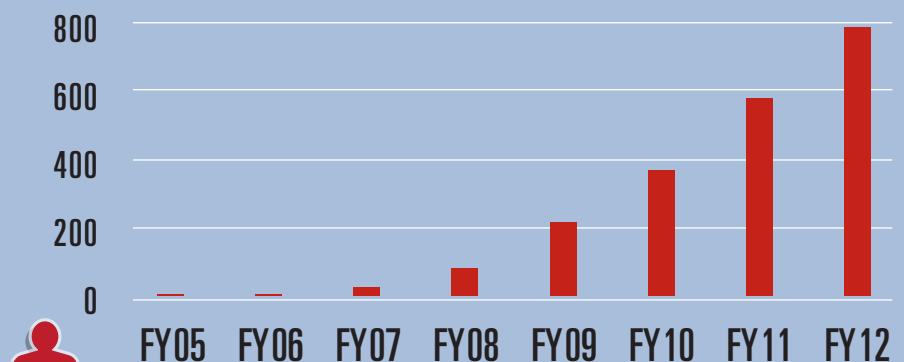
# CORD BLOOD BANK ACTIVITY



Cord Blood Units **Collected**: 42,058\*



Cord Blood Units **Banked**: 16,428\*



Cord Blood Units **Transplanted**: 790\*

\*These numbers are cumulative over the span of eight years.

These patients can become very sick very quickly and that level of uncertainty can be frightening. We, as nurses and mid-level providers, must be attuned to the slightest clinical changes while helping them manage their burdens.”

## NURSES MONITOR AND MOTIVATE

For Karen DeYoung, inpatient clinical nurse, who has worked on the transplant unit since 2010, one way to help patients manage their treatment is by talking to them about what motivates them to get better — listening not to their fears, but about their family, pets or work. Outside the patient’s room, in the team room, it’s about extending that same care to colleagues.

“The transplant unit is fundamentally one step below the Intensive Care Unit,” DeYoung says. “We have to work together to watch for the slightest change in a patient’s condition or demeanor and respond quickly, whether it be to call on another nurse, physician, a respiratory therapist, social worker or physical therapist.”

For her colleague, Lourine Davis, who has been a nurse for 22 years, it’s all about showing care and compassion. In February, Davis and some of the nurses on the unit planned a wedding in MD Anderson’s chapel for a patient and his long-time fiancée, who was at his bedside constantly.

“Every day, I come to work and want to make a difference in the lives of these patients,” she says. “We all are passionate about making sure they have the resources they need.”

## LIVES RESET

Dylan Smart, who was infused with his own stem cells last year as a rescue transplant after high-dose chemotherapy, still loves baseball. He volunteers with the Children’s Cancer Hospital’s Teen Advisory Council and hopes to be an MD Anderson child life specialist.

Darshe Edge, M.D., is two years out from her double cord-blood transplant. She is a medical resident, who recently completed an MD Anderson rotation and is considering oncology as a specialty.

Cesar Talamantes had his stem cell transplant in 2010, thanks to his oldest sister who was a match. Despite life-threatening complications and GVHD, he is back to work at a Houston restaurant.

Laura McKensie had her bone marrow transplant in February 2001 and continues to struggle with GVHD. Despite her condition, she exercises five days a week and hopes to return to work later this year. She has three healthy grandchildren, one of whom was diagnosed with leukemia at the same time she was being treated.

Cristina Rodriguez is recovering from her December 2012 haploidentical bone marrow transplant and blogging about her cancer experience. She plans to return to Corpus Christi, Texas, with her husband and parents in the near future.



**Working with MD Anderson patients for almost 20 years, Cindy Trevino, advanced practice nurse, witnesses and shares their daily challenges and joys of life after transplant.**

**So when Trevino and her husband were expecting their second child, Ava, five years ago, the decision to donate the baby’s cord blood really wasn’t a decision at all. It was a given.**

**“Working with patients every day, you see all that they go through and you want to take that involvement to another level,” she says. “We were so happy to donate Ava’s cord blood, especially because of the great need for donors from minorities. It was a natural and easy decision.”**

**Trevino is one of many mothers who have donated their babies’ cord blood to the MD Anderson Cord Blood Bank. (See infographic on page 11 and sidebar on page 13.)**





**Sue Armitage** observes **Keith Dickerson**, senior clinical cell therapy specialist, as he processes a cord blood donation. **Devin Blass** (right) supervises the Cell Therapy Lab.

## A MOTHER'S JOY, A PATIENT'S HOPE

By Julie Penne

**M**ore new mothers who experience the joy of birth are giving transplant patients all over the world a chance for rebirth.

They are donating their baby's stem-cell-rich umbilical cord blood to MD Anderson's Cord Blood Bank, a program that has been growing exponentially since it collected the first unit in 2005.

The first dedicated bank in the United States was opened in New York in 1993, as research in cord blood transplants sprouted. Today, that bank is the largest in the nation, but MD Anderson's young bank is the fastest growing and has the largest collection of cord blood units from diverse populations.

Between 2005 and the end of fiscal year 2012, the MD Anderson Cord Blood Bank collected more than 42,000 units with more than 16,000 banked and listed on the international registry. Nearly 800 of the units were transplanted in patients at MD Anderson, throughout the United States and the world. Other units, not suitable for transplant, are used in research.

Starting in 2005 with The Woman's Hospital of Texas, which has the largest obstetrical program in Houston, and then adding Ben Taub General Hospital one year later, which delivers a large percentage of babies from minority populations, the program now has four major Houston hospitals on board.

Later this summer, Memorial Hermann Hospital and HarrisHealth's Lyndon Baines Johnson Hospital will join the program. There is no charge for patients donating the cord blood to MD Anderson's Cord Blood Bank, unlike most private cord blood banks, which store the units for only that family's possible use.

## CORD BLOOD BANK INCREASES CAPACITY

"It always will be the parents' decision if they want to donate their child's cord, but once they hear that the tissue is discarded after delivery and that it won't affect their baby, they are open to the idea," says Sue Armitage, assistant director of MD Anderson's Cord Blood Bank. "Many more parents are now aware of this option than when we started, but it's always important to take time to answer all their questions."

In addition to the Houston hospitals where MD Anderson Cord Blood Bank representatives are on-site to speak with parents, there is an outreach program at hospitals in Detroit and California. Plus, a collection kit is available to any expectant mother who contacts the bank, but who lives in an area that does not have access to cord blood banking. The kit is accompanied by an online training module for physicians, who will collect the unit to be sent to Houston.

All this growth is forcing the Cord Blood Bank to move from the area it now shares with the Stem Cell Processing Lab on the North Campus to a newly renovated facility near South Campus. The new facility will feature cryostorage for 50,000 units and expanded clean rooms for meticulous processing and testing of the cells.

About 50 people work for the bank, half are recruiters working at partner hospitals. Depending on the hospital, bilingual recruiters are available either five or seven days a week, 24 hours a day, to meet with parents before the delivery and collect the cord blood after the baby is born.





# Picture This

## Turn to The Learning Center for cancer and health information

By David Berkowitz

**When someone is diagnosed with cancer, it's natural to immediately want to learn as much as possible about the disease.**

The Learning Center at MD Anderson not only links patients and family members to the latest and most reliable cancer information, but also offers resources on a wealth of other health topics.

Resources include: free booklets; journals and books; consumer health magazines and newsletters; online journals, electronic books and databases; topic-specific binders; audiotapes; and DVDs and videotapes.

The center's staff members guide searches and help visitors find information they need to make informed decisions with their medical team.

The Learning Center has three locations:

- Theodore N. Law Learning Center, Main Building, Floor 4, near Elevator A, R4.1100
- Levit Family Learning Center, Mays Clinic, Floor 2, near The Tree Sculpture, ACB2.1120
- Holden Foundation Learning Center, Rotary House, Floor 1, RH1.103

Check the website at [www.mdanderson.org/tlc](http://www.mdanderson.org/tlc) for more information and access to resources, or email [asktlcstaff@mdanderson.org](mailto:asktlcstaff@mdanderson.org) with questions.





**The Learning Center in MD Anderson’s Main Building has plenty to offer patients, family members and caregivers:**

**1. Kathy Jinkins**, associate director in the Patient Education Office, displays an array of materials available in The Learning Center. She directs operations for all three locations.

**2. Patrons can check in at the reception desk**, where a staff member will answer their initial questions and help direct their search for information. More than 31,000 people visited The Learning Centers in fiscal year 2012.

**3. Lura Lumsden, health education specialist**, helps a patron find information on cancer. Hundreds of free pamphlets and booklets from the American Cancer Society, National Cancer Institute, American Institute for Cancer Research and other reliable sources cover a wide range of cancer topics.

**4. Ashlie Bausley, health education specialist**, searches for a reference resource. Information on breast cancer, self-care and nutrition were the most requested topics last year. Materials are also available in Spanish.

**5. Cancer and health topic library books** can be checked out. (From left) Linda Yarger, senior librarian, Jila Tanha, health education specialist, Julia Jenkins, librarian, and Rosemary Catalo, senior librarian (not pictured), find resources for a patient’s information search.

**6. Liz Brackeen, senior librarian**, locates the most helpful audiovisual material, including DVDs and CDs, to check out and view.

**7. Patients, caregivers and family members** can use computers to access their myMDAnderson account, check email and conduct research. The center also offers free use of fax machines and copier services.

**8. A variety of DVDs** on cancer and other health topics, some of which are produced at MD Anderson, are available.

**9. Pathfinders guide patrons** by highlighting available resources on specific topics. Pathfinders also are available on The Learning Center website.

*Overall, The Learning Center distributed more than 62,000 materials in fiscal year 2012.*



## Moon Shots Program update

MD Anderson is known for its innovative ventures, and the Moon Shots Program, launched last year, is its most visionary. Its focus is on systematically and rapidly converting scientific discoveries into clinical advances that reduce cancer deaths.

Key components of the program are platforms, like the Institute for Applied Cancer Science (IACS, see page 18) and Big Data Analytics, which provide specialized expertise and infrastructure. While some platforms are in development, others like IACS are up and running.



# Demystifying big data

## Insights leveraged to improve outcomes

By Hilary Graham

**There's good news:** Massive amounts of useful data are generated every day by cancer researchers around the world.

**But there's also challenging news:** Due to the huge amount, its complexity and lack of centralization, much is left unanalyzed.

**The consequence:** Important insights often remain unknown.

**T**ake this scenario: A 56-year-old woman enters the clinic with BRAF-mutant melanoma. Her cancer initially responds to available treatments, but then she relapses after a few months. Why did the therapy work initially and then fail?

Big data backed by powerful analytics hold the key to understanding why some patients never respond to treatment, why some patients initially respond and then relapse, and why some patients have long-lasting responses. To unravel this mystery, specific factors such as family histories, clinical test results and genomic data must be collected from a large number of patients and housed collectively so that factors that modulate response can be identified.

### The big data buzz

Big data is a buzzword today, but what is it and how is it relevant to cancer research and patient care?

“Big data is not just big. The term also implies three additional qualities: multiple varieties of data types, the velocity at which the data is generated, and the volume seen within MD Anderson,” says Keith Perry, associate vice president and deputy chief information officer.

“Additionally, many of our databases currently don’t interface with each other because they’re generated by and housed separately in prevention, research and clinical departments versus a centralized platform.”

Harnessing big data is transformative. It provides unique opportunities to ask complex questions and identify new knowledge in existing data through centralization, standardization and new types of computing analytics.

### Harnessing powerful information

MD Anderson refers to the specialized expertise and infrastructure that is being assembled to support the Moon Shots Program as platforms. The Big Data Analytics platform consists of two functional components. First, a longitudinal patient data warehouse will house clinical and genomic data. Second, a suite of massive data analytics will interrogate and learn from the data to provide end users with understandable and actionable answers to their complex clinical or research questions.

“This platform differs from currently available research and clinical databases because of the size, centralization, strength of the analytics and, most important, because it doesn’t belong to one researcher or department,” says Lynda Chin, M.D., chair of the Department of Genomic Medicine and scientific director of the Institute for Applied Cancer Science.

“Providing this wealth of accessible data to all MD Anderson clinicians and researchers as an institutional resource will increase research productivity and improve patient care.”

### Enter analytics and their role in a health care setting

Today’s powerful analytics can combine natural language processing of massive amounts of unstructured data with structured research and clinical data. Think doctors’ notes versus numerical lab tests — with sophisticated software to define probabilities when answering complex questions related to medically relevant scenarios.

“Analytics can address large-scale data sets. They permit the discovery of meaningful patterns in data by applying sophisticated algorithms to filter and analyze collected information,” says Andrew Futreal, Ph.D., professor in the Department of Genomic Medicine and co-leader of the Big Data Analytics Platform.

“This approach allows for real-world questions, like the hypothetical scenario above, to be explored because analytics look at interactions and relationships that are not ‘under the lamp post.’ The infrastructure allows for the consideration of all available information about a patient and patients like them.”

### Providing the next generation of care today

An interdisciplinary pilot project is under way, providing the next 1,000 patients admitted to MD Anderson’s Leukemia Center the next generation of cancer care. The project integrates scientific and clinical knowledge with a big data infrastructure.

Patients’ information is collected, including a profile of their genetic makeup, clinical histories, test results, treatment courses and treatment responses. This data will be interpreted by the massive data analytics, which provide real-time decision support to rapidly improve clinical outcomes.

This Moon Shots Program platform is a true collaboration between research and clinical departments and information technology.


### Democratization of excellent care

The goal of building this infrastructure is to simultaneously harness both technological and human capabilities that will lead to critical insights and dramatically improve patient outcomes.

“Building these integrated platforms enables MD Anderson to leverage the knowledge and insight of scientists and clinicians to provide decision support, not only to the institution’s physicians, but also potentially to providers across the planet,” says John Frenzel, M.D., chief medical information officer and co-leader of the Big Data Analytics Platform.

“These platforms also could enable physicians globally to practice with the MD Anderson standard of care no matter where the patient is located, improving outcomes and reducing suffering.”

Best of all, there will be insights that optimize patient outcomes — as well as the accelerated translation of new therapies and diagnostics — for patients like the woman in the opening scenario and for all patients who are treated with the next generation of medicine.



**Andrew Futreal, Ph.D. (far left), Keith Perry, Lynda Chin, M.D., and John Frenzel, M.D., use a specially designed meeting pod on Floor 1 of MD Anderson’s South Campus Research Building IV to discuss next steps on the Big Data Analytics Platform.**





Barbara Czako, Ph.D., research scientist in MD Anderson's Institute for Applied Cancer Science, works in a state-of-the-art chemistry suite to design and synthesize novel, safe and effective compounds that will serve as the basis for the next generation of cancer therapies.

# A fully integrated approach

By Hilary Graham

## Collaboration speeds drug discovery

Take the extensive knowledge of biology found in academia.

Add the disease expertise of MD Anderson's top clinicians.

Combine with the drug discovery capabilities of the biopharmaceutical industry.

Then, build a bridge that connects them. That's what MD Anderson has done by establishing the Institute for Applied Cancer Science (IACS).



**D**riven to bring new therapies to patients, the institute is carrying out drug discovery programs that target tumor types resistant to the standard of care. Their efforts focus on metabolism, epigenetics, immunotherapies and biologics (see Glossary below).

### Outsmarting cancer cells

While many cancers respond to available treatments, a significant number of patients face treatment-resistant disease, either initially or during recurrence.

Traditionally, researchers have developed drugs to target tumors taken from patients at diagnosis. This approach is why only a portion of patients responds to currently available therapeutics.

“Resistant tumors are not a single disease, instead they are heterogeneous with a multitude of genetic abnormalities and are affected by their surrounding environment,” says Ana Maria Gonzalez-Angulo, M.D., associate professor in MD Anderson’s Department of Breast Medical Oncology.

As a patient moves through treatment, resistant tumors circumvent therapy either by mutating to develop resistance via newly acquired biological evasion mechanisms or because a small subset of initially resistant cells emerge as the dominant population.

“To effectively combat hard-to-treat cancers, we need to understand and target fundamental pathways, such as metabolism, which are critical for cancer cell survival,” says Carlo Toniatti, M.D., Ph.D., head of research at IACS. “By designing therapeutics against these indispensable targets, we can ensure that cancer cells will have a difficult time evading therapy.”

### Translating innovative research discoveries

When approached, the institute serves as a filter to rigorously evaluate targets identified by MD Anderson investigators. Applying their cumulative industry expertise along the drug discovery and development continuum, IACS researchers provide recommendations on next steps for targets in an unbiased manner, considering scientific merit as well as technical and business feasibility.

Cross-functional teams with diverse expertise in cancer biology, drug discovery and clinical research ensure that all potential

strengths and weaknesses in the biology surrounding the target, the drug structure and the appropriate patient population are identified. Once promising programs are thoroughly vetted, IACS can act as an engine to drive programs forward in the drug development process either through internal efforts or in partnership with biopharmaceutical companies.

One such opportunity recently enabled by IACS is the co-development and licensing agreement with the pharmaceutical company, GlaxoSmithKline (GSK). The collaboration focuses on the development of therapeutic antibodies that target the OX40 receptor and promote an immune system attack against cancer.

The IACS and the original MD Anderson researchers will work closely with GSK to position the antibodies for clinical success. Reflecting the potential promise of the research, the institution could receive up to \$335 million plus royalties from GSK if all milestones are achieved.

“This collaboration also demonstrates IACS’s unique ability to seamlessly integrate drug development expertise with deep biological knowledge and provide patients with promising new therapeutics,” says Giulio Draetta, M.D., Ph.D., professor in MD Anderson’s Department of Genomic Medicine and director of IACS.

**Informal meetings in hallways and stairwells enhance the collaboration between Carlo Toniatti, M.D., Ph.D. (left), head of research for the Institute for Applied Cancer Science, Laura Bover, Ph.D., associate professor, and Kui Voo, Ph.D., assistant professor, both in the Department of Genomic Medicine.**



## Glossary

**Altered cellular metabolism** is a hallmark of cancer. Understanding the signaling pathways that are hijacked to support cancer cell growth and survival will provide therapeutic strategies to combat malignant cells. Abnormal conditions in the tumor, such as oxygen and nutrient deprivation, require optimized metabolic conditions to support the rapid cellular growth often associated with cancerous tissues.

**Epigenetics** is the study of changes in gene expression that happen without altering DNA sequence. This field of research is promising because the chemical modifications of DNA and histone proteins that regulate chromatin structure and gene expression are reversible, making ideal targets for therapeutic intervention.

**Biologics** are a class of therapeutics that are either isolated from natural sources or generated by biological processes in the laboratory. This is in contrast to small molecule drugs, which are generated by chemical synthesis. While there are many categories of biologics, antibodies are particularly well represented in terms of the U.S. Food and Drug Administration-approved products and therapeutic candidates under development.

**Immunotherapies** engage the body’s immune system to treat, prevent or cure illnesses. One example of immunotherapeutics is antibodies. While cancer cells are foreign to the body and can be detected by the immune system, they often develop ways to avoid destruction. Immunotherapeutics harness the immune system to attack on command, providing patients with a powerful and targeted therapeutic option.

# CALM

in the midst of storm



Garden spaces  
integral part of  
campus design

By Gini Reed





A bluejay hops through, foraging for breakfast.  
A bee skips over a patch of flowering Blue Daze.  
A young monarch butterfly emerges from its  
chrysalis and dries its wings in the morning sun.

All this happens in a few brief moments, steps away from the main entrance to MD Anderson.

The garden spaces are an integral part of the cancer center, not only acting as buffers and respites from the concrete, traffic and Houston heat — but playing their own surprising role in the healing process.

For Chris LaChance, being in the gardens helped give her space to center herself and step away from the stress and worry of treatment. “Wheeling my IV pole across the drive and plopping down on the grass, I immediately felt calmer, more at peace.”

LaChance, master gardener with Texas A&M AgriLife Extension Service and cancer survivor, was the catalyst for the development of the butterfly garden tucked into the eastern end of the Dorothy H. Hudson Memorial Garden.

Leaving treatment one day, she envisioned the butterfly garden. It became her way of thanking MD Anderson for her survival and also giving hope to other cancer patients. The transformation from caterpillar to chrysalis to butterfly helped her find a fitting metaphor for her cancer journey.

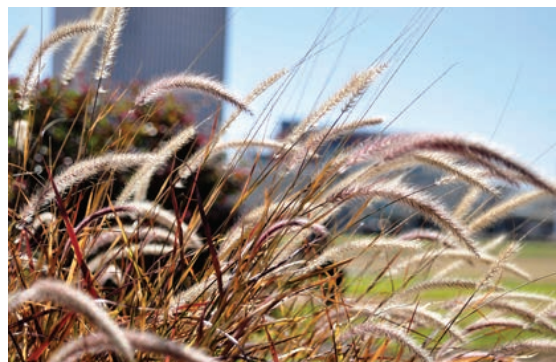
### Room for privacy and solace

The first patient garden spaces were planted in the late 1970s. They consisted of roses planted by Tom Jean Moore, volunteer, to whom today’s rose garden is dedicated.

The patient experience extends from inside the hospital to the garden spaces.

“Many of MD Anderson’s gardens are divided by foliage into smaller ‘rooms’ where people can find privacy and solace,” says David Renninger, facilities project manager in the Division of Operations and Facilities Management and steward of the MD Anderson gardens.

At the Lowry and Peggy Mays Clinic, patients and visitors can visit the different Texas regions on the Floor 8 terrace gardens. And on the land formerly occupied by the Houston Main Building at the southeast corner of Fannin and Holcombe, The Prairie is taking shape. Walking paths winding through these spaces are filled with wildflowers and native grasses and offer a welcome distraction. If you’re very, very quiet, you might even sight the resident rabbit.







“In contemplating the exceeding beauty of the earth, people have found calmness and courage.”

— Rachel Carson



## MD Anderson parks and gardens

**Houston Endowment Inc. Park**  
Patients and visitors can relax in The Park, a comfortable indoor setting.

**Dorothy H. Hudson Garden and LeRoy Melcher Jr. Memorial Fountain**  
Park benches are located in a pleasant outdoor area featuring the “Flame” sculpture.

**Tom Jean Moore Rose Garden**  
Volunteers cut, arrange and deliver roses to patient rooms from the fragrant rose garden just outside the Main Building.





**The Prairie**

Winding trails, trees, Palisades zoysia grass, native prairie grasses and benches provide a place to relax.

**Worham Linear Park**

Two blocks of landscaped parkway feature a fountain and benches.



**CONQUEST**

Scan this QR code, or visit [www.mdanderson.org/conquest](http://www.mdanderson.org/conquest), to enjoy MD Anderson's gardens and their surprising inhabitants.



# More than an ounce of prevention

## Studies build knowledge

**D**epression in bladder cancer patients, contralateral prophylactic mastectomy and survival rates of African-American versus Caucasian kidney cancer patients represent just three areas of study in the wide spectrum of research under way in MD Anderson's Division of Cancer Prevention and Population Sciences.

Carried out by epidemiologists, behavioral scientists, cancer prevention experts and those researching health disparities, these studies focus on prevention and early detection of cancer.

The goal: To gain a deeper understanding of risk factors and discover interventions that can prevent disease.

### A sad soul

By Joey Tran

"A sad soul can kill you quicker, far quicker, than a germ," John Steinbeck once wrote. Now, more than ever, researchers can understand the deepest meaning of this quote.

For patients, a disease like bladder cancer can be a battle, often burdened with overwhelming depression. Given that managing stress can be difficult even under ordinary circumstances, feelings of fear and depression in cancer patients are understandable.

However, a number of studies have shown that people's mental attitudes can impact physical health. To determine the effects of depression on bladder cancer patients' disease progression and survival, Xifeng Wu, M.D., Ph.D., professor and chair of the Department of Epidemiology, was principal investigator on a related study conducted at MD Anderson.

Findings revealed that depression and certain age-related biomarkers could affect a bladder cancer patient's likelihood of survival. The results may improve the prediction of bladder cancer outcomes. They also highlight the critical importance of enhanced stress management, the regular screening of cancer patients for depression and the need to provide appropriate interventions.

"People are not treating the depression directly, but are mainly focused on coping with cancer," says Meng Chen, Ph.D., instructor in MD Anderson's Department of Epidemiology. "Not taking depression into consideration leads to additional stress that decreases survival."

The research also identified the shortened length of telomeres (specialized structures that protect the end of chromosomes from deterioration) as an age-associated biomarker in bladder cancer. As part of the aging process, telomeres get shorter, which makes the cells stop dividing and eventually die.

The study confirms that a combination of factors — longer telomeres and low levels of depressive symptoms — greatly increase survival for bladder cancer patients.



**Meng Chen, Ph.D.**





Abenaa Brewster, M.D.

## To make an informed decision

By Katrina Burton

Breast cancer patients requesting removal of a healthy breast, along with the diseased one, is fast becoming the “norm” in clinics around the country.

From a patient’s perspective, undergoing a contralateral prophylactic mastectomy (CPM) will hopefully reduce the risk of developing cancer in the healthy breast at a later date and improve chances of survival.

The problem with this rationale, according to Abenaa Brewster, M.D., associate professor in MD Anderson’s Department of Clinical Cancer Prevention, is that there is no significant data on whether removing the healthy breast affects survival at all.

“In fact, women with nonhereditary breast cancer have a very low risk of breast cancer developing in the healthy breast,” Brewster says.

In a recent study published in the journal *Cancer*, Brewster and a team of researchers observed the data of more than 3,800 female mastectomy-treated breast cancer patients. Their intent was to determine if there was an association between CPM, breast cancer disease-free (DFS) and overall survival.

By matching patients in the CPM and non-CPM groups using propensity scores — a technique that estimates the effect of CPM by accounting for such indicators as age, disease stage and treatment — researchers could reduce bias. The study also compared patients based on whether they had hormone receptor-negative breast cancer or hormone receptor-positive breast cancer.

They discovered improved DFS was more predominant among hormone receptor-negative patients who did not receive the drugs tamoxifen and arimidex, as compared to hormone receptor-positive patients. The study also identified that balancing these indicators was important because women who underwent CPM were more likely to be younger than age 50, Caucasian and have stage I or II breast cancer.

“Our findings indicate that small subgroups of patients may benefit from CPM, but we need to study these groups more closely,” Brewster says. She also stresses that the results indicate important implications for a more personalized approach to determining which breast cancer patients at average risk should be targeted for removal of a healthy breast.

## Lagging in the race to survive

By Katrina Burton

Despite being diagnosed in earlier stages and at younger ages, African-American patients are more likely to die from renal cell carcinoma (RCC), an invasive form of kidney cancer, than Caucasians.

The findings published online in *Cancer*, a journal of the American Cancer Society, analyzed data from a 15-year period that included nearly 40,000 patients — 4,359 black and 34,991 white — diagnosed with RCC. The study was led by Wong-Ho Chow, Ph.D., professor in MD Anderson’s Department of Epidemiology, and conducted at the National Cancer Institute.

Chow and her collaborators found that 72.6% of Caucasian patients survived at least five years after their diagnosis as compared to 68% of African-Americans. Also compelling is that 10.5% of white patients did not undergo surgery to remove the tumor as compared to 14.5% of black patients. It is important to note that survival rates were much lower for both groups who did not have surgery to remove their tumors.



Wong-Ho Chow, Ph.D.

# Military service provides 'an accidental gift'

Experience and values shape careers and patient care

By William Fitzgerald



**Craig Kovitz, M.D., is happy to see patients closer to their homes at the Regional Care Center in the Bay Area.**

**Y**ou wouldn't know unless you asked, but for a select group of oncologists who spent time in the armed forces, there are common traits and take-aways that influence much of what they do. Even years after their service has ended, these attributes still tell something about who they are.

Craig Kovitz, M.D., assistant professor in MD Anderson's Department of General Oncology and stationed at MD Anderson's Regional Care Center in the Bay Area, joined the Air Force after graduating from college to secure funding for medical school. Like other military branches, the Air Force supports education in exchange for active duty service upon completion of a degree.

In September 2001, Kovitz was stationed at Keesler Air Force Base in Mississippi, serving as the associate program director of the Internal Medicine Residency. It was this position that gave birth to an array of leadership skills that would later be honed in the rugged terrain of Pakistan and Afghanistan as U.S. war efforts ramped up.

"I was given the opportunity to have leadership positions early in my career, and I think that makes you a person with greater perspective," Kovitz says. "The truth is that until you step into a world with immediate danger, it's impossible to understand how quickly you mature."

## **Service leads to opportunity**

In an environment dominated by almost constant conflict, learning to function under stress was one of the keys to survival. In 2002, Kovitz found himself in Jacobabad, Pakistan, as the medical commander and sole physician on a small forward-operating base. Learning to manage with less and forced to meet challenges head-on were situations that would prove valuable stateside.

After returning home and completing his medical fellowship, Kovitz decided to help lead a new MD Anderson venture in establishing regional care centers located around the Houston metro area. Admittedly, engaging in this uncharted expansion was risky, but with his wartime experience, it was just another adventure.

"I could have taken jobs almost anywhere, and, to some degree, it's a risk in your career to take time and figure this initiative out, but I wasn't intimidated by it," Kovitz says. "I think military experience gave me the self-confidence to go into the community and start building a new practice."





**Elizabeth Mittendorf, M.D., Ph.D., and Na Qiao, Ph.D., research scientist, review the latest results in the study of a vaccine for breast cancer patients.**

### Preparation vital to future success

Elizabeth Mittendorf, M.D., Ph.D., assistant professor in the Department of Surgical Oncology, found herself in similar circumstances, having joined the Air Force to fund medical school. Immediately following Sept. 11, 2001, Mittendorf was stationed at Walter Reed Medical Center in Washington, D.C., to backfill positions vacated by Army doctors who deployed to Afghanistan in support of Operation Enduring Freedom.

During her four years of service, she came to appreciate the rigorous military environment, learning to address different types of traumatic injuries while maturing as a surgeon.

“All of us had trauma training in our residency programs, but, in the military, we dealt with a population of patients who had injuries from IEDs (improvised explosive devices) and other mechanisms we hadn’t seen before,” Mittendorf says.

Ironically, serving at Walter Reed Medical Center was where Mittendorf discovered her interest in breast cancer. The hospital has the largest breast center within the Department of Defense, and, while not large by MD Anderson standards, was a significant opportunity in her career development.

“It was a four-year period of growth and maturation as both a person and a surgeon that prepared me for my subsequent MD Anderson fellowship and faculty position,” she says. “The skills I developed in the military come into play almost every day, and they’ve helped me build my clinical practice and academic program.”

While serving the country opened new opportunities and undoubtedly enhanced their abilities as physicians, Kovitz and Mittendorf are quick to point out that military service also made them better people.

“It’s impossible to spend day after day with people who have sacrificed beyond measure and not have an appreciation for the greater good,” Mittendorf says.

In hindsight, Kovitz found an additional appreciation that he didn’t realize at the time of his service.

“Being in the Air Force was an accidental gift in some ways,” he says. “I joined for a different purpose, but I will tell people for the rest of my life that it was the most important experience I’ve ever had.”

# Cancer Briefings



Alexander Prokhorov, M.D., Ph.D.

## EXPOSING THE SILENT KILLER

### Intervention brings awareness to second-hand smoke exposure in households

By Katrina Burton

Exposure to second-hand smoke (SHS) is associated with a 20% to 30% increased risk of developing lung cancer. When smokers light up a cigarette, they release at least 250 toxic chemicals into the air, exposing everyone around them to the dangers of smoking.

Alexander Prokhorov, M.D., Ph.D., professor in MD Anderson's Department of Behavioral Science, is working to prevent smoking and tobacco use in youth and other population groups, including Mexican-Americans. More than 28% of Mexican-Americans are exposed to SHS and smokers subject multigenerational family members to their smoking habits at home.

Results of an intervention study, designed to promote smoke-free indoor air policies in Mexican-American households, were published in the August 2012 edition of the journal Addictive Behaviors. CASA (Clean Air-Safe Air) addressed SHS using two fotonovelas (illustrated storybooks) and a comic book designed for children and adults. Fotonovelas — a culturally sensitive informational tool — helped significantly increase awareness of the dangers of smoking to this population group.

## SOCIAL MEDIA REMINDS PATIENTS, CAREGIVERS THEY'RE NOT ALONE

By Laura Nathan-Garner

Cancer can be overwhelming and lonely.

But it doesn't have to be. Enter the online community MD Anderson is building for patients, caregivers and survivors through its Cancerwise blog and social networks.

Each month, more than 30,000 patients, caregivers and survivors visit Cancerwise — which is published daily — to learn about new treatments and hospital happenings, and read stories from patients, caregivers and survivors. Recent posts have covered getting married after cancer, benefits of support groups and myths about oncologists.

Each Cancerwise post is shared on MD Anderson's Facebook, Twitter and Google+ pages, and, occasionally, on Pinterest. But that's not all social media followers find each day.

They also find videos and podcasts from MD Anderson's YouTube channel, recipes, inspiring words — and a community that encourages personal stories, helpful tips and questions. And, when they do ask questions, MD Anderson's Facebook and Twitter followers can count on an answer — or several — from others who have been there, as well as the institution's social media team. But perhaps most important, they can count on reminders that they're not alone.

Want to be part of MD Anderson's online community? Join the conversation:



Facebook: MDAnderson



Twitter: @MDAndersonNews



Google+: MDAnderson



YouTube: MDAndersonorg



Pinterest: MDAnderson CC



Cancerwise: [www.cancerwise.org](http://www.cancerwise.org)





## MEXICO AND TEXAS JOIN FORCES TO REDUCE TOBACCO USE

By Katrina Burton

MD Anderson, the National Institute of Cancer of the United Mexican States and the Commission of National Institutes and High Specialty Hospitals signed an agreement in Mexico City in November 2012 to develop prevention and control programs to reduce tobacco use in the United States and Mexico, with a focus on Mexican and Mexican-American youth.

The Mexico and Texas Tobacco Control Initiative's intent is to:

- contribute to legislative and policy initiatives and
- collaborate on clinical and community services and educational programs that can be implemented in neighborhoods, educational institutions, workplaces and public establishments.

The agreement is a commitment from the institutions to create a comprehensive evidence-based smoking and tobacco-cessation campaign together, targeting the Mexican population.

MD Anderson President Ronald DePinho, M.D., says the collaboration is the first flagship project from the Cancer Prevention and Control Platform of MD Anderson's Moon Shots Program and focused on converting academic knowledge into effective anti-smoking strategies for the population in Mexico and across Texas.

The unprecedented Moon Shots Program is an aggressive and milestone-driven effort initially targeting eight cancers with an end goal of dramatically accelerating the reduction of all cancer deaths. The platforms provide infrastructure, technologies or processes that will support all of the moon shots. Cancer control in the population is a major emphasis for the program.

"This agreement will advance tobacco prevention and cessation efforts drawing on the experience and expertise of both partners, while providing new opportunities to develop more progressive programs, services, policies and initiatives for both countries," DePinho says. "Although our initial approach is to start with Texas and Mexico, the overall goal is to develop a model that will scale for the United States and other Spanish-speaking countries around the world."

## IS YOUR NEIGHBOR A HEALTH BENEFIT OR HEALTH RISK?

**Support to quit smoking might be right next door**

By Katrina Burton

Living in a safe place with a stellar school district and easy access to work are not the only factors to consider when choosing a neighborhood. According to a study led by Lorraine Reitzel, Ph.D., assistant professor in MD Anderson's Department of Health Disparities Research, stronger bonds with neighbors led to more successful outcomes among African-American smokers trying to quit.

Published in the *Annals of Behavioral Medicine*, the study followed 397 black smokers attempting to quit to determine if social cohesion — the trust and connectedness between neighbors — was linked to smoking abstinence through psychosocial factors. Results indicated that stronger bonds with neighbors had beneficial effects on social support, emotions and stress, which increased the likelihood of smoking cessation.

"More than 45,000 African-Americans die in the United States from smoking-related cancers annually," Reitzel says. "It's important for us to examine these types of relationships to develop interventions that will help smokers successfully quit."

By Sandi Stromberg

According to Angelo Rizzo, cancer treatment should be about adding life to one's days, as well as adding days to one's life.

Eddy Davis agrees.



Eddy Davis,  
golf professional



Angelo Rizzo, oncology physical therapist





**A**lthough the two have never met — Rizzo lives in Atlanta and Davis in Austin, Texas — they both attribute their health to appropriate exercise during and after treatment.

Rizzo had already transitioned his physical therapy business from its emphasis on orthopedic and sports injuries to working with cancer patients when he was diagnosed with chronic myeloid leukemia in 1999.

“I realized during my work with the National Osteoporosis Foundation that many cancer patients develop osteoporosis from chemotherapy and radiation,” Rizzo says.

“No one was addressing this or other treatment side effects that physical therapists know how to deal with, such as severe fatigue, numbness, lymphedema, weakness, difficulty sleeping, depression, anxiety and more,” he says. “Many symptoms can be effectively managed and treated with proper exercise, oncology physical therapy intervention and guidance in making needed lifestyle changes.”

### To practice what you preach

It wasn't until the third month of Rizzo's own treatment — his first clinical trial at MD Anderson under the care of Hagop Kantarjian, M.D., professor and chair of the Department of Leukemia — that his extreme fatigue finally got his attention and made him realize he wasn't exercising at all.

“I wasn't practicing what I preach,” he says. “While we were waiting to find a donor for a bone marrow transplant, I was on a triple chemotherapy regimen that was debilitating. I continued to work and run my practice, but a two-hour work day was a good day for me. Fortunately, a new clinical trial offered a more promising drug that had just come out — Gleevec. Within six months, I went from partial remission to complete remission, and my quality of life escalated,” he says.

As a 14-year cancer survivor, Rizzo empathizes with his patients when they say they don't want to do anything. It took him a while, but when he started the exercise program, he realized its impact on his quality of life.

“I was determined that if I got through this treatment, I needed to educate the medical community and other survivors,” he says. “It was the true start of my oncology rehab mission.”

### Golf professional on the rebounder

Eddy Davis calls himself the “resident artist” at the Jimmy Clay-Roy Kizer Municipal Golf Courses in Austin.

Originally diagnosed with non-Hodgkin B-cell lymphoma in 2003, the golf pro came to MD Anderson in June 2009, having exhausted his treatment options in Austin. About the same time, he got the shingles. That's when the rebounder came into his life.

“I was too consumed with working and paying bills,” he says. “My wife, Aimee, was the proactive one. She found a soft-bounce rebounder [jumping mat] online. I looked at it, read about it and decided it made perfect sense.”

Davis bounced through the pain of shingles, and the rebounder accompanied him to MD Anderson and through high-dose chemotherapy.

“But the chemotherapy was wearing me out,” he says. “You come to the point when you don't even have the energy to walk around the neighborhood. So I made myself get off the couch and use the rebounder two minutes every hour to move my lymphatic system.”

When the chemotherapy failed him in 2010, he was told a stem cell transplant was his only chance of survival. Under the care of Borje Andersson, M.D., professor in MD Anderson's Department of Stem Cell Transplantation and Cellular Therapy, he prepared for an autologous (using his own blood cells) transplant.

“I stayed on the rebounder through the entire stem cell process,” he says. “I'd be bouncing when the nurses came in and they'd say, ‘What're you doing? Are you approved to do that?’”

He assured them that he wasn't going to do any back flips, and he was quick to explain that the soft-bounce equipment would not cause stress in his joints or knee problems.

“This was the one constant when I went through treatments,” he says. “I could see that if I had the rebounder with me, I could stay in relatively good shape. All my numbers stayed good. And after the transplant, when I went into isolation — even though I was throwing up and losing my hair — I always got on the rebounder. I would sometimes crawl onto the thing when I couldn't walk, but that was enough for me.”

### Oncology rehabilitation

Rizzo says that, while few practices focus specifically on using physical therapy to combat the symptoms of cancer treatment, the need for this service is becoming increasingly recognized among physicians and patients. He recommends that cancer survivors be more proactive, asking their doctors to refer them to oncology physical therapists at the earliest sign of side effects, when they can be more easily managed or eliminated.

Today, 65% of referrals to his Atlanta business, Therapeutic Solutions, are oncology-based, from breast cancer surgeons, as well as medical and radiation oncologists.

“Physical therapy helps heal the mind, body and soul at the functional level,” he says. “My patients see the benefits of having trained professionals coach them through every step of their recovery as they work to restore normalcy to the many roles they play in their lives.”

## The Volunteer Endowment for Patient Support



“It was very comforting, like being wrapped in a warm hug,” says one patient of the warmed blanket she received while waiting for a procedure at MD Anderson.

That patient owes her thanks not only to this institution, but also to the Volunteer Endowment for Patient Support (VEPS), which is a program of the Department of Volunteer Services.

Established in 1991 by a handful of volunteers, the endowment was created to provide a perpetual source of funding for important patient-oriented programs not ordinarily covered through traditional sources.

Some of these are small grants addressing basic services and amenities; others are larger and more complex. All provide hope and raise the quality of a patient's experience.

It was the promise of providing for these needs in perpetuity that captured the founding volunteers' imaginations, a promise that proved to be a wise vision. VEPS-supported programs have helped make MD Anderson a place known for providing support with the associated problems that confront cancer patients, as well as for going beyond the basics of medical treatment.

### Multiple projects benefit

To date, VEPS has disbursed \$2,168,152 in accrued interest to support a wide variety of needs and requests — from a booklet for caregivers to aquariums found in many waiting rooms to those warm blankets.

Departments throughout the cancer center apply for funds to support programs or projects that will enhance their patients' care. Through fundraising efforts and an annual luncheon, the endowment corpus has reached \$2,745,898.

The countless benefits VEPS offers patients are measured by less tangible means. A child's laughter, a warm handshake, a grateful smile and a heartfelt hug in response to a program, service or even that warm blanket reflect the true value of VEPS and the reason it was established.

*A donation to the endowment is an investment in the future of volunteerism and support programs, an investment with a direct effect on patients' quality of life. For more information about VEPS, call 713-792-7180 or visit the website at [www.mdanderson.org/how-you-can-help/volunteer](http://www.mdanderson.org/how-you-can-help/volunteer).*



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In addition to MD Anderson's main campus in the Texas Medical Center in Houston, four regional care centers in the greater Houston area (Bay Area, Katy, Sugar Land, The Woodlands) and two research campuses in Bastrop County, Texas, the institution has developed a network of national and international locations.

**MD ANDERSON CANCER NETWORK™**

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

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- MD Anderson Cancer Center Orlando (Orlando, Fla.)

**CERTIFIED MEMBERS**

- Nine health systems and hospitals in eight states

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- MD Anderson Radiation Treatment Center at American Hospital (Istanbul, Turkey)
- MD Anderson Radiation Treatment Center at Presbyterian Kaseman Hospital (Albuquerque, N.M.)

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