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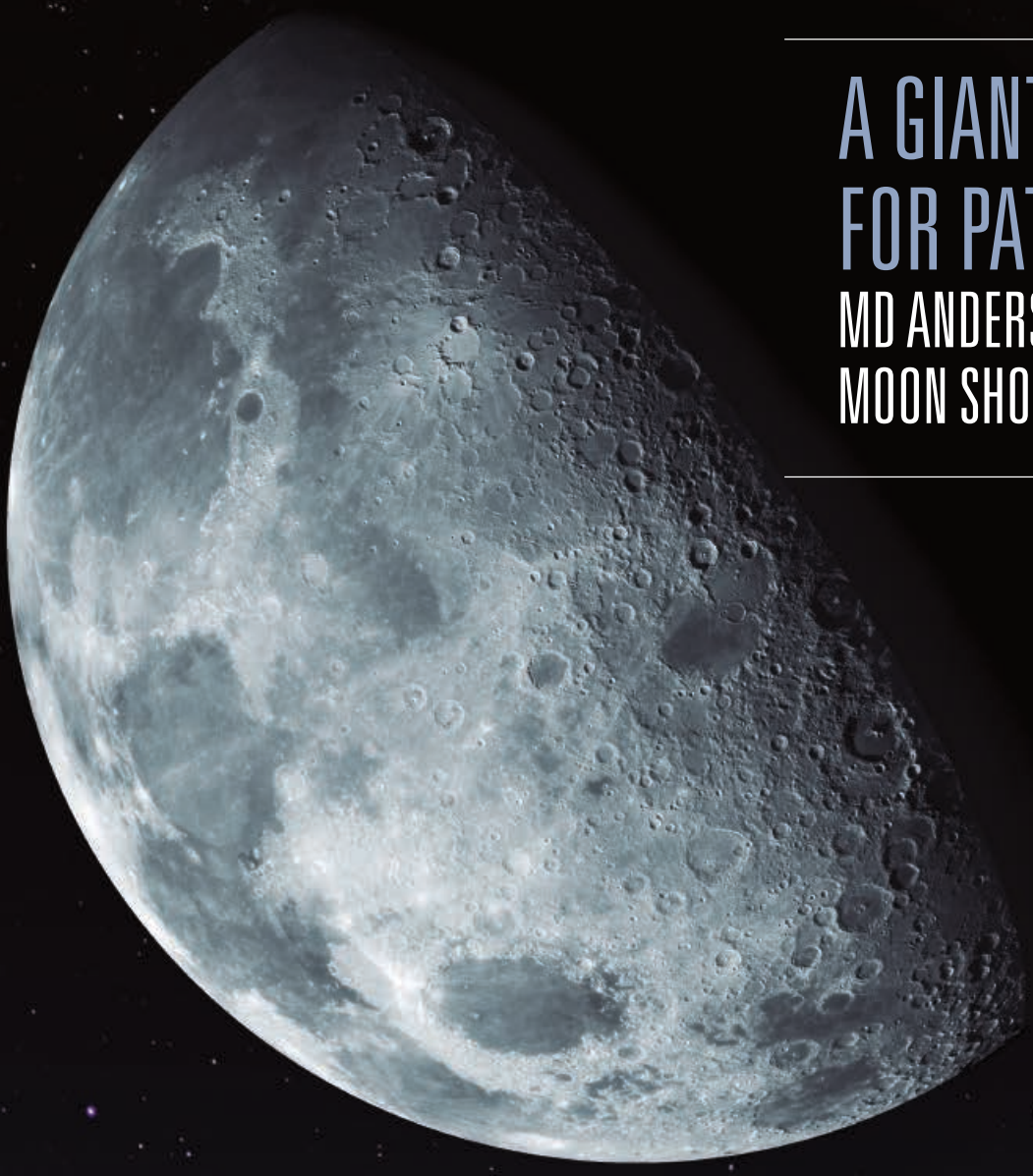

A GIANT LEAP FOR PATIENTS

MD ANDERSON'S MOON SHOTS PROGRAM

THE UNIVERSITY OF TEXAS
MD Anderson 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: To prolong and improve patients' lives, MD Anderson has launched several "moon shots," while charting a trajectory for curing cancer.

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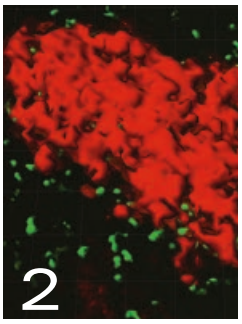


Departments

Features

A giant leap for patients

MD Anderson's Moon Shots Program

By Scott Merville

"By applying today's knowledge and game-changing technologies, MD Anderson's Moon Shots Program will dramatically accelerate improved survival in the next five to 10 years, beyond the 1% to 2% annual declines in cancer mortality that we've seen in the past decade. The expertise and team science behind our selected cancer moon shots also will lay the foundation for ultimate cure of these diseases in the years to follow."

— Ronald DePinho, M.D., president of MD Anderson

PHOTO ILLUSTRATION

Fifty years after President John F. Kennedy told the world "we choose to go to the moon" during a speech in Houston, MD Anderson has launched several "moon shots" to prolong and improve patients' lives while charting a trajectory for curing cancers.

"Progress against cancer has come in small steps, but the time is ripe to lengthen our strides, pick up the pace and gather ourselves to make a giant leap for patients with the type of all-out team effort that fulfilled President Kennedy's promise only seven years after it was made," says Ronald DePinho, M.D., president of MD Anderson.

Drawing further parallels, DePinho adds "the cancer moon shot initiative is goal-oriented, milestone-driven. Kennedy did not say that *we will study how to go to the moon*; he inspired us to marshal our talents and our will to achieve a specific goal. It is this perspective that defines our initiative. This effort goes beyond discovery, the traditional strength of academia. It's about taking responsibility to convert knowledge into clinical impact — into treatments for patients."

A combination of recent conceptual and technical advances in cancer, as well as MD Anderson's vast capabilities and resources, inspired DePinho to propose the program, unprecedented in its scope and ambition for a single institution.

"Our moon shots seize the opportunity provided by transforming developments in technology and scientific knowledge," DePinho says. "They're comprehensive, covering the full care continuum of cancer prevention, early detection, treatment and survivorship.

"They're integrative, marshalling expertise and technologies from across the institution to focus, at first, on eight cancers poised for accelerated progress. They also are action-oriented by creating professional platforms charged with the task of ensuring the systematic translation of knowledge into new policies, educational material, drugs and diagnostics capable of saving lives."

Criteria: comprehensiveness and accountability

The original moon shot proposals targeting 13 major cancer types and involving large MD Anderson teams, sometimes numbering in the hundreds, were reviewed by a panel of internal and external experts. Frank McCormick, Ph.D., director of the Helen Diller Family Comprehensive Cancer Center at the University of California, San Francisco and president of the American Association for Cancer Research, chaired the review committee.

Inaugural moon shots were chosen to address eight cancers: melanoma, lung, prostate, breast/ovarian, chronic lymphocytic leukemia and myelodysplastic syndrome/acute myeloid leukemia. This in-depth planning effort identified areas where strategic investment could elevate the remaining cancers to full moon shot status in the future and provide opportunities for some projects to move forward.

To be selected, moon shots had to have prospects for both short-term improvement and major long-term impact. They also had to set specific goals and metrics — such as reducing mortality by 30% within this decade — to gauge performance and ensure accountability. Moon shot organizers were told to build their plans initially by ignoring constraints, such as funding, organizational barriers or industry priorities. Program leaders found this approach to be liberating.

"Traditionally, when people think about research projects, they think about 'What can I do?' The moon shot approach was to think about 'What needs to be done?'" says Michael Davies, M.D., Ph.D., assistant professor in the Department of Melanoma Medical Oncology and co-leader of the melanoma moon shot with Jeffrey Gershenwald, M.D., professor in the Department of Surgical Oncology.

Integration a key word

One result was collaboration among departments whose paths don't normally cross. "What's different about the moon shots is the idea of tackling the disease across the full continuum of cancer care. I don't think that's really been done before in such a comprehensive and goal-oriented way," Davies says.

The results are evident in the melanoma moon shot's aims. "Our goal is to reduce melanoma diagnoses, catch it at an earlier stage when the disease is largely curable and increase survival among those with the most advanced disease," Gershenwald says.

Moon shot and institutional leaders will set priorities for funding projects, articulate clear milestones, and develop operating and business plans for each moon shot. Implementation will begin in February 2013, focusing initially on the establishment of enabling platforms (see graphic on next page) and launch of high-priority projects. The moon shot initiative will strive to hit its full stride by mid-2013.

The billions of dollars needed for this effort during this decade will be "seeded" initially through philanthropic funds and institutional earnings, followed by grants from foundations, government and industry. In the later years, these efforts are anticipated to create new drugs and diagnostics, providing opportunities for licensing revenues that will be plowed back into the moon shot mission to continue to increase momentum.

According to DePinho, MD Anderson would not be able to think so boldly and ambitiously were it not for its tremendous framework — the fact that the institution:

- sees about 110,000 patients annually,
- has about 10,000 patients on clinical trials,
- completes thousands of tumor profiles,
- has innovative experimental programs, legions of basic scientists working on fundamental mechanisms and accomplished computational scientists,
- has a multidisciplinary team of hundreds who can focus in a comprehensive and integrative way on each cancer, and
- maintains a global academic network involving many major cancer centers around the world.

Moon shots build upon MD Anderson's collaborative network so that advances will scale to all parts of the globe. This approach is dramatically illustrated in the chronic lymphocytic leukemia moon shot, which has scientific and clinical collaborators from nine U.S. and seven European institutions.

Just one novel project and sample metric — of the many — for these shots are featured here (pages 6-7), as examples of this new approach to science-driven patient care. Each plan has multiple projects, metrics and milestones. These projects will start when funding and resources have been provided.

The moon shot approach, the platforms (shown on the right) developed and their progress against targeted cancers will spill over into the understanding and treatment of other cancers. Ultimately, the goal is for all cancers to become moon shots.

"Breaking out of the traditional, academic research and discovery silos into the Moon Shots Program has been very important," says Guillermo Garcia-Manero, M.D., professor in the Department of Leukemia.

"Recent discoveries identified the BRAF mutation, prominent in melanoma, as present in leukemia and a Nature paper found mutations common to leukemia in breast cancer. This integrated approach has fostered cross-disciplinary communication so we can use the lessons learned from other cancers. This program enables and rewards that kind of collaboration."

Novel platforms

Moon Shots Program results will be generated by leveraging cross-cutting, industry-like platforms — innovative infrastructure, which brings together the best attributes of academia and industry.

The Moon Shots

Lung

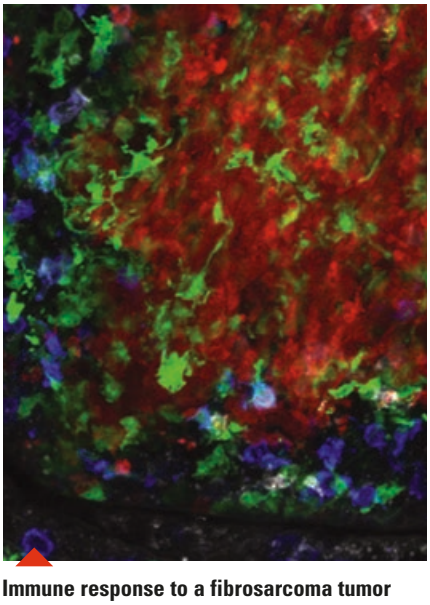
CO-LEADERS:

JOHN HEYMACH, M.D., PH.D., associate professor in the Department of Thoracic/ Head and Neck Medical Oncology

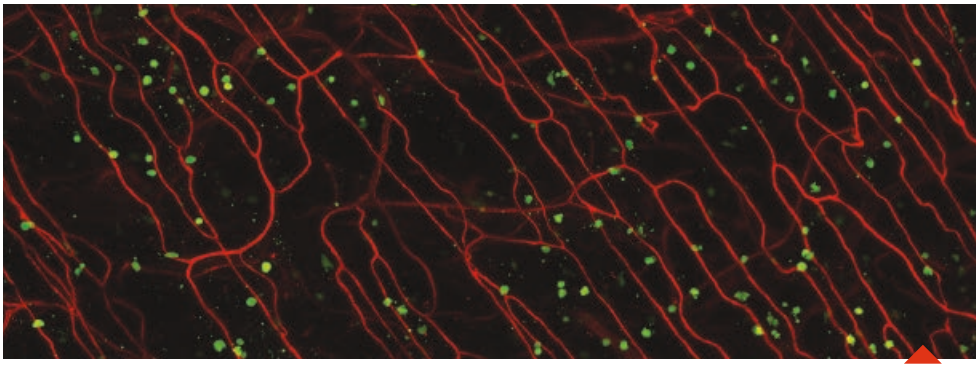
STEPHEN SWISHER, M.D., chair and professor in the Department of Thoracic and Cardiovascular Surgery

NOVEL PROJECTS: Integrate new blood test and novel imaging methods to improve the early detection of lung cancer. Complete real-time profiling of all known DNA mutations in 1,000 lung cancer patients.

SAMPLE METRICS: Improve specificity of early lung cancer detection by 20% in three years. Develop personalized clinical trials tailored to all of the major molecular subtypes of lung cancer.



Immune response to a fibrosarcoma tumor (blue) in the lung



Blood vessels in the skin

Melanoma

CO-LEADERS:

JEFFREY GERSHENWALD, M.D., professor in the Department of Surgical Oncology

MICHAEL DAVIES, M.D., PH.D., assistant professor in the Department of Melanoma Medical Oncology

NOVEL PROJECT: Building upon recent advances, comprehensively profile — both molecularly and immunologically — metastatic melanoma patients to develop and select optimized, personalized therapeutic approaches, unleashing the power of the immune system.

SAMPLE METRIC: Exploit molecular insights to develop markers that will guide therapy selection for all melanoma patients. Develop personalized therapeutic combinations that will markedly increase the long-term survival rate for patients with metastatic melanoma.

Myelodysplastic syndrome and acute myeloid leukemia

CO-LEADERS:

GUILLERMO GARCIA-MANERO, M.D., professor in the Department of Leukemia

HAGOP KANTARJIAN, M.D., chair and professor in the Department of Leukemia

NOVEL PROJECT: Harness the depth and breadth of targeted therapy programs across many drug classes that target cancer-signaling aberrations, activate immune system responses and enhance anti-cancer stem cell therapies — all in powerful combinations informed by full sequencing of every MDS and AML patient before and after start of treatment.

SAMPLE METRIC: Identify the causes of resistance to treatment and translate that knowledge into significant cure rates for older patients with MDS and AML within five years.

Chronic lymphocytic leukemia

CO-LEADERS:

MICHAEL KEATING, M.B., B.S., professor in the Department of Leukemia

WILLIAM PLUNKETT, PH.D., professor in the Department of Experimental Therapeutics

NOVEL PROJECT: Apply new breakthrough treatments based on specific targeted inhibitors of CLL pathways without damaging DNA or the immune system.

SAMPLE METRIC: Replace standard chemotherapy regimens for all patients within one year. Longer-term metric: Double the cure rate of CLL, halve the rate of secondary cancers.

Prostate

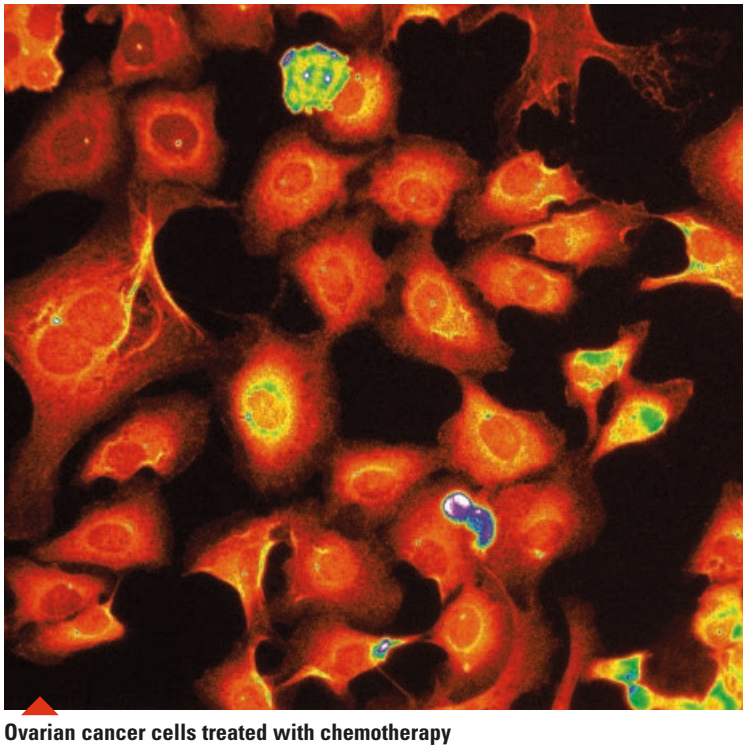
CO-LEADERS:

CHRISTOPHER LOGOTHETIS, M.D., chair and professor in the Department of Genitourinary Medical Oncology

TIMOTHY THOMPSON, PH.D., professor in the Department of Genitourinary Oncology

NOVEL PROJECT: Establish metabolites and metabolic signatures associated with androgen-responsive prostate cancer and castrate-resistant prostate cancer in human tissue samples for the development of clinical prognostic, predictive and/or monitoring biomarkers.

SAMPLE METRIC: Develop metabolomics-based biomarkers to monitor response to androgen-deprivation therapy and the transition to castrate-resistant prostate cancer in individual patients, optimizing the use of newly developed therapeutic agents to extend survival of patients with advanced prostate cancer.



Ovarian cancer cells treated with chemotherapy

Breast and ovarian

CO-LEADERS:

GORDON MILLS, M.D., PH.D., chair and professor in the Department of Systems Biology

MIEN-CHIE HUNG, PH.D., chair and professor in the Department of Molecular and Cellular Oncology

ANIL SOOD, M.D., professor in the Department of Gynecologic Oncology and Reproductive Medicine and the Department of Cancer Biology

NOVEL PROJECT: Transform and individualize therapy for the most dangerous forms of breast and ovarian cancers through discovery and bypass of tumor adaptation and resistance to treatment.

SAMPLE METRIC: Develop a universal genetic/biomarker test for marker-guided therapy for triple-negative breast cancer and high-grade serous ovarian cancer patients within five years.

FRONTLINE

Anthony Lucci, M.D.

PREDICTIVE VALUE OF CIRCULATING TUMOR CELLS

Circulating tumor cells — established in metastatic breast cancer for predicting a woman's chance of recurrence and survival — have now shown similar value in early-stage breast cancer. As one of the first studies and the largest to show this new predictive value, its findings may help determine which earlier stage breast cancer patients need additional treatment and intervention in the adjuvant setting.

LEAD AUTHOR AND PRINCIPAL INVESTIGATOR: ANTHONY LUCCI, M.D., PROFESSOR IN MD ANDERSON'S DEPARTMENT OF SURGICAL ONCOLOGY

REPORTED IN THE JULY 2012 EDITION OF LANCET ONCOLOGY.

See MD Anderson's online Newsroom (www.mdanderson.org/newsroom) and CancerFrontline (www2.mdanderson.org/cancerfrontline) for more information on these and other basic, translational and clinical research findings at MD Anderson.

CLINICAL TOOL INDICATES RADIATION BENEFIT

A new nomogram, or clinical model, demonstrates accuracy in predicting the benefit of radiation therapy in older women — ages 66-79 — with breast cancer. The study may offer clinical guidance to physicians so they can help determine which patients in this age group will likely benefit from radiation therapy. As the U.S. population ages, it is critical to establish indications for radiation therapy. A 57% increase in breast cancer diagnoses in older women is projected during the next two decades.

LEAD AUTHOR: BENJAMIN SMITH, M.D., ASSISTANT PROFESSOR IN MD ANDERSON'S DEPARTMENT OF RADIATION ONCOLOGY

REPORTED IN THE AUG. 10, 2012, EDITION OF THE JOURNAL OF CLINICAL ONCOLOGY.

GENETIC CHANGE CAUSED BY SUN DAMAGE

It's been a burning question in melanoma research: Tumor cells are full of ultraviolet (UV)-induced genetic damage caused by sunlight exposure, but which mutations drive this cancer? The sheer abundance of these passenger mutations has obscured the search for genetic driver mutations that actually matter in melanoma development and progression. Researchers, however, have now identified six genes with driving mutations in melanoma, three of which have recurrent "hotspot" mutations as a result of damage inflicted by UV light.

CO-SENIOR AUTHOR: LYNDA CHIN, M.D., PROFESSOR AND CHAIR OF MD ANDERSON'S DEPARTMENT OF GENOMIC MEDICINE; IN COLLABORATION WITH SCIENTISTS AT THE BROAD INSTITUTE OF MIT AND HARVARD, AND THE DANA-FARBER CANCER INSTITUTE

REPORTED IN THE JULY 20, 2012, ISSUE OF THE JOURNAL CELL.

MARKER IDENTIFIES, ATTACKS STEM CELLS

Breast cancer stem cells wear a new nametag on the cell surface called GD2 ganglioside (a group of glycosphingolipids found principally on the surface of some nerve cells). Presence of GD2 serves part as nametag and part bull's-eye, identifying them as potent tumor-generating cells and flagging their vulnerability to the drug triptolide. This drug stymied cancer growth in cell line experiments and also resulted in smaller tumors and prolonged survival in mouse models. Drug development for clinical trials is close.

CO-SENIOR AUTHORS: MICHAEL ANDREEFF, M.D., PH.D., PROFESSOR IN MD ANDERSON'S DEPARTMENTS OF LEUKEMIA AND STEM CELL TRANSPLANTATION AND CELLULAR THERAPY, AND SENDURAI MANI, PH.D., ASSISTANT PROFESSOR IN MD ANDERSON'S DEPARTMENT OF MOLECULAR PATHOLOGY AND CO-DIRECTOR OF THE METASTASIS RESEARCH CENTER

REPORTED IN THE JUNE 1, 2012, EDITION OF THE JOURNAL OF CLINICAL INVESTIGATION.

SPECIALIZED PROTEIN ACTIVATES MAJOR PLAYER IN CANCER

Researchers have found a chain of events that promotes Herceptin resistance in breast cancer and activation of glucose metabolism (glycolysis), which cancer cells primarily use to fuel their growth and survive. This discovery is potentially important for understanding and addressing Herceptin resistance in breast cancer. The effect on glucose metabolism also could have implications for other types of solid tumor cancers, including prostate, because they rely so heavily on glycolysis.

SENIOR AUTHOR: HUI-KUAN LIN, PH.D., ASSOCIATE PROFESSOR IN MD ANDERSON'S DEPARTMENT OF MOLECULAR AND CELLULAR ONCOLOGY

REPORTED IN THE MAY 25, 2012, ISSUE OF CELL.

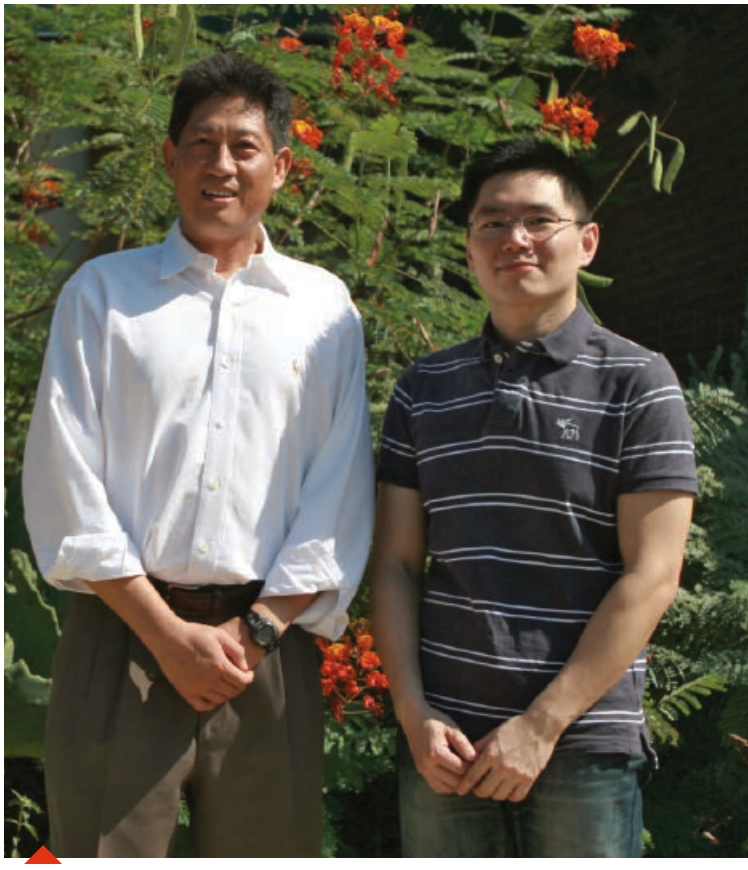
THERAPIES FOR RHEUMATOID ARTHRITIS DO NOT INCREASE CANCER RISK

Biologic therapies developed for patients with rheumatoid arthritis during the last decade have caused concern about possible links to cancer. However, results from the largest systematic review of these drugs — including 29,423 adult patients from 63 randomized controlled trials — showed no statistically significant increased risk of any type of cancer in patients treated with these biologic response modifiers (BRMs), compared to other medications.

Rheumatoid arthritis affects approximately 1% of the population and can lead to significant morbidity, joint deformity and impaired quality of life. Researchers compared the safety of all nine BRMs currently approved by the U.S. Food and Drug Administration against a placebo or traditional disease-modifying, anti-rheumatic drug. They worked with the Cochrane Collaboration, an independent, non-profit organization that houses the largest collection of records of randomized, controlled trials in the world.

SENIOR AUTHOR: MARIA SUAREZ-ALMAZOR, M.D., PROFESSOR IN THE DEPARTMENT OF GENERAL INTERNAL MEDICINE

REPORTED IN THE SEPT. 5, 2012, ISSUE OF THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.



Xin Liu (right), senior graduate student, was co-contributing first author on a prostate study with senior author Dean Tang, Ph.D., professor in the Department of Molecular Carcinogenesis, at MD Anderson's Virginia Harris Cockrell Cancer Research Center in Smithville, Texas.

CANCER STEM CELLS FOUND AMONG LOW-PSA CELLS

Prostate cancer cells that defy treatment and display heightened tumor-generating capacity can be identified by levels of prostate specific antigen (PSA) expressed in the tumor cells. Using a new technique, researchers were able, for the first time, to separate low-PSA and high-PSA prostate cancer cells, leading to the discovery that a low-PSA population of cancer stem cells appears to be an important source of castration-resistant prostate cancer.

Low-PSA cells were found to be both self-renewing and capable of differentiating into other prostate cancer cell types upon division. The findings demonstrate the need to develop new therapeutics that will target low-PSA prostate cancer cells that can be combined with hormone therapy to wipe out cancer cells and prevent recurrence.

SENIOR AUTHOR: DEAN TANG, PH.D., PROFESSOR IN MD ANDERSON'S DEPARTMENT OF MOLECULAR CARCINOGENESIS

REPORTED IN THE MAY 3, 2012, EDITION OF CELL STEM CELL.

SCOTT MERVILLE, JULIE PENNE, LAURA SUSSMAN AND SANDI STROMBERG CONTRIBUTED TO FRONTLINE

RESTORING THE BODY, RENEWING THE SPIRIT

Reconstructive plastic surgeons ready patients to face life after cancer

By Julie Penne

Microsurgery loupes are a common tool in the operating room for David Chang, M.D., and his colleagues.

They are elegant artisans in the operating room.

Using sophisticated operating microscopes and instruments, MD Anderson's reconstructive plastic surgeons carve bones into new structures, reattach thread-like blood vessels and transplant harvested tissue as new scaffolds for cratered parts of the body.

Back away from the complex tools, and their work reveals a new jaw, esophagus, breast, nerve graft, skin cover, eye socket or other structures to restore form and function for a patient.

Step even farther away from the scene and observe patients' new self-assurance and outlook because of the ability to speak, swallow, attend school, return to work or continue treatment.

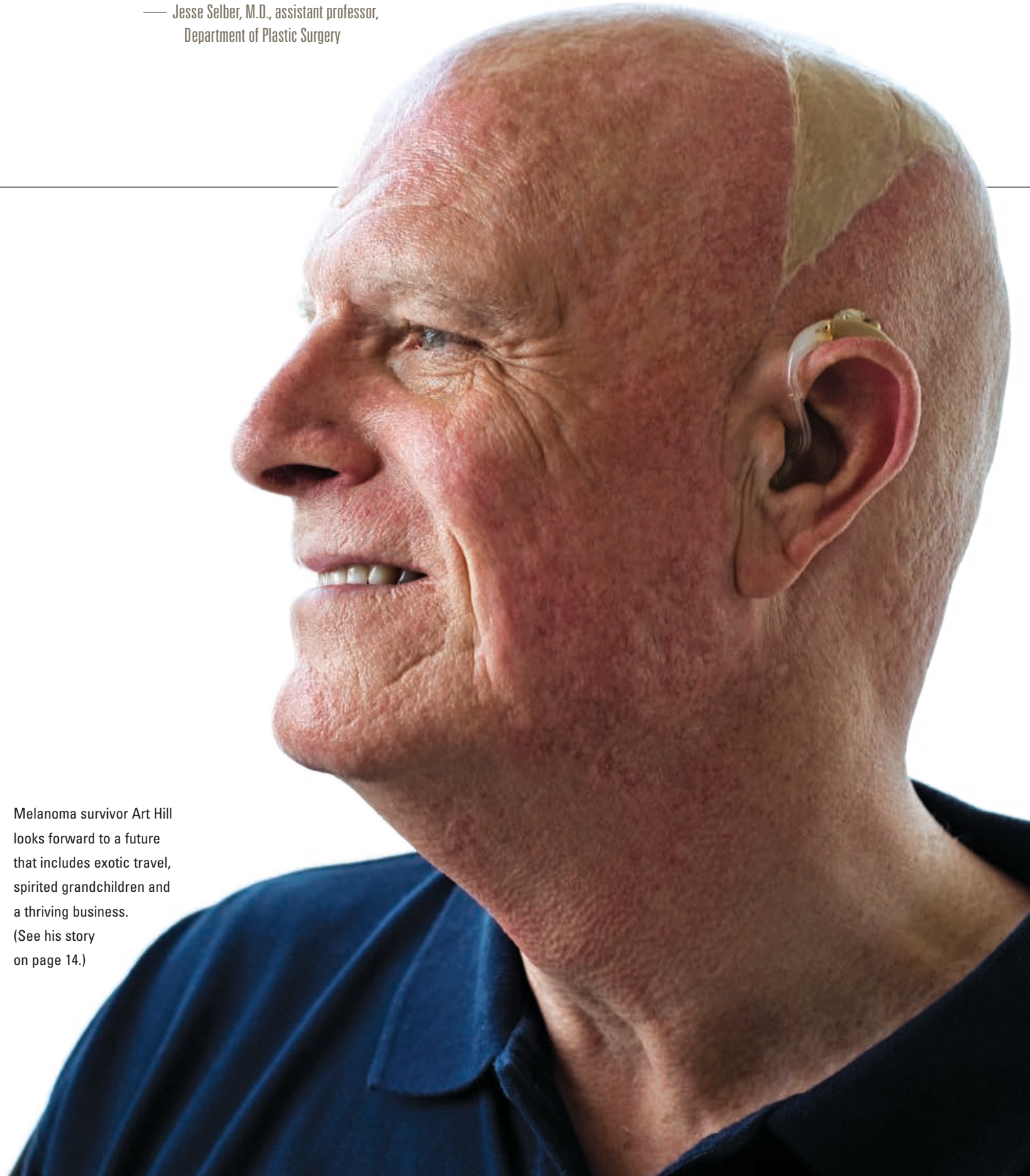
Since the introduction of modern microsurgery in the 1970s — that enabled blood vessels and tissue to be transferred from one part of the body to another — the Department of Plastic Surgery has become a global hub for innovation, multidisciplinary collaboration, research and training.

What distinguishes the group and its practice from the plastic surgery norm is the commitment to restoring the patient's health, function and form — goals that go well beyond a cosmetic outcome.

"Any procedure we do will have a cosmetic element, but reconstructive plastic surgery at MD Anderson contributes to patients starting new lives after their cancer," says Geoffrey Robb, M.D., professor and chair of the Department of Plastic Surgery. "We're driven to constantly improve our techniques, skills and technologies but we also must be attuned to the biology and treatment of cancer so we can work alongside our colleagues, complement their work and improve outcomes."

"MD Anderson is a place where people can write the history of reconstructive plastic surgery. We want to write the history of our specialty, not read about it."

— Jesse Selber, M.D., assistant professor, Department of Plastic Surgery



Melanoma survivor Art Hill looks forward to a future that includes exotic travel, spirited grandchildren and a thriving business. (See his story on page 14.)

Thomas Buchholz, M.D. (left), professor and head of the Division of Radiation Oncology, and Stephen Kronowitz, M.D. (center), work together to fill Kristin Fenetz' expanders as she prepares for radiation treatment.

Research changing and influencing patient care

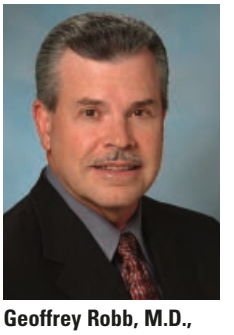
The number of MD Anderson reconstructive plastic surgeons has grown from 11 in 2002 to 19 in 2011. In that same period, total cases have soared from 1,505 to 4,260. Breast reconstruction is the most common procedure, with head and neck reconstruction second.

The team's growth and expertise have fueled research, stoked the internationally acclaimed fellowship program and encouraged greater collaboration with a wide range of other disciplines.

In the coming year, reconstructive plastic surgery will be offered at MD Anderson's regional care centers.

Through the decades, these surgeons have contributed significantly to MD Anderson's body of research that has changed or influenced the standard of care.

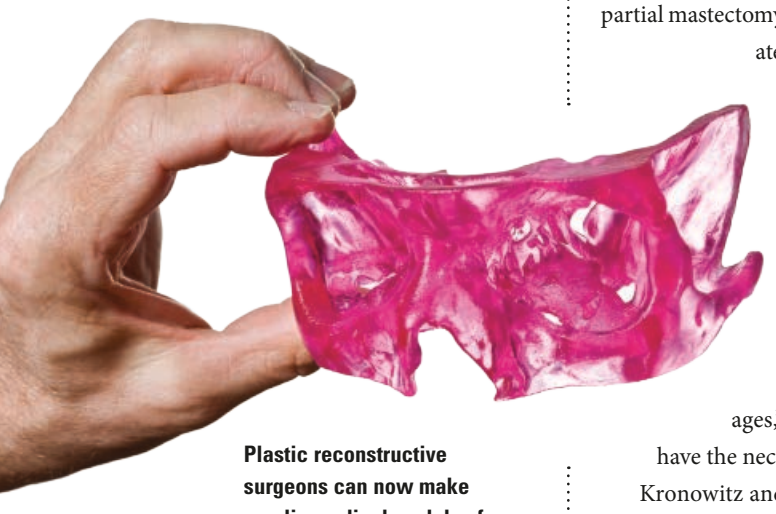
Discoveries include limb-sparing surgery for bone tumors and sarcomas, a new flap strategy for pharyngeal reconstruction and clinical guidelines for determining the best approach for reconstruction on patients who have had a total or partial mastectomy and who may need radiation.



Geoffrey Robb, M.D., professor and chair, Department of Plastic Surgery

Steven Kronowitz, M.D., professor in the Department of Plastic Surgery, has led a number of the groundbreaking studies that enable more women to wake up from their mastectomies or lumpectomies with a breast.

Today, with skin-sparing breast surgery and the use of tissue expanders, breast implants are positioned at the time of a full or partial mastectomy and filled when the time is clinically appropriate, even if the patient is scheduled for radiation. According to Kronowitz, it now is common for radiation oncologists to observe or assist with filling or deflating the expanders so the precise size will correspond with the treatment plans.



Plastic reconstructive surgeons can now make acrylic medical models of a patient's facial skeleton.

Before the research, as late as the 1970s, women would have their breast or tumor removed but often were unsure if they would need radiation later. Reconstruction often was delayed for years, so it would not hinder possible follow-up treatment.

"With this new standard of care, women don't have to go back to the dark ages," Kronowitz says. "They can wake up from surgery with a breast and still have the necessary follow-up care without any difference in survival."

Kronowitz and his colleagues also are exploring new reconstruction techniques after a partial mastectomy. Though lumpectomy is common, more research is needed on maximizing the remaining tissue for rebuilding the breast.

3D aids precision

Another area of research is in jaw replacement and reconstruction in which Matthew Hanasono, M.D., and Roman Skoracki, M.D., both associate professors in the Department of Plastic Surgery, are collaborating.

The two have helped develop software that uses MRI or CT scans to model the patient's jawbone and surrounding structures in 3D, providing precise measurements for surgeons in the operating room.

Using the software in their planning, the surgeons employ the model to shape the patient's fibula (a leg bone) into a new jaw. The meticulous measurements taken in advance can reduce time under anesthesia and result in a jaw that improves the patient's appearance and ability to chew and speak.

MD Anderson performs more jaw reconstructions than any other center in the nation, but, for now, the experimental modeling is used only in the most complex cases.

Hanasono, like Robb, trained first as a head and neck surgeon. Along with his colleagues, he now operates on patients who face severe disfigurement and function loss.

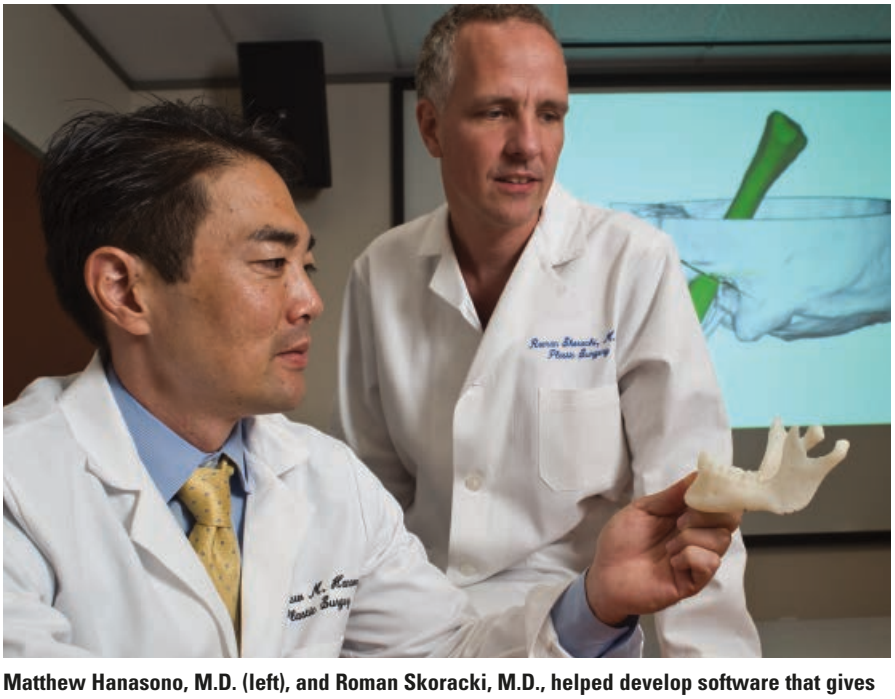
"I wanted to do the most challenging reconstructive surgery and that was in head and neck," says Hanasono, who, with Skoracki, leads the largest fellowship training program in reconstructive plastic surgery in the world. "We see patients at their best and worst, but the motivation they show is inspirational. We don't count out anyone."

A change in patient care

Other reconstructive plastic surgeons and their teams also have research under way on lymphedema and the use of robotics (see stories on pages 14-15). They are also exploring new approaches for treating skin conditions, restoring erectile function through nerve reconstruction and growing tissue in the laboratory.

Randal Weber, M.D., professor and chair of the Department of Head and Neck Surgery, and Mark Chambers, D.M.D., professor in the department, say that new reconstruction techniques have changed the way they approach their patients' care.

"Knowing that the reconstructive plastic surgeons on our team have top-level expertise and tools allows my colleagues and me to access and remove tumors we may never have tried before," Weber says. "Knowing that patients can have quality of life after major head and neck surgery gives me additional flexibility, and that can mean a better outcome for a patient."



Matthew Hanasono, M.D. (left), and Roman Skoracki, M.D., helped develop software that gives plastic surgeons more precise dimensions for crafting new facial structures.

"When you prepare for a case, you have to plan for multiple scenarios in your head. If the surgeon removing the tumor runs into problems, how can they be fixed? If the cancer is more widespread than thought, what's the plan? What if the bone I want to use is not in good shape? Preparation and working closely with colleagues early on are key."

— David Chang, M.D., professor, Department of Plastic Surgery

Jesse Selber, M.D., has been researching the use of robotics for plastic surgery since 2011.

Robotics could take discipline to new heights

The last thing on 64-year-old Art Hill's mind while hiking Machu Picchu this fall is the microvascular muscle flap on his scalp.

But for Jesse Selber, M.D., assistant professor in the Department of Plastic Surgery, it's a reminder that robotics may one day improve outcomes in reconstructive plastic surgery.

Hill (see photo on page 11) was diagnosed in March 2011 with melanoma at the peak of his scalp. When surgeons went deeper and wider to remove more surrounding tissue, it was vital to cover the palm-sized area. Not only did Hill want to get back to his family and business in Boerne, Texas, but he also needed radiation treatment.

Hill is among the first patients anywhere — not just MD Anderson — to have portions of his latissmus dorsi (the large muscle under the arm that wraps around to the back) harvested robotically and transplanted microsurgically. Selber, who began offering the technique to carefully selected patients in 2011, has been at the forefront of this emerging field.

Other surgical specialties have been using robotics for some time, but only recently has reconstructive plastic surgery seen the potential, Selber says. He's been sharing his experience and research with colleagues at MD Anderson and elsewhere at every opportunity.

For Hill, electing to have robotic-assisted plastic surgery meant less scarring and greater mobility. Had Selber used the traditional method to harvest the slashes of muscle and skin, Hill would have had about a 15-inch scar under his arm, an extended recovery time and greater risk for complications. Instead, Hill has a number of small punctures under his left arm and around his rib cage. The tradeoff, at least for now, is that the tedious harvest can take longer than the traditional method.

Selber also has used the technique for breast reconstructions for about a dozen patients.

"I expect robotic microsurgery to explode in the next 20 years," he says. "We've always used our hands, but it's time to look at what technology can do to enhance what we use."

— Julie Penne

Valorie Ott's daughters — Mollie-Beth (left) and Sarah-Lindsey (right) — cheered her during extensive treatment for breast cancer and lymphedema.

Active mom back in the swim of life

As tough as the news of the stage III breast cancer was in 2006 for Valorie Ott, a busy wife and mother to three daughters, there was more in store.

After having both breasts and 30 lymph nodes removed and completing rigorous chemotherapy and radiation treatment, Ott heard another diagnosis. She'd learned about this one through extensive breast cancer research. And when she read about it, she feared it. Now, she faced it.

She had lymphedema, a permanent condition that causes the arms or legs to swell, discolor from poor circulation and become immobile and prone to infection.

Once diagnosed, Ott had aggressive daily decongestive therapy near her home in Oxford, Miss., including special massage to drain the blocked lymphatic fluid. Therapy also included wearing a 2-inch-thick wrap on her left arm from her knuckles to her shoulder. She could only remove the unwieldy sleeve one hour a day.

Ott had the extensive therapy twice a year for six weeks for three years, but, in 2010, her condition started to decline.

She read that David Chang, M.D., professor in the Department of Plastic Surgery, was doing a new procedure to relieve lymphedema symptoms. It was also about this time that Ott was talking to Melissa Crosby, M.D., associate professor in the department, about breast reconstruction. Together, the three agreed she was a good candidate to have both surgeries.

After Crosby completed the reconstruction, Chang performed six vessel bypasses on Ott.

"Dr. Chang made 'exits' where my lymph system had a traffic jam," Ott says. "He relieved the 'traffic congestion' in my arm that was debilitating for so many years."

Ott saw and felt immediate improvement with her arm's blood flow, movement and color. A week later, she saw her elbow for the first time in four years. Today, she can see the bone and muscle definition, and she's back swimming.

"I know this isn't a cure, and that I'll have to manage my lymphedema for the rest of my life, but the surgery made it manageable for me," she says.

— Julie Penne

Cooper's vision is the right kind

Ashli Cooper may have lost her eye and most of the right side of her face to a rare sarcoma when she was 5 years old, but the vision she has for her future is focused and clear.

Through each step, David Chang, M.D., professor in the Department of Plastic Surgery, has been a vital part of Cooper's survival, recovery — and life. During her 23-hour surgery, the cancer and the tangled web of blood vessels were removed, and the resulting large facial deck was reconstructed with a soft tissue free flap.

He closely observed his colleagues in neurosurgery remove the tumor that had devoured the bones and structure of her nose, cheekbones and part of her skull. Had the team not removed the tumor, Cooper's parents were told she would live about one year.

Further reconstructive surgery was in her future to complete reconstruction involving her bone structure after her facial development was concluded.

"I remember that Dr. Chang told me we would have a 'date' in about 10 years to complete the reconstruction," says Cooper, now 18. "He gave me hope, and that got me through some tough years and many tears."

Two years ago, when the time came for Cooper's reconstruction, Chang took a bone from her leg and fashioned a cheekbone and eye socket. During the six-hour surgery, he also transferred some of her own fat to fill out her face. While there will be follow-up surgeries, Cooper has opted against a prosthetic eye.

"Reconstruction has been a very big part of my cancer journey, but I like having my battle scars, too," she says. "I don't mind telling people my story because each person seems to get something different out of it."

Cooper is off to the University of North Texas this fall for her first year of college to study psychology. She plans to earn a master's degree at The University of Texas and then have a career working with children with cancer, ideally at MD Anderson.

— Julie Penne

Ashli Cooper takes her time getting ready for the prom, the final event at MD Anderson's Camp A-OK for adolescent and teen patients.

Picture This

Medical Dosimetry Program graduates radiation treatment planning partners

By David Berkowitz

As one of the major modalities used in cancer management, radiation therapy is part of the treatment plan for more than half of all cancer patients.

Partnering with radiation oncologists to design these plans are medical dosimetrists. Dosimetry is the scientific determination of amount, rate and distribution of radiation.

Medical dosimetrists use the latest developments in computer technology, along with scientific knowledge and critical-thinking skills, to help ensure the safest, most appropriate treatment for each patient.

Many of today's medical dosimetrists are graduates of the Medical Dosimetry baccalaureate program within MD Anderson's School of Health Professions — one of only two such programs in Texas and 16 in the United States.

Through intensive classroom and clinical education, students pursuing a bachelor of science degree gain skills in radiation dose calculation, treatment design and quality assurance. The degree is achieved under the supervision of educated, experienced medical dosimetrists, physicists and radiation oncologists.

Medical dosimetry students and instructors take advantage of a well-equipped classroom in the School of Health Professions:

1. Mahsa Dehghanpour, Ed.D., program director and assistant professor, holds a tablet computer that highlights cross-sectional anatomy, which is an important aspect of medical dosimetry education.

2. Brittney Wilson (center), senior health professions educator, works with senior students Megan Waddell and David Cummings on an anthropomorphic phantom. The 110-pound phantom demonstrates the radiation scattering and absorption behavior of a human body, since materials used in its construction simulate various body tissues.

3. Jamie Baker, educational coordinator and instructor, helps senior student Tiffany Dang digitize a radiograph into the computer for brachytherapy planning.

4. Amita Tailor, clinical coordinator, shows devices used in clinics to measure radiation exposure. An ion chamber connected to an electrometer measures the charge collected inside the ion chamber following irradiation.

5. Senior students Sherin Varghese (left) and Gina Nieto take a break from their studies to review the latest issue of Medical Dosimetry, one of the professional journals available in the classroom.

6. A Vac-Lok™ cushion (in blue) and thermoplastic mask help restrict patients' movement during radiation treatment.

7. Following safety guidelines, this badge worn by medical dosimetry students monitors radiation dose to them while working in clinical areas. The badges are read, and reports of their cumulative dose are communicated to them every quarter.

8. Tandems and ovoids in different sizes and curvatures are used in the treatment of cervical cancer. They're placed inside the patient and loaded with radioactive sources according to the treatment plan, delivering the prescribed dose of radiation to the target.

9. Numbered slices on the anthropomorphic phantom's head, as well as on the entire body, allow the placement of tiny thermoluminescence dosimeters for use in dosimetry studies.

'The final marker is the patient'

SYMPTOM RESEARCH MOVES CLOSER TO THE SPOTLGHT

By Sandi Stromberg

There were probably times when Charles Cleeland, Ph.D., — a champion for patients' quality of life — thought he was tilting at windmills.

In those days, oncologists and scientists were working so diligently to find cures for cancer that they had little time to consider treatment side effects. But that didn't deter Cleeland, professor and chair of MD Anderson's Department of Symptom Research.

Starting with the most common symptom — pain — he persevered. He is the pioneer behind the Brief Pain Inventory that set up the 0-10 scale, allowing patients to express their level of pain. And while acceptance of the need to treat pain on the basis of patient self-report took years, it is now a reality around the world, translated into many languages.

And he hasn't stopped there. As cancer research moves toward personalized care so patients' therapies can be tailored to their genetic make-up, he continues the campaign for incorporating patient-reported side effects into drug development.

"We might focus on some biomarker," says Nora Janjan, M.D., of the National Center for Policy Analysis. "But the final marker is the patient."

Janjan is one of an increasing number of people from academia, the pharmaceutical industry, policy groups and government agencies who come together under the auspices of Assessing Symptoms of Cancer Using Patient-Reported Outcomes (ASCPRO). This independent working group is headed by Cleeland and Jeff A. Sloan, Ph.D., professor in the Department of Oncology and Health Sciences Research in the Division of Biostatistics at Mayo Clinic's College of Medicine.

Established in 2006, ASCPRO reviews the current use of symptom measures as clinical-trial and clinical-research outcomes and makes recommendations to facilitate the use of symptom assessment, based on patient-reported outcomes (PRO). Recently, the group commissioned a multisymptom task force to make recommendations for measuring multi-symptom endpoints in cancer clinical trials, published Aug. 28, 2012 (online in advance of print) in the journal Cancer.

Understanding clinical significance

Sloan, who met Cleeland at an international meeting on patients' quality of life, immediately recognized a potential mentor. When he moved to the Mayo Clinic's College of Medicine in 1995, he started asking questions like:

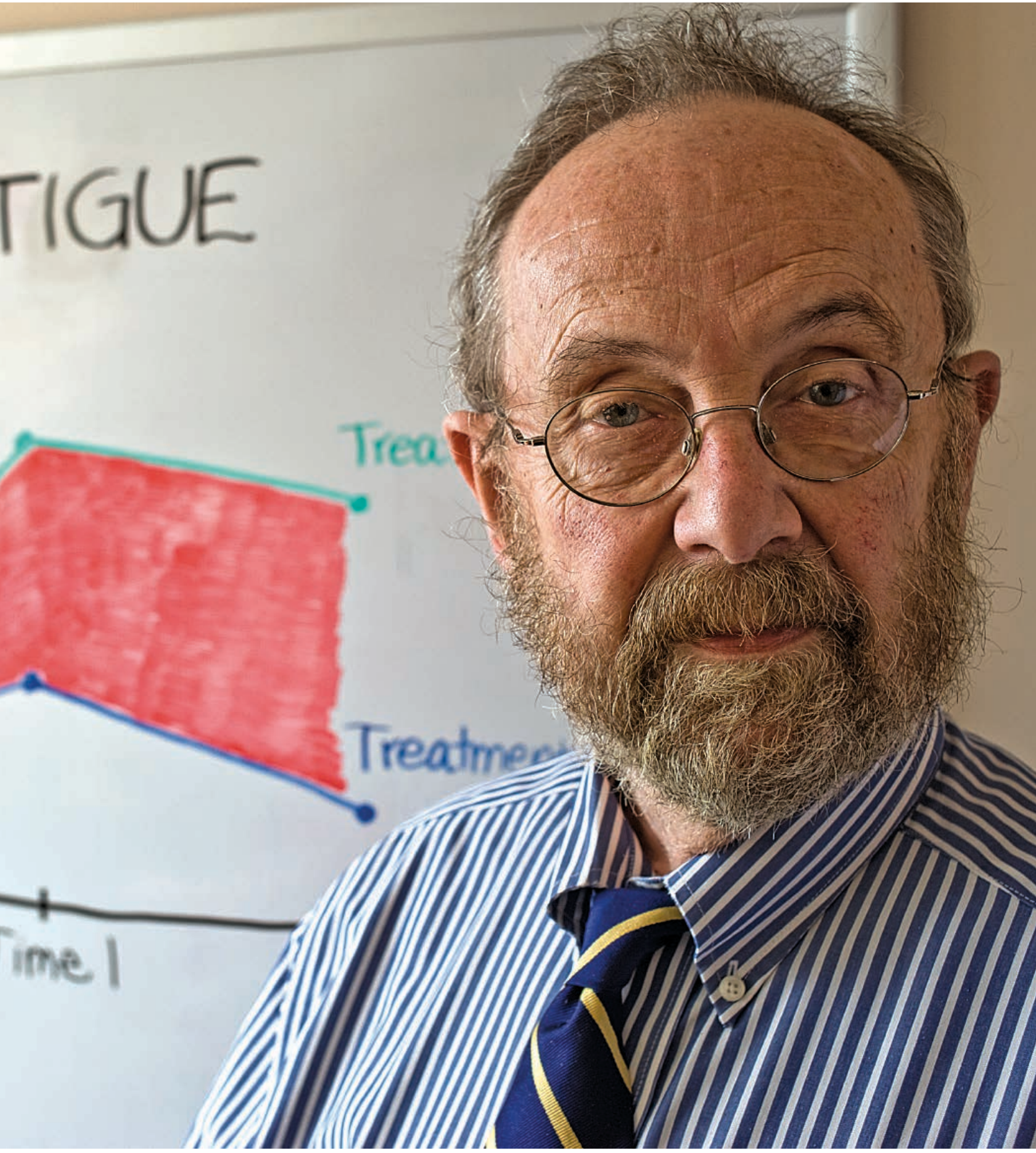
- What is the clinical significance of quality-of-life measures?
- When does the change in a quality-of-life score become significant?

"Then, Charlie and I were at a meeting in Barcelona with top names in the field from Europe, the United States and Canada also asking these questions," Sloan says. "I thought if we could get these people together, we could do something.

"We wrote some papers on clinical significance that described the state of the science and methodological advances that were being made. We further collaborated on foundational work related to the guidance document released by the U.S. Food and Drug Administration (FDA). That led us to form ASCPRO to serve as a resource for people who wanted to do patient-related outcomes research and needed objective assessment tools," he says.

While the FDA document, in addition to assuring drug safety, mandates that a clinical benefit must be shown, methods for judging that benefit have been controversial. In the June 6, 2010, edition of the Journal of Pain and Symptom Management, Cleeland and Sloan put forward that: "The effect of a treatment on how a person feels or functions is best known through patient self-report."

Charles Cleeland, Ph.D., has devoted his life to understanding and lightening patients' symptom burden from pain to fatigue and beyond. The chart here shows the importance of understanding a treatment side effect like fatigue, so patients can receive the treatment that creates the least symptom burden.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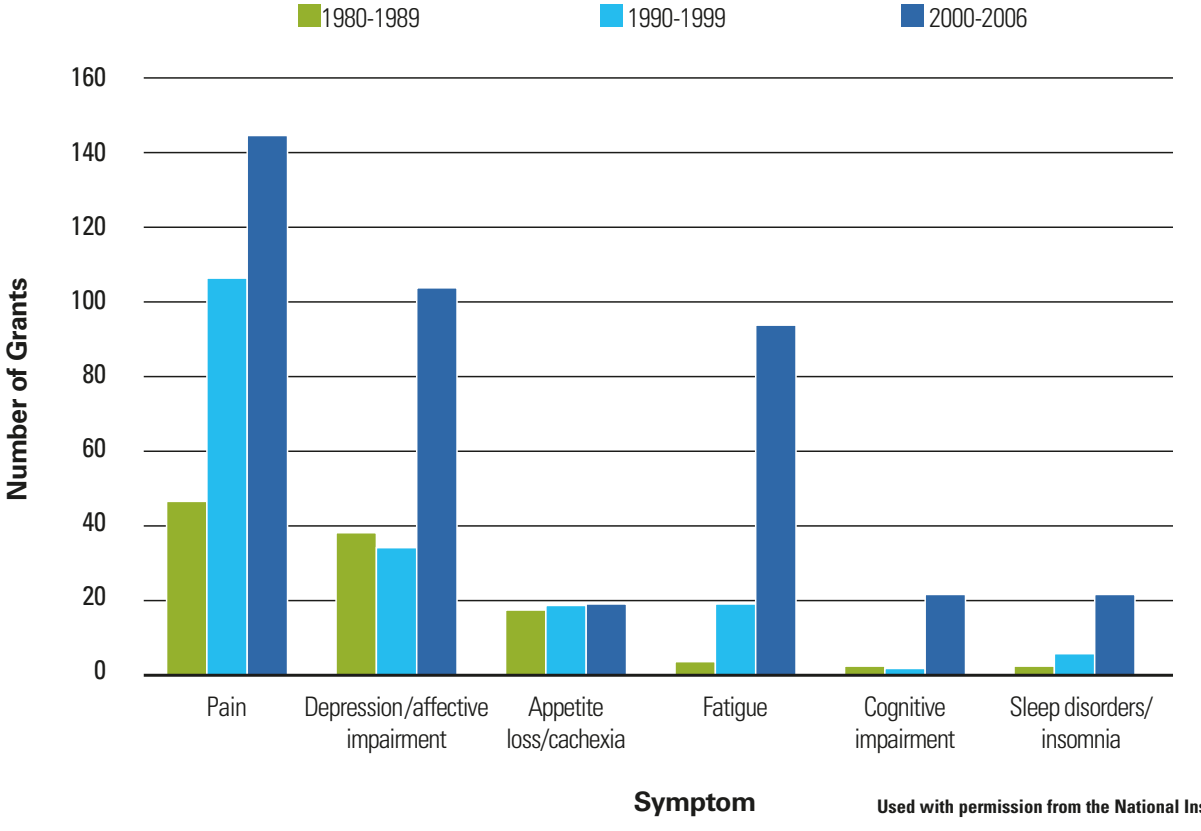
Number of NIH grants, by symptom and decade



Used with permission from the National Institutes of Health.

Can we trust self-reports?

Patient self-report has not always been seen as reliable by the medical community.

"In the 1950s, consensus was that patients weren't good sources for rating pain, so clinicians were doing it," Sloan says. "That was the state of knowledge because we didn't have a reliable measure of pain. Now, we do, and it's being used."

"Lots of doctors still don't pay attention. It's not part of their checklist," Janjan says. "They aren't aggressive enough in taking care of treatment-related symptoms. Yet, it's only through patient-reported outcomes that we can identify and track what patients truly experience.

"Any clinical therapy or trial is for the patient. We get so focused on the war that we forget the battle is for patients to do better, for them to remember the cure and support, not to deal with how they suffered through and after treatment."

Despite the fact that patient-reported outcomes have become more accepted, the concept bumps against significant barriers.

"The major battle is still over which tool to use to address symptoms," Sloan says. "In fact, we won't go too far wrong because there are many tools out there that have been validated — more than 10,000 at last count. When people in the field can't agree over methods, doubts are raised."

Another barrier, he says, is the "perfectionism streak." Blood pressure cuffs aren't perfect either, he says, but we know and accept them. "The classic example is Charlie's work in pain and the 0-10 scale, asking patients 'how's your pain?' It's very simple. This has given us data that 6 is a clinically significant level of pain."

NIH looks for treatment value

Ann O'Mara, Ph.D., head of Palliative Care Research, Community Oncology and Prevention Trials Research Group in the Division of Cancer Prevention at the National Cancer Institute (NCI), manages the budget for PO1 (Program Project) and RO1 (NIH Research Project) grant-funded studies and has known Cleeland since she arrived at NCI in 2001.

"My role with ASCPRO is very limited for ethical reasons," she says. "I bring the National Institutes of Health perspective on what NCI and NIH funds, the organizational structure of NCI and the bigger picture of research that it brings to symptom research. I also introduce other investigators with similar interests, of whom the ASCPRO group might not be aware.

"We control disease with many treatments now, but create a whole new set of symptoms. Charlie's push and that of ASCPRO is to study drug development for its treatment value, but also how it relieves, or doesn't cause, symptoms."

O'Mara cites three significant barriers that inhibit patients undergoing treatment on self-reporting symptoms:

- They don't want to bother their physician.
- They think if they report symptoms, the physician will reduce the dose or stop treatment.
- They fear that symptoms are an indication that the disease is progressing or has come back.

"This is where communication between patient and physician is so important," she says.

Enter the pharmaceutical industry

Connie Chen, Pharm.D., and senior director of Global Outcomes Research, Oncology at Pfizer Inc., met Cleeland more than 10 years ago when they both researched arthritis and pain.

"Pfizer places a great deal of importance on patients in its clinical trials," she says. "Listening to patients gives us the opportunity to hear what effect a drug is having on them. They help us know how we should develop a drug moving forward, so we strive to get self-reported symptom information early into the Phase I/II stage of a clinical trial whenever possible."

However, she admits there are practical and logistical problems in gathering patient-reported data. "When we put in questionnaires for patients, we do this in a scientifically rigorous manner — similar to other endpoints within the clinical trial and realizing the costs to collect, analyze and report the results. But we know it's going to benefit the end-user. The problem is that there can be differences in the way information is understood. We need to do a lot more education."

Yasuhiro Torigoe, Ph.D., at Genentech, met Cleeland several years ago and was immediately interested in his PRO work.

Currently, Genentech has 30 to 40 Phase III trials that use PRO in breast, gastric, lung and other cancers, with many more in the pipeline. When it comes to selecting a measurement tool for many of Genentech's studies, Torigoe choses the MD Anderson Symptom Inventory (MDASI), developed by Cleeland and his group.

Taking the MDASI to another level

To include possible side effects on a drug's labeling, the FDA specifies that researchers must employ a standard published manual. Torigoe went an extra step to guarantee he could use the MDASI.

"We knew its scientific merit, and I wanted to use it for trials in brain and lung," he says. "I encouraged Charlie to develop the manual, even gave him an outline and reviewed it several times."

Like other entities, the pharmaceutical companies have encountered barriers in incorporating multi-symptom endpoints into their clinical trials. These include:

- the push to streamline clinical trials, cheaply and quickly, with the goal of overall survival;
- the cost associated with trials;
- the inclusion of multi-symptom endpoints impeding the speed of the trial; and
- the lack of FDA guidance stating how much longer a patient needs to live on a drug for it to be approved.

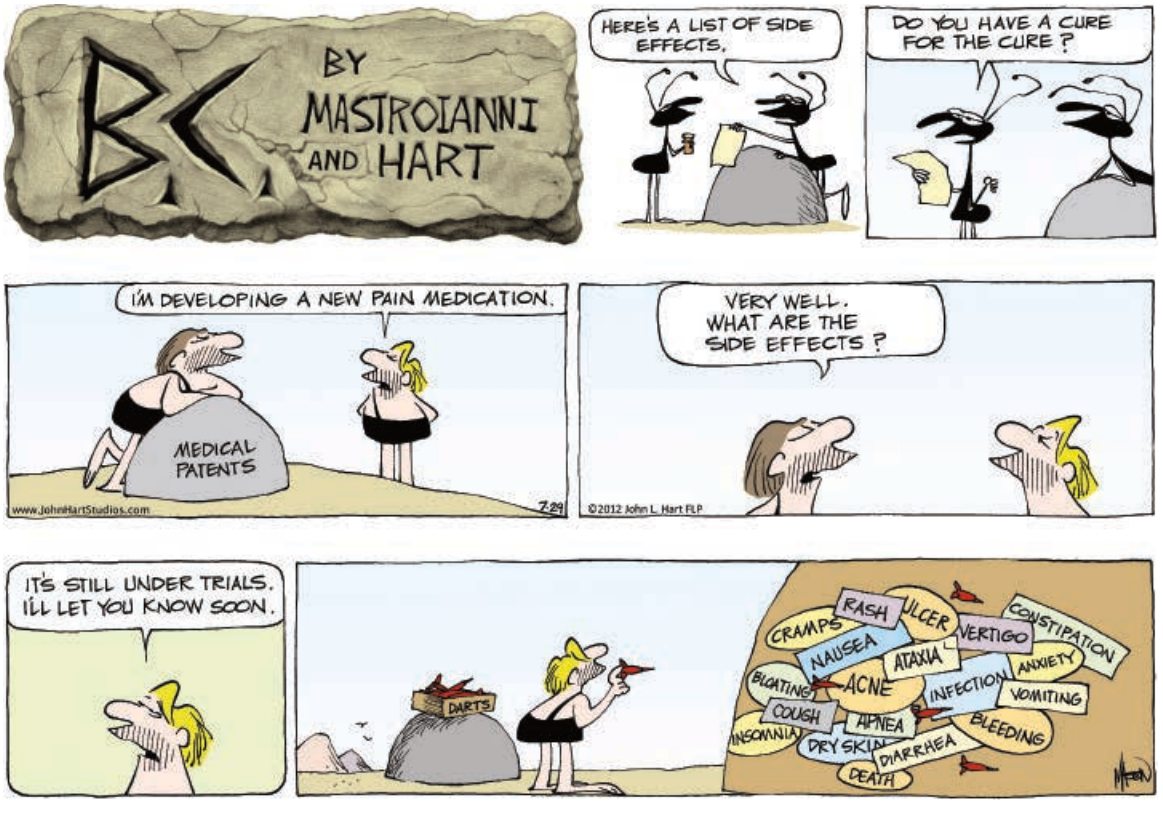
However, Torigoe firmly believes that the ultimate goal is not only for a patient to survive, but also to have better quality of life without the symptoms of chemotherapy, which some of the newer targeted therapies offer. "Symptom assessment is critical to showing patient benefit from these new treatments," he says.

Chen agrees, "The patient's perspective should be heard so we can share, better understand and educate a wider audience of decision- and policy-makers, and other health care professionals. And so patients can have a larger say in the choice of therapy, taking into consideration how treatments affect their symptoms and day-to-day well-being and function. We can't have a trial without the patient's voice."

Due to his decades-long perseverance, Cleeland is no longer tilting at windmills. Rather, along with a growing host of partners across academia, industry, policy groups and government agencies, he's forging inroads toward ensuring the patient's voice will be heard — and heeded.

No more guessing!

Charles Cleeland, Ph.D., and his diverse associates from across academia, industry, policy groups and government agencies are crusading for increased attention on treatment side effects and the importance of patient self-report.



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Food for thought

eCookbook offers nutritious recipes for patients in treatment and beyond

By Erica Quiroz

Two years ago, Joya Chandra, Ph.D., asked the question: Is there a relationship between the foods patients eat while on chemotherapy and their outcomes?

Her search for an answer is the basis for the new @TheTable eCookbook, which features more than 250 recipes, and caters to the nutritional needs of cancer patients, their families and the general public.

As part of MD Anderson Children's Cancer Hospital (CCH) and through the Optimizing Nutrition (ON) to Life Program — which promotes healthy eating habits in pediatric patients and survivors through multidisciplinary resources — Chandra, associate professor at CCH, and Rhea Li, a licensed research dietitian at the hospital, counsel patients on the importance of eating the right types of foods during and after treatment.

"As we spoke to some of the pediatric patients and their parents, we realized there was a real need to get practical information to them about healthy eating," Chandra says. "So we started thinking about how we could provide a resource to patients while they're in treatment or afterward."

Chandra and Li initially thought about a hard copy cookbook but quickly realized patients would have more meal options and could access recipes easier in an online format.

Input from the cancer community

To gather enough recipes to fill a website, Li polled parents of children in treatment and found the majority were interested in meals that could be prepared quickly.

She then held several submission contests and received recipes from patients, staff members and various local chefs.

Initially, to be considered for the eCookbook, recipes had to meet certain criteria:

- use 10-15 easy to find ingredients,
- be prepared in 10 steps or fewer,
- be prepared in less than an hour, and
- have fewer than 400 calories per serving.

Submissions were then opened to include any recipe people were willing to share. Li and her team of nutrition experts made changes as needed.

"Some recipes we received had to be remade with substitute ingredients," says Li, who oversaw the testing of the recipes. "But a healthy portion were left as is, for people who need to gain weight during or after their treatment."

Li and Chandra say the benefit of having an online cookbook is the option to constantly change it and add more recipes.

To choose the best recipes from two years' worth of submissions, an eCookbook committee was created.

Members of the CCH advisory group and MD Anderson's Advance Team (a volunteer leadership board focused on community-based initiatives), along with volunteers and parents of patients all tested and rated their favorites.

Recipes were also prepared and served at MD Anderson's Lantern Café to help the committee with feedback.

Once final recipes were selected and compiled, @TheTable received support from the Children's Art Project and at events held by the Advance Team, such as the Santa's Elves Parties 2011 and 2012.

The Gerber Foundation supported Chandra's initial research and the Mr. and Mrs. David T. Herr family donated to the ON to Life Program.

Meals based on patients' symptoms

People can search @TheTable by ingredients, type of dish or category. The advanced search option includes color, texture and taste.

Chandra says the additional features were included because many patients experience symptoms like cravings, fatigue or a change in their food preferences while on chemotherapy, which can negatively impact their nutritional health.

"Through the symptom search feature, if patients have mouth sores, they can find foods with a softer texture," Chandra says. "Also, for example, if they need to increase their iron intake, they can find foods based on that nutritional need as well."

Rhea Li (center), licensed research dietitian, and Joya Chandra, Ph.D. (right), watch as intern Margaret Raber (also pictured on page 22) prepares a healthy version of macaroni and cheese from the @TheTable eCookbook.

The site also has articles that promote healthy eating, showcases the latest and most popular recipes and is brightly colored to appeal to children as well as adults.

Chandra and Li say the next phase for the eCookbook is to expand its accessibility to smart phones and to continue growing the site with more recipes.

"The general public has been really enthusiastic about donating recipes for a good cause," Chandra says. "I think people are excited to help because almost everyone knows someone who's had cancer and has had difficulty with food and eating appropriately."

"The main goal is to have nutrition play a more important part in our patients' lives and to provide a cancer prevention tool for our community at large," Li says.

@TheTable is available online at www.mdanderson.org/atthetable.

Scan this QR code for a video telling more about the eCookbook or visit www.mdanderson.org/conquest.

CONQUEST

Russell Broaddus, M.D., Ph.D. (right), professor in the Department of Pathology, mentored Jessica Bowser, Ph.D., and David Gaytan, M.D., Ph.D., as they pursued their degrees.

Opportunities knock

Today's students can change tomorrow's world

By Mary Jane Schier

The 70 future scientists seemed to sit up straighter as they listened to the speaker.

MD Anderson's president, Ronald DePinho, M.D., shared his academic experience with the latest graduates at the Graduate School of Biomedical Sciences commencement this past May.

"You all have the opportunity to change the very nature of human existence," MD Anderson President Ronald DePinho, M.D., stressed in his first commencement address to graduates of the Graduate School of Biomedical Sciences (GSBS).

GSBS is a long-standing partnership between MD Anderson and The University of Texas Health Science Center at Houston (UTHealth), which jointly awards doctor of philosophy and master of science degrees.

DePinho told the 2012 graduates that his father, a Portuguese immigrant, had "cried when I graduated," first from Fordham University with a bachelor's degree in biological sciences and then when he earned his medical degree in microbiology and immunology from Albert Einstein College of Medicine.

"I applaud your parents and grandparents, your partners and other family members. Having a wonderfully supportive family means more than you can fully appreciate right now," DePinho said.

Yesterday's student, today's exceptional mentor

DePinho advised the graduates to "make sure that each and every day you'll always be a student."

His counsel was especially appreciated by Joya Chandra, Ph.D., who received the 2012 John P. McGovern Outstanding Teacher Award, recognizing exceptional nurturing of GSBS students.

"To teach is to learn twice over. I'm so fortunate to have had wonderful mentors at MD Anderson … and now I have the privilege of helping train the next generation of bright young scientists," noted Chandra, associate professor at MD Anderson's Children's Cancer Hospital.

She credits working as a summer college student with neuropsychologists in MD Anderson's Division of Pediatrics with confirming her career choice. After graduating from Louisiana State University, she enrolled in GSBS and became the first graduate student in the lab of David McConkey, Ph.D., now professor in the Department of Urology and recipient of the 2001 McGovern Award.

Chandra obtained her Ph.D. in 1998, then completed postdoctoral fellowships at the Karolinska Institute in Sweden and the Mayo Clinic before returning to MD Anderson in 2002 to start a research laboratory.

A father of three, Ronald DePinho, M.D., delighted in congratulating Hoainam Nguyen-Jackson, Ph.D., on completing her degree, and had sage advice for her three daughters, Anya, Ella and Tess.

Illustrating her pride in "seeing my students excel" are GSBS students Christa Manton and Blake Johnson, who respectively have won a Sowell-Huggins Endowed Scholar Award and the Arnold Foundation Graduate Student Fellowship from MD Anderson's Center for Stem Cell and Developmental Biology.

Johnson, whose research focuses on oxidative stress in leukemic stem cells, wants to be a science educator while Manton's goal is to have her own research program and continue studies that can be applied to treating brain tumors.

Going for the gold

Another dedicated mentor is Russell Broaddus, M.D., Ph.D., professor in the Department of Pathology, who has advised more than 100 GSBS students, plus many postdoctoral trainees, clinical residents and fellows. He received the 2006 McGovern Award.

Broaddus helped place gold-lined, academic hoods around the necks of the 70 graduates at the commencement. Gold is the traditional color signifying advanced degrees in science. He had warm congratulations for Jessica Bowser, Ph.D., and David Gaytan, M.D., Ph.D., whom he had mentored as they pursued their degrees.

"Both have been extraordinary students, and I feel privileged to be a part of their educational journeys," Broaddus said.

Bowser, who came from a rural farming community in Kansas, was the first in her family to attend college, while Gaytan immigrated as a child to the United States from Mexico. Bowser remains at MD Anderson for a postdoctoral fellowship in pathology, and Gaytan has gone to Baylor College of Medicine for a residency in internal medicine.

Presidential support makes a difference

After the graduation, DePinho spent extra time with Hoainam Nguyen-Jackson, Ph.D., her husband John Jackson, daughters Anya, 7, and twins Ella and Tess, 6.

Nguyen-Jackson had completed her graduate work with support from a 2011 Presidents' Research Scholarship funded by the presidents of MD Anderson and UTHealth. She won that award for original research conducted in the laboratory of Stephanie Watowich, Ph.D., associate professor in the Department of Immunology and recipient of the 2010 McGovern Award.

As the father of three young children, DePinho offered this advice to Anya, Ella and Tess: "Always do your best in school and finish your homework."

Nguyen-Jackson said the Presidents' Research Scholarship "meant so much since my graduate school experience was challenging due to the births of my three children during that time."

She now teaches science courses at James Bowie High School in Austin, where she initiated a program for students to conduct research projects that can be continued at The University of Texas at Austin.

Joya Chandra, Ph.D. (center), takes pride in her students — Christa Manton and Blake Johnson, both of whom have won honors for their research.

A ‘good’ death

Easing symptoms, fulfilling wishes at the end of life

By Mary Brolley

Taylor Brown was too young to have a bucket list.

In late December 2011, the 29-year-old parts manager for a Baton Rouge, La., trucking firm began to have disabling pain in his lower back.

Diagnosed with an aggressive tumor in his sacrum that had spread throughout his body, he died March 23, 2012. But not before marrying the love of his life, Donia Crouch Brown.

"We'd been engaged for two years," says Brown, 26. "Getting married was an easy decision — we were in love."

It wasn't the big wedding the couple had planned, but the small ceremony arranged by the staff of MD Anderson's Andreas Beck Inpatient Palliative Care Unit was lovely and meaningful, according to Brown.

"Everybody gets a soul mate, and Taylor was mine," she says.

Delicate balance between treatment and quality of life

In the United States, a surprising number of patients spend time in the intensive care unit or receive curative treatment in the last week of their lives, at great cost to them, their families and their health care teams.

Instead, at MD Anderson about 500 patients a year are admitted to an inpatient palliative care unit affiliated with the Department of Palliative Care and Rehabilitation Medicine. Patients are referred by their oncologists because side effects have caused them severe distress or treatment has become ineffective.

The goal of a stay on the 12-bed unit is stabilization of symptoms, then preparation for the next stage of care. Some return to treatment, but about one-third of those admitted die there. Another 30% to 50% are discharged to hospice at home or offsite.

First, members of the team address the patient's physical and psychological symptoms. These may include pain, fatigue, nausea, depression, anxiety, drowsiness, lack of appetite, dyspnea (labored or difficult breathing) and difficulty sleeping.

Once these symptoms are under control, team members speak with patients about their end-of-life goals.

"We ask them their understanding of their disease," says David Hui, M.D., a medical oncologist, palliative care specialist and assistant professor in the Department of Palliative Care and Rehabilitation Medicine, as well as medical director of the unit.

"We find out what they know and what they hope to achieve in the time they have left. Sometimes our job is helping them understand the state of their illness."

Some patients express regret that they won't be able to achieve goals, such as Taylor Brown's wish to marry Donia.

Fulfilling goals at the end of life

There have been several weddings on the unit.

One was the subject of a paper published in June in the Journal of Pain and Symptom Management. It proposed that the team's help in fulfilling a terminal patient's wish to marry her fiancé helped alleviate her distressing physical and psychological symptoms during her stay on the unit.

There was significant improvement in her pain, difficulty with walking and breathing after the wedding. As she'd hoped, she was discharged to home hospice and able to spend Christmas with her loved ones. She died two weeks later.

Martha Aschenbrenner is a program manager on the unit. A therapist with years of experience at MD Anderson Children's Cancer Hospital, her specialty is helping patients communicate with their children — or deal with the sorrow of leaving them.

She meets with patients and their children on several occasions, if possible. Many patients are concerned with how they'll be remembered and want to ensure that their children will know how much they were loved.

But encouraging patients to leave a legacy — for example, a video or audio recording for their children before they die — may be unnecessarily stressful.

"It's just putting one more expectation on them," Aschenbrenner says. Instead, she might suggest that a loved one write an account of the parent's last days or of the discussions they had.

'We're privileged'

Working on the unit can be difficult and would be impossible without daily meetings — lively and sometimes intense updates on each patient in the unit.

Team member Steven Thorney, chaplain in the Department of Chaplaincy and Pastoral Education, calls their work transdisciplinary.

"We each have our specialty, and each is valued. We share the stress and the work," he says.

Despite the strains, he says team members feel lucky to work on the unit.

"It's an emotional time," he says. "Patients want their loved ones near — to say thank you, or I'm sorry, or please forgive me, or I love you, or goodbye. The things we're privileged to see are extraordinary."

Scan this QR code, or visit www.mdanderson.org/conquest, to listen to a podcast about how MD Anderson health care providers help patients and family look at end-of-life goals.

Cancer Briefings

A NEW TWIST ON AN OLD PARTNERSHIP

Humans and canines join forces against lymphoma

By Claudia Giertz

Man's — and woman's — best friend may have more than friendship to offer his or her human counterpart. A new study using T-cell therapy to treat companion canines with non-Hodgkin lymphoma (NHL) could be a key to discovering better ways to treat humans with cancer.

T-cell is a type of white blood cell that plays a vital role in the immune system by helping protect the body from disease. In the study, a dog's T-cells are first extracted before chemotherapy, which is intended to treat canine cancer, but inadvertently damages the immune system. Next, the cells are grown to large numbers and injected back into the dog after it has finished the chemotherapy. By infusing it with its own T-cells, the dog's body can ward off remaining cancer cells without further treatment.

"We developed this idea after observing clinical data that showed the faster the human T-cells recovered after chemotherapy, the better the patient's prognosis," says Colleen O'Connor, Ph.D., postdoctoral fellow at MD Anderson's Children's Cancer Hospital (CCH) and an investigator on the trial. "Thus, we tried infusing large numbers of healthy T-cells back into the dog to help the immune system recover after chemotherapy."

The trial, undertaken in collaboration with Heather Wilson-Robles, D.V.M., assistant professor at Texas A&M College of Veterinary Medicine and Biomedical Sciences, is proving successful and yielding new insights into the disease. Most dogs with NHL, unfortunately, only live up to 10 months after their diagnosis and treatment. However, two of the dogs treated with T-cell therapy have been in complete remission for two years post T-cell therapy, and most of the others have lived well past the 10-month period.

This T-cell therapy isn't restricted to lymphoma, however.

"The power of this study is that it can be used for all types of cancer," says Laurence Cooper, M.D., Ph.D., professor and section chief of pediatric T-cell therapy at CCH and the study's senior author. "In the near future, we're interested in targeting other malignancies, such as brain tumors and bone cancers using this approach as a platform."

Canine and humans have been living together for 15,000 years, sharing the same environment, food and types of cancer. Now, their partnership could lead to new and innovative ways of treating cancer.

Cheyenne is still in complete remission two years after T-cell infusion.

WHEN THE THRILL IS GONE

Counseling enhances a couple's intimacy after prostate cancer treatment

By Katrina Burton

Sexual intimacy between couples can be one of the most important factors in a healthy relationship.

Yet, some couples struggle to keep passion alive, especially when busy schedules and changing bodies get in the way. Add prostate cancer treatment to the mix, and the intimacy gap widens.

But there's hope for men facing erectile dysfunction, intimacy issues and a low sex drive after prostate cancer treatment.

CAREss (Counseling About Regaining Erections and Sexual Satisfaction), a study led by Leslie Schover, Ph.D., professor in MD Anderson's Department of Behavioral Science, randomized 115 heterosexual prostate cancer survivors who were experiencing erectile dysfunction and their partners into three groups: a wait list group that received delayed counseling, a face-to-face counseling group and a group that received an Internet-based sexual counseling program.

The study revealed Internet-based sexual counseling and traditional sex therapy are equally effective in improving sexual outcomes for couples. The study also showed that the sex lives for couples on a waiting list for counseling did not improve.

In addition, men experienced a marked improvement in their sexual function for up to a year, and women who started out with a sexual problem improved significantly with counseling.

"The sad thing is that only a minority of men can have reliable erections and satisfying sex after treatment from prostate cancer," Schover says. "The good news is that for couples with relatively good relationships and sexual communication, counseling can really help improve their intimacy."

The CAREss trial, and surveys leading to its development, were funded by grants from the American Cancer Society.

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Facts and Stats:

MD Anderson and U.S. News and World Report's 2012 Best Hospitals Survey

One	MD Anderson's 2012 ranking in cancer care.
9 of the past 11	Years MD Anderson has been ranked No. 1.
nine	MD Anderson specialties called out as "Top Ranked" or "High Performing."
19	Years Gynecology has been in the top 10.
18	Years Ear, Nose and Throat has been in the top 10.
21	Years Urology has been in the top 25.
19,339	Employees who contributed to the No. 1 ranking.
23	Years MD Anderson has been ranked as one of the top two hospitals for cancer care.
four	Years the Children's Cancer Hospital has been ranked in the top 15.
1,100	Volunteers who support patients and families.
122,788	Philanthropic gifts in fiscal year 2012.

Moving Forward | Nurses who know

By Sara Farris

Childhood cancer survivors find new role at MD Anderson

Nurses do their best to understand the patient's perspective as they provide care. However, none can relate as well as three MD Anderson nurses. Shelby Robin, Anna Smith and Richard Wang know first-hand the ups and downs of being a patient because they were patients themselves as children.

SHELBY ROBIN

Shelby Robin was diagnosed with Ewing's sarcoma, a bone cancer, when she was 12 years old. She made the difficult decision to have her leg amputated after six rounds of chemotherapy.

Refusing to let that hold her back, she went on to be a cheerleader in high school, ski down double-black diamond slopes on the hospital's rehabilitation ski trip, become president of her sorority and graduate as the top nursing student from The University of Texas School of Nursing at Austin.

She now works full time as an inpatient nurse in the same hospital that saved her life — MD Anderson Children's Cancer Hospital (CCH).

"As a patient, I spent most of my time with the nurses. They became my friends and were the ones who made me feel like everything was going to be OK one day. That's what I try to do now for kids like Khrystin Andrews (right), who are going through the same thing I did."

RICHARD WANG

Richard Wang knows what life in the trenches is all about. At 9 years old, he was diagnosed with rhabdomyosarcoma, a soft tissue cancer, and went through chemotherapy, radiation and surgery at the CCH.

Cancer-free, Wang joined the U.S. Army and served as a medic and nurse, spending several months working with the military's intensive care unit in Baghdad.

When he returned from Iraq, he completed his nursing degree and clinical training in MD Anderson's sarcoma unit. He graduated from nursing school in May 2011, then joined MD Anderson as a full-time nurse on an inpatient unit.

In the summer, he serves as a counselor at Camp Star Trails, funded by the Children's Art Project, for patients and siblings ages 5 to 12 — the same camp he attended during treatment.

ANNA SMITH

Anna Smith was diagnosed with the bone cancer, osteosarcoma, at age 13, and endured a year of chemotherapy and five surgeries.

Now a nurse in the outpatient clinic at CCH, she says impacting patients in the way her nurses impacted her is rewarding but difficult at the same time.

"When I see patients come through who look just like I did as a patient, but their story doesn't end up like mine, it makes me wonder how I got so lucky. Then, I have to stop and tell myself, 'I'm here to do just what I'm doing right now' — to give these kids hope and support them in their battle, to show them that they can beat this, and life will go back to normal."

Smith serves on the hospital's Family Advisory Council, learning from families of patients what she can do as a nurse to make their time at MD Anderson better.

She's not only an advocate for MD Anderson patients. Smith has traveled twice to Washington, D.C., to speak on Capitol Hill on behalf of childhood cancer survivors and CureSearch. She also represents other nurses on the national steering committee for the Association of Pediatric Hematology/Oncology Nurses and has served as local chapter president.

Through the microscope

Interns see their cancer up close for the first time

By Sara Farris

While their peers were poolside soaking up the summer, Patrick Ede and Mary Blake donned lab coats and spent their days researching at MD Anderson Children's Cancer Hospital (CCH).

For them, it was an opportunity to learn more about the disease they fought as children — leukemia.

A 'thumbs up' to a possible research career

Ede was diagnosed in November 2002 at the age of 11 with acute myelogenous leukemia (AML). When doctors found his disease was more aggressive than originally thought, they sent him to CCH for a bone marrow transplant.

Now 21, Ede is cancer-free and a senior, majoring in biomedical sciences at Texas A&M University in College Station. His original plan was to become a physician assistant, but his summer in the lab opened his eyes to research opportunities instead.

"I'm an analytical person, so research fits my personality," Ede says. "I face some challenges with quick processing as a result of treatment, but research allows me to think things out thoroughly."

While interning under Dean Lee, M.D., Ph.D., assistant professor at CCH, Ede studied AML transplant patient cells to see how potent the donor cells were against the cancer.

"Dr. Lee is what every physician should be," Ede reports. "He cares about the people he serves, and his research stems from there."

As the young Aggie wraps up his final year at Texas A&M, he will continue to determine the next steps in his career. His current focus, though, is saving up for the coveted Aggie ring in time for graduation.

Future oncologist learns the importance of research

In the same year Ede was diagnosed, Blake learned that she had the most common kind of cancer in children, acute lymphoblastic leukemia (ALL). At age 11, she endured more than two years of chemotherapy at Lucile Packard Children's Hospital at Stanford University in Palo Alto, Calif.

Blake is also a senior, majoring in biomedical sciences while attending Sacramento State University. She spent the summer as part of the CPRIT (Cancer Prevention Research Institute of Texas) Summer Undergraduate Research program, working under Joya Chandra, Ph.D., associate professor at CCH.

This summer was Blake's first experience researching cancer cells, and she says what she learned in the lab will help as she pursues a career as a pediatric oncologist.

"Having this experience and being a survivor has taught me what both sides of the field look like. It gave me perspective on researchers' needs as they collaborate with those working in the clinic."

Once Blake finishes medical school, she hopes to fulfill one of her life's dreams, based on her years of attending and serving as a counselor at a summer camp for cancer patients.

"My goal is to open up a ropes course for families fighting cancer," she says. "It's something I loved doing as a patient, and I want to give that opportunity to others."

Signs of Hope | Transplanted blessings

By Gail B. Goodwin

Chaplains bring a spiritual presence to stem cell transplants

The room is quiet, but the sound of hope still rings loud and clear as a young cancer patient prepares for his stem cell transplant.

The stem cells, donated by the patient's brother, are the center of attention. For this young man, the infusion is another chance at life. It is his second transplant, so for everyone in the room, tension is mixed with faith and optimism.

Prayers are offered

Chaplains from the Department of Chaplaincy and Pastoral Education provide stem cell blessings at the request of any MD Anderson patient. Today, Richard Maddox has been asked to pray with this patient, his family and his medical team and bless the stem cells being transplanted.

Maddox, the chaplain assigned to the MD Anderson Children's Cancer Hospital, says that the blessing prior to the infusion can be a very emotional moment.

Everyone in the room gathers and places their hands on the bag of cells as Maddox prays. This moment is the point of passage from sickness into a place of tremendous hope.

"Gracious God, we are so grateful for this very sacred moment when we humble ourselves before you with these cells. May they go straight forward into his marrow, Lord, and begin to produce wholesome, healthy cells so that he may recover quickly."

Contemplating the future with new hope

The cells themselves come from bone marrow and are immature cells that develop into various types of mature blood cells. A stem cell transplant replaces defective or damaged cells in patients whose normal blood cells have been crowded out by cancerous cells.

The stem cell blessing is a pivotal point in a patient's treatment. A patient must be in remission to receive the transplant and that requires physical, psychological, emotional and often spiritual work.

Ten years ago, this same patient was just a boy facing his first transplant. Now he is a young adult and, with the relapse of his leukemia, faces challenges in establishing his career, his relationship with his fiancé and how he will manage his cancer.

The powerful moment of his stem cell blessing gives him hope for his future.

MD Anderson is one of the world's largest centers for stem cell transplants, performing more than 865 procedures for adults and children each year. The program is recognized by the National Marrow Donor Program (NMDP) as a specialized center for matched unrelated donor transplants and maintains an advanced cell processing laboratory that prepares safe and effective hematologic tissues for transplantation. The apheresis and stem cell collection unit performs more than 1,000 blood stem cell collections annually.

LOCATIONS
In addition to MD Anderson's main campus in the Texas Medical Center in Houston and two research campuses in Bastrop County, Texas, the institution has developed a number of local, national and international locations.

REGIONAL CARE CENTERS
Greater Houston area: Bay Area (Nassau Bay), Katy, Sugar Land, The Woodlands

EXTENSIONS
Banner MD Anderson Cancer Center (Gilbert, Ariz.)

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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