

# FINDINGS

Spring/Summer 2009 • [omrf.org](http://omrf.org)



**GREEN  
DAY AT  
OMRF**

# The Discoveries Campaign

A stylized illustration of a scientist in a white lab coat holding a test tube, set against a dark background with a bright blue spotlight and floating bubbles. The scientist is smiling and looking at the test tube. The lab coat has a pocket with the letters 'OMRF' on it. The overall style is reminiscent of mid-20th-century graphic design.

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today for a  
healthier tomorrow

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# FINDINGS

Spring/Summer 2009 • omrf.org



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Chartered in 1946, OMRF is an independent, nonprofit biomedical research institute dedicated to understanding and developing more effective treatments for human disease. Its scientists focus on such critical research areas as Alzheimer's disease, cancer, lupus and cardiovascular disease.



A United Way Partner Agency



## 10

**STEVE PRESCOTT'S CHALLENGE WAS A TOUGH ONE.** Take OMRF and preserve its excellence. But build it to almost twice its current size. And recruit dozens of new scientists. How did he respond? Bring it on.

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Hear a teen cancer warrior

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## BRAND NEW DAY

A half-century ago, medicine stood on the cusp of a new era. Watson and Crick had just unmasked the structure of DNA. Surgeons had performed the first organ transplant. Vaccines would soon target smallpox and polio. And unimaginable technological advances—chemotherapy, dialysis, genetic engineering—would follow.

Yet tomorrow has the potential to dwarf those advances.

We now know how our DNA is constructed. Each day, we learn more about the microscopic mistakes that lead to Alzheimer's, cancer and other illnesses. Never before has medical research moved ahead at the pace it does today.

Already, OMRF has been at the forefront of this brave, new world. Our labs have given birth to the first and only approved treatment for severe sepsis. A pair of drugs to treat life-threatening blood disorders. A test to assess a woman's risk of breast cancer. Groundbreaking advances in the battle against Alzheimer's, HIV and lupus.

And we're poised to play a key role in the revolution in biomedical science that tomorrow will bring. With our staff of world-renowned scientists, we will perform the research that drives the next generation of life-changing discoveries, transforming those breakthroughs into diagnostics and treatments for human disease.

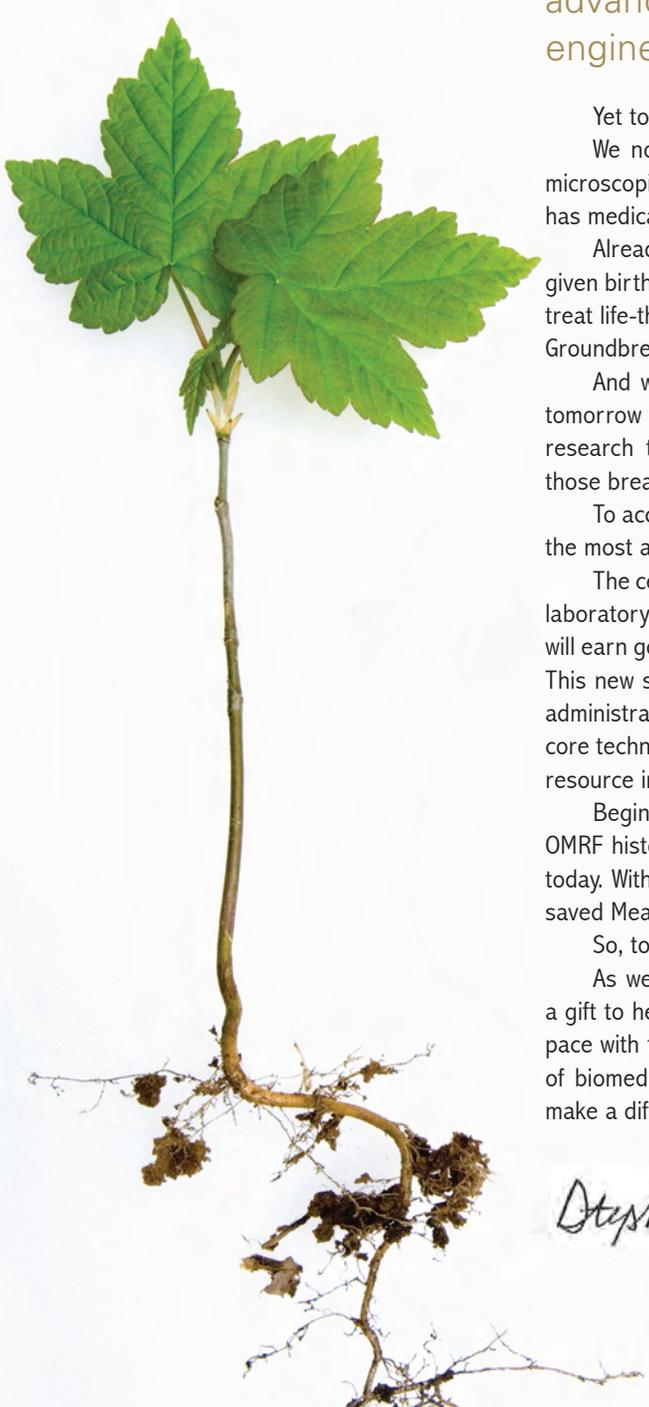
To accomplish these lofty goals, OMRF must grow. And that is why we have launched the most ambitious expansion in our 63-year history.

The centerpiece of this effort will be a new "green" research tower. It will be the first laboratory building in North America to use wind energy to help power the facility and will earn gold-level LEED (Leadership in Energy and Environmental Design) certification. This new structure will also add 185,000 square feet of state-of-the-art scientific and administrative space that will house dozens of new laboratories and a broad array of core technology facilities. Above all, the tower will serve as a home to the most precious resource in biomedicine: human capital.

Beginning on page 10, you can read all about this new chapter we're writing in OMRF history. Of course, it's your generous support that has gotten OMRF where it is today. Without your help, there would be no stories of breakthroughs like the one that saved Meagan McLain's life (see page 16).

So, to all who have made these things possible, I say thank you.

As we embark on this exciting new journey, I hope you will also consider making a gift to help us build this new tower. An investment in OMRF ensures that we will keep pace with the revolution in biomedicine. That Oklahoma will remain on the cutting edge of biomedical research. And that OMRF scientists will continue making discoveries that make a difference.



*Stephen M. Fuscott*

### THREE CHEERS FOR PUTNAM CITY

I TAUGHT SCHOOL IN PUTNAM CITY for 18 years and was glad to be a part of the fundraising for OMRF's cancer research. Our elementary school had a yearly Jog-a-Thon, where students received donations for each lap they ran during a 15-minute time period. What made it so special was that the students only worked hard so that they could give to others. It was not about winning anything material—just the great feeling of giving. Giving to OMRF is one of Putnam City Schools' greatest traditions.

KATHLEEN MESSENBAUGH  
OKLAHOMA CITY

*Editor's Note: For more on Putnam City School District's tradition of supporting cancer research at OMRF, see page 18.*

### A DAY TO REMEMBER

THANK YOU FOR ALL YOU DID to make our visit to OMRF such a success. What an exciting and gratifying day! It was a great pleasure to read my own story ("Prayers Answered," Fall 2008) and then meet the scientists who helped change my life. My husband and I both appreciated the opportunity to educate others about paroxymal noctural hemoglobinuria and ourselves about the tremendous work happening at OMRF.

SANDY ROARK  
SHAWNEE

### ON THE RANGE

MY HUSBAND KENNETH WAS the ranch foreman for Jim Chapman ("The Giver," Fall 2008) for many years, and we knew Bill Bell, as well. We are angus ranchers in Holdenville, and Kenneth is his own foreman now. We appreciate all that you do for thousands of people. We are happy to donate to your causes.

D. J. STEELE  
HOLDENVILLE

### KUDOS

CONGRATULATIONS ON YOUR recent awards for *Findings*. It's the only magazine we read cover-to-cover when we get it. It's informative, uplifting and very well written. Keep up the great work!

RON & POLLY TOTH  
SALT LAKE CITY, UT

### BIG SHOES TO FILL

I WAS THRILLED TO SEE Paul Harvey's picture on your magazine's back cover. I enjoy *Findings* magazine so very much. I'm 93 and live in Kansas now, but I'm still very interested in Oklahoma, where I was born, raised and taught school.

CELIA YODER  
OLATHE, KS

THE LATE PAUL HARVEY WAS ONE OF THE GREATEST news broadcasters of the last 70 years. I began listening to him when I was 13 years old in 1939. We enjoy each issue of your magazine. Thank you for your wonderful work.

DONALD H. HARALSON  
KENAI, AK



In 1971, I was one of the Hugh G. Payne OMRF award winners, and I worked at OMRF that summer. I later enrolled in the OU Nursing Program and graduated in 1975. To this day, I reflect back on what a positive experience I had at OMRF. It truly launched me into a great career path. Over 30 years later, I am still involved in the field of medicine.

DIANE KRUCHOSKI ABRAMS  
SAN ANTONIO, TX

### WRITE TO US!

Send your letters to *Findings*, 825 Northeast 13th Street, Oklahoma City, OK 73104 or e-mail us at [findings@omrf.org](mailto:findings@omrf.org). Please include your name and address. If we publish your letter, you'll receive an OMRF T-shirt.



## GERM WARFARE

Each year, nearly 19,000 Americans die after being infected with the virulent superbug known as methicillin-resistant *Staphylococcus aureus*, or MRSA. But an OMRF discovery has put scientists one step closer to finding a defense against MRSA and other deadly bacteria that don't respond to treatments with standard antibodies.

In a study published in the *Proceedings of the National Academy of Sciences*, Drs. Philip Silverman and Margaret Clarke have obtained the first visual evidence of a key piece in the puzzle of how superbugs spread antibiotic resistance in hospitals and throughout the general population.

"These superbugs have become increasingly common since the widespread use of antibiotics began, and they are now a serious public health menace," says Silverman, who holds the Marjorie Nichlos Chair in Medical

Research at OMRF. "Now, for the first time, we can literally begin to see how they acquire and disseminate antibiotic resistance."

The infections are easily transmitted, making their way into the body through breaks in the skin, even microscopic ones, and through nasal passages. And they are particularly threatening in hospitals, because they attack patients whose immune systems may already be compromised.

The new study from OMRF casts light on the role that structures known as conjugative pili—thread-like bacterial filaments—play in spreading antibiotic resistance. Scientists have known for decades that these filaments are required to transmit antibiotic resistance genes from one bacterium to another. But Silverman and Clarke are the first to capture images of the structures as they extend and retract on live cells.

## COLLATERAL DAMAGE

Destroying cancer cells is easy. Destroying them without serious side effects is the difficult part.

But new research from OMRF has identified a way of more effectively eradicating cancer cells using low doses of an anti-cancer drug. In a study that appears in the journal *Cancer Research*, Dr. Gary Gorbosky, has found that a newly identified compound enhances the killing power of Taxol, a drug used in chemotherapy treatments.

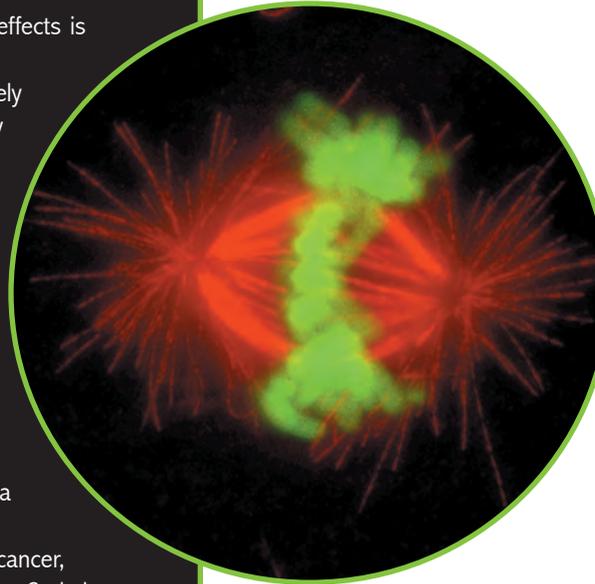
"This chemical or ones derived from it, used with the anti-cancer drug Taxol, could make destroying cancer cells easier and safer by reducing the amount of Taxol needed," says Gorbosky, who holds the W.H. and Betty Phelps Chair in Developmental Biology at OMRF.

Physicians currently use Taxol in chemotherapy to treat a variety of cancers, including lung, ovarian and breast cancer. However, Taxol treatment often causes significant side effects, including vomiting, diarrhea, low platelet counts, decreased white and red blood cells, anemia and increased risk for infection.

"If we could cut the dosage of Taxol and retain the ability to target the cancer, we'd hope to reduce the 'collateral damage' that Taxol can cause," says Gorbosky. "That could mean a significant decrease in side effects."

The experimental chemical, known as OM137, intervenes during the process of cell division, causing the process to short-circuit in cancer cells. "The healthy cells are still making very few mistakes when dividing, but the cancer cells fail to divide at all," says Gorbosky.

His team will continue studying the experimental drug and a group of 10 related compounds, searching for the best option as they go forward with testing. "Our ultimate goal," he says, "is to help improve treatment outcomes for cancer patients."



The OMRF research team, which included Cindy Maddera and Robin Harris, attached a fluorescent dye to a virus, which in turn bound specifically to the filaments on live bacteria. This allowed OMRF researchers to record the behavior of the filaments with a high-powered fluorescence microscope. Using this process, the scientists were able to capture a detailed series of images showing filament growth, attachment to other cells, and retraction to pull the cells together in preparation for genetic transfer.

"This is an important step forward in understanding how antibiotic resistance spreads," says Silverman. With Clarke, he will continue to study the ways in which antibiotic resistance spreads. The aim will be to help develop a better understanding of this life-threatening phenomenon. Ultimately, they hope the work will lead to new ways to fight the bacteria.

"More people in the U.S. die of MRSA each year than of HIV/AIDS," said Silverman. "It's crucial that we do all we can to combat this profound threat to human health."



"Superbugs are a serious public health menace. Now, for the first time, we can literally begin to see how they acquire and disseminate antibiotic resistance." DR. PHILIP SILVERMAN

## LINING UP FOR HEALTHIER TOMORROWS

In today's workplace, insurance and retirement benefits are expected. Health insurance, dental and vision plans are commonplace as well. But this past winter at OMRF, 150 employees and their spouses took advantage of a unique benefit—a breast cancer risk assessment test.

More than 15 years ago, scientists at OMRF began to look at genetic factors present in women who developed breast cancer. After gathering and analyzing samples from more than 10,000 volunteers, they developed a test that gives a woman reliable assessment of her lifetime risk for breast cancer. That test, OncoVue, is now available in selected clinics throughout the country and costs approximately \$400.

Thanks to an exclusive agreement between OMRF and InterGenetics, the company that produces OncoVue, OMRF offered all female employees and their spouses a significantly reduced rate: \$20, with OMRF underwriting the balance of the costs. The program was so well received that OMRF had to schedule a second day of testing to accommodate all those who wanted to participate.

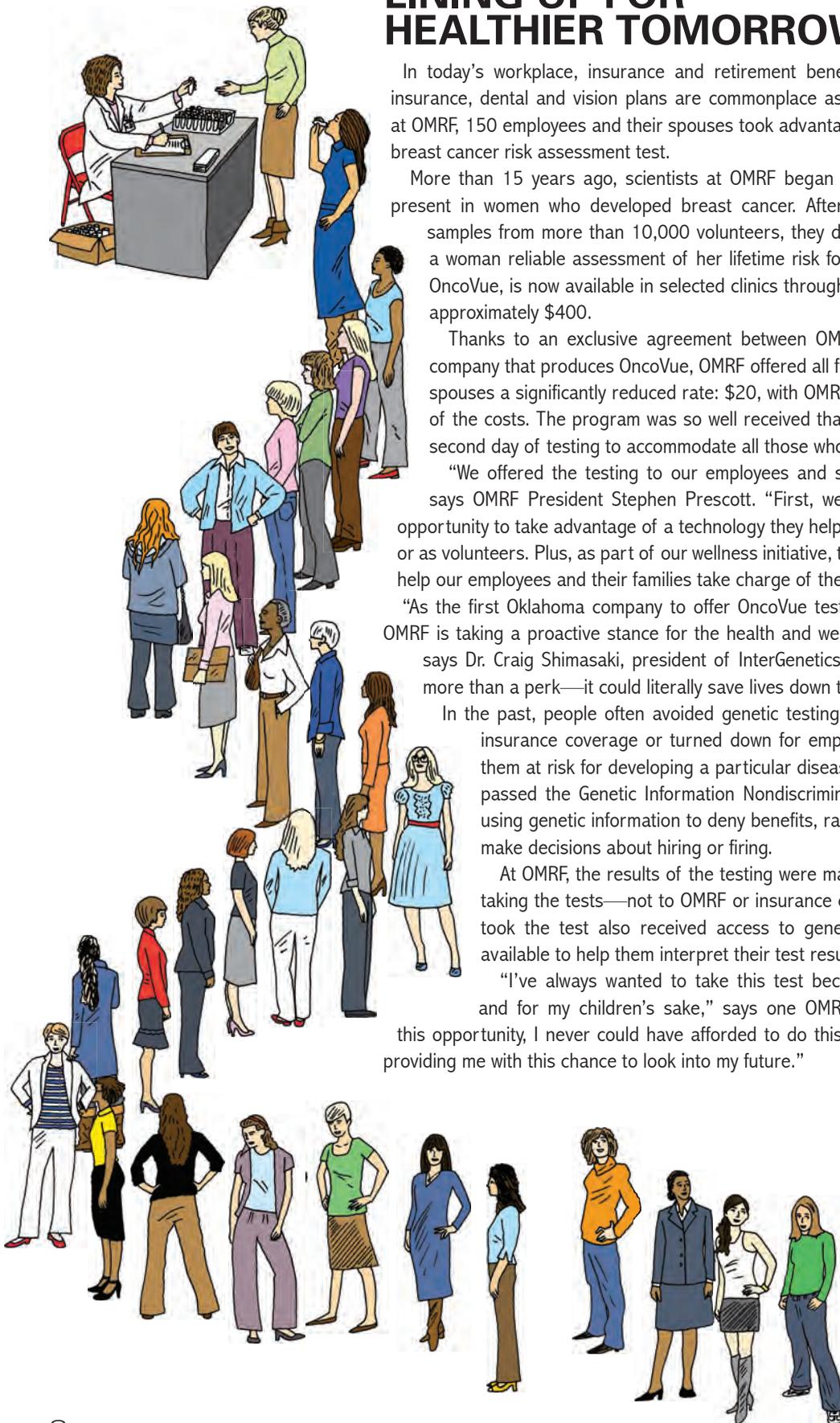
"We offered the testing to our employees and spouses for two reasons," says OMRF President Stephen Prescott. "First, we wanted to give them an opportunity to take advantage of a technology they helped create, either in the lab or as volunteers. Plus, as part of our wellness initiative, this is just one more way to help our employees and their families take charge of their health."

"As the first Oklahoma company to offer OncoVue testing as a wellness benefit, OMRF is taking a proactive stance for the health and well-being of its employees," says Dr. Craig Shimasaki, president of InterGenetics. "And offering this test is more than a perk—it could literally save lives down the road."

In the past, people often avoided genetic testing for fear of being refused insurance coverage or turned down for employment if testing showed them at risk for developing a particular disease. But last year, Congress passed the Genetic Information Nondiscrimination Act, which prohibits using genetic information to deny benefits, raise insurance premiums or make decisions about hiring or firing.

At OMRF, the results of the testing were made available only to those taking the tests—not to OMRF or insurance companies. And those who took the test also received access to genetic counselors, who were available to help them interpret their test results.

"I've always wanted to take this test because of my family history and for my children's sake," says one OMRF employee. "But without this opportunity, I never could have afforded to do this. I'm grateful to OMRF for providing me with this chance to look into my future."



**Dr. José Alberola-Ila**, *Role of GATA-3 During CD4/CD8 Lineage Commitment*, National Institute of Allergy and Infectious Diseases

**Dr. Hong Chen**, *Epsin in Ubiquitin-Mediated Endocytosis of Notch Ligand: Implication in Angiogenesis*, American Heart Association

**Dr. Mark Coggeshall**, *Molecular and Immunologic Analysis of the Pathobiology of Anthrax*, National Institute of Allergy and Infectious Diseases

**Dr. Patrick Gaffney**, *Comprehensive Candidate Pathway Analysis in SLE*, National Institute of Allergy and Infectious Diseases

**Dr. Gary Gorbsky**, *Chromosome Movement in Prometaphase*, National Institute of General Medical Sciences

**Dr. Courtney Griffin**, *ATP-Dependent Chromatin-Remodeling Complexes and Vascular Development*, National Heart, Lung and Blood Institute

**Dr. Tim Griffin**, *Biomechanical Regulation of Mitochondrial Function in Osteoarthritis*, Arthritis Foundation

**Dr. John Harley**, *Lupus Multiplex Registry and Repository*, National Heart, Lung and Blood Institute

**Dr. Kenneth Hensley**, *Metabolic Replacement Therapy with Lanthionines for ALS*, Judith and Jean Pape Adams Charitable Foundation

**Dr. Judith James**, *Native American Research Centers for Health, Chickasaw Nation; Oklahoma Rheumatic Disease Research Core Centers*, National Institute of Arthritis and Musculoskeletal and Skin Diseases

**Dr. Paul Kincade**, *Replenishment of the Innate Immune System*, National Institute of Allergy and Infectious Diseases



Led by Kincade, OMRF researchers have found a “primitive” cell—one that can transform into different types of cells—that may lead to new insights for treating infections and certain types of cancer. The study appeared in March in the *Proceedings of the National Academy of Sciences*.

**Dr. Rodger McEver**, *Mechanisms for Blood Cell Adhesion Under Flow*, National Heart, Lung and Blood Institute

**Chip Morgan**, *Health Care and Other Facilities*, Department of Health and Human Services Health Resources and Services Administration

**Dr. Philip Silverman**, *Organization of F Plasmid TRA Proteins*, National Science Foundation

**Dr. Linda Thompson**, *Immune Function and Biodefense in Children, Elderly and Immunocompromised Populations*, National Institute of Allergy and Infectious Diseases

## OF NOTE



On May 14, OMRF was honored for the fourth consecutive year as one of Oklahoma’s “**Best Places to Work**” by OKCBiz and the Best Companies Group. Employee survey data helped determine the top nominees.



A discovery by **Dr. Xiao-Hong Sun** may lead to better ways to prevent infections in the elderly. The findings, published this winter in the journal *Blood*, point to ways for helping maintain a healthy immune system.



Oklahoma First Lady **Kim Henry** and five other former first ladies hosted the First Ladies’ Gala to benefit OMRF on March 27. Guests donned 3-D glasses for a special presentation that unveiled plans for OMRF’s new research tower.



**Dr. John Harley** was one of only 60 doctors nationwide selected in 2009 to the Association of American Physicians. Membership criteria include “excellence in the pursuit of medical knowledge and advancement of clinical science.”



For the seventh year running, OMRF has received the highest possible rating from **Charity Navigator**, the nation’s largest charity evaluator. OMRF’s score places it in the top one percent of charities rated by the group nationwide.



green

OMRE  
UNVEILS THE  
~~BLUEPRINT~~  
FOR A  
HISTORIC  
CAMPUS  
EXPANSION

en

BY ADAM COHEN

DR. STEVE  
PRESCOTT WAS  
PRETTY SURE  
HE WASN'T  
INTERESTED.

It was early 2006, and the Oklahoma Medical Research Foundation's board of directors had approached Prescott about becoming OMRF's ninth president.

Yes, the internationally respected vascular biologist knew all about OMRF and its reputation for scientific achievement. For four years, he'd served on OMRF's scientific advisory board. Throughout his career, he'd read the scholarly tracts by OMRF's faculty, listened to them lecture at conferences. In fact, for decades he'd collaborated with Dr. Rod McEver, one of OMRF's—really, the world's—leading cardiovascular biology researchers.

Still, Prescott figured he'd take a pass.

Having served as executive director of the University of Utah's Huntsman Cancer Institute, he knew what it was like to lead a biomedical research center that excelled in the pursuit of scientific knowledge. But after five years of doing that, the thought of shepherding another institution as it continued upon a smooth, if unexciting, scientific course held little appeal to him.

"OMRF was already excellent," says Prescott. "I knew that. And while finding a leader who can maintain the status quo in that kind of situation is very important, that's just not me.

"I like things that are difficult."

Hmmm. Difficult. How about leading the most ambitious campus expansion in the foundation's six-decade history? Nearly doubling the size of OMRF's laboratories? Recruiting dozens of the world's leading scientists to an independent medical research institute smack-dab in the middle of the country?

"When the board laid out the blueprint for OMRF's future, that's when I got excited. I thought, 'Here is a challenge I can sink my teeth into. Here's a chance to transform an institution.'" It was, he realized, "the kind of opportunity that you might only see once in a lifetime."

Prescott, of course, took the job. And three years later, his vision for OMRF's future is about to become a reality.

On May 18, OMRF broke ground on a new research tower. Rising from the center of OMRF's campus, the eight-story tower will add 185,000 square feet of state-of-the-art scientific and administrative space. When complete, it will house 34 new labs and a broad array of core technology facilities. It will also be home to a new OMRF clinic, a place where Oklahomans suffering from multiple sclerosis, lupus and other autoimmune diseases can receive treatment from rheumatologists with unsurpassed expertise in the field.

But perhaps the most novel aspect of the facility will be its environmentally efficient design.

The tower will be the first laboratory building in North America to use renewable energy sources to help power the facility, and it will become the second building in Oklahoma to earn gold-level certification for Leadership in Energy and Environmental Design (LEED). Crowned by 24 wind turbines—each designed to echo the shape of a DNA molecule—the tower will be the only medical research facility anywhere to harness the wind to fuel its labs.

"Most people design a building and then ask, 'How can we make this green?'" says Prescott. "We worked to install the green features first, and then we designed the rest of the building around them."

The bird-friendly, helix-shaped turbines are soundless and shrouded in materials that accelerate the speed of the wind to double energy output. Unique window and wall designs will bring natural daylight deep inside the tower to reduce electrical lighting, while newly developed energy management technologies will conserve electricity. All told, energy-saving features will decrease the facility's electricity usage by 37 percent and total power use by 17 percent.

Other key sustainable features include a living roof and rain garden that will prevent runoff pollution and insulate the building. To reduce water consumption, the facility will recycle condensation from the air conditioning system and use native plants in landscaping.

"This project is about being forward-looking and state-of-the-art in everything we do," he says.

## TAKE A VIRTUAL TOUR

Can't wait till 2011? Come visit OMRF's research tower today >> [tower.omrf.org](http://tower.omrf.org).

"WE WANT TO BE INNOVATIVE IN EVERY PART OF OUR ORGANIZATION."



Once upon a time, science was small. A solitary researcher toiled in an isolated lab, working alone for many years on a single problem. But the world of biomedicine has changed dramatically since OMRF was founded in 1946.

“Research today relies increasingly on large, multi-disciplinary teams of investigators,” says Prescott. “It’s all about collaboration, about assembling an all-star team of scientists with a host of different talents.” To continue to unravel increasingly complex biomedical challenges, he says, “We need to add a host of new investigators with strengths that complement those of our current researchers.”

With the new facility, OMRF expects to grow from its current size of about 50 principal scientists and 500 employees to approximately 80 scientists and 800 employees. “This will allow us to build our already robust research programs in immunology, cardiovascular biology, cancer and neurodegenerative diseases,” says Prescott. The tower will also provide a platform for strengthening clinical and “translational” research programs—“areas that focus on transforming laboratory discoveries into better outcomes for patients.” Central to this initiative will be the addition of new clinical space, with an emphasis on convenience and accessibility for patients and research volunteers.

Following completion, the tower is expected to house 300 new OMRF researchers, physicians, technicians and staff members. The total project cost, including construction, equipment, furnishings and recruitment packages for 30 senior-level scientists, is expected to be \$125 million.

This fundraising effort, dubbed the Discoveries Campaign, is the largest in the foundation’s history. To date, \$50 million has been raised, with a lead grant of \$15 million from the Oklahoma Opportunity Fund.

“This is an investment that will pay major dividends for our state’s health, environment and economic development,” says Gov. Brad Henry. “In this tower, OMRF scientists are going to perform the research that will drive the next generation of life-changing discoveries. By building this one-of-a-kind research facility, we’re taking another crucial step toward making Oklahoma the Research Capital of the Plains.”

Situated at the heart of a campus that is landlocked on its perimeter, the tower represents OMRF’s last chance to grow. “Yes, this is an ambitious expansion,” says Len Cason, chair of OMRF’s board of directors. “But we will never have another opportunity like this, so we have to seize it.”

The building will sit directly north of the foundation’s main building at 825 Northeast 13th Street and is expected to be ready for occupancy by January 2011. With an open configuration that mimics the shape of a pinwheel, the layout of each floor “is designed to encourage communication between scientists and allow close proximity between laboratories and office space,” says Dan Watch of Perkins + Will, the lead architect on the project. Indeed, the tower’s pinwheel configuration and green elements have literally rewritten the book on research facility design: A rendering of the building graces the cover of Watch’s new textbook, *Building Type Basics for Research Laboratories*.

The Norman firm of Architects in Partnership is assisting with design work, while Flintco is acting as construction manager for the project. “We have a great team in place,” says OMRF Executive Vice President and Chief Operating Officer Chip Morgan, who is coordinating the project internally. “This building has been a labor of love for so many of us—the scientists who helped craft the lab

## GREEN DAY

OMRF’s new research tower will

- Save the equivalent of 44,470 gallons of gasoline each year
- Cut annual CO<sub>2</sub> emissions by 2,162,520 pounds
- Be the first medical research facility in the world to harness the wind to help power its labs



designs, the architects who put pen to paper, the laborers who will transform it all into concrete and steel.”

Prescott is, of course, excited to see the tower become a reality. “But the building itself is not as important as what happens inside it.” For OMRF, the facility will be the physical manifestation of an expansion that began last year, when OMRF successfully recruited seven new principal scientists from Duke University, the University of North Carolina, Yale University, the Cleveland Clinic, Case Western Reserve University, the National Institutes of Health and London’s Imperial College of Medicine. And once the tower is complete, dozens more will follow.

“With this facility,” says Prescott, “we’ll have a unique asset—something that will bring the world’s most talented biomedical scientists to Oklahoma.”

Not long ago, Prescott stood alongside the plot of land that will soon be home to the tower. The early spring winds were gusting, and he had his hands jammed in his pockets. Bulldozers and cranes whined as they scraped red dirt and rock from the site, preparing it for the piers, pillars and concrete footing that would form the base of the structure.

“After so much planning, it’s easy to forget that this is at last coming to fruition,” he said. “But then, I’ll hear a bang, or the floor of my office will shake”—he smiled—“and I’ll remember.”

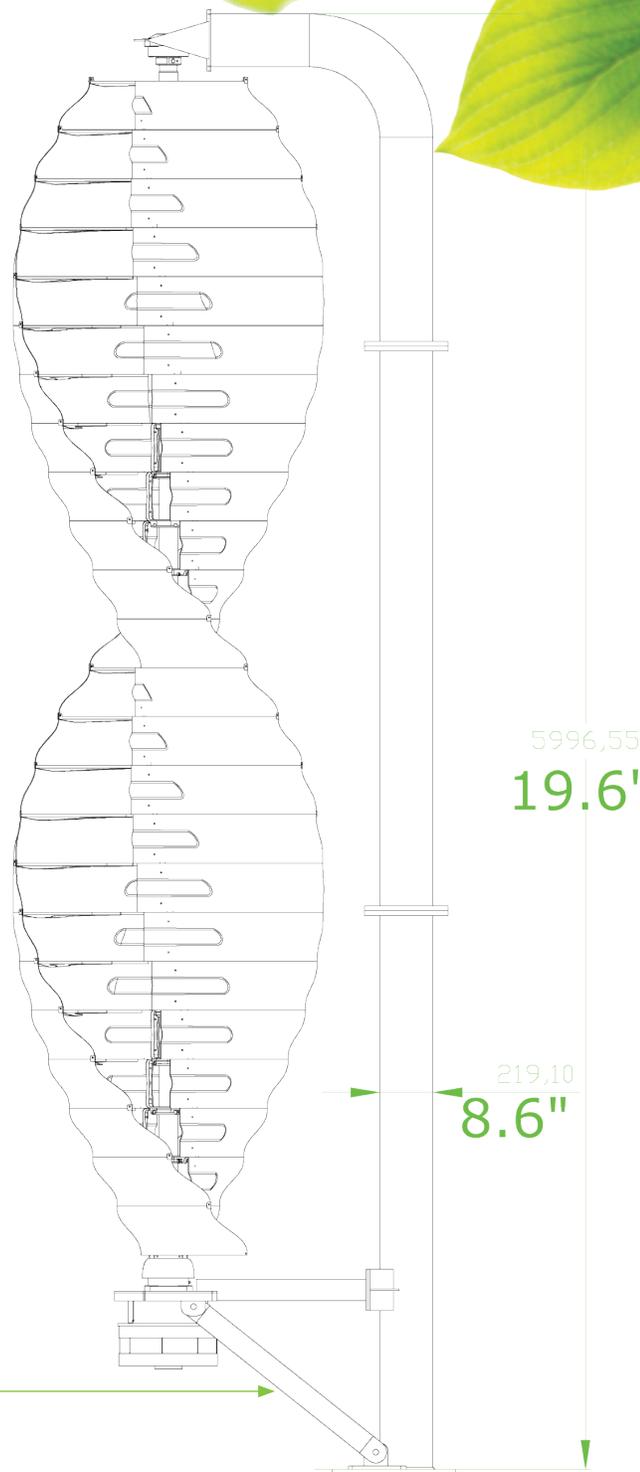
The total project cost of \$125 million, admitted Prescott, “is a substantial sum, no question. And we still have a long way to go to reach that goal. But this expansion is the key to OMRF’s future.”

The wind kicked up a cloud of dust, and you could almost see the DNA-shaped turbines spinning in the breeze. They’d be powering a lab where a team of OMRF researchers was working on a new Alzheimer’s discovery. Or maybe fueling a breakthrough that would bring hope to cancer patients.

“This tower is going to keep OMRF and Oklahoma on the leading edge of biomedical research for a long time,” said Prescott. He took his hands from his pockets and spread them wide. “I can’t wait to open the doors.”

## SPIN CYCLE

DNA-shaped wind turbines will generate 58,000 kilowatt hours of the tower’s electricity each year.





Meagan McLain was 21 years old.  
A college student. And dying.

Temperature 106. Heart rate 180. Blood pressure plummeting. In the ICU at the Midwest Regional Medical Center, physicians and nurses scrambled to stabilize her. But to no avail.

Meagan had come to the hospital complaining only of pain in her lower back. Soon, though, her blood oxygen dropped to dangerous levels. Her heart was racing at a gallop, her body burning up with fever. And then her breathing, at first labored and halting, stopped altogether.

Doctors pushed a tube down her throat, into her lungs. Within moments, they hooked a ventilator to the tube, and a machine began to do for Meagan what her lungs could not—breathe.

Still, her physicians had no idea what had pushed this University of Central Oklahoma student to the verge of death. Or how to stop it.

**YOU'VE PROBABLY NEVER HEARD OF SEPSIS.**

Meagan hadn't. But, as her doctors would soon discover, that was what was killing her.

Sepsis is the body's attempt to counter another infection that has moved into the bloodstream. The problem is, that massive, system-wide counterattack often proves more devastating than the original infection. Blood vessels become inflamed, and their cell walls leak fluid. The clotting system goes haywire, simultaneously causing bleeding and throwing clots. The resulting tissue and organ death makes sepsis one of the most dangerous threats in intensive care units: All told, it kills 250,000 Americans each year.

In Meagan's case, the original infection had come in the form of a pimple. What she didn't know is that this seemingly innocuous skin infection harbored dangerous *Staphylococcus* bacteria. Those bacteria eventually migrated to her lower back, where they formed a large, painful abscess below the skin.

Her young life hung by a thread.  
Could an OMRF discovery save her?

Meagan's

When Meagan went to the hospital, physicians—suspecting her back pain was caused by meningitis—performed a spinal tap. In the process, they discovered an abscess, and the infection subsequently spread into her bloodstream. That’s when Meagan went septic.

**“SHE’S DYING! SHE’S NOT GOING TO MAKE IT!”**

Meagan’s mother knew death. Working at Midwest Regional Medical Center, Monica Parham saw it each day. Watching her daughter lying motionless, unconscious and hooked to a ventilator, she began to try to wrap her mind around the unthinkable. “I was losing my baby girl.”

As Parham kept a vigil by Meagan’s bedside, doctors approached her with a set of permits. We have a drug we think might help your daughter, they said.

Parham could scarcely process what they were saying. “I was too much of a basket case.” So Meagan’s father, Rex McLain, signed the forms. And in minutes, doctors began an IV drip of a drug called Xigris. It was, the doctors said, the last, best chance to save Meagan’s life.

**FOR DECADES, SEPSIS HAD PROVEN A NOTORIOUSLY** tough medical riddle to solve: More than 20 experimental drugs had failed to show any benefit in treating it. But after a clinical trial found that Xigris reduced mortality among the most severe sepsis patients by 24 percent, the Food and Drug Administration gave the drug its seal of approval. The drug, a synthetic version of a human protein, has its roots in the work of OMRF’s Drs. Charles Esmon and Fletcher Taylor.

In their laboratories at OMRF, Esmon and Taylor discovered a method of controlling the body’s blood-clotting cascade. Eli Lilly and Company built on this research to create Xigris, which works by helping to normalize the body’s clotting system and calm inflammation.

In Meagan’s case, says Taylor, “It was a miracle of timing. They got Xigris to her at the right time, and it worked precisely the way we want it to.” Yet that result would not become evident for some time.

In the interim, Meagan lay in a coma induced by medication. The sedation was necessary to counter the severe discomfort of the intubation.

As the ventilator breathed for Meagan and IVs delivered sustenance, fluids and medication to her motionless frame, her loved ones took turns by her bedside. “I just cried and cried,” recalls Meagan’s friend Carrie Fralish. “There are no words for how awful I felt seeing my friend in there and not knowing if I was ever going to get to talk to her again.”

**FOURTEEN DAYS AFTER SHE FIRST ENTERED THE** hospital, Meagan awoke. She remembers seeing a nurse. And trying to say one word: “Mom.” And then everything went black again.

Her next memory is a room full of friends and family. Some cried. Everyone smiled. They knew, at long last, that Meagan was going to make it.

But the path back was not smooth. Sepsis had taken a heavy toll. As Meagan had slumbered in a coma, her muscles had atrophied so much that she was too weak to even crawl into bed on her own.

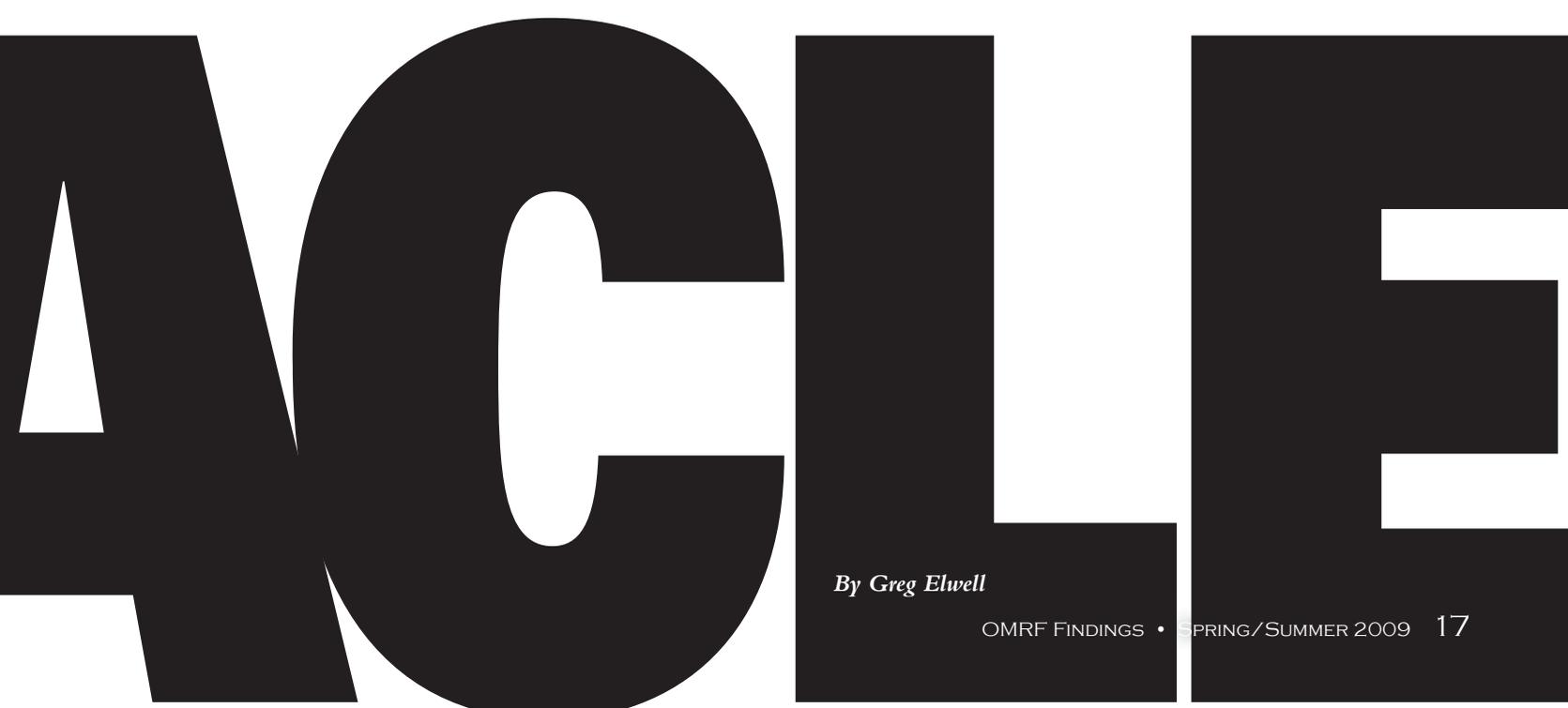
“I’d break into tears every time the physical therapist came, because I couldn’t get my body to work the way I wanted it to,” she remembers. “I just wanted to know when I’d be normal again.”

Still, unlike so many sepsis survivors, who often lose organ function and limbs, Meagan emerged intact from her battle with the illness. In the weeks and months that followed, she endured session after session of grueling physical therapy. She returned to college. And today, almost three years after sepsis nearly took her life, it’s like it was never there.

“I know that if it wasn’t for Dr. Taylor and Dr. Esmon, I might not be here,” she says. “Xigris gave me the chance to survive. What I do with it from now on is up to me.”

Today, Meagan McLain is 24 years old. As of May, she’s a college graduate. And she’s very much alive. 

**Hear more from Meagan, her family and friends at [interactive.omrf.org](http://interactive.omrf.org)**



*By Greg Elwell*

# LESSONS IN PHILANTHROPY

*Putnam City School students learn early that giving to OMRF's cancer research efforts is a good thing. In Nathan Holliday, it instilled a timeless lesson: It's better to give than to receive. Now 18 and about to graduate from Putnam City West High School, Holliday says that as chair of PC West's Cancer Fund Drive, he's learned lessons that he'll carry with him throughout his life.*

T-shirt sales, powder puff football, car washes, talent shows—we do whatever it takes to get students involved and pumped up. My freshman year we raised more than \$40,000.

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My grandpa died of cancer in 2001, and my dad had melanoma twice.

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Everybody buys Cancer Fund Drive t-shirts. Even if you only have \$5 in your pocket, giving it to the Cancer Fund Drive does something great.

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The cancer drive started 30-some-odd years ago, but it's still relevant today. So many people have been touched by cancer.

If we were just doing this for our school, it wouldn't be as successful. This is for something that's bigger than everybody.

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We've raised nearly \$3 million for OMRF because (Putnam City teacher) Lois Thomas cared about people back in the 1970s.

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She proved that one person really can start a revolution.

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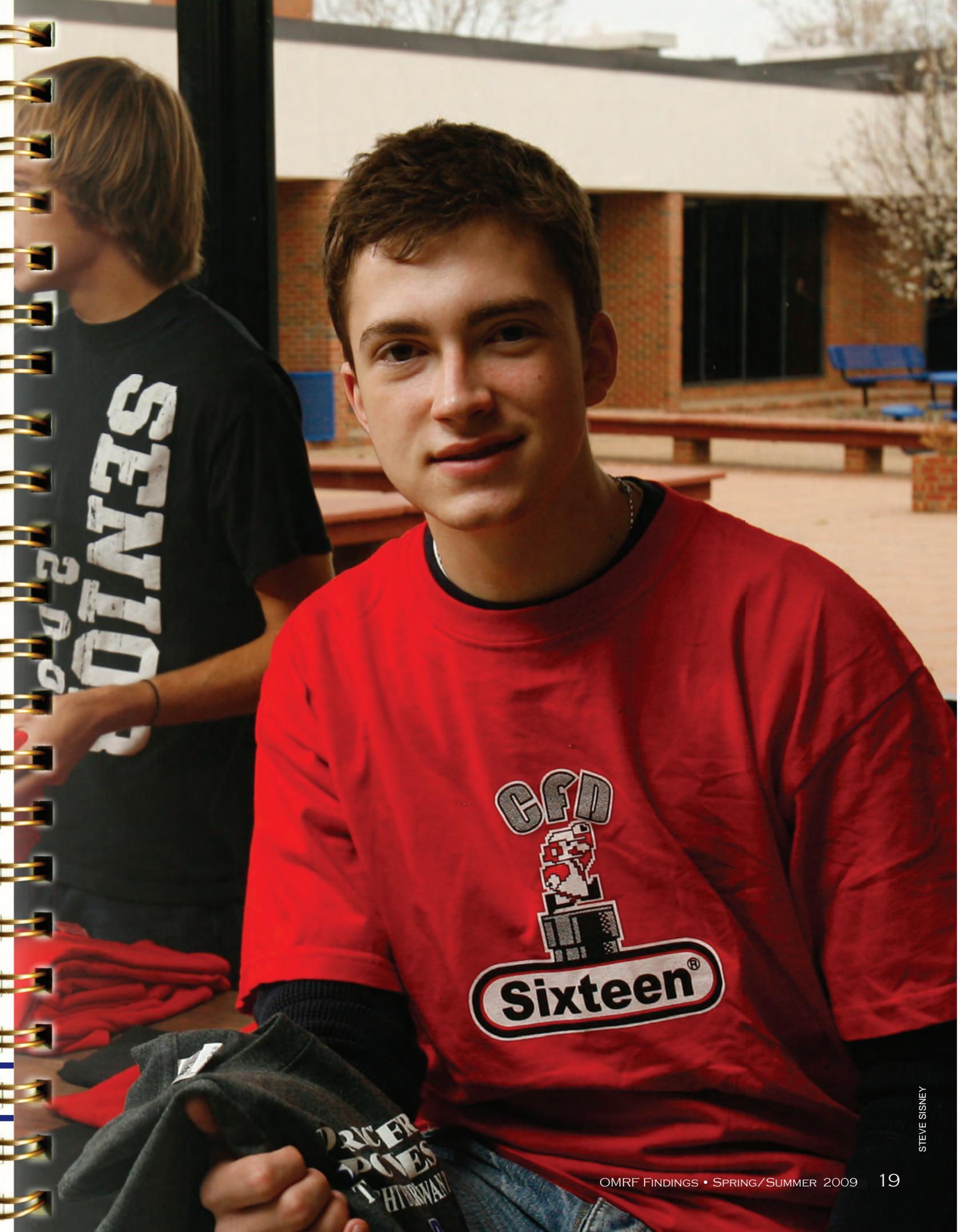
The cancer drive has helped me be a better person and a better leader.

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When scientists find a cure for cancer, we'll know we've been a part of it.



Hear Nathan tell his story  
at [interactive.omrf.org](http://interactive.omrf.org)





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## LOOK BACK

Yes, that's Elvis Presley on the right. But who's the guy hamming it up with the King on his yacht? The star of *Make Room for Daddy*, this late actor visited Oklahoma City to tour OMRF's labs in 1968. He later founded St. Jude's Children's Research Hospital, where today his daughter carries on the family tradition of philanthropy. For a chance to win an OMRF T-shirt, can you name Elvis' pal? Send guesses to [findings@omrf.org](mailto:findings@omrf.org) or call 405-271-7213.