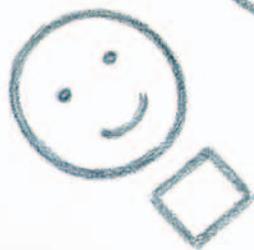


Findings

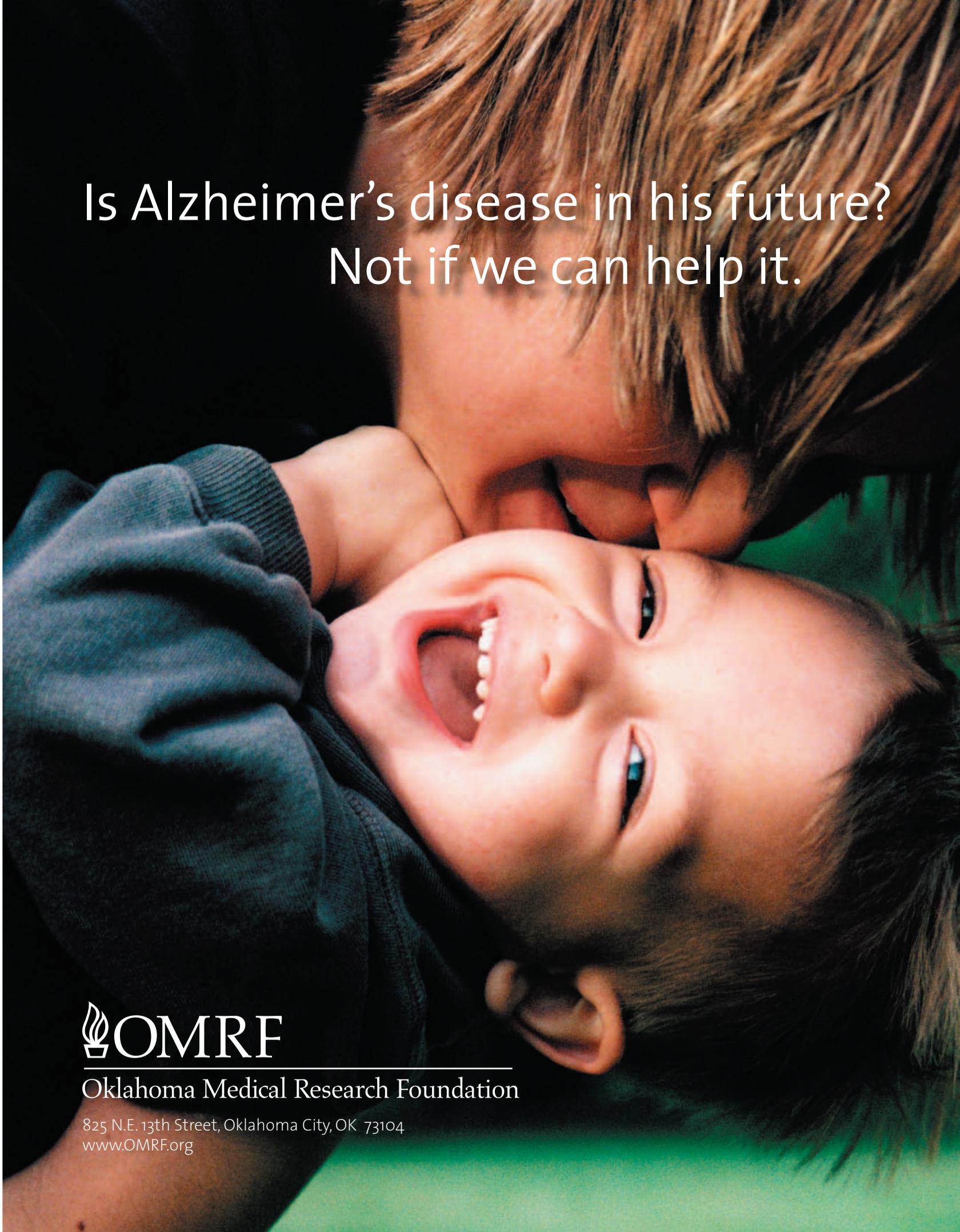
Oklahoma Medical Research Foundation

Winter/Spring 2007

Which is happy?



AUTISM
a Personal
Story



Is Alzheimer's disease in his future?
Not if we can help it.



Oklahoma Medical Research Foundation

825 N.E. 13th Street, Oklahoma City, OK 73104
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Findings

The Magazine of the Oklahoma Medical Research Foundation

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- 2005 Silver Quill Best Magazine
- 2005 Upper Case Best Magazine
- 2005 Bronze Quill Best Magazine
- 2004 Upper Case Best Feature Writing



Oklahoma Medical Research Foundation

Chartered in 1946, the Oklahoma Medical Research Foundation is one of the nation's oldest, most respected biomedical research institutes. Dedicated to understanding and curing human disease, the nonprofit institute focuses on such critical research areas as Alzheimer's disease, cancer, lupus and cardiovascular disease. It is home to Oklahoma's only member of the National Academy of Sciences.

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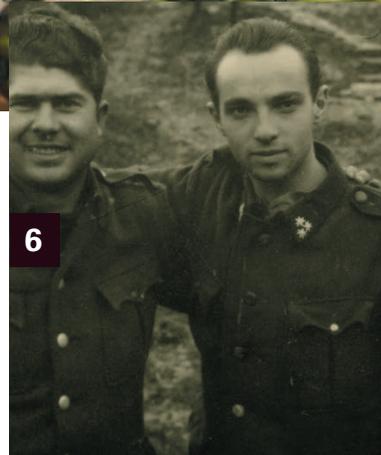


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10 Bringing up Jeremy

Dr. Jim Rand devoted his career to understanding how cells communicate with one another. He never suspected that this research would one day lead him back to his own family. Until doctors told him that his own son suffers from a form of autism.



14 The Survivor

For many, a cancer diagnosis marks the beginning of the end. For OMRF patient Huguette White, it meant a whole new beginning. Scenes from a remarkable life.



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Cover illustration by Bruce Eagle



Tighten your belts. Again.

That's the message biomedical researchers received in February when the president made his recommendation for the 2008 National Institutes of Health budget.

The president recommended no increase in the NIH's budget for the current year. This is hardly what biomedical researchers had hoped for, particularly after the Senate resolved last spring to boost spending on health and education by \$7 billion.

Congress will work out the final spending package in the coming months. But regardless of where the dust settles, one thing is clear: For a fifth straight year, the budget for the nation's leading supporter of biomedical research will remain essentially flat.

In the United States, the NIH funds about two-thirds of all biomedical research conducted at nonprofit and academic institutes. The NIH is the primary engine that powers the search to better understand—and, hopefully, diagnose, treat and cure—disease. That means cancer, Alzheimer's, heart disease and diabetes. It also means emerging threats like avian flu and bioterrorism.

When it comes time to pick up the tab, we each pay about \$97 per year to fund the NIH, to advance the health and well-being of our nation. On the other hand, annual national defense spending now has reached \$1,600 per capita.

The budget environment inevitably forces Congress to make difficult choices. Yet we can ill afford to erode the biomedical research base we have worked so long and hard to build.

Contrary to Hollywood conceptions of science, discoveries do not happen simply like the flick of a switch. Medical research is a long-term process, and the novel drugs and therapeutics emerging today are the culmination of medical research that, in most cases, began more than a decade ago.

With the continued flat-lining of the NIH budget, success rates for grant applications have hit an all-time low. In 2005, the NIH funded only 22 percent of grant applications, significantly

below its historical average of roughly 30 percent and a full 50 percent below funding rates in the early to mid-1970s. Although competition is certainly healthy, when the funding line is pushed so low, many first-rate projects do not survive the chopping block.

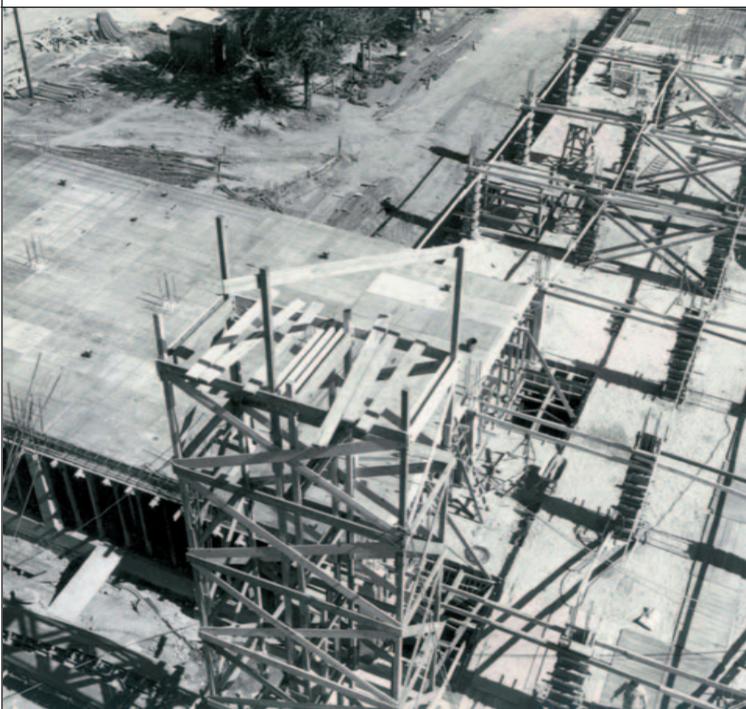
In this climate, all scientists, and particularly junior researchers, are experiencing great difficulty finding funding for their work. Indeed, since 1970, the average age at which a researcher secures his or her first significant NIH grant has moved from 35 to 43. Unable to secure financial support for their work, growing numbers of promising young scientists now are abandoning the field.

In Oklahoma, the state has made admirable efforts to offset federal research funding shortfalls through the Oklahoma Center for the Advancement of Science and Technology and Gov. Brad Henry's EDGE endowment. Still, institutions must grow resourceful in finding other durable, steady streams of support for biomedical research.

At OMRF, we increasingly rely on philanthropic support to fund our work. And thanks to the support of a private trust, which pays our administrative expenses, we are able to use 100 percent of donations to fund research.

Because of the generosity that so many have shown over the past 61 years, we stand on the cusp of a golden era of discovery. Now, more than ever, OMRF needs your help. Together, we can make a difference in the lives of Oklahomans and people everywhere.

Stephen M. Prescott



Happy Birthday, OMRF!

I WAS PRACTICING medicine in Ponca City at the time OMRF was started. Many of us physicians at that time made a 10-year pledge for \$1,000 a year for 10 years, as I recall, which my dad and I both did. That seemed like quite a bit of money, because office calls were only \$3 during those years. But I think it is wonderful how OMRF has grown and all it has done. It has been a pleasure to be associated with it.

DR. EUGENE ARRENDELL
TULSA

MY COMPLIMENTS on the 60th anniversary issue of *Findings*, which keeps getting better and better. The timeline is a great device and lends scope to the narrative. That the Rolling Stones would still be touring in the future was a cute touch. I'm keeping that for my math class. For some reason, the ideas of interpolation and extrapolation seem hard for some to grasp. The Stones might be just the image that they need.

REGINA BUCKLEY
WYNNEWOOD, PENN.

Editors' Note: Thanks, Mom! The T-shirt is in the mail.

YOUR PUBLICATION came today, and I have read it cover to cover. I look forward to it every time.

MRS. BOYD PHILLIPS
ENID

MANY READERS correctly identified former University of Oklahoma football coach Barry Switzer as our mystery person on the back of our last issue. Along with her contest entry, reader Jolayne Tune asked, "Why isn't the nurse drawing Switzer's blood wearing gloves?"



OMRF's Dr. Hal Scofield answers: "No one wore gloves to draw blood in those days. Universal precautions for handling human specimens—including blood—were not instituted until the late 1980s. In fact, some surgeons were still operating barehanded as late as the 1940s. So the wearing of lab gloves is a relatively new practice."

LIKE BARRY SWITZER, I, too, participated in the Lipid Research Clinic studies. At first, I wasn't too keen on the idea, but once I learned what it was about, I was in it all the way. Even when I moved to Chicago, your people made sure I got my medication. I stayed in it from 1975 through the end. That program was one of the best things in my life.

JOHN H. BUDWILL
EL DORADO, KAN.

write to us!

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

SPOTLIGHT LETTER

THOSE WHO CONCEIVED of OMRF 60 years ago would indeed be proud of the ongoing stewardship of their mission, "so more can live longer, healthier lives." The scientific discoveries emanating from OMRF's labs over the last six decades are making indelible contributions to the health and well-being of citizens in America and around the world. The fall 2006 edition of *Findings* takes its readers on a brief but momentous journey through time, capturing some of the organization's crowning achievements in historical snapshots. The graphics are captivating, the side scripts are illuminating, and best of all, the journey has just begun. Candle-blowing services are definitely available, Dr. Prescott. When do we cut the cake?

ELISSA CROCKER
OKLAHOMA CITY

NO END IN SIGHT

OCTOGENARIAN RESEARCHER STILL FINDS CHALLENGES EACH DAY

M

Many Americans dream of retiring as early as possible. But mention the word “retirement” to the head of OMRF’s Lipid and Lipoprotein Laboratory, and he simply smiles. It’s a smile that says, “Rocking chairs are not an option.” Because for this 83-year-old scientist, who recently marked his 47th year at OMRF, too much remains to be done even to think of calling it quits.

Dr. Petar Alaupovic—known affectionately at OMRF as “Dr. A”—has spent more than half his life studying lipoproteins, compounds that carry fats and cholesterol in the blood. Indeed, he’s one of the pioneers in this mind-bogglingly complex area of research, and his work in the field continues full-throttle today. “My health is really good, and I can still get up early in the morning, work until 7 in the evening and enjoy it,” he says.

Alaupovic has called OMRF and Oklahoma home since 1960. His life here—as a scientist, as an American—represents a dream he only could have imagined as a boy growing up in Yugoslavia (now Croatia).

As a high school student in Zagreb, Alaupovic studied philosophy, history, literature and the arts. He learned to love opera, spoke seven languages and was named Yugoslavia’s rowing champion. Life was good, and his future seemed limitless. Then the German army came marching across the border.

The subsequent war made daily life a struggle, but Alaupovic managed to go to school and earn a degree in chemical engineering. He paid his tuition by playing the saxophone in a jazz band each evening at the local radio station. After college, he took a job as a chemist but realized that if he wanted to do meaningful work, his best hope was to go to the United States. In 1957, Alaupovic was offered an “unbelievable opportunity”—a research fellowship at the University of Illinois, Urbana.

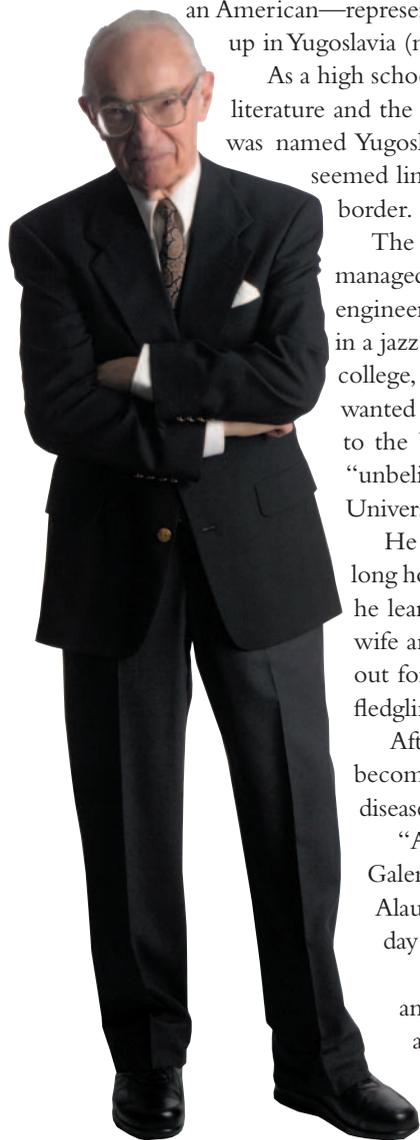
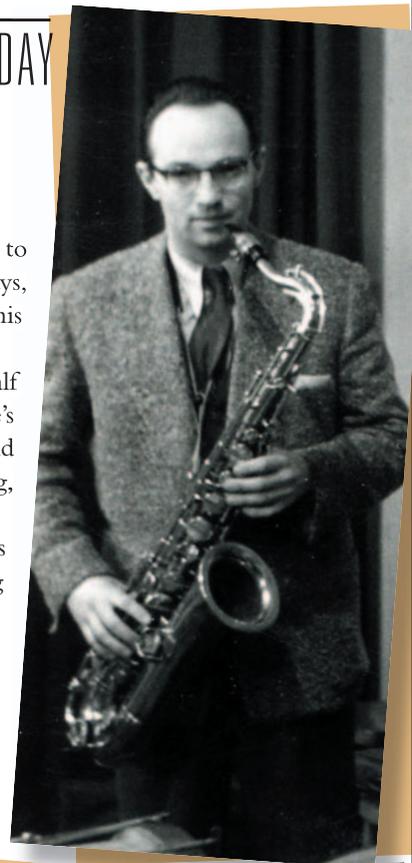
He accepted the position, and for three years he worked long hours in the lab and sharpened his English skills. When he learned about a job opening at OMRF, Alaupovic, his wife and young daughter packed their old Pontiac and set out for a fresh start in Oklahoma City. OMRF was still a fledgling foundation, but Alaupovic sensed he could help make a difference. And he did.

After just four years, he created a naming and classification system for apolipoproteins that has become the international standard. These proteins play important roles in causing coronary heart disease, diabetes and stroke. That same year he and his family became U.S. citizens.

“After all these years, he goes to his lab each day, writes papers and is still thinking,” says Dr. Galen Robbins, an Oklahoma City cardiologist and OMRF board member who has known Alaupovic for many years. “He’s the kindest, most soft-spoken worker and truly believes each day means one more contribution to science.”

Alaupovic has lectured throughout the world and received numerous honorary degrees and awards during his illustrious career. Today, he continues to serve as head of OMRF’s lipid and lipoprotein laboratory.

Although nearly all of his contemporaries have hung up their lab coats, retirement just doesn’t seem to be in the cards for Alaupovic. “This path is not for everyone,” he admits. “But I can’t think of anything more exciting.”



Teaching an Old Drug New Tricks

Can a common pain reliever fight a deadly neurodegenerative disease? One OMRF scientist believes it could, and he has received a grant to study whether an over-the-counter drug can slow the progression of amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's disease.

The Muscular Dystrophy Association will fund Dr. Kenneth Hensley's research project examining whether acetaminophen, the active ingredient in Tylenol, can combat ALS. "Sometimes it's not the newest, fanciest drug that can treat disease," says Hensley, an assistant member in OMRF's Free Radical Biology and Aging Research Program. "Acetaminophen suppresses inflammation, and we've seen positive results in tests with mouse models."

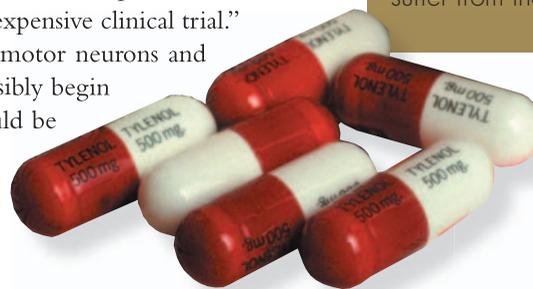
With the grant, Hensley will expand his work using acetaminophen to treat mice that have been bred to develop a condition similar to ALS. "If those results are successful, we'd hope they'd serve as a foundation for a human clinical trial," he says.

Currently there is just one drug—riluzole—on the market to treat ALS. A prescription can cost patients more than \$1,000 a month and yields only marginal benefits. "Acetaminophen would be a safe drug at pennies per dose," says Hensley. "This also would be a very inexpensive clinical trial."

Hensley's study will investigate whether the medication protects motor neurons and slows progression of the disorder. Clinical trials for humans could possibly begin within two years after completion of mouse studies. Those trials would be conducted in collaboration with physicians outside of OMRF.

Dr. Kenneth Hensley has received a grant to study whether the active ingredient in Tylenol could fight Lou Gehrig's disease.

A chronic, progressive disease marked by degeneration of the central nervous system, **ALS** causes muscle weakness and atrophy, with death in two to five years from onset. The Amyotrophic Lateral Sclerosis Association estimates that as many as 30,000 Americans suffer from the disease.



Good Things Come in Fours



Charity Navigator, the nation's largest charity evaluator, has once again awarded OMRF four stars—its highest possible rating. OMRF is one of only four Oklahoma charities to earn Charity Navigator's top score every year since the nonprofit rating organization was founded in 2001.

"This 'exceptional' designation from Charity Navigator differentiates the Oklahoma Medical Research Foundation from its peers and demonstrates to the public that it is worthy of their trust," says Trent Stamp, executive director of Charity Navigator. According to Stamp, only 12 percent of the more than 4,000 nonprofits evaluated by Charity Navigator have received even two consecutive four-star ratings.

Using publicly available financial information, Charity Navigator promotes intelligent giving by providing report cards for national and international charities. It measures charities' performance in seven categories: fund-raising efficiency, fund-raising expenses, program expenses, primary revenue growth, administrative expenses, program expenses growth and working capital ration. It then assigns each charity a score from zero to four stars.

OMRF was one of 100 medical research organizations nationwide evaluated this year by Charity Navigator. Only one-third received a four-star rating, and OMRF was the sole medical research organization in Oklahoma to earn this score.

"We know that donors have a dizzying number of giving choices," says OMRF President Stephen Prescott. "Tools like Charity Navigator are a great way of promoting intelligent giving. The more information donors have, the better decisions they can make."

For OMRF, says Prescott, "It's nice to be recognized for our commitment to financial accountability. This rating should remind our supporters that when you give to OMRF, those dollars are not going to overhead; 100 percent are going to fund life-saving research on human disease."

Charity Navigator's evaluation of OMRF and more than 4,000 other charities can be found at www.charitynavigator.org.

Making Inroads Against Anthrax



In 2001, letters filled with inhalation anthrax spores killed five people and made 17 others ill. Those attacks spurred a new emphasis on bioterrorism research, both nationally and at OMRF. This winter, at the mid-point of a five-year research project, OMRF announced that it has made key strides toward developing more effective vaccines and treatments for the deadly infectious disease.

In a study involving 120 military personnel, Drs. Judith James, Sherry Crowe and **Darise Farris** have identified a novel strategy to improve the effectiveness and safety of a vaccine that currently carries a substantial risk of side effects and may not protect all vaccinated individuals. The OMRF researchers also are developing a new immunotherapeutic approach, which would use certain antibodies to treat the often fatal infection.

“The letter attacks of 2001 were a tragic reminder of the threat that anthrax poses,” says OMRF President Stephen Prescott. “OMRF’s scientists have risen to meet this challenge, and in a relatively short time, they have made real progress in finding solutions to this pressing biosecurity need.”

In fall 2004, OMRF received a five-year grant from the National Institutes of Health to study the form of bacteria that causes anthrax. The grant, which OMRF won in a competition involving roughly two dozen medical research institutions from across the country, was the largest ever awarded to an Oklahoma institution for bioterrorism research.

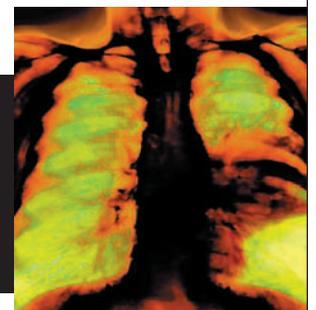
Using blood from individuals immunized with the currently approved vaccine, James, Crowe and Farris have focused on the body’s production of antibodies in response to anthrax vaccination. Their work has yielded insights that could help improve the vaccine for the majority of the population.

“Historically, researchers have focused on the anthrax bacteria themselves,” says Prescott. “The path that OMRF took was, instead, to study how the human immune system forms or fails to form immune responses to those bacteria. That non-traditional approach now is paying big dividends.”

Another key development on the project comes from Dr. Jordan Tang, who has created an inhibitor to stop the anthrax bacteria. And OMRF scientists also are developing models to test therapeutics before human trials and finding ways to predict who will experience side effects from the anthrax vaccine.

Prescott stressed that all of the research projects remain at the pre-clinical stages. “We still have much work to do,” he says. “But these discoveries will pay significant dividends for human health.”

Anthrax is an acute infectious disease caused by a form of bacteria that occurs naturally in grazing animals. It can be transmitted to humans by inhalation, skin infection or the consumption of undercooked meat from infected animals. Inhalation anthrax, the type involved in the letter attacks, has a mortality rate of 45 to 90 percent, even with treatment.



A Gift to Help Fading Minds

When **Lew and Myra Ward** chose to make a gift to fight Alzheimer's disease, their decision was driven by a desire to help not only those who suffer from the disease but also patients' loved ones. "I am always concerned about the families of people who have Alzheimer's. They are the ones who really suffer," says Lew. "All of us might end up with Alzheimer's sometime, so the more we can learn about it, the better off we're going to be."

In November, the Enid couple donated \$1 million to OMRF to create the Lew and Myra Ward Chair in Biomedical Research. The new endowed chair will concentrate on the study of Alzheimer's disease. In addition, it will emphasize research on lymphoma, a type of cancer that attacks the body's lymph system. That choice has a personal basis: The couple's daughter-in-law recently was diagnosed with the disease. "Hopefully, this will help with great advancements in the treatment of both Alzheimer's and lymphoma," says Lew.



The Wards, who grew up in families that made their living in the oil and gas business, both graduated from the University of Oklahoma in 1953. Together, they formed L.O. Ward Oil Operations and Ward Oil Co. Today, Ward Petroleum, an independent exploration and production company, operates more than 350 wells and has been named one of America's fastest growing private companies by *Inc.* magazine.

"Lew and Myra Ward have made their mark on Oklahoma in so many ways," says OMRF President Stephen Prescott. "This wonderful gift is but one more example of their willingness to invest selflessly in the future of our state."

Making Headway

OMRF scientists already have made important contributions to fighting both Alzheimer's disease and lymphoma. **Led by Dr. Jordan Tang**, OMRF researchers have created an inhibitor for the enzyme believed to cause Alzheimer's disease. They have made steady progress transforming this discovery into a drug to treat the disease, and they hope to begin human clinical trials of an experimental Alzheimer's drug this year. In another OMRF lab, **Dr. Paul Kincade** and his colleagues have discovered two new cell types they believe have special jobs in the immune system. This work holds promise in revealing how abnormalities in hormone production could lead to lymphoma.

Of Note



Kathy Taylor



James Morris II

Tulsa Mayor **Kathy Taylor** and **James Morris II**, a retired Oklahoma City insurance executive, have joined OMRF's board of directors. ❖ The Lupus Foundation of America honored **Dr. Morris Reichlin** as the 2006 winner of its Evelyn V. Hess Award for his outstanding contributions to lupus research, diagnosis and treatment. ❖ **Penny Voss** has joined OMRF as vice president of development, and **Janis Perrault** has been named vice president of human resources. ❖ The U.S. Senate has confirmed OMRF President **Stephen Prescott** to serve on the board of trustees for the Morris K. Udall Scholarship and Excellence in National Environmental Policy Foundation. ❖ The **Hon. Steven Taylor**, an OMRF director since 1988, was inducted into the Oklahoma State University Hall of Fame on Feb. 23. ❖ At OMRF's November board meeting, **Dr. Swapan Nath** received the Merrick Award for Outstanding Research and **Dr. Fletcher Taylor Jr.** became the fourth Distinguished Career Scientist in OMRF's 61-year history. ❖ In November, **Bethany High School** students presented OMRF with a check for \$6,366 to support cancer research. The students staged dozens of fund-raisers, including a cancer carnival, hamburger cookouts and candy sales, to raise the money. ❖ The National Institutes of Health has selected **Dr. Gary Gorbsky** to chair a grant selection committee in the Nuclear Dynamics and Transport Study Section.



Penny Voss



Janis Perrault

Which is happy?



BRinging
Jerem

By Mi
ill



Dr. Jim Rand devoted his career to understanding how cells communicate with one another. Little did he suspect that this research would one day lead him back to his own family.

When Jeremy Rand was a kindergartener, he figured out that one-quarter of one-quarter was one-sixteenth. He knew his multiplication tables. And he read novels written for third graders. But if you asked the 5-year-old whether someone in a photograph looked happy, he couldn't answer unless his parents used their fingers to trace the person's mouth. Oh, Jeremy would say at last, he's smiling.

Jeremy's parents, Drs. Jim and Kathy Rand, had long understood that their son was different from other children. Even at four months, when the Rands moved from Wisconsin to join the scientific staff at the Oklahoma Medical Research Foundation, Jeremy became easily upset. He was extraordinarily sensitive to his environment; certain smells bothered only him, and he required soft clothing without tags inside. He clung to his mother, crying and shunning interaction with others. Was this, Kathy wondered, what all parents go through?

As a cell biologist, Kathy had devoted her life to understanding how organisms function. So she decided to take some time off to learn more about this little organism she and Jim had just brought into the world.

Meanwhile, at OMRF, Jim set his sights on learning how signals in the nervous system and brain—in effect, the body's wiring—influence movement, function and interaction. By isolating the nervous systems of minuscule roundworms known as *C. elegans*, he learned about genetic disorders like muscular dystrophy. His work taught him that, much like a single wire controls the flow of an electrical current, a single mutation in a gene can change the function of the entire nervous system. Jim understood that his work could provide valuable insight into a variety of brain disorders. But it would be years before he learned that his own son suffered from one of those conditions.

“He should have known I hated chocolate!”

AS JEREMY GREW, he showed remarkable talents. At 2, he began using a DOS-based computer. By 5, he was solving mathematical equations better suited for those twice his age. But it was the simple things, the things we all take for granted, that posed the biggest problems.

Jeremy had trouble standing in line. He could tell you if he was angry or sad, but he couldn't identify emotions in others. Body language and facial expression meant nothing to him. Eye contact was fleeting at best, and he had a hard time playing with other children.

Routine errands, things like trips to the grocery store, devolved into screaming, thrashing tantrums. “What’s the matter?” Kathy would ask. It seemed a store employee had offered Jeremy a free chocolate chip cookie. “He should have known I hated chocolate!” he would shout between sobs.

At the age of 6, Jeremy was diagnosed with Asperger’s

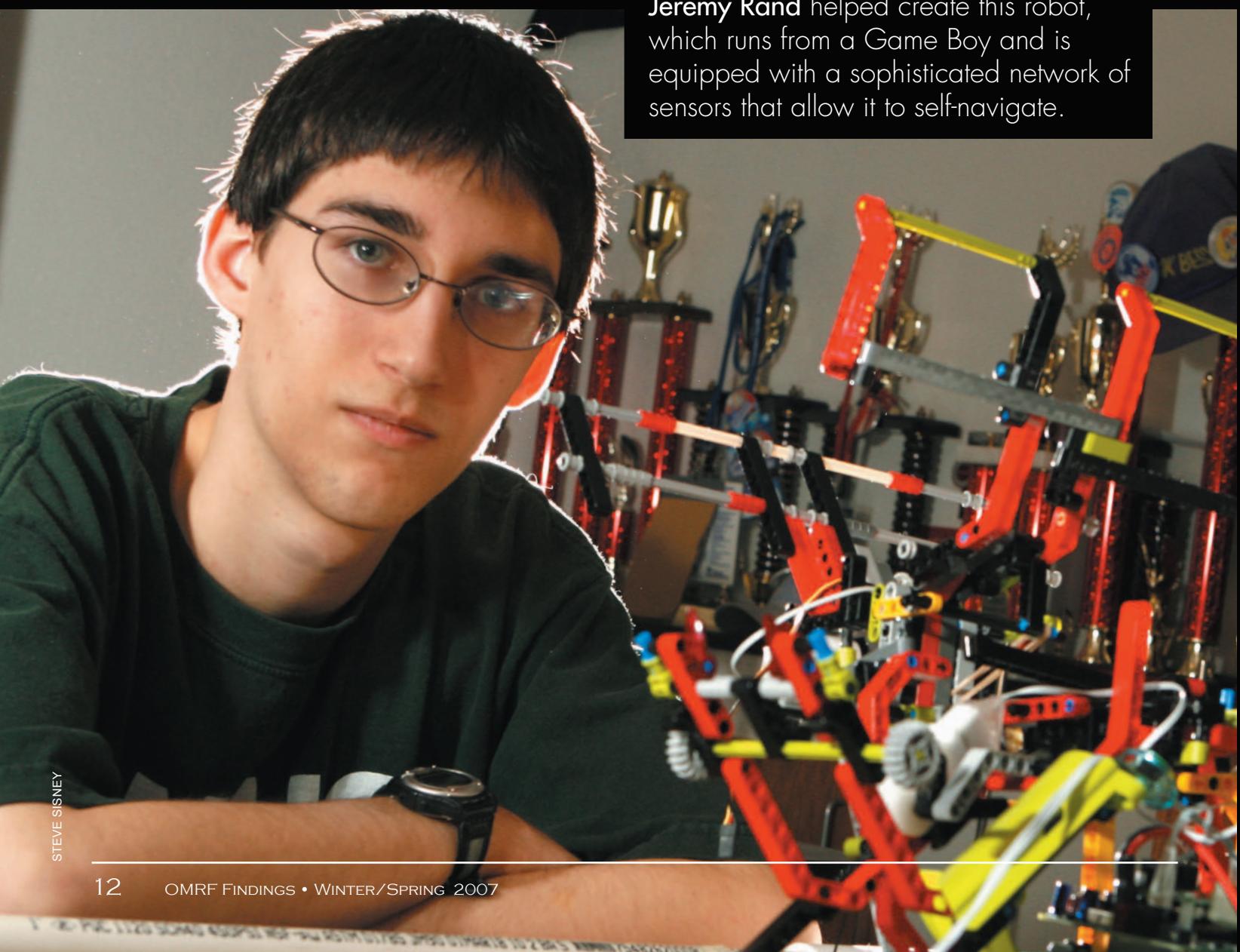
syndrome. Asperger’s is one of the autism spectrum disorders. Children with classic autism have language delays and deficits and difficulty relating to others; they display rigid, often obsessive behaviors, and some are mentally retarded. Those with milder conditions on the spectrum, like Asperger’s, exhibit some or all of these characteristics to lesser degrees. But Asperger’s also is distinguished by average or above average intelligence.

With Jeremy’s diagnosis, the 15 years that Jim had devoted to studying the nervous system had come full circle. “Now I had a kid whose nervous system wasn’t working like a normal nervous system works,” he says. But as much as he wanted to help his son by doing research that could contribute in some meaningful way to Jeremy’s life, his expertise was the nervous system of tiny worms. In other words, says Jim, “I was a far cry from being an autism researcher.”

Jim and Kathy sought the help of professionals to teach their 6-year-old son basic neurological skills, such as how to walk up and down stairs or throw a ball to his pet dog. At one point, Jeremy received 13 hours of one-on-one behavioral intervention each week, on top of lessons he learned during the routine school day in Norman Public Schools.

“It’s really difficult for these children because their brains

Jeremy Rand helped create this robot, which runs from a Game Boy and is equipped with a sophisticated network of sensors that allow it to self-navigate.



“When people have children, they envision being able to share the things they feel.”

aren't wired to think like other people,” Jim says. “People often don't understand if you're strong in one area, how you can have a deficit in another. In second grade, he was reading at 10th or 11th grade level, but if you asked him what a particular paragraph was about, he'd be three or four grades below his own grade level.”

One overriding issue was Jeremy's need for routine. For instance, says Jim, “If I were driving home and went two blocks farther than normal, my son might start screaming. Life is not supposed to be like that; to him, it would just be wrong.”

With support from his parents, from therapists, from teachers and school administrators, Jeremy has excelled in school. By middle school, he was taking high school classes. And this year, as a high school junior, he scored 35 (out of 36) on the ACT. But on a day-to-day basis, life presents a set of challenges most of us cannot conceive.

Jeremy's ability to focus on singular details also has led to a fascination with and aptitude for computers. He's learned several computer platforms, nearly even memorizing entire books on how they function. A self-proclaimed “computer hack,” he's broken codes of online gaming systems. As a member of his school's “Botball” robotics team, his programming skills have proved vital: Jeremy's robot can talk, and he even has designed ways to make it paralyze enemy robots.

In the Wiring

ABOUT ONE CHILD IN 150 develops an autism spectrum disorder, according to a study released in February by the Centers for Disease Control and Prevention. With roughly 560,000 U.S. children struggling with these disorders, they are more prevalent than pediatric cancer, AIDS and diabetes combined. Although autism's cause is unknown, scientists have long suspected that it stems from the way the brain is wired, that the circuitry is different from the norm.

In 2003, a study revealed that a particular gene (known as *neurexins*) was mutated in many patients with autism. For Jim, those findings represented a chance to build a bridge between his work and his life.

Neurexins is involved in synapse formation, or how nerve cells communicate with each other. From his many years of working with roundworms, Jim understood how he could rewire the creatures genetically. The worms have nerve cells similar to humans. What, wondered Jim, would happen if he disrupted the worm's *neurexins* gene? And what might that tell us about autism in humans?

Jim applied for and received a grant from Autism Speaks, the nation's leading funder of private autism research. He now

is studying the behavioral changes in worms with *neurexins* disruptions. The worms, Jim has discovered, have sensory deficits and restrictive exploratory behaviors. “These are characteristics often associated with autism spectrum disorders,” he says.

The research may help scientists figure out whether they can stimulate the synapses to form in children. It also could help them learn how such treatments might offset problems in brain “wiring” associated with autism.

The Rands' younger son, 12-year-old Marty, also has been diagnosed with a mild form of autism known as pervasive developmental disorder. Like his older brother, Marty often has difficulty grasping the importance of day-to-day tasks. Why is it important to comb your hair? Who cares if you brush your teeth? Kathy and Jim can teach the basic skill, but the struggle comes when the boys see no need to perform the act.

“When people have children, they envision being able to share the things they feel, things like taking care of other people and making the world a better place than how you found it,” says Kathy, who now serves as president of the Autism Society of Central Oklahoma. “It's really tough for us as parents, because concepts like empathy and emotion are hard for people on the autism spectrum to understand.”

Increasingly, people are beginning to understand. Autism diagnoses have risen tenfold since the 1980s, and the once obscure disorder has garnered cover stories in *Time* and *Newsweek* and countless features in national and local news media. In December, President Bush signed the Combating Autism Act, authorizing nearly \$1 billion over a five-year period to fight autism through research, screening, early detection and early intervention.

As Jeremy prepares for college, where he plans to study computer engineering or physics, he is doing his part to increase autism awareness. He works with his teachers to help them understand more about the autism spectrum, and he also participates in panel discussions on the topic with educators and fellow students.

Although he recognizes that he's wired differently than most people, Jeremy doesn't necessarily see it as a disadvantage. “I may have Asperger's, but I'm not stupid,” he says. “I just sort of keep the hard facts and my emotions segregated. When teachers tell me to do something, I just ask why. If they say I can't wear hats at school, I want to know why.”

Kathy and Jim have spent more hours than they can remember explaining why. That's why, for Jim, the chance to research autism represents a rare opportunity. “It's not that I'm going to go to a lab and come back with a magic bullet,” he says. “But there is a lot of anguish associated with having children with disabilities, and if I can help, that would be important.” **FINDINGS**

The Survivor



hope

By Shari Hawkins

For many, a cancer diagnosis marks the beginning of the end. For Huguetta White, it meant a whole new beginning.

It was windy that Thursday in November—the kind of swirling wind Oklahoma is famous for. Shrubs whipped back and forth. Leaves somersaulted across the portico of the Oklahoma Medical Research Foundation.

Huguette White moved nimbly across the stone porch, her long hair flying behind her. No matter that she walked on a single leg and a pair of crutches. Just inside the door, she clasped her hands over her heart and closed her eyes. “Oh, I feel like I’m home.”

GROWING PAINS. That’s what the doctor called the ache above Huguette’s knee. The throbbing persisted, sapping the 15-year-old’s energy and limiting her movement, but still her doctor seemed unconcerned. After eight months, when Huguette no longer could lift her leg, her parents consulted a second physician. He diagnosed her “growing pains” as cancer: Ewing’s sarcoma, a rare and deadly cancer of the bone that typically strikes adolescents and can spread quickly. Your chances of survival, he said, are not good.

Huguette and her family were not prepared to give up so easily. She and her mother flew from their native Lebanon to

OMRF’s research hospital. The year was 1954, and even though OMRF was internationally recognized for its work on childhood cancers, she nevertheless had reason to fear the worst: 53 years ago, few victims of Ewing’s sarcoma, in Lebanon or elsewhere, survived. The language barrier—Huguette spoke no English, only Arabic and French—only added to her apprehension about this unfamiliar place half a world from home.

Hugh Payne, OMRF’s general manager, made it his mission to comfort OMRF’s new patient. He knew that Huguette’s treatment would be harsh; the cancer had grown unchecked for the better part of a year, and surgeons deemed amputation the only way to save her life.

Payne delivered the news himself. When he told Huguette, translating through her mother, both women broke down sobbing. The teen had never heard of amputation, but Payne assured her that it would save her life. He also explained that her leg would be used for research, to help save other young people just like her. She dried her eyes. “If it’s going to help people, okay.”

The night before the operation, Payne stayed up with Huguette until the wee hours, reading to her from the Bible. The next morning, he presented her with her first corsage, a gardenia.

After the surgery at University Hospital, Huguette returned to OMRF’s research hospital. For the next three months, as she recuperated and underwent therapy, Huguette called OMRF’s research hospital home. Doctors wouldn’t know for certain for another year or two, but her surgery appeared to have been a success. OMRF’s doctors and nurses helped her adjust to the challenges of living with just one leg. They also helped teach her English—a language she speaks fluently today.



“You’d think that I would have been traumatized by it all, but it’s just the opposite,” she says. “It’s a beautiful memory for me, and I am so grateful to everyone here. It completely changed my attitude and made me a better person. Even my loss from cancer didn’t compare to what I gained from my time at OMRF.”

Huguette is not alone in finding a silver lining in her fight with disease, says OMRF President Stephen Prescott. “It’s surprising, but a bout with cancer can be a positive experience,” says Prescott, who served as executive director of the Huntsman Cancer Institute at the University of Utah before coming to OMRF. “Regardless of how serious the case or how difficult the treatment, people often remember a battle with cancer as a special time. Often, it shapes who they become later in life.”

Shortly after she finished her treatment at OMRF, Huguette returned to Lebanon. But when she found herself treated as an object of pity, she decided to return to Oklahoma and finish high school in Bristow, where her grandparents lived. After graduation, she took a job with the Oklahoma Tax Commission and enrolled at Oklahoma City University.

She had been cancer-free for four years, and she had adjusted to life after amputation. “I was independent and self-sufficient,” she says. “My life couldn’t have been better.”

BUT WHEN HUGUETTE was injured in a traffic accident in 1958, doctors made a terrible discovery: Cancer had again invaded her body, this time her lung. Once more, her physicians told her the outlook was grim.

Surgeons removed the lower lobe of one lung, and then Huguette returned to OMRF to fight for her life. Her doctors employed the same therapy that had successfully treated the cancer in her leg. The treatment was aggressive, employing nitrogen mustard—a crystalline form of the mustard gas used on battlefields—and wracking her weakened body. Again, Huguette’s OMRF caregivers stood by her side, offering support and comfort. And once more, she beat the odds. Four weeks later, she left OMRF for what she hoped was the last time.

Huguette then began a new chapter of her life. She met a man at a New Year’s Eve party, and before long, they were engaged. At her wedding, she wore a prosthesis (which she detests) so she could walk down the aisle. A year later, she gave birth to her daughter Kathy. “I changed her diapers, gave her baths, rocked her and carried her just like any mother would,” says Huguette. All on crutches.

At times, onlookers stared or whispered. Children tried to look up Huguette’s skirt in search of her missing leg. “My leg got sick,” she would tell them. Those encounters angered Kathy, but Huguette saw them as chances to tell of her victory over cancer, to show the world that life, even life with just one leg, was good.

She kept her outlook positive, even when she feared

the cancer would return. Even when her husband died in an automobile accident. She struggled as a young, single mother, determined to remain in the U.S. to raise her daughter. Money was tight, and Payne, her old OMRF friend, sometimes wired cash to ensure that bills were paid and daily needs met. And until he died in 1964, he even made sure that Huguette and Kathy had Thanksgiving turkeys and presents at Christmas. “Huguette was like part of our family,” says Hugh Payne Jr. “Dad looked out for her just like he did the rest of us.”

III

HUGUETTE KEPT FIGHTING. She became a U.S. citizen. She raised Kathy. She became a grandmother. But it was never easy.

Physical ailments still plague her today. Her lungs remain vulnerable, weakened by the aggressive treatment doctors used to treat her cancer years ago. Bouts with pneumonia sometimes have led to other debilitating illnesses. Diabetes and heart issues

“She’s been near death so many times, but no matter how bad it seems, she never, ever gives up.”





are constant concerns, and she occasionally suffers from shingles. Phantom pains from her amputation recur even 50 years later, some severe enough to hospitalize her. “When she gets sick, she is sicker than anyone,” says Kathy. “I know the dark side of her life, because I lived it with her and sometimes still do. She’s been near death so many times, and her life has been filled with incredible heartache and tragedy. But she always has hope. No matter how bad it seems, she never, ever gives up.”

Indeed, even on crutches—hers are white metal and adorned with yellow and orange flame-shaped stickers—she has covered more ground than most with two legs. She has trekked through the Amazon and across the Sahara. She has kayaked white water rapids, biked and hiked countless trails. And, says her boyfriend, Dan Brenden, “You should see her on the dance floor. She does disco, spins and twirls, all on one leg. She’s amazing.” Huguette even has earned a following in the unlikeliest of sub-cultures: the world of ultra-distance running.

Brenden travels the world to run races ranging from 26.2 to 300-plus miles, and Huguette always accompanies him. She has become a staple at checkpoints, where she awaits his arrival, yelling, “Go get ‘em, Dan! You can do it!”

In the 150-mile Jungle Marathon in the Amazon, her enthusiasm endeared her to the locals, who used their machetes to fashion a bench where she could sit and wait for the runners. Each day, she greeted the participants from her “throne” (complete with thatched roof), earning her the title “Queen of the Jungle.” Each night, she slept in a hammock and bathed in the river.

During Brenden’s five-day, 200-mile run in the Libyan Desert, Huguette navigated her crutches through deep sand

and over dunes to greet him at rest stops and hand out water and food to all the runners. She acted as a translator for race organizers, who spoke French, and participants, most of whom spoke English. Along the way, she stole the hearts of Bedouins who were camped nearby. As the only Arabic-speaking member of the race contingent, Huguette spent evenings with the desert wanderers, sharing stories by campfire light. They, too, devised their own honorific—“Sunshine of the Desert”—and begged her to stay with them.

AT EACH RACE, IT’S BECOME TRADITION for Brenden to scoop up Huguette and carry her across the finish line. He’s been known to wait patiently for her, regardless of what it might do to his finish time or place.

Huguette even has taken up running herself, covering one- and two-mile courses in the mountains near her Phoenix home. Recently, she completed her first 5-kilometer (3.1-mile) race. Her finish time, over mountainous terrain, was 68 minutes. It would have been faster, but she stopped to hand out water to other runners while the clock ticked on her own race.

Huguette’s daughter, Kathy, attributes her mother’s remarkable resilience to her relentlessly positive attitude. “She refuses to remember the bad things,” Kathy says. “It’s her survival technique. And because of it, she affects every person she meets. Mom says ‘I love you’ to everybody, and she’s completely sincere... It’s that unselfish love of hers that keeps her going and makes her so incredibly alive.”

Huguette traces that love back to OMRF, back to the battles with cancer she fought a half-century ago. “Cancer gave me real appreciation for life,” she says. “My family and friends, even those who didn’t speak my language, taught me to cherish every person and every minute. People here cared for me unselfishly. I was embraced and blessed in my time of need.”

This fall, Huguette returned to OMRF for the first time in 48 years. The research hospital is long closed, the doctors and nurses who treated her gone (although she still keeps contact with Dr. Robert Furman, one of her physicians at OMRF and now, like her, a Phoenix resident). Yet as she walked the halls of OMRF, Huguette wore an ear-to-ear grin.

“Mr. Payne would be so proud if he could see this foundation today,” she said on more than one occasion. “I wish he were here to share this moment with me.” She gave out dozens of hugs to the OMRF employees—“My new friends!”—she met.

Eventually, she settled into an OMRF conference room to visit about her days in the research hospital. From her chair, she looked out onto the same sun-soaked lobby where she first set foot so many years ago, a young girl in desperate need of help and hope. “People who give money for research don’t realize what their gifts mean,” she said quietly. “I’m just one of many whose life changed because of this place.” For a moment, she seemed pensive. Somber even. But then she smiled. And when she did, everyone else in the room smiled, too. **FINDINGS**

Grants

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

Dr. Robert Barstead, *A Gene Knockout Resource for C. Elegans*, National Human Genome Research Institute

Dr. J. Donald Capra, *Science in a Culture of Mentoring*, National Center for Research Resources; *Molecular and Immunologic Analysis of the Pathobiology of Anthrax*, National Institute of Allergy and Infectious Diseases; *Molecular Analysis of Human IGA for Mucosal Therapy*, Oklahoma Center for the Advancement of Science and Technology

Dr. Michael Centola, *Developing a Molecular-Based Diagnostic Assay for RA*, Oklahoma Center for the Advancement of Science and Technology

Dr. Margaret Clarke, *Dynamics of Intracellular Pathogen: Host Interactions*, Oklahoma Center for the Advancement of Science and Technology

Dr. Michael Dresser, *High-Speed Total Internal Reflection Fluorescence Microscope*, National Center for Research Resources

Dr. Charles Esmon, *Post-Translational Modifications in Host Defense*, National Center for Research Resources

Dr. Naomi Esmon, *Anti-Phospholipid Antibodies and the Protein C System*, National Institute of Arthritis and Musculoskeletal and Skin Diseases

Dr. Robert Floyd, *Nitron Anti-Cancer Activity in Colon and Liver Cancer*, Oklahoma Center for the Advancement of Science and Technology

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

Dr. John Harley, *Molecular Mechanisms and Genetics of Autoimmunity*, National Center for Research Resources; *Lupus Multiplex Registry and Repository*, National Heart, Lung and Blood Institute; *EBNA-1 in Lupus*, National Institute of Allergy and Infectious Diseases

Dr. Kenneth Hensley, *Tocopherol Metabolites in Diabetic Hypertension*, American Diabetes Association; *Epidemiology of Tocopherol Metabolites in Diabetic Hypertension*; *Novel CEHCs in Neuromuscular Disease*, Oklahoma Center for the Advancement of Science and Technology

Dr. Corey Johnson, *Lipid Raft Regulation of PIP2 Signaling T Cells*, American Heart Association

Dr. Susan Kovats, *Estrogen Regulates Dendritic Cell Differentiation*, Oklahoma Center for the Advancement of Science and Technology

Dr. Florea Lupu, *Blocking Nuclear Import of HIF1 Alpha as Therapy for Sepsis-Associated Vascular Thrombosis*, American Heart Association; *EPCR, TAFI as Regulators of PMN/Endothelial Interaction*, National Institute of General Medical Sciences

Dr. Satoshi Matsuzaki, *Mechanisms and Consequences of Mitochondrial Complex I Inhibition During Cardiac Ischemia and Reperfusion*, American Heart Association

Dr. Rodger McEver, *Protein-Glycan Interactions in the Vascular System*; *Cytoplasmic Regulation of P-Selectin/PSGL-1*, National Heart, Lung and Blood Institute

Dr. Joan Merrill, *Genetic Basis of Platelet Dysfunction in APS*, Oklahoma Center for the Advancement of Science and Technology

Dr. Molina Mhatre, *Role of Thrombin and APOE-4 in Sporadic AD*, Oklahoma Center for the Advancement of Science and Technology

Dr. Kenneth Miller, *Identification of Synaptic Dag Effectors and Regulators*, Oklahoma Center for the Advancement of Science and Technology

Dr. Kevin Moore, *Tyrosine Sulfation and Chemokine Receptor Function*, National Heart, Lung and Blood Institute

Dr. Bahram Namjou, *Finding a Novel Susceptibility Gene for SLE 1913*, Oklahoma Center for the Advancement of Science and Technology

Dr. James Rand, *Molecular and Genetic Analysis of Presynaptic Proteins*, National Institute of General Medical Sciences

Dr. Susannah Rankin, *Sororin Chromosome Cohesion and Cell Cycle Control*, Oklahoma Center for the Advancement of Science and Technology

Dr. Morris Reichlin, *Oklahoma Specialized Center of Research in SLE*, National Institute of Arthritis and Musculoskeletal and Skin Diseases

Dr. William Rodgers, *GEM Domains and T Cell Signaling*, National Institute of General Medical Sciences

Dr. Hal Scofield, *Genetics of Severe SLE Defined by Thrombocytopenia*, National Institute of Arthritis and Musculoskeletal and Skin Diseases

Dr. Philip Silverman, *Organization of F Plasmid Tra Proteins*, National Science Foundation; *Genetic Selection of Inhibitors of Bacterial Secretion*, Oklahoma Center for the Advancement of Science and Technology

Dr. Deborah Stearns-Kurosawa, *In Vivo Localization of Anthrax Toxins by MRI*, Oklahoma Center for the Advancement of Science and Technology

Dr. Luke Szweda, *Pro-Oxidant Activation of Lon Protease: Removal of Oxidatively Modified Mitochondrial Protein during Cardiac Reperfusion*, American Heart Association

Dr. Jordan Tang, *Beta Secretase Inhibition for Treating Alzheimer's Disease*, National Institute on Aging

Dr. Linda Thompson, *Adenosine Deaminase Deficiency*, National Institute of Child Health and Human Development; *NIH Flu Contract*, National Institutes of Health

Dr. Rheel Towner, *Biomedical Imaging in Oklahoma: OMRF Small Animal fMRI*; *In Vivo Detection of Tumor Antigens: Targeted MRI*, Oklahoma Center for the Advancement of Science and Technology

Dr. Lijun Xia, *Therapeutic Use of Hematopoietic Stem Cells Derived from Human Umbilical Cord Blood*, America Stem Cell Bank, Inc.; *Role of Intestinal O-Glycans in the Pathogenesis of Ulcerative Colitis*, Crohn's & Colitis Foundation of America

Dr. Cai Zhang, *Structural Studies on PAR1 Signal Transduction*, American Heart Association

Grants Awarded May–December, 2006

Mike Kellum, father of Will, 6, who has autism

We grieved when we learned Will was autistic. We thought we could find the key to unlock the door, and he'd walk right through, but it's never that easy. Finally, you put on your work gloves and you go to work.

Will looks like any 6- to 7-year-old child, but he acts like a 3-year-old in some cases. He likes to be carried, but 60 pounds on your hip is tough.

When Will is upset he can be tough to handle, but when he laughs it just warms you inside.

With Will we have a saying: If it's good once, it's good a thousand times. When he finds a video he likes, you better like it, too, because you're going to watch it a lot.

I really have high hopes that he'll be able to attend college one day. He may not live away from home, but I have confidence that he'll be able to handle the scholastic workload.

It's taken a village to get Will where he is. Everybody in my family works to understand his needs.

People have autism their whole lives. It doesn't go away. It's just who they are.

Will has grown to communicate better. Instead of blowing a gasket, he'll suggest something more fun like, "Go swimming? Go swimming?"

He is enamored with crunchy things, like Cheez-Its and Pringles. He has been attracted to lasagna recently, which is totally uncharacteristic because of its texture.

Eighty percent of couples who have autistic children end up getting divorced. Ironically, since our divorce, Debra and I have been able to work more as a team.

Autism is a riddle. Thankfully, we have organizations like OMRF to raise awareness and find answers to that riddle.





a LOOK BACK back

Pop Goes the Artist

The artist who created this image of screen legend Marilyn Monroe helped father the Pop Art movement of the 1960s and broaden our definition of art. And while his work still can provoke heated discussions in some circles, few would argue that this man was one of the 20th century's most creative individuals.

A book by David Fitzgerald, *The Genesis of Artistic Creativity: Asperger's Syndrome and the Arts*, now argues that this artist (and many other creative heavyweights throughout history) suffered from Asperger's syndrome, a high-functioning form of autism. Fitzgerald also suggests that Asperger's, typically associated with rigidity, actually may help fuel the highly creative mind.

If you're feeling creative, name the man who painted multiple Marylins (and also was the subject of a recent film). We'll draw five lucky T-shirt winners from all correct answers. Call 405-271-7213 or e-mail findings@omrf.ouhsc.edu.



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