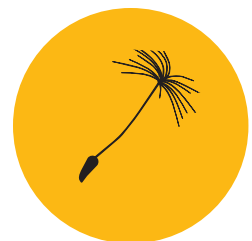
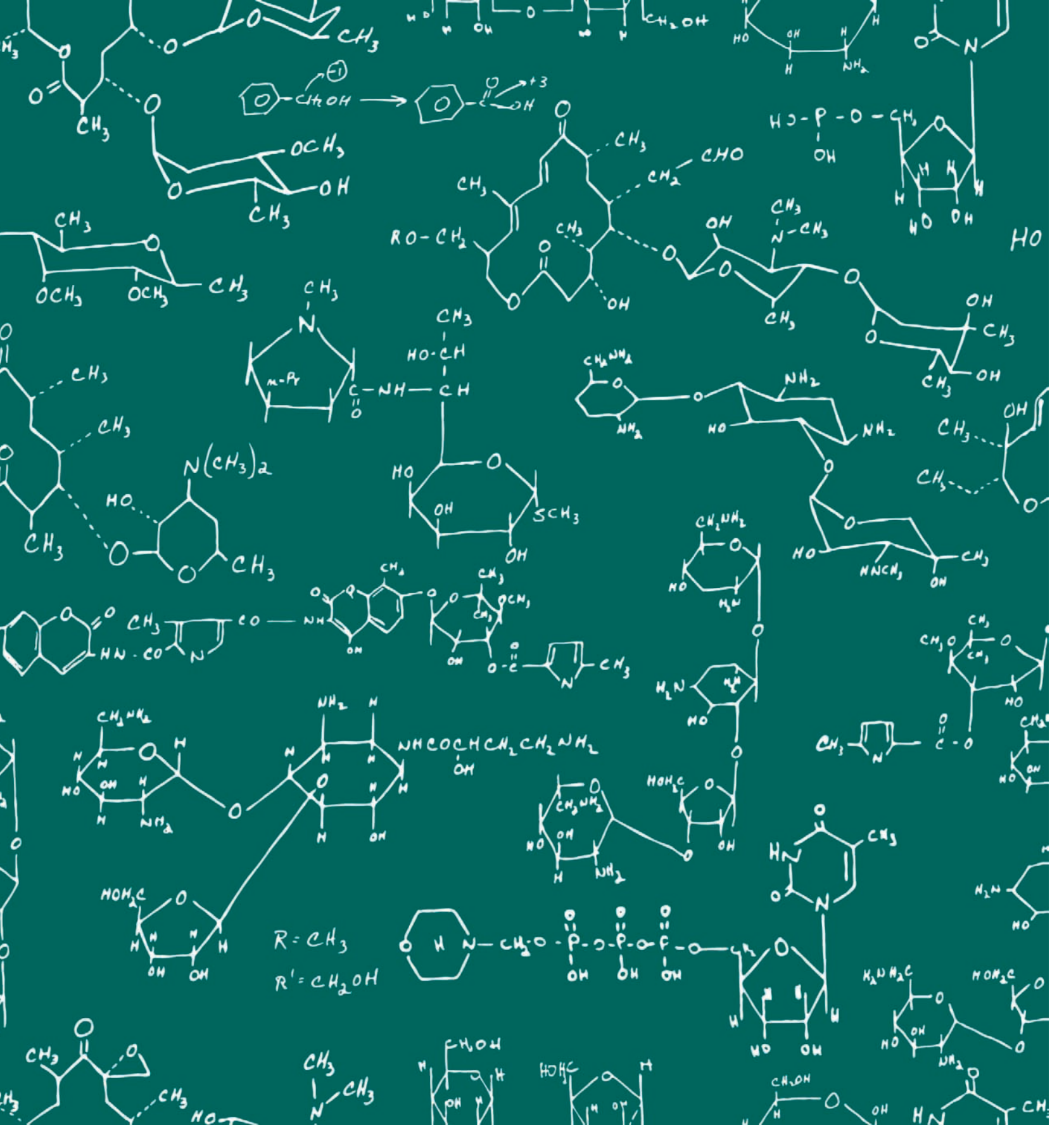


**COMBUSTION ANNUAL
COREPORT**



THE ELEMENTS OF THE SUCCESS



A year in six acts

What does it take to succeed? In 2007, the Oklahoma Medical Research Foundation had many different answers to this simple question. In the pages that follow, you'll read a half-dozen of them, each told in the form of a story from the year that was. Of course, these vignettes offer only a small sampling of what went on in the laboratories and halls of OMRF. The pictures they paint are specific, but the qualities they epitomize are universal. Taken together, they should provide a glimpse into the soul of OMRF. And in their outlines, you'll also divine a recipe for tomorrow's successes.

2007



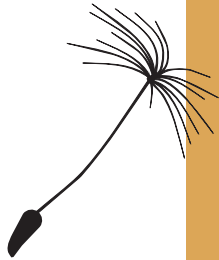
Never, never, never give up

For five years,

Jeannine Tuttle Rainbolt battled valiantly against lung cancer. Although she ultimately succumbed in October, one week shy of her 78th birthday, her fight against the deadly disease will live on.

In November, the Rainbolt family made a \$1 million gift to OMRF to create the Jeannine Tuttle Rainbolt Endowed Chair in Cancer Research. The scientist who holds the chair will focus research efforts on developing a deeper understanding of cancer's causes and creating new therapeutic approaches for the disease, which claims one million American lives each year. Rainbolt was born

in Oklahoma City, and she met her future husband of 57 years, Gene, when they were sixth graders at Norman's McKinley Elementary School. The pair attended junior high, high school and the University of Oklahoma together, and they married while still in college. Upon graduation, Jeannine became a dedicated and passionate elementary school teacher. For many years, she was actively involved in Oklahoma's civic and philanthropic communities. **"Jeannine's life was taken by lung cancer, although she never smoked and abhorred the habit," says Gene. "This chair is our family's way of ensuring that her death will not be in vain, that there will be at least one more scientist working in perpetuity to stop an insidious disease that senselessly decimates countless lives."**



hope

New treatment for a rare scourge You've

probably never heard of protein C. Yet it's essential to keep blood flowing properly throughout the body. And for those infants born with too little of this vital protein, the prospects are grim: blindness, severe brain damage, multi-organ failure and, too often, death. **In the early 1980s, OMRF scientists Drs. Charles and Naomi Esmon began working on this and other problems of the body's blood-clotting system. Rather than following the beaten path of cardiovascular biology research, they chose a road less traveled, focusing on how to "activate" the body's protein C pathways. That choice has now yielded a breakthrough that could spell the difference between life and death for patients who suffer from this rare congenital disorder.** In March, the Food and Drug Administration approved a medication as the first biologic treatment for those suffering from severe protein C deficiency. The new drug, which has roots in discoveries the Esmons made at OMRF, treats those patients when they're faced with life-threatening clots in the veins or from a skin and systemic clotting disorder. **"This is a much-needed therapy for people with few treatment options," says Charles Esmon. It exists today because OMRF scientists dared to look at an old problem through a new lens.**







Long journey, big payoff

If you reach the age of 85, chances are nearly one in two that you will develop Alzheimer's disease. That's why countless medical researchers are working to crack its code. Still, Alzheimer's remains one of our least understood illnesses—one with no cure, no method of prevention and existing treatments that are marginally effective at best. **A decade ago, OMRF's Dr. Jordan Tang entered the world of Alzheimer's research. His résumé hardly prophesied success; although Tang had enjoyed a long and prestigious career as a protein studies researcher, he had never investigated the brain.** Yet he had something that few other scientists could claim: tens of thousands of hours spent unlocking the mysteries of cutting enzymes known as proteases. While some questioned the importance of proteases in the larger human health picture, Tang persevered in unraveling their complexities. And those years of toil ultimately paid off when he determined that proteases—he calls them "biological scissors"—play a key role in Alzheimer's. **That novel insight, along with subsequent years of painstaking lab work, yielded an experimental drug to treat Alzheimer's. In June, that medication began human clinical trials.** If the trials prove successful, they will represent the final steps in a long research journey. And they will, once again, demonstrate that the race is not always to the swift.

perseverance

With a little bit of luck A dash of serendipity and a

lot of dying worms may open new treatment doors for a dizzying array of deadly illnesses. **Studying tiny roundworms, researchers at OMRF have discovered a protein may play a key role in the cell and tissue death process known as necrosis. That process, long thought to be chaotic and irreversible, is associated with illnesses ranging from heart disease and stroke to cancer and Alzheimer's.** In the study, OMRF's Dr. Robert Barstead and Gary Moulder generated genetically modified worms that lacked a protein known as SRP-6. When a collaborator was collecting specimens of the worms—by chance using water instead of the more commonly used saline—he noticed the genetically modified worms dying in droves, while their normal counterparts remained healthy. Researchers then determined that necrosis spurred by shock from the water was killing the worms lacking the SRP-6 protein; the normal worms survived because the protein protected their cells. **"The next piece of this puzzle will be to find compounds that either activate or block SRP-6," says Barstead.** For example, physicians could boost levels of the protein in Alzheimer's patients to halt the process of necrosis. **"If researchers can identify compounds that target SRP-6, it will put us a step closer to effective therapies for many life-threatening human illnesses."**





You're doing fine, OMRF!

In any successful charity, donations arrive in the mail with regularity. Some come from individuals, others from corporations and foundations. But one envelope that arrived in February 2007 left Penny Voss scratching her head. **"The return address said Rodgers and Hammerstein," says Voss, who had joined OMRF a month earlier as vice president of development. "OMRF receives gifts from all sorts of different sources, but this one puzzled me."** The check—made out to OMRF for more than \$7,000—was no mistake. As Voss soon learned, the payment represented OMRF's quarterly royalty share from performances of the Richard Rodgers and Oscar Hammerstein musical *Oklahoma!* **The gift traces its roots to Claremore native Lynn Riggs, who penned *Green Grow the Lilacs*, the play that Rodgers and Hammerstein used as the basis for their musical *Oklahoma!* When Riggs died, he willed equal shares of his royalties on the musical to his four siblings. Riggs' brother William Edgar lost his wife to heart disease and his daughter to cancer, so upon his death in 1977, he donated his portion to support heart disease and cancer research at OMRF. "Mr. Riggs chose a unique way to give back to our state," Voss says. Who'd have thought that Curly, Laurey, Ado Annie and Aunt Eller would help find treatments for diseases that touch the lives of nearly every Oklahoman?**

Back in the game

It was April 2002, and Rayna DuBose had wrapped up her freshman season on the Virginia Tech University women's basketball team. When an adviser found her sprawled on the floor of study hall, drenched in sweat, Rayna was hospitalized and diagnosed with bacterial meningitis. Then sepsis, a deadly blood infection, took hold. Rayna slipped into a coma, and her vital organs began shutting down. **Traditional sepsis treatments—antibiotics, fluids, a ventilator—failed, so doctors turned to a new medication: Xigris. It was the last, best chance to save Rayna's life.** At OMRF, Drs. Fletcher Taylor and Charles Esmon had discovered a method of controlling blood clotting. Eli Lilly and Company built on this research to create Xigris, the only drug to earn FDA approval for treating severe sepsis. **After Rayna received Xigris, something unexpected happened: She woke up.** "It was a great a moment," says her mother. **But it was far from perfect. Circulation loss had destroyed the tissue in Rayna's extremities, forcing surgeons to amputate her hands and feet.** The road since has been long and hard. But Rayna hasn't surrendered. **With prosthetics, she learned to walk. To feed and dress herself. Even to drive. In May, she graduated from Virginia Tech.** Rayna's story reminds us of the impact OMRF's discoveries have on people's lives. And why our work is far from done.





DONOR AND FINANCIAL INFORMATION

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Between July 1, 2006, and June 30, 2007, more than 12,000 individuals, corporations, foundations and organizations made gifts to OMRF. Each one of those donations made a difference. In this Honor Roll, we have recognized gifts of \$500 and above. Pledged amounts are listed in full the year they are made; subsequent payments on those pledges will not be listed in future annual reports.

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Casellas R, Zhang Q, Sheng NY, Mathias MD, Smith K, Wilson PC. I κ B α allelic inclusion is a consequence of receptor editing. *J Exp Med* 204:153-160, 2007.

Koelsch K, Zheng NY, Zhang Q, Duty A, Helms C, Mathias MD, Jared M, Smith K, Capra JD, Wilson, PC. Mature B cells class switched to IgD are autoreactive in healthy individuals. *J Clin Invest* 117:1558-1565, 2007.

PROTEIN STUDIES RESEARCH PROGRAM

Chang WP, Downs D, Huang XP, Da H, Fung KM, Tang J. Amyloid-beta reduction by memapsin 2 (beta-secretase) immunization. *FASEB J* 21:3184-3196, 2007.

He X, Cooley K, Chung CH, Dashti N, Tang J. Apolipoprotein receptor 2 and X11 α/β mediate apolipoprotein E-induced endocytosis of amyloid- β precursor protein and β -secretase, leading to amyloid- β production. *J Neurosci* 27:4052-4060, 2007.

For a complete list of 2007 scientific publications, please go to omrf.org/2007pubs.

SELECTED FINANCIAL INFORMATION

Operating Fund July 1, 2006 - June 30, 2007

OPERATING REVENUE

Competitive research grants	
National Institutes of Health grants	\$ 26,478,116
Other competitive research grants	<u>7,517,988</u>
Total grants	33,996,104
Private contributions	
Income and gifts from trusts	5,847,729
Gifts and bequests	565,323
Contributions	1,040,201
Memorials	<u>736,448</u>
Total private contributions	8,189,701
Other revenue	
Interest and investment income	3,481,419
Mineral income	1,341,419
Royalties and licensing income	1,663,125
Rent, analytical lab and miscellaneous	<u>1,265,380</u>
Total other revenue	7,751,343
Total revenue	<u>49,937,148</u>
Operating revenue from wills, pledges and other restricted gifts recorded in prior years	<u>1,041,144</u>
Total operating revenue	<u>50,978,292</u>

OPERATING EXPENSES

Program services - research	46,229,540
Support services - general and administrative	<u>4,274,451</u>
Total operating expenses	<u>50,503,991</u>
Excess of revenues over expenses	\$ 474,301

The \$474,301 in excess of revenues over expenses was used for plant and equipment purchases.

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