

BILL BRECHT



## Outstanding Alumnus of the Year *Dr. James Womack*

On a shelf in **Dr. James Womack's** modest office at Texas A&M University is a gray book, published in 1962. Its edges are worn and its 543 pages are yellowed now, but if not for that book and a skeptical ACU biology professor, the world of genetics might be very different today.

Womack ('63), a former Hawley High School basketball star who at 5'10" made the all-state team twice and averaged 30 points a game, now chuckles as he recalls how his career path took a sharp turn.

Planning to teach and coach, Womack entered ACU in 1959 on a basketball scholarship, lettered four years, and captained the 1962-63 Wildcat team. By his junior year, he decided he wanted to be a dentist instead, but lacked the biology prerequisites. He visited Dr. James Throneberry, who taught Genetics, the only course that didn't interfere with basketball workouts.

"He gave me a challenge that I took very personally," Womack says. "He said in the first place, normally athletes didn't pass his class, and second, that without the prerequisites, I didn't have a chance. But if I wanted to fail his course, I was welcome to sign up. With a challenge like that, I went to the bookstore and bought the book, and to make a long story short, I just read the textbook before the first class."

The textbook – which he has kept – fascinated Womack, especially a supplement containing Nobel Prize-winning papers on the structure of DNA. "This was the early 1960s

and everything was just breaking in genetics. By the time the course was over, I had decided I didn't want to go to dental school," Womack says.

Even so, he was accepted into Baylor College of Dentistry, and the summer after his graduation, he and his new wife, Raby (Beakley '62), prepared to go. In mid-August, an Abilene dentist invited Womack to come help in his office. "About the third or fourth day of actually working with him, I came home and told Raby, 'I can't do this the rest of my life,'" Womack says, laughing. "I've got to pursue the genetic stuff."

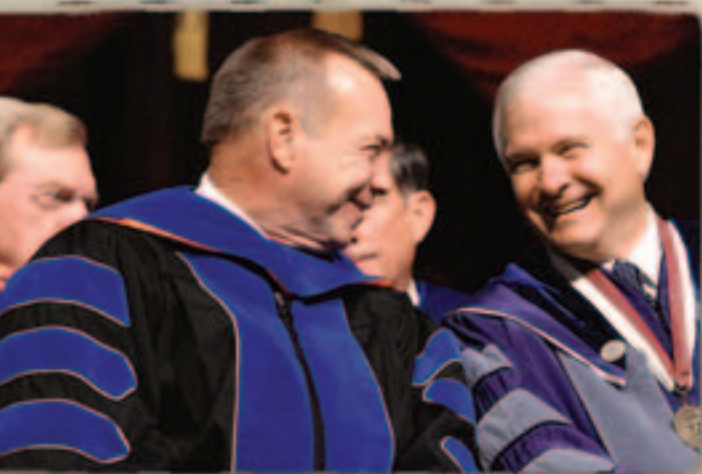
So he stayed at ACU, teaching labs. "Throneberry became my big advocate and helped me get in grad school and kind of pushed me on my way to becoming a geneticist," says Womack.

But not just any geneticist.

Now distinguished professor and director of the Center for Animal Biotechnology and

Genomics at Texas A&M, Womack has been recognized nationally and internationally for his pioneering work in the cattle genome. Most notably, he received the 2001 prestigious Wolf Prize in agriculture, which many deem equivalent to the Nobel Prize since it does not honor agriculturists.

For the past 20 years, Womack, who received his Ph.D. at Oregon State University, has focused his research interests on mapping the



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*Womack talks with Texas A&M president Robert Gates, who was recently appointed by President George W. Bush to serve as U.S. Secretary of Defense.*

bovine genome, with an emphasis on how the genome relates to that of other mammals, especially humans and mice.

Womack has led the research in sequencing the bovine genome, on target to be complete in early 2007. Although the actual sequencing is being done at Baylor College of Medicine's Human Genome Center, it is the culmination of his work with the bovine genome and believed to be his finest accomplishment.

"In the last year, seeing the sequence published has been very rewarding to me," Womack says. "I had no idea when we started building maps of the cattle genome that we would ever, in my lifetime, see the complete sequence." He credits advances in technology for making the sequencing happen faster than anticipated.

"The practical applications of my research are mostly in disease resistance. I'm interested in why individuals, whether they be cattle or humans, ... respond differently to pathogens, whether they be bacterial, viral, parasites, whatever," Womack says, explaining that when the genetic causes for these differences are determined, proper treatment will follow.

"The practical goal of my research is to be able to understand these individual differences,

so that whether it be veterinary medicine or human medicine, we can use genomic information to better treat infectious diseases," Womack adds.

Citing Womack's work, the Wolf Prize selection panel noted, "Dr. Womack has provided the foundation for the development of marker-assisted selections in cattle, comparing the bovine and human genomes within the bovine genetic map ... A whole new generation of scientists will use techniques provided by Womack to clone the genes affecting economically important traits in mammals."

As a result of his work, Womack believes in a decade or so, "we're going to have genetic markers in cattle, for example, so that we can identify with a little DNA test which cattle will be susceptible to a particular disease, a particular parasite, which one is more likely to be infected with mastitis ... That's probably the biggest goal of my research, to be able to offer some avenues to genetically select animals that don't require the antibiotics, animals that don't require the pesticides in use today."

In addition to the Wolf Prize, Womack received the 1996 Outstanding Texas Geneticist Award from the Texas Genetic Society, the CIBA Prize for Research in Animal Health (awarded from Switzerland), the Carrington Award for Research in Cell Biology, the Beecham Award for Research Excellence, and two Distinguished ACU Alumni Citations. In 1999, he was named to the prestigious National Academy of Sciences. He has lectured in 16 countries, published more than 300 peer-reviewed articles in scientific journals, and served as president of the International Society for Animal Genetics, the American Genetics Association, and the Texas Genetics Society.

"He is known as the bovine genome leader in the whole world. Everyone looks to him ... and respects him for that," says Dr. Joe Templeton ('64), professor of genetics and pathobiology at Texas A&M and a former ACU and Oregon State classmate. "Scientifically his credentials are sparkling, but he's still a Christian, no matter what award he's received or what he's recognized for."

As a scientist and a Christian, Womack finds discussions on creation inevitably arise. He likes to make a distinction between how and why.

"I believe that our presence here as humans is

by God's design, and I believe we're different from other animals," he says. "If that's what intelligent design means, I'm 100 percent in that camp. But what I hear are people saying that intelligent design is a science – in our schools we should be teaching biology as intelligent design – and I don't go that far. I think biology has to be taught as biology, and math as math, and physics as physics ... So I hold intelligent design as a theology very strongly, but I don't believe it's a substitute for hard science ... I don't think any of our sciences tell us why we're here – but I don't think we can learn anything about how we're here by either a creationist or an intelligent design approach to biology."

"Because we had the same undergraduate institution and were both at A&M, we had a lot of discussions about where science and religion fit in," says Caird (Eugene '93) Rexroad, one of two ACU graduates to do doctoral studies under Womack at Texas A&M, and now a molecular biologist with the USDA in Virginia. "One thing about Jim is he never wanted to and doesn't like to push his philosophies on people. He has a way of asking the right questions to get somebody to think and consider all options."

Despite Womack's success, "he's never forgotten where he came from, and things that were important to him before he was successful still are," says Templeton.

Church and family are two of those things. Womack and his wife have been members of the A&M Church of Christ since moving to College Station in 1977, and he has served as a deacon for 20 years. The couple lives in College Station and maintains a 100-acre farm near Wheelock with 30 cows, one bison and two horses. He and Raby, a retired second-grade teacher, built a log cabin there they plan to expand and eventually move into when he retires. It will be close to their daughter, Wendy (Womack '90) Faltys, a nurse in Franklin, and their son, James Michael Womack ('90), a business owner in Austin.

Throughout his years at A&M, Womack has not only influenced the future of genetics, but also the lives of future geneticists. More than 30 graduate students such as Rexroad did their doctoral studies under Womack's tutelage and have gone on to successful careers in genetics.

In late April, his former graduate students will hold a symposium at A&M sharing how Womack's influence, in and out of the lab, benefited their careers. It will be a time to celebrate, once again, the spark ignited in a young man by a book and a challenge. ▲

– TAMARA THOMPSON