photo by Peter Freed

When James Watson and Francis Crick shared the 1962 Nobel Prize in medicine with Maurice Wilkins for discovering the molecular structure of DNA, Nola Masterson was earning top marks in high-school biology. Two decades later, she would be at the forefront of the multibillion-dollar biotechnology industry, but at the time she had no idea how powerfully the scientists' solution to one of the world's most puzzling biological riddles would impact her own life. It was Masterson's 10th-grade teacher who inadvertently fired the imagination of a young scientist, simply because she refused to grant her best students a perfect grade until they completed some kind of extra-credit project.

Nola Masterson Biotechnology Leader

By Ryan Stellabotte

"My father was an orthopedic surgeon, so when I got home from school that day, I picked up one of the newsletters he received and noticed the lead story about the discovery of the molecular structure of DNA," said Masterson, the founder and managing director of the bioscience investment advisory firm Science Futures, Inc. "I copied that story word for word and copied, in longhand, several other journal articles. So I learned a lot about DNA through osmosis, and it has become the cornerstone of my scientific searching.

"What is the divine spark? We still have not answered that question," she said.

The impact of the discovery of the molecular structure of DNA, which laid the foundation for the biotechnology industry, can be seen, felt—even tasted—everywhere. Last June in San Francisco, at the annual conference of the Biotechnology Industry Organization, Carl Feldbaum, the group's president, said that governmental, media and public interest in the industry has soared enormously in recent years because biotech "touches life at every level. We now sleep on cotton sheets, eat our meals and take our medicines largely created or improved through biotechnology," said Feldbaum.

Biotechnology is not without controversy. Debates rage over the use of embryonic stem cells for clinical research. And critics argue that, despite the enormous wealth of financial and intellectual resources it has attracted, particularly since the 1990s, the industry has yet to fulfill its potential for medical advances and its promise for returns on investment. By the same token, investments in biotechnology have made possible—or, at least helped facilitate—medical breakthroughs, including the development of proteins that help blood clot, new cancer drugs and gene-based diagnostic tests for the AIDS virus.

"Biotech is 25 years old now," said Masterson. "It has another 20- to 25-year life cycle to go before it simply becomes part of our lives and our world, in the same way that today we don't necessarily remember that people once talked about a plastics industry." The next 10 years, she added, will be especially exciting "because of the products that will be created and used to cure diseases. …We now have a core understanding of the body that we didn't have four or five years ago."

Masterson, who grew up in Alexandria and Fairfax County, Va., said she has always been fascinated with how the body works. After her high-school encounter with DNA, she left Virginia and enrolled at Marymount College, in part because she was interested in attending a women's college.

"It was a little like being in graduate school," Masterson said. "The number of students studying science [at Marymount] at the time was small, so we received a lot of hands-on care."

After receiving her degree in biology and chemistry—and a certification in medical technology—in 1969, Masterson took a job as a medical technician at a hospital in North Carolina. She and her colleagues, she said, "were doing some pretty interesting work and providing the basis for diagnostics." However, as a doctor's daughter, Masterson also knew that in the hospital hierarchy, medical technicians do not rank especially high and can only rise so far. She decided to go back to school, eventually earning a master's degree in biological sciences from George Washington University in 1971 and later pursuing further postgraduate studies at the University of Florida, where she also taught.

"There was a disconnect between men and women [in the 1960s and '70s]," said Masterson. Some men, she said, often wondered, "why should women receive an education beyond the point where they have a job and they're making money? Marymount, however, was special in that the sisters asked, where are you going to graduate school? We were encouraged—and in many cases that was not necessarily what we got from our parents, husbands or boyfriends."

After a stint in the Department of Environmental Engineering at the University of Florida, where Masterson spent time "spooling and studying DNA," she used her

science background to climb the corporate ladder in sales and marketing in the biotechnology equipment industry. At the Millipore Corporation, where she held various sales and senior management positions between 1976 and 1982, she learned a valuable lesson in the growth potential of small companies. During the time that she spent at Millipore, she said, the company's revenue skyrocketed from $40 million a year to $350 million.

When, in 1982, she felt she had climbed as high as she could in the biotech equipment industry, Masterson founded the San Francisco-based Science Futures, Inc. As a single mother and business owner—her daughter had just turned 2—Masterson often worked late into the night while her daughter slept, and she never scheduled breakfast meetings, focusing only on her daughter until 10 a.m. every day. She soon became one of the first analysts to cover biotech companies on Wall Street, working first for Drexel Burnham and later for Merrill Lynch.

"I was getting my MBA on the Street, while raising my daughter," Masterson said. "I learned finance by serving as a consultant, doing investigational research, writing papers and also by buying into the companies [I recommended]."

In the 1990s, Masterson met scientist Hubert Koster, Ph.D., and together they helped start Sequenom, Inc., a company that has pioneered the use of mass spectrometry instruments in the measurement and analysis of genetic variations. This technology has helped scientists search for the causes of various diseases, such as diabetes, breast cancer and osteoporosis.

"Hubert had a lot of [questions about the effectiveness of the technology], but we said, let's make it happen. He was the genius, I was the CEO," said Masterson, who also served on the board of directors of Sequenom from 1994 to 1997. "It took a while to prove that the science was true, but not only did it work, it has been like mother's milk [for researchers]."

Masterson, who was included in *Irish America* magazine's annual "Business 100" list last year, has raised money for two biotech venture funds managed by Science Futures and is now working to raise money the for the third.

Investing in biotech companies can be a tricky proposition. The industry's mostly small, research-driven start-ups have produced numerous medical breakthroughs, for example, but those breakthroughs take time. Companies can spend years on research before they develop a revenue-producing drug. And so, Masterson said, she helps contribute to the growth and development of successful companies by serving on their boards of directors and connecting them with people who can provide information critical to making investment decisions.

"I have a whole network of scientists and lawyers to make sure there is the intellectual property freedom to operate the company," said Masterson. "And I look really hard at the management because managers can make or break a company."

Masterson's influence as a leader in the biotech industry extends beyond the United States. As early as 1987, she expanded her research and analysis to European companies. She frequently lectures on the business of biotech and she is one of the founders of two annual events, the Biopharmaceutical Conference in Europe and, in California, the Biotech Meeting at Laguna Niguel, both of which help foster alliances between major pharmaceutical and emerging bioscience companies. She also serves as a mentor for women in business. Masterson is a founding member of the Forum for Women Entrepreneurs, serves on the advisory board of the Professional Women's Healthcare Alliance, and is a coach to the Women's Technology Cluster, a group that aims to stimulate economic growth and generate social impact by supporting entrepreneurs. One of the women Masterson has helped is a fellow Marymount alumna, Mary Skelly (MC '79), the founder and chief executive officer of the Dublin-based Irish Bio Ventures International, Ltd.

But there is more to biotechnology than science and business. As much as Masterson champions the medical and financial promise of the industry, she also believes there is a spiritual aspect to the science, and she is still inspired to search for answers to the same existential questions sparked by Watson's and Crick's discovery and, more recently, the mapping of the human genome.

When critics question whether or not it is morally right to study genomics, Masterson said she often paraphrases the Dalai Lama—and describes an appearance His Holiness made with author Deepak Chopra, M.D., on *Larry King Live* in June 2000. Instead of limiting the definition of life to mere matter and material processes, Masterson said, genomics allows us to explore the strands that connect us to all of life, providing another way of understanding ourselves and appreciating life's profound mysteries.

"The Dalai Lama and Deepak Chopra said, in effect, man must go into the study of this area because in studying it he will see himself and know himself as the face of God," said Masterson. "We don't know how to create life. But when we delve into it, the creation of our own cells, we can appreciate the complex beauty, the mystery of life. That's how you become one with God, and recognize God in every cell."