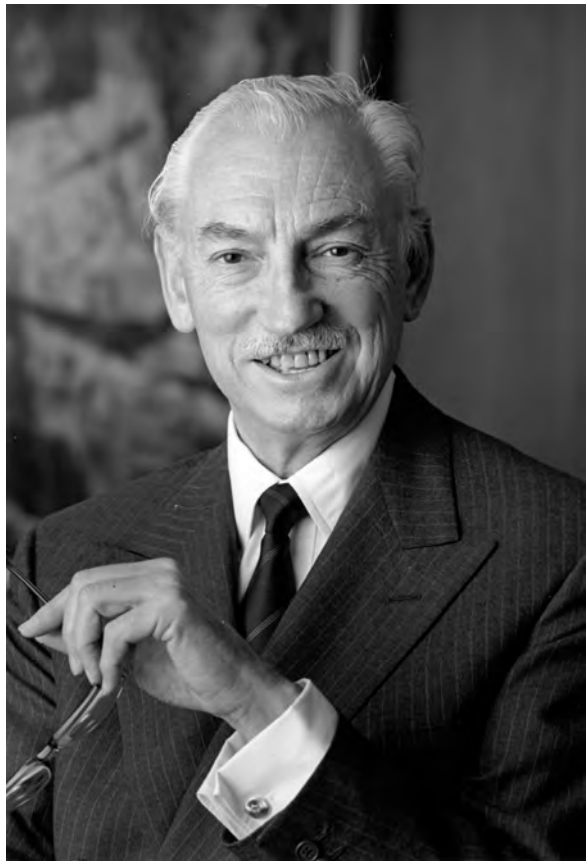


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ALEJANDRO ZAFFARONI

1923–2014

Elected in 1997

"For contributions to human health care through creating and forging collaborations between the scientific and engineering disciplines."

BY HOWIE ROSEN

ALEJANDRO ZAFFARONI, an innovator in drug delivery systems and biotechnology and generous humanitarian, died peacefully at home on March 1, 2014, in Atherton, California. He was 91. Dr. Zaffaroni was widely regarded as a visionary who left a positive impact on the lives of millions through the invention of innovative medical technology.

He was born in Montevideo, Uruguay, February 27, 1923. He studied medicine in his home country and was accepted to pursue a PhD in biochemistry at Harvard. He was also awarded a scholarship through the Institute of International Education in 1945 to study at the University of Rochester. He took a US military cargo ship to New York in the waning days of World War II and, after visiting both universities, he decided to attend Rochester as it offered him his own laboratory and the freedom to pursue his interest in biochemistry and steroid research. His research at Rochester resulted in the development of the "Zaffaroni technique," a method using paper chromatography to isolate steroids. It became an essential analytical tool and led to the first synthesis of cortisone by scientists at Upjohn Company. He received his PhD in biochemistry in 1949.

In 1951, after finishing a National Institutes of Health fellowship, he turned down multiple job offers in academia and with

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major pharmaceutical companies to join a small, privately held Mexican chemical company, Syntex S.A. In 1956, after just five years, he was elected executive vice president and director of Syntex Corporation. He played a key role, beginning in 1962, in bringing Syntex to the United States and establishing it as the first pharmaceutical company on the West Coast. He led the transformation of the firm into a global pharmaceutical corporation that pioneered the development of therapeutic corticosteroids and the birth control pill. Eventually he became president of Syntex Laboratories and director of research.

In 1968 he left Syntex to found ALZA Corporation (the name is formed from the first two letters of his first and last names). ALZA pioneered new technologies for drug delivery. Most drugs at the time were administered through simple pills or injections. The concept of "drug delivery" was so novel that one pharmaceutical executive thought that ALZA's product was a fleet of trucks. As part of the negotiations of Dr. Zaffaroni's departure from Syntex, he offered Syntex a 25 percent stake in the new startup. In 1969, it became the first US company to go public without revenues or positive earnings. The new methods developed by ALZA included transdermal patches for nicotine, nitroglycerin, fentanyl, and scopolamine (first marketed in 1981); insertable devices (first marketed in 1974); and an oral controlled release system (OROS for oral osmotic) that was licensed to Pfizer for a cardiovascular drug and became its first billion-dollar therapeutic when introduced in 1991. OROS technology was used in more than ten other commercial products.

ALZA was the first of Dr. Zaffaroni's nine companies built around novel technologies and 130 patented processes for drug delivery, high-speed genome scanning, drug discovery, and innovative materials development for a wide variety of industries. These companies have produced a multitude of successful platform technologies from which further medicines, devices, and materials have been developed. For example, Affymetrix, a company he cofounded in 1991, was a pioneer in developing DNA chips, more formally known as microarrays. Those chips revolutionized genetic studies, allowing many

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genes to be analyzed at once. They are now widely used in studies aimed at finding genetic variants linked to different diseases.

Dr. Zaffaroni attributed his legendary productivity to his many talented colleagues and the highly collaborative work culture he encouraged. His colleagues have recalled him as a supportive supervisor who often gave significant responsibility to young people, some fresh out of college. There are two themes that permeated Dr. Zaffaroni's career—the absolute requirement to create an environment where individuals had freedom to innovate and the vision to see the intersection between seemingly disparate technical fields.

Building on the success of his entrepreneurial pursuits, Dr. Zaffaroni and his wife Lida gave generously to humanitarian causes. The Zaffaroni Foundation has provided grants for medical research, higher education, scholarships, and the construction and ongoing support of the Moldaw-Zaffaroni Clubhouse of the Boys and Girls Clubs of the Peninsula located in East Palo Alto, CA.

The $10 million endowed Alejandro and Lida Zaffaroni Scholarship and Fellowship Program at Stanford University, which is partly funded by gifts from donors who credit Dr. Zaffaroni with providing inspiration, mentorship, and friendship throughout their careers, provides students, especially those from Latin America, with undergraduate scholarships and graduate fellowships. The Zaffaronis were also major donors to the Lida and Alejandro Zaffaroni Breast Imaging Center at the Stanford Cancer Center.

Numerous awards and honors are a testament to Dr. Zaffaroni's accomplishments. Notably, he was awarded the National Medal of Technology and Innovation, the nation's highest honor for technological achievement, bestowed by President Bill Clinton (1995). Other prominent honors include induction into the National Inventors Hall of Fame at the Smithsonian Institution (2012), the Woodrow Wilson Award for Public Service (2008), the Biotech Hall of Fame Award from the Life Sciences Foundation, the Biotechnology Heritage Award from the Chemical Heritage Foundation and the

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Biotechnology Industry Organization (2006), the Bower Award for Business Leadership from the Franklin Institute (2005), the Gregory Pincus Award from the Worcester Foundation (2005), the Winthrop-Sears Medal from the Chemists' Club (2004), the UCSF Medal from the University of California, San Francisco (2002), first recipient of the Lester Center Lifetime Achievement Award from the University of California, Berkeley's Haas School of Business (1998), the Chemical Pioneer Award from the American Institute of Chemists (1979), and the President's Award from the Weizmann Institute of Science (1978).

Dr. Zaffaroni's professional associations included, in addition to the NAE, the National Academy of Sciences (1977) and the Institute of Medicine (1978). He was also a member of the Beckman Center for Molecular and Genetic Medicine Advisory Council at Stanford University, the Stanford University Hospital Board of Directors, the Division of Biological Sciences Advisory Council at Harvard University, the Massachusetts Institute of Technology Sustaining Fellows, and fellow of the American Association for the Advancement of Science, American Academy of Arts and Sciences (1973), and American Academy of Pharmaceutical Research and Science (1973).

Dr. Zaffaroni is survived by his wife Lida, son Alejandro and daughter-in-law Leah, daughter Elisa, and two grandchildren, Alejandro Peter and Charles A. Zaffaroni.

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