

Nobel Prize Awarded to Scientists for Nitric Oxide Discoveries Ruth SoRelle

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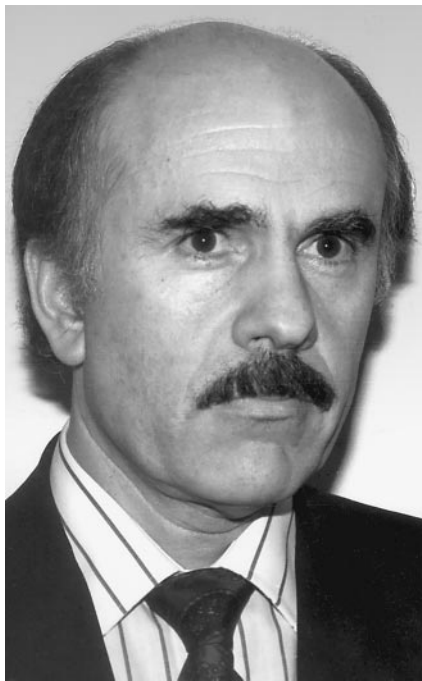
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Nobel Prize Awarded to Scientists for Nitric Oxide Discoveries



Robert F. Furchgott, PhD



Louis J. Ignarro, PhD



Ferid Murad, MD, PhD

Nitric oxide was named “Molecule of the Year” in 1992 by the journal *Science*, but it took another 6 years for those responsible for the major discoveries surrounding it to win the Nobel Prize. Three US scientists—Robert F. Furchgott, PhD, Louis J. Ignarro, PhD, and Ferid Murad, MD, PhD—will receive the 1998 Nobel Prize for Physiology and Medicine on December 10, 1998, in Stockholm, Sweden.

The discovery of nitric oxide’s signaling role in the cardiovascular and nervous systems is now nearly 20 years old, but its clinical use is only beginning. Dr Furchgott, a distinguished professor of pharmacology at the State University of New York (SUNY) at Brooklyn, began the studies that led to the identification of nitric oxide as a biological agent in 1980. At that time, he was trying to reconcile the contradictory effects drugs had on blood vessels. He concluded that endothelial cells produce an unknown signal molecule that makes vascular smooth muscle cells relax. He called the signal molecule EDRF, or endothelium-derived relaxing factor.

In unrelated experiments, Dr Murad, now chairman of the integrative biology department at the University of Texas Medical School at Houston, was analyzing how nitroglycerin

works. In 1977, while at the University of Virginia, he found that nitrates release nitric oxide, which relaxes smooth muscle cells, resulting in vasodilation. He was fascinated that the colorless, odorless gas could act as a signaling molecule.

Dr Ignarro, now a professor of pharmacology at UCLA School of Medicine in Los Angeles, California, through a series of analyses concluded in 1986 that EDRF was identical to nitric oxide. His work, done independently and together with that of Dr Furchgott, prompted an increase in research activities in many areas of the world.

The Nobel committee could recognize only 3 scientists, and their decision not to name Salvador Moncada, PhD, a professor at University College London, as one of the awardees provoked some comment. The controversy was similar to that when the Albert Lasker Awards were announced in 1996. At that time, Drs Murad and Furchgott were the awardees, and omission of Drs Ignarro and Moncada aroused comment. However, Dr Moncada has made no protest. Michael E. DeBakey, MD, chairman emeritus of the Lasker Award jury, said Murad and Furchgott received that prize because the work represents “a fundamental finding affecting the circulation. It is a fundamental and important observation.”

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Dr Furchgott, 82, said he was mildly surprised to have won the Nobel prize because most such prizes go to more popular areas, such as molecular research. He described himself as an old-fashioned pharmacologist.

Dr Murad, 62, who had held his University of Texas position only 18 months when the prize was announced, said he had been called by the secretary of the Nobel committee at 4 AM Central Standard Time. He rushed upstairs to shower and don a coat and tie before photographers appeared at the door.

"It's fantastic to be recognized by one's peers," he said. "I'd like to share this with so many of the trainees who have worked with me over the years."

What the Nobel prize recognized was the scientists' dogged efforts to prove that nitric oxide, an endogenous gas and also a free radical, could have this kind of crucial biological effect. Research has proven the crucial role the gas plays in such fundamental biological processes as regulation of blood pressure, functioning and malfunctioning of the immune system, and activation of mechanisms in the central nervous system affecting everything from gastric motility to memory to behavior.

Long known only as an air pollutant, nitric oxide and its related enzymes could one day provide the basis for the development of drugs that could treat everything from Alzheimer's disease to high blood pressure. Its inhibition could play a role in treatment of sepsis and dangerous hypotension, and the ability to increase its activity might lead to a treatment for hypertension.

Each of the recipients of this year's Nobel prize has a distinguished career in research. Dr Furchgott, born June 4, 1916, in Charleston, SC, received his BS from the University of North Carolina and his PhD in biochemistry at Northwestern University in Chicago, Ill. He began his career at SUNY-Brooklyn in 1956 and has continued there ever since.

He holds honorary doctorates at several universities and is the recipient of numerous awards other than the Lasker and the Nobel.

Dr Murad, born September 14, 1936, in Whiting, Ind, received his undergraduate degree from DePauw University in Greencastle, Ind. His MD and PhD in pharmacology were received from Western Reserve University School of Medicine in Cleveland, Ohio. He did his residency at Massachusetts General Hospital in Boston. He served as professor and director of clinical research at the University of Virginia School of Medicine in Charlottesville and was director of the division of clinical pharmacology there from 1975 to 1981.

From Virginia, Dr Murad went to Stanford University in California in 1981, where he was a professor of internal medicine and pharmacology until 1989. He served as chief of medicine at the Palo Alto Veterans Administration Medical Center from 1981 until 1986. In 1990, he became vice president for pharmaceutical research and development at Abbott Laboratories in Illinois and served as an adjunct professor in the department of pharmacology at Northwestern University Medical School in Chicago. In 1993, he started his own biotech firm, called Molecular Geriatrics Corporation, in Lake Bluff, Ill, but he left the post of president there to return to academia at the University of Texas at Houston in 1997.

Dr Ignarro was born May 31, 1941, in Brooklyn, NY. He obtained his BA in pharmacy at Columbia University in New York, NY, and his PhD in pharmacology at the University of Minnesota. From 1979 to 1985, he was a professor in the department of pharmacology at Tulane University School of Medicine in New Orleans, La. In 1985, he joined the faculty of the department of pharmacology at UCLA, where he is currently a professor. Dr Ignarro was out of the country when the Nobel award was announced.

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