



Frank Wilczek

Science Talent Search 1967

MacArthur Fellow 1982

Nobel Prize in Physics 2004

Frank Wilczek has long been considered one of the most influential theoretical physicists of our time. That position was cemented with the announcement of the Nobel Prize winners last October. Wilczek, along with David Gross and H. David Politzer, was awarded the Nobel Prize in Physics for the discovery of asymptotic freedom, which describes how the strong force, one of the four fundamental forces of nature, governs the behavior of quarks, the smallest building blocks of matter.

As a youth, Wilczek had fantasized about being a scientist, “but I didn’t have a concrete idea of what it would mean, how it would happen, whether it was realistic.” His experience at the Science Talent Search in 1967 changed all that. “From that experience I got the idea that it could actually happen. It was pretty wonderful.”

His mathematics project, conceived during a summer institute offered by the National Science Foundation, won fourth place. Competing taught him the valuable process of learning to write up and present his work. During judging, he found his broad interest in the sciences served him well. “I was, and am, very curious, and was well read; I found that I had been preparing for this for years...Attending the Science Talent Search was a great adventure. Meeting people from all over, including famous scientists, opened up a whole new world.”

Now the Herman Feshbach professor of physics at the Massachusetts Institute of Technology (MIT), Wilczek completed his bachelor’s degree in mathematics at the University of Chicago in 1970. He completed his master’s degree in mathematics and his doctoral degree in physics at Princeton University. He taught at Princeton from 1974 to 1981, and then moved to the University of California at Santa Barbara. He became the first permanent member of the National Science Foundation's Institute for Theoretical Physics. In the fall of 2000, Wilczek moved from the Institute for Advanced Study, where was the J.R. Oppenheimer Professor, to MIT.

Wilczek is known, among other things, for the discovery of asymptotic freedom, the development of quantum chromodynamics, the invention of axions, and the discovery and exploitation of new forms of quantum statistics (anyons). He has been a Sloan Foundation Fellow (1975–77) and a MacArthur Foundation Fellow (1982–87). Among other awards, Wilczek has received the 2003 High Energy and Particle Physics Prize of the European Physical Society; the 2003 Lilienfeld Prize of the American Physical Society; and the 2002 Lorentz Medal of the Royal Netherlands Academy of Arts and Sciences. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. He also contributes regularly to *Physics Today* and *Nature*.

Wilczek is concerned that the pursuit of science does not have the prestige it did when he was young. “I grew up with the idea that scientists were essential...One needs the pure science and curiosity-driven research that leads to surprises.”