

# John J. Hopfield Biography

August 9, 2020

John Joseph Hopfield (July 15, 1933-) was born to Polish physicist John Joseph Hopfield and American physicist Helen Hopfield (née Staff). Hopfield spent part of his childhood in Toledo, Ohio, where his father was working for the Libbey-Owens-Ford Company, and then around Washington, DC, where both his parents eventually joined the Applied Physics Laboratory at Johns Hopkins.

Hopfield attended Swarthmore College, obtaining an A. B. in 1954, and then Cornell University, obtaining a Ph.D in physics in 1958 under the supervision of Albert Overhauser. He then spent two years in the theory group at Bell Laboratories, one year at École Normale Supérieure-Paris, and was subsequently a faculty member at University of California, Berkeley (physics, 1961-1964), Princeton University (physics, 1964-1980), California Institute of Technology (chemistry and biology, 1980-1996), and again at Princeton (molecular biology, 1997-2008), where he is still the Howard A. Prior Professor of Molecular Biology, Emeritus. For 35 years, he also maintained a strong connection with Bell Laboratories.

Hopfield was a theoretical and computational researcher, initially centered on the solid state physics tradition, and steadily shifted to biophysics and neuroscience. Thanks to his long-standing friendship with Phil Anderson, he kept abreast of spin glass research in the 60s, 70s and 80s. These models were an important source of inspiration in his devising of a novel neural network, now known as the Hopfield network.

Hopfield notably received the Oliver Buckley Prize of the American Physical Society in 1969 for work on the interactions between light and solid, the John and Catherine T. MacArthur Award in 1983 for studies the physical and mathematical aspects of biology and biological computation, and the Dirac Medal of the ICTP in 2001 for his interdisciplinary contributions to understanding biology as a physical process. Hopfield was elected member of the National Academy of Sciences in 1973, member of the American Academy of Arts and Sciences in 1975, and member of the American Philosophical Society in 1988. He was President of the American Physical Society in 2006.