

# Robert Burns Woodward Biography

## Robert Burns Woodward

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# Biography

Woodward was interested in chemistry from an early age and often conducted experiments at his home in Boston. At age 16 he entered the Massachusetts Institute of Technology (MIT), where he received his bachelor's degree in 1936 and his doctorate in 1937. At the age of 21 Woodward went on to teach at Harvard University as a post-doctorate fellow, and he became a full professor in 1950.

Woodward was skilled in analyzing very complex organic molecules and determining their structure. He is most famous for his ability to duplicate natural products in the laboratory; this skill is important in chemistry because synthetic analogs are often cheaper and chemically more consistent than their natural counterparts.

During World War II Woodward determined the structure of penicillin and, with William von Eggers Deering, successfully synthesized quinine. By the late 1940s Woodward had successfully synthesized sempervirine and patulin and had discerned the structure of strychnine.

In 1951 Woodward, with some associates, was able to make fully saturated steroids, such as cholesterol, cortisone, and lanosterol. He went on to synthesize strychnine, lysergic acid (the primary component of LSD), and reserpine, the first tranquilizer. He was also active in research on antibiotics, including tetracyclines.

In 1960 Woodward built on the work of Hans Fischer and Melvin Calvin and succeeded in creating chlorophyll in the lab. He also investigated the structure and synthesis of vitamin B 12, while at the same time publishing a paper on orbital symmetry with Hoffmann. Woodward received the National Medal of Science in 1964 and the Nobel Prize for chemistry in 1965.

In 1972 Woodward and Albert Eschenmoser, after working with chemists from nineteen countries for more than eleven years, succeeded in producing vitamin B 12. The process was not a practical source of the vitamin, but his research added greatly to the understanding of similar compounds. Woodward continued his career by producing lanosterol and colchicine and by discerning the structures of many other complex organic compounds.

Woodward was a genius who used logic and a thorough understanding of chemistry to uncover the secrets of complex, natural organic chemical compounds and expand our understanding of chemistry. He died in Cambridge, Massachusetts in 1979.