

# Adolf Friedrich Butenandt Biography

## Adolf Friedrich Butenandt

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# Biography

Friedrich Butenandt devoted most of his career to isolating and synthesizing male and female hormones. He received the 1939 Nobel Prize in chemistry for demonstrating that the sex hormones were steroids and that the hormones are related to cholesterol and bile acids.

Butenandt was born to middle-class parents in what is now Wesermünde. In 1925, he graduated from the University of Marburg. His education continued at the University of Göttingen where he received his Ph.D. in 1927, and joined the faculty in 1931. In 1936, Butenandt became director of the Kaiser Wilhelm (later Max Planck) Institute for Biochemistry.

Working separately in 1929, Butenandt and the American biochemist Edward Doisy isolated the female hormone oestrone, which regulates the fertility-menstrual cycle. Butenandt showed that another estrogen hormone called estriol could be converted into oestrone by removing water. Butenandt's group continued their hormone research and in 1934, they isolated another female hormone, progesterone, which is important in pregnancy. Though other scientists also isolated progesterone the same year, Butenandt's isolation of the male hormone androsterone (which controls male fertility) was a sole accomplishment. The structure he deduced was verified experimentally when Swiss biochemist Leopold Ruzicka (1887-1976) synthesized it in 1934.

Butenandt isolated non-human hormones including ecdysone, the steroid hormone that transforms a caterpillar into a pupa and then into a butterfly. In 1959, Butenandt and a colleague were the first to isolate a pheromone or sex attractant, bombykol, from the scent gland of the silk moth *Bombyx mori*. Pheromones are hormones which perform important sexual functions in many organisms, especially insects. Released (usually by a female) in incredibly minute quantities, a pheromone can attract potential mates to the releasing individual from great distances.

In 1960 he became president of the Max Planck Society for the Advancement of Science. Butenandt's many honors have included membership in the New York Academy of Sciences, the Academy of Sciences at Göttingen, the Japanese Biochemical Society, the Deutsche Akademie der Naturforscher Leopoldina, Halle, and the Austrian Academy of Sciences; as well as the Grand Cross for Federal Services with Star in 1959 and six honorary doctorates.