Jean Donald Wilson was born in 1932 in a small town in the Texas Panhandle. He attended the University of Texas at Austin, and although he was a pre-med student, he decided to major in chemistry and minor in zoology. He graduated in 1951 and enrolled in medical school at the University of Texas Southwestern Medical Center at Dallas, where he spent a summer working with Donald W. Seldin on the effects of adrenal hormones on acid-base balance in the rat.

After earning his M.D. in 1955, Wilson decided to stay in Dallas and did a residency in internal medicine at the Parkland Memorial Hospital. During this time, he spent 6 elective months working with Marvin D. Siperstein on the effects of diets high in saturated and unsaturated fats on the metabolism and excretion of cholesterol and bile acids in rats.

When Wilson completed his residency in 1958, the physician’s draft was in effect, and he went to the National Institutes of Health to work as a clinical associate in the National Heart Institute. He spent most of his time doing clinical duties, but he also managed to spend part of each day working in the laboratory with Sidney Udenfriend, investigating the mechanism of ethanolamine biosynthesis.

In 1960, Wilson returned to UT Southwestern as an instructor in the department of internal medicine, where he remains today as the Charles Cameron Sprague Distinguished Chair in Biomedical Science.

Since starting his laboratory at UT Southwestern, Wilson’s research has focused on two areas. The first is cholesterol. Between 1960 and 1972, he developed methods for the quantification of cholesterol synthesis, absorption, degradation, and excretion in intact animals, with the aim of understanding the feedback control of cholesterol synthesis and turnover. He also demonstrated that plasma cholesterol is synthesized in the intestinal wall and liver, which led to the development of paradigms that defined the contributions of diet and endogenous synthesis to cholesterol turnover in humans and baboons.
Wilson's second research focus has been on hormone action, specifically the mechanisms by which steroid hormones influence protein turnover in the urogenital tract. A leading theory in the early 1960s was that steroid hormones regulate protein biosynthesis by controlling amino acid transport into cells (1). However, Wilson found that testosterone administration increased protein synthesis in the male urogenital tract prior to enhancement of amino acid transport, indicating that the increase in protein biosynthesis was secondary to an increase in RNA formation (2). He later showed that gonadal steroids are physically concentrated at the sites of mRNA synthesis in target tissues (3), but chromatin's insolubility made it difficult to figure out to which macromolecule the hormones were attached.

In 1966, Nicholas Bruchovsky joined Wilson's lab as a postdoctoral fellow. His project was to determine whether a testosterone-binding protein could be isolated from prostatic nuclei. He injected animals with tritiated testosterone and used gel exclusion chromatography to show that radioactivity was bound to the nuclear components. Bruchovsky decided to confirm the identity of the bound hormone, but when he tried to isolate the radioactive nuclear material using thin layer chromatography, he was able to recover only a very small amount of it. By examining the chromatograms in discrete sections, Wilson and Bruchovsky discovered that the majority of radioactivity co-migrated with dihydrotestosterone, a potent metabolite of testosterone. Over the next several months, Wilson and Bruchovsky showed that the prostate contained enzymes that were very active in converting testosterone to dihydrotestosterone, and dihydrotestosterone to androstanediol, and managed to partially characterize testosterone 5α-reductase, the chromatin-associated nuclear enzyme that converts testosterone to dihydrotestosterone. They wrote up these results in a paper reprinted here as the first Journal of Biological Chemistry (JBC) Classic.

This paper is the first to attach biological significance to the formation of dihydrotestosterone within target cells for testosterone. It became a Current Contents Citation Classic and was cited more than 640 times between 1968 and 1980.

Wilson and Bruchovsky followed up this paper with the second JBC Classic in which they looked at the localization of dihydrotestosterone. They intravenously administered [1,2-3H]testosterone to rats and used gel filtration to examine the nuclear extracts. Their results confirmed that dihydrotestosterone was the predominant form of hormone bound to chromatin, proving that dihydrotestosterone is the active form of testosterone in peripheral tissues. Wilson went on to show that mutations in the steroid 5α-reductase gene cause a form of male pseudohermaphroditism in humans.

Wilson is the recipient of several honors and awards, including the American Academy of Arts and Sciences Amory Prize (1977), the Society for Endocrinology Henry Dale Medal (1991), the Worcester Foundation for Experimental Biology Gregory Pincus Award (1992), the Endocrine Society Fred Conrad Koch Award (1993), and the Association of American Physicians Kober Medal (1999). He also is a member of the National Academy of Sciences, the Institute of Medicine, the American Philosophical Society, and the American Academy of Arts and Sciences, and he is a fellow of the Royal College of Physicians.1

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DOI 10.1074/jbc.O110.000236

1 Biographical information on Jean D. Wilson was taken from Ref. 4.
Isolation Discovery of the Role of Dihydrotestosterone: the Work of Jean D. Wilson
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doi: 10.1074/jbc.O110.000236

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