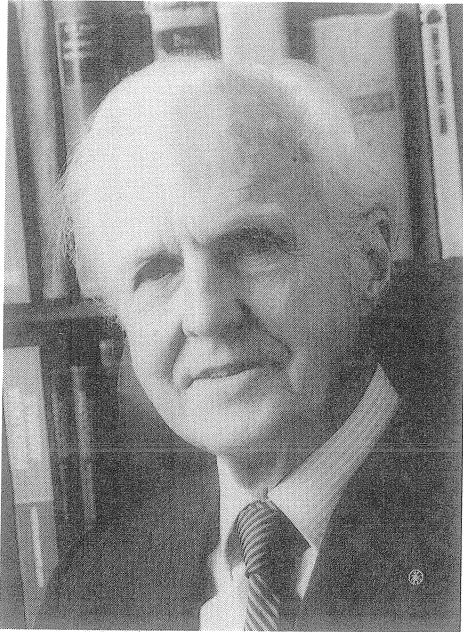


Professor Knut Schmidt-Nielsen



Birth: September 24, 1915
Trondheim, Norway

Nationality: United States of America

Position: James B. Duke Professor of
Physiology, Department of Zoology,
Duke University

Address: Division of Zoology, Duke University
Durham,
North Carolina 27706,
U.S.A.

Education and Career:

1941	Mag. Sci., University of Copenhagen
1941–1944	Research Fellow, Carlsberg Laboratory, Copenhagen
1944–1946	Research Fellow, University of Copenhagen
1946	Ph. D., University of Copenhagen
1946–1948	Research Associate, Swarthmore College
1948–1949	Research Associate, Stanford University
1949–1952	Assistant Professor, College of Medicine, University of Cincinnati
1952–1963	Professor of Physiology, Department of Zoology, Duke University
1963–	James B. Duke Professor of Physiology, Department of Zoology, Duke University
1980–	Professor of Physiology, Department of Physiology, Duke Medical Center

Awards and Distinctions:

New York Academy of Sciences, Elected Fellow, 1955
Poteat Award, North Carolina Academy of Sciences, 1957
National Academy of Sciences, Elected 1963
American Academy of Arts and Sciences, Elected 1963
Royal Norwegian Academy of Sciences and Letters, Elected 1973
Royal Danish Academy of Sciences and Letters, Elected 1975
Académie des Sciences (France), Elected 1978
Norwegian Academy of Science, Elected 1979
Royal Society of London, Elected 1985
President, International Union of Physiological Sciences, 1980–1986
Honorary Member, Deutsche Ornithologen-Gesellschaft, 1988
Honorary Fellow, Zoological Society of London, 1990
Honorary Member, American Society of Zoologists, 1990

Academic Achievements:

Prof. Knut Schmidt-Nielsen conducted physiological studies on the adaptation of vertebrates including amphibia, reptiles, birds and mammals, to natural environments of deserts and oceans and discovered their adaptation mechanisms which were not known before his time. Taking up various subjects pertaining to such mechanisms displayed by a variety of animals living in severe circumstances, Prof. Schmidt-Nielsen clarified physiological characteristics of these animals as well as the inter-specific principles of their environmental adaptation.

Prof. Schmidt-Nielsen first clarified the metabolic mechanism for economizing water displayed by kangaroo rats and camels living in extremely hot and dry deserts, the ion and water regulation mechanism of small- and big-sized mammals and birds living in deserts, and the mechanism of body temperature regulation of camels and other mammals living in the circumstances where atmospheric temperature changes remarkably from daytime to night. He also showed that these animals possess characteristic organs and forms suitable for adaptation to specific environments.

Prof. Schmidt-Nielsen clarified that marine birds and reptiles in the environment of high salt concentration obtain Drinking water and regulate body salinity by means of extra-renal salt-secretion mechanism, as they lack sufficient renal concentrating ability. Then, after an analytical study of temperature regulation and water metabolism in ostriches, desert rabbits and reptiles, he showed that the integument plays a significant role in the transpiration of water; it had previously been regarded as negligible. He also found that the bird lung has a special form and metabolism in terms of respiration, different from the mammal lung, in order to sufficiently supply oxygen for muscular movement. Then, measuring the energy cost of locomotion in animals of various body sizes, he found that the body size has profound effects on the life of animals.

Through the elucidation of physiological mechanisms of various animals living in peculiar environments, Prof. Schmidt-Nielsen not only showed that these animals had developed inter-specific physiological mechanisms in order to adapt themselves to their environments but also offered the foundation for the understanding of animal evolution.