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Biography of Professor Robert W. Ledeen

Dr. Robert Ledeen was born in Denver, Colorado in 1928 and at present he is a professor in the Department of Neuroscience at the New Jersey Medical School (UMDNJ). After receiving his Ph.D. from the Oregon State University in Organic Chemistry in 1953, he joined the research group of Professor Morris Kharash at the University of Chicago to work in the area of free radical chemistry. Subsequently he served two years in the US Army and worked as a postdoctoral fellow in Mount Sinai Hospital and was trained in biomedical research during 1956–59. With the invitation of Professor Saul Corey he joined the research faculty of Albert Einstein College of Medicine and became an assistant professor in the department of Neurology in 1962. After being promoted to become a full professor in 1975, he remained there until 1991 when he moved to UMDNJ.

As an organic chemist his interest at first was to elucidate structures of gangliosides and his elegant work on the structure of Tay-Sachs ganglioside (GM2 ganglioside; GalNAcβ1-4(NeuAcα2-3Galβ1-4Glcβ1-1Cer) appeared in the literature in 1965 within two years of the publication of the structure of GD1a ganglioside (NeuAcα2-3Galβ1-3GlaNAcβ1-4(NeuAcα2-3)Galβ1-4Glcβ1-1Cer) by Richard Kuhn and Herbert Wiegandt in 1963. The structures of different gangliosides published by five independent groups (Klenk *et al.*; Kuhn and Wiegandt; Yamakawa *et al.*; Svennerholm *et al.*; and Ledeen *et al.*) between 1959 and 1965 paved the road for establishing the biosynthetic *in vitro* pathway for gangliosides (GM3 to GD1a) by Saul Roseman, Subhash Basu, and Bernard Kaufman (1965–67) in embryonic chicken brain and other brain tissues. Dr. Ledeen and his associates later on discovered the structure of G4 ganglioside (NeuAcα2-3Galβ1-1Cer) and its biosynthesis in myelin tissues with R. Yu.

During his 40 plus years of research in the area of Ganglioside, Dr. Ledeen and his group have contributed from the structure to the functional aspects of different gangliosides in the neuronal tissues and cultured neuronal cells. Recently, Dr. Ledeen and his coworkers have focused their attention on the functional roles of gangliosides as modulators of calcium channels. They have revealed that GM1 ganglioside in the nuclear envelope is needed to activate the sodium–calcium exchange process. They also have correlated neuronal seizure activity in ganglioside knockout-mice with the loss of calcium homeostasis. The role of *N*-acetylaspartate as a donor of acetyl groups for myelin lipid synthesis has become a major interest of his group in recent years.

Dr. Ledeen received the Jacob Javits Research Award from NIMHDS in 1987 and the Alexander von Humbolt Prize in 1988. Dr. Ledeen and his coworkers have published over 110 papers and research articles in internationally recognized journals and books.