Donald S. Fredrickson, MD (1924–2002)

Donald “Don” Fredrickson, MD, received his medical doctor degree from the University of Michigan Medical School and did his residency in internal medicine at the Peter Bent Brigham Hospital in Boston. He studied the biochemistry of cholesterol metabolism at the Massachusetts General Hospital before joining the National Institutes of Health (NIH) as one of the first clinical associates in 1953.

He worked with Christian B. Anfinsen Jr. (later Nobel Laureate) and Daniel Steinberg, MD, PhD, on lipid metabolism before developing his own laboratory at NIH. This became known as the Molecular Disease Branch in the National Heart Institute. In this setting he demonstrated the existence of the high flow of fatty acids in human blood, and discovered Tangier disease and cholesteryl ester storage disease. In the 1960s as scientific director of the National Heart and Lung Institute with his young staff of scientists (Robert I. Levy, MD, and Robert S. Lees, MD) he described a new typing system that allowed clinicians to classify disorders of plasma lipoprotein disorders. Separation of elevated LDL from HDL, VLDL, and chylomicrons was now feasible and allowed studies of the “hyperlipoproteinemias”as familial traits. Some very early studies of drug and diet were conducted in the clinics of NIH with this new form of characterizing and monitoring lipoprotein concentrations. The apolipoproteins A2, C-I, CII, and CIII were also isolated and characterized in this laboratory in the late 1960s.

In the 1970s, he inspired and supported Dr. Levy who directed the Lipid Research Clinics Program that funded research on lipoprotein disorders in a collaborative mode in 12 universities in the U.S. and two in Russia.

Dr. Fredrickson became director of the Institute of Medicine at the National Academy of Sciences in 1974 and returned to the NIH as its director in 1975. In this role, he was faced with a tide of research proposals that involved changing the genome of bacteria and higher creatures including mice. This burgeoning field was virtually stopped by fear of unleashing dangerous new infectious agents into the population. His careful deliberate organization of the issues and his political skills provided for a set of rules that allowed laboratories to proceed in a productive fashion while quelling the fears of scientists and the population. The result has been a giant harvest of new information that explains genetic disorders and that provides for creation of very specific and effective new therapeutic agents.

He mentored many basic and clinical scientists who today hold leadership positions in universities, research institutes, voluntary health organizations, and government agencies around the world.