The ASN welcomes Bruce Beutler, MD, as he presents a state-of-the-art lecture, “Genetic Insights into the Innate Immune System,” during the Saturday, October 31, plenary session, which begins at 8 a.m. Dr. Beutler is professor and chair of the department of genetics at the Scripps Research Institute in La Jolla, Calif.

As an immunologist and geneticist, Dr. Beutler has made fundamental contributions to our understanding of the inflammatory processes. His work revealed precisely how the body senses diverse infections, leading to the initiation of an immune response.

While at Rockefeller University in New York, Dr. Beutler isolated mouse tumor necrosis factor (TNF) and discovered its inflammatory properties. He was the first to use anti-TNF antibodies to block inflammation in animals. He invented recombinant inhibitors of TNF activity, made by fusing the TNF receptor ectodomain to IgG heavy chains. These molecules are now widely applied in clinical medicine.

Returning to Dallas as a Howard Hughes Medical Institute Investigator in 1986, Dr. Beutler turned his research to the persistent question of how microbes are initially perceived as nonself by the host immune system—an event that triggers an inflammatory response. He mapped and positionally cloned a critical mutation of the Lps locus that prevented mice from sensing bacterial lipopolysaccharide and enhanced their susceptibility to Gram-negative infection. This work established Toll-like receptors (TLRs) as the principal sensors used by the innate immune system to perceive infection. At the same time, this research marked TLRs as the proximal cause of systemic inflammation during infection and ushered in a new era of research in immunology. Dr. Beutler's laboratory subsequently established many of the essential proteins active in TLR signal transduction.

In 2000, Dr. Beutler moved to the Scripps Research Institute in La Jolla, where he developed a prolific N-ethyl-N-nitrosourea (ENU) mutagenesis program, focusing on variant phenotypes related to the innate immune response. He researches genes required for normal immune function through germline mutagenesis and positional cloning, identifying mutations that shed light on other biological phenomena, including hearing, sight, iron absorption, and development.

Dr. Beutler is a member of the National Academy of Sciences and the Institute of Medicine. His discoveries have been recognized by several prestigious awards, including the Robert Koch Prize in 2004 for his discovery of molecular mechanisms of sensing and effector responses in innate immunity; the Balzan Prize in 2007 for his discovery of the genetic mechanisms responsible for innate immunity, and the Albany Medical Center Prize in 2009 for his discovery of the role of TNF and TLRs in inflammation.

Dr. Beutler received his medical degree from the University of Chicago in 1981, and was a resident at the University of Texas Southwestern Medical Center from 1981 to 1983. He completed his postdoctoral studies at Rockefeller University between 1983 and 1985.

The clarity of Dr. Smith’s logic and the skill with which he explained his ideas transformed them into vivid and powerful concepts that are the cornerstones of our present understanding of normal and abnormal renal function. He attracted the best and brightest to the field, to NYU, and to the Mount Desert Island Biological Laboratory, where he spent many summers studying renal physiology in fish.

Homer W. Smith

Homer W. Smith was chairman of physiology at the University of Virginia before moving in 1928 to New York University (NYU). As director of the Physiology Laboratories at NYU, he developed and refined the concepts of glomerular filtration and tubular absorption and secretion of solutes. The Homer W. Smith award recognizes individuals who contribute to our basic understanding of how the kidneys function in health and disease.