



Curriculum Vitae Prof. Dr. Bruce Beutler



Name: Bruce Alan Beutler

Born: 29 December 1957

Research focuses: Immune system, innate immunity, receptor proteins, toll gene, toll-like receptors (TLR), tumour necrosis factor (TNF), TNF blockers

Bruce Alan Beutler is an American immunologist and geneticist. In 2011 he was awarded the Nobel Prize in Physiology or Medicine along with Jules Hoffmann and Ralph M. Steinmann. The three scientists researched the human immune system and, as the Nobel committee put it, “revolutionised our understanding of the immune system”. Bruce Beutler and his colleague Jules Hoffmann discovered activation mechanisms of innate immunity.

Academic and Professional Career

- since 2011 Director of the Center for the Genetics of Host Defense and holder of the “Raymond and Ellen Willie Distinguished Chair in Cancer Research”, University of Texas Southwestern Medical Center, USA
- 2007 - 2011 Chief of the Department of Genetics, The Scripps Research Institute, La Jolla, USA
- 2000 - 2007 Professor of Immunology and Microbial Science (IMS), The Scripps Research Institute, La Jolla, USA
- 2000 - 2011 Lecturer, Kellogg School of Science and Technology, The Scripps Research Institute, La Jolla, USA
- 1996 - 2000 Professor at the University of Texas Southwestern Medical Center, USA
- 1991 - 2000 Associate Scientist at the University of Texas Southwestern Medical Center, USA
- 1990 - 1996 Associate Professor, Department of Internal Medicine, University of Texas Southwestern Medical Center, USA

1986 - 1991	Assistant Investigator, Howard Hughes Medical Institute, USA
1986 - 1990	Assistant Professor, Department of Internal Medicine, The University of Texas Southwestern Medical Center, USA
1985 - 1986	Assistant Professor, Rockefeller University, USA
1983 - 1985	Postdoctoral Fellow, Rockefeller University, USA
1981 - 1983	Assistant, University of Texas Southwestern Medical Center, USA
1981	M.D., Pritzker School of Medicine, University of Chicago, USA
1976	B.A. in Biology, University of California, San Diego, USA

Honours and Awarded Memberships

since 2013	Member of the American Academy of Arts and Sciences
2013	Stanley J. Korsmeyer Award
since 2012	Member of the German National Academy of Sciences Leopoldina
2011	Nobel Prize in Physiology or Medicine together with Jules A. Hoffmann and Ralph M. Steinman
2011	Shaw Prize
2009	Albany Medical Center Prize in Medicine and Biomedical Research (with Charles A. Dinarello and Ralph M. Steinman)
2009	The Will Rogers Institute Annual Prize for Research
since 2008	Member of the US National Academy of Sciences
2007	Frederik B. Bang Award
2007	Honorary Doctorate of the Technische Universität Munich
2007	Balzan Prize for Innate Immunity (with Jules A. Hoffmann)
2006	The William B. Coley Award of the Cancer Research Institute, USA (with Shizuo Akira)
2006	The Gran Prix Charles-Leopold Mayer of the French Académie des Sciences
2004	Robert Koch Award of the Robert Koch Foundation (with Jules A. Hoffmann und Shizuo Akira)
1994	Outstanding Investigator Award of the American Federation for Clinical Research

Major Scientific Interests

Bruce Alan Beutler was awarded the Nobel Prize in Physiology or Medicine in 2011 along with Jules Hoffmann and Ralph M. Steinmann. The three scientists researched the human immune system and, as the Nobel committee put it, “revolutionised our understanding of the immune system”. Bruce Beutler and his colleague Jules Hoffmann discovered activation mechanisms of innate immunity.

All living organisms protect themselves against bacteria and microorganisms with an innate defence system. Beutler and Hoffmann discovered the receptor proteins that recognise such “invaders” when they enter the body and activate the immune system. Dendritic cells, which Steinman discovered, are then involved in the next step in the body’s immune response. Hoffman had recognised the toll gene’s significance for the immune system in flies. Mutations in the toll gene make the body incapable of triggering an effective defence reaction. This is because the gene activates receptor proteins, which in turn set the immune response into motion. Building on this knowledge, Beutler found such receptors, the toll-like receptors (TLRs), in mice. Beutler had thus discovered a new class of immune molecules and proved that the immune reaction is activated via the same mechanism in insects and mammals. These discoveries have contributed significantly to our understanding of diseases and supported the development of new therapies for infections, cancer and inflammatory diseases.

In earlier research work, Beutler isolated tumour necrosis factor (TNF) in mice and recognised its significance in inflammatory processes. On the one hand, TNF causes tumour cells to die off; on the other hand, it is an important messenger substance for the genesis of inflammatory reactions and fever. Its discovery was the foundation for the development of substances called TNF blockers – medications that prevent the activity of the messenger substance in the immune system in a targeted way and are used in the treatment of autoimmune diseases and rheumatism. At Scripps Research Institute, Beutler developed the world’s largest mutagenesis programme using mice in order to bring about targeted mutations in their DNA.