

THOMAS CHRISTIAN SÜDHOF



Thomas Christian Südhof is a German American neuroscientist. His findings helped scientists to better understand the cellular mechanisms underlying neurological conditions such as autism, schizophrenia, and Alzheimer disease.

For his breakthroughs, Südhof was awarded the 2013 Nobel Prize for Physiology or Medicine, which he shared with American biochemists and cell biologists James E. Rothman and Randy W. Schekman.

ACADEMIC AND PROFESSIONAL CAREER

In 1982 Südhof received a medical degree from the University of Göttingen and a doctorate in neurochemistry from the Max Planck Institute for Biophysical Chemistry, where he investigated the release of hormones from cells of the adrenal glands. The following year Südhof began his postdoctoral studies at the University of Texas Southwestern Medical Center at Dallas. There he investigated the low-density lipoprotein (LDL) receptor, a molecule involved in cholesterol metabolism. His mentors, American molecular geneticists Michael S. Brown and Joseph L. Goldstein, received the Nobel Prize for Physiology or Medicine (1985) for their cholesterol research while Südhof was a student in their laboratory. In 1986 Südhof became an investigator at Texas Southwestern and an investigator with the Howard Hughes Medical Institute. He moved his laboratory to Stanford University in 2008.

Throughout his career much of Südhof's research focused on presynaptic neurons, which release signaling chemicals called neurotransmitters into the synapse (or junction) between communicating cells (i.e., between neurons, between neurons and muscle cells, or between neurons and glands). He elucidated the process by which synaptic vesicles, which are filled with neurotransmitters, fuse with neuronal membranes and undergo exocytosis, in which they release their neurotransmitters into the extracellular environment. Südhof's research has not only given the scientific community a great understanding of the processes underlying synaptic transmission and synapse formation, but has also advanced medical knowledge of mechanisms behind poorly understood diseases such as Alzheimer's, Schizophrenia, and Autism.

He is currently working with a diverse group of researchers at the Howard Hughes Medical Institute to develop mouse models for mutants of synaptic genes. The project aims to drastically advance our understanding of neurological disorders. He also serves on the Research Consortium of Cure Alzheimer's Fund.

AWARDS AND HONORS

- 1993 W. Alden Spencer Award from Columbia University (shared with Richard Scheller)
- 1994 Wilhelm Feldberg Award
- 1997 Roger Eckert Award Lecture, Göttingen
- 1997 U.S. National Academy Award in Molecular Biology (shared with Richard Scheller)
- 2002 Member of the National Academy of Sciences of the U.S.A.
- 2003 Metlife Foundation Award for Medical Research in Alzheimer's Disease (shared with Roberto Malinow)
- 2004 Bristol-Myers Squibb Award for Distinguished Achievement in Neuroscience Research
- 2004 Ulf von Euler Award Lecture, Karolinska Institute
- 2007 Member of the Institute of Medicine
- 2008 Bernhard Katz Award, Biophysical Society (shared with Reinhard Jahn)
- 2008 Passano Foundation Award
- 2010 Kavli Prize (shared with Richard Scheller and James Rothman)
- 2013 Albert Lasker Award for Basic Medical Research (shared with Richard Scheller)
- 2013 Nobel Prize in Physiology or Medicine- shared with Randy Schekman and James Rothman
- 2014 Golden Plate Award of the American Academy of Achievement
- 2017 Foreign Member of the Royal Society
- 2022 Member of the Hungarian Academy of Sciences