The Sir Bernard Katz Award for Excellence in Research on Exocytosis and Endocytosis is named after the investigator who established the exocytotic nature of synaptic transmission and discovered the ligand-gated channel basis for the post-synaptic response. He is one of the founding fathers of biophysics and neuroscience.

About Bernard Katz:

Bernard Katz was born on March 26, 1911, in Leipzig, Germany, of Russian Jewish origin. His early education was at the Albert Gymnasium in Leipzig (1921-1929). He then studied Medicine at the University of Leipzig and obtained his MD in 1934.

Katz fled Germany in 1935 and was accepted as a Ph.D. student by Professor A.V. Hill at University College, London (UCL), where he worked until August 1939. He referred to Hill as his greatest scientific influence and later described this period as “the most inspiring period of my life.” Katz then left Britain for Sydney, Australia, where he worked with John Eccles and Stephen Kuffler. In 1941 he became a naturalized British citizen, and in 1942 he joined the Royal Australian Air Force and served as a Radar Officer in the South West Pacific until the end of the war. Immediately after the war Hill invited Katz to return to UCL in 1946 as Assistant Director of Research and Henry Head Research Fellow. During this period, he presented the first description of inward rectification and demonstrated, together with Alan Hodgkin, that the overshoot of the action potential results from an influx of Na+. In 1952 Katz succeeded Hill as Professor of Biophysics at UCL (he headed a department there until his retirement in 1978). Katz also married Marguerite "Rita" Penly, and they had two children, David and Jonathan, during this time.

During the 1950s, Katz and Paul Fatt observed spontaneous miniature synaptic currents and developed the “quantal hypothesis” that is the basis for our current understanding of neurotransmitter release as exocytosis and for which he received the Nobel Prize in Medicine or Physiology (together with Ulf von Euler and Julius Axelrod) in 1970. In the late 1960s, Ricardo Miledi and Katz advanced the hypothesis that depolarization-induced influx of Ca2+ triggers exocytosis. In the early 1970s, Miledi and Katz quantified the voltage noise induced in muscle by acetylcholine to infer properties of single ion channels before they could be directly measured and thus opened the era of molecular neuroscience.

In addition to his scientific achievements, Katz was also admired for his crisp, unpretentious writing style. He remained scientifically active long after his retirement. Katz's wife died in 1999, and he himself died at age 92 on April 20, 2003.

About Joshua Zimmerberg:

Dr. Joshua Zimmerberg is the 2021 recipient of the Sir Bernard Katz Award for Excellence in Research in Exocytosis and Endocytosis. He is being recognized for his many seminal contributions to the understanding of membrane fusion and fission in exocytosis and endocytosis. The broadness of the scope of Dr. Zimmerberg's studies is breathtaking and unique. He has worked with very diverse experimental models of different levels of complexity from protein-free lipid bilayers to *in vivo* models, from experimental work pioneering new tools and approaches to theoretical studies illuminating the underlying physical mechanisms. His studies have direct application for treating human diseases. In all these systems, his work is aimed at and delivers deep biophysical understanding of the processes he studies. He demonstrated in one of his earliest studies that vesicle -bilayer fusion was a physical process that did not require a living cell and must be understood as such. He had the insight to exploit the large secretory granules in mast cells of the Beige mouse to identify for the first time the initial fusion pore and estimate its dimension. Parallel work on biological fusion processes dependent on different triggers and different proteins has allowed Dr. Zimmerberg to establish a conserved pathway of lipid rearrangements in fusion shared by processes

as dissimilar as mast cell degranulation and cell entry by influenza virus and baculovirus. Dr. Zimmerberg's studies have also provided key insights into formation and properties of fission pore in Toxoplasma invasion, virus release and dynamin-dependent endocytosis. His broad perspective also led him to investigations of the malarial parasite and the identification of membrane remodeling mechanisms involved in different stages of the plasmodium life cycle.

His accomplishments extend to the very culture of research. His generosity and enthusiasm for rigorous and innovative investigation enabled strong research bonds and collaboration among colleagues, both national and international. His laboratory has launched the careers of many students and post-doctoral fellows.

Because of these and many other fundamental contributions to the field, Dr. Joshua Zimmerberg is widely considered as one of the most influential researchers working on membrane remodeling in fusion and fission.

Ronald W Holz & Leonid Chernomordik