



The Nobel Prize in Physiology or Medicine 1970



Press Release

KAROLINSKA INSTITUTET

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[Karolinska Institutet](#) has decided to award the Nobel Prize in Physiology or Medicine for 1970 jointly to

Bernard Katz, Ulf von Euler and Julius Axelrod

for their discoveries concerning "the humoral transmitters in the nerve terminals and the mechanisms for their storage, release and inactivation".

The discoveries which this year's Nobel laureates have made have given us answer to questions of fundamental importance for the understanding of the mechanism underlying the transmission between the nerve cells, i.e. at the so-called synapses, and between the nerve terminals and the so-called effector organs, for instance between the motor nerve fibres and the muscle fibres which they innervate. The transmission between the nerve cells, which radically differs from the mechanisms underlying the impulse transmission in the nerve fibres, is mediated by chemical substances, so-called neurotransmitters, which carry the message from one cell to the other. The three scientists have been working independently of each other, but their discoveries all contribute in solving principal questions concerning the neurotransmitters, their storage, release and inactivation.

Sir Bernard Katz' discoveries concerning the mechanism for the release of the transmitter acetylcholine from the nerve terminals at the nerve-muscle junction, under the influence of the nerve impulses, are fundamental not only for the understanding of the so-

called cholinergic transmission, but are also of primary importance for our knowledge about the synaptic transmission between the nerve cells in the central nervous system.

Professor Ulf von Euler has discovered that the substance noradrenaline serves as neurotransmitter at the nerve terminals of the sympathetic nervous system. He has also shown how this substance is stored in small nerve granules within the nerve fibres of this system.

Dr. Julius Axelrod's discoveries concern the mechanisms which regulate the formation of this important transmitter in the nerve cells and the mechanisms which are involved in the inactivation of noradrenaline, partly under the influence of an enzyme discovered by himself.

von Euler's and Axelrod's discoveries have not only increased our knowledge about the transmission in the sympathetic nervous system, they also form the basis for the understanding of the transmission in the central nervous system and its pharmacology. Thus in a very significant way, the laureates have presented basic data about the physical and chemical mechanisms of the synaptic transmission and thus given us basic information about how the messages are mediated between nerve cells. Their discoveries concerning these regulatory mechanisms in the nervous system are fundamental in neurophysiology and neuropharmacology and have greatly stimulated the search for remedies against nervous and mental disturbances.