

# GOLDMAN-RAKIC PRIZE

## FOR OUTSTANDING ACHIEVEMENT IN COGNITIVE NEUROSCIENCE



Jean-Pierre Changeux, Ph.D.  
Professor  
Collège de France & Institut Pasteur, France

*"I was a close friend of Patricia for whom I had an immense admiration. This Goldman-Rakic Prize profoundly touches me, since it evokes in my mind, in addition to the vivid memories of her person, her extraordinary lucid views about cognition and the brain. This is a very moving moment of my scientific and personal life."*

Widely acknowledged as one of the fathers of modern neurobiology and neuroscience, Jean-Pierre Changeux, Ph.D., has combined biochemical, physiological, and behavioral experimentation together with theoretical modeling to discover the mode of action of nicotine in the brain, its pharmacological receptors, and the molecular mechanism of its dual action: its therapeutic action as cognitive enhancer and its addictive properties as a drug of misuse.

Dr. Changeux's discovery of the acetylcholine receptor, a model membrane receptor, was ground-breaking, revealing one of the central regulatory mechanisms in biology and providing insight into the chemistry of the brain and ultimately the brain-mind relationship.

Dr. Changeux pursued his doctoral studies at the Pasteur Institute under the direction of two giants in the history of molecular biology, Jacques Monod and François Jacob. He went on to become a professor at the Pasteur Institute and the Collège de France.

He is the author of 685 scientific publications and of many books, including several that have bridged the gap between neuroscience and the humanities. Dr. Changeux has received numerous scientific prizes and international awards, and is known as a champion of the arts and ethical consideration of the implications of scientific discovery.

His first breakthrough led to the theory of allosteric transitions in proteins. This postulated that regulatory ligands control the activity of the active sites of enzymes when they bind to topologically distinct sites. Soon after, he proposed a similar concept to explain the behavior of synaptic receptors for neurotransmitters. He subsequently discovered the acetylcholine receptor. Currently, many pharmaceutical and biotechnology companies are developing allosteric modulators of receptors or other key proteins in human cells for use in neurological disorders and a host of other illnesses.

*"Dr. Changeux brilliantly demonstrated that interactions between different sites underlie biological regulation of proteins. The work was extended through decades with discovery of the nicotinic acetylcholine binding sites, and many other aspects of cellular functioning. In the brain, it included cognitive behaviors. His great discoveries revolutionized medicine and the principles of drug discovery. In neuroscience, they are central to neural therapies for addiction, pain, myasthenia gravis, neurodegenerative diseases and schizophrenia."*

—Jack D. Barchas, M.D., Chair of the Goldman-Rakic Prize Selection Committee