Jean-Pierre Changeux

Professor Emeritus at the Institut Pasteur and Honorary Professor at the Collège de France

2001 Balzan Prize for Cognitive Neurosciences

Professor Changeux's broad and profound contribution ranges from the fundamental molecular mechanisms of chemical communication in the nervous system to learning and consciousness. In addition to his outstanding experimental work, Professor Changeux has made a theoretical contribution on the epigenesis of neuronal networks by selective stabilization of developing synapses and on several aspects of cognition. Jean-Pierre Changeux has established a new direction for the study of cognitive functions by rooting them at the molecular level.

Institution Administering Research Funds: Institut Pasteur

Adviser for the Balzan General Prize Committee: Nicole Le Douarin

Neuronal Organization of the Brain and Cognitive Functions

In his research, 2001 Balzan Prizewinner in Cognitive Neurosciences Jean-Pierre Changeux was mainly concerned with the study of the correlation of cognitive functions and the molecular aspects of cerebral activity. His laboratory was the first to activate the genes of neuronal nicotinic receptors and to study the consequences they might have on human behaviour. Jean-Pierre Changeux used the second half of his Balzan Prize to continue and diversify this research at the Récepteurs et Cognition unit of the Institut Pasteur. General overviews of this research are contained in a book (Jean-Pierre Changeux and Stuart J. Edelstein, *Nicotinic Acetylcholine Receptors: From Molecular Biology to Cognition*, Editions Odile Jacob, Paris-New York, 2005) and in a recently published article by (Changeux, J.-P., *Nicotine addiction and nicotinic receptors: lessons from genetically modified mice*, "Nature Reviews Neuroscience", 11th June 2010). In this article Professor Changeux reviews studies in transgenic mice that have started to reveal which nicotine receptor subunits mediate the effects of nicotine on behavior, cognition and addiction, thus forming therapeutic targets for nicotine addiction.

Researchers:
Nicolas Champtiaux
Stanislav Dehaene
Philippe Faure
Thomas Gisiger
Sylvie Granon
Zhi-Yan Han
Corentin Le Magueresse
Nicolas Le Novère
Jérôme Sallette

Main Publications:
- Jean-Pierre Changeux and Stuart J. Edelstein, *Nicotinic Acetylcholine Receptors: From Molecular Biology to Cognition*, Editions Odile Jacob, Paris-New York, 2005
- Changeux, J.-P., *Nicotine addiction and nicotinic receptors: lessons from genetically modified mice*, in "Nature Reviews Neuroscience", 11th June 2010).

Other Publications (in chronological order):
- Le Novère, N., Grutter, T. and Changeux, J.-P., *Models of the extracellular domain of the nicotinic receptors and of agonist- and Ca2+ binding sites*, "Proceedings of the National Academy of Sciences", 99(5), 2002.
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