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The implementation of goal-directed emotionally motivated behavior and emotionally saturated cognitive map of the brain

Describes the hierarchical network of the mammals brain, pyramidal and extrapyramidal system. Hierarchical network of brain functions on the basis of synaptic excitation and inhibition. The new signal is consolidated by specific intracellular modifications of gene expression. The signal in hierarchical networks, passes through the dorsal striatum, nucleus of pallidum reaches the substantia nigra, and divided into three parts. The first part activates thalamo-cortical network and returns the signal to the neocortex. The second part, forms output of the basal ganglia with the red nucleus and the adds information coming from the motor cortex and cerebellum. The third part, through the global dopaminergic (DA) signal activates the mesolimbic, mesocortical and nigrastriatal DA system and through interaction with nucleus raphe and locus coeruleus integrated with noradrenergic (NA) and serotonin (CT) systems, control emotionally motivational states implement behavior and evaluator feature. Useful or harmful coming reaction or realized behavior, reinforce it, to weaken or completely removed? Emotional and motivation states formed by neurohormones, neuropeptides and neuromodulators that do not generate synaptic potentials and induce intracellular response through their metabotropic receptors via signal transduction and modification of gene expression. Neuromodulators are control of neural networks. Neural networks are managed in such a way to realize of goal-directed emotionally motivated behavior. But goal-directed emotionally motivated behavior is not possible without the orientation in the environment. This function is performed by hippocampal formation, which has place cells, time cells, entorhinal grid cell (orientation) and environmental monitoring (head direction cells) and so on, which integrates with the neocortex and forms cognitive map of brain. The integrated system of the hippocampus - neocortex controls the behavior through cortico-basal network, the substantia nigra, and organizes the emotionally saturated cognitive map of the brain and controls the goal-directed behavior. Emotionally saturated cognitive map of the brain is an internal source of our knowledge and experience.

Biography

Ara Bazyan is a Neuroscientist and Molecular Psychobiologist. He has worked as Research Associate in the Department of Neurophysics Institute Higher Nervous Activity, Russian Academy of Sciences from 1971-1974, then Senior Research Associate from 1974-1995, and Laboratory Head since 1995. His major achievements include research in molecular mechanisms of learning and memory; and implementation of emotional and motivation states. He has contributed over 100 articles to science journals, including Neurosci., Brain Research, Biogenic Amines and others. He is member of several societies including International Brain Research Organization, Russian Physiological Society and Russian Bio-chemical Society.

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