Sélection Internationale

Biology as Main Discipline. July 2013.

1.- Describe the essential elements of an excitatory synapse of the Central Nervous System of Vertebrates (1.5p).

2.- Criteria defining a neurotransmitter (1p)

3.- Which mechanisms are used by inhibitory neurons to produce and accumulate neurotransmitter? (0.5p)

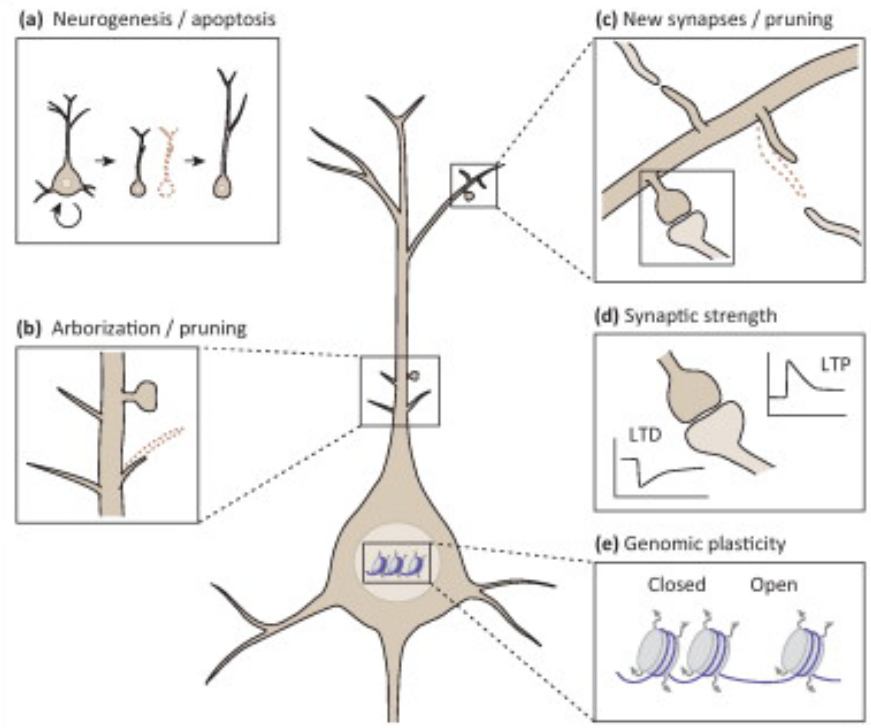
4.- What determines the resting potential of a neuron? (1p)

5.- Role(s) of astrocytes (1p)

6.- In which part of the encephalon is the thalamus? How is its overall organization? Which are its inputs and outputs? (1.5p)

7.- Proposed model for the levels of neuronal plasticity.

Neuronal plasticity acts at different structural levels and bidirectionally to influence variability and selection within neuronal networks. Increased formation of structures at any of these levels generates variability and promotes competition between similar structures for stabilization, thereby enhancing adaptability, even if the total number of structures is not increased due to the simultaneous increase in structural elimination.



Discuss each of the proposed mechanisms and their potential. (3.5p)