

## 9.14

### **Classes #3-4: Steps to the CNS of chordates Monday, February 7; Wednesday, February 9.**

#### *Questions based on lectures:*

- 1) Three basic types of multipurpose actions were described in class. For any mammal you are familiar with, what are two specific examples of each?
- 2) Define primary sensory neuron, secondary sensory neuron, interneuron, motor neuron.
- 3) What is the notochord?
- 4) Amphioxus, the primitive protochordate, has visual inputs. What division of the CNS do these inputs enter? How do we know that there is a probable evolutionary relationship between the visual structures of Amphioxus and structures in mammals?
- 5) Give examples of the ongoing background support, provided by actions of the nervous system, for what we call motivated behavior patterns and for various cognitive functions.
- 6) Give an example of a sensory function that has led to great expansions of specific parts of the hindbrain in certain species of fish.
- 7) What sensory functions led to great expansions of the midbrain in some species?
- 8) What sensory inputs led to the early expansion of the endbrain, and to the later expansion of the endbrain, prior to the evolution of primates and other large-brained mammals?
- 9) What closely related brain systems evolved to serve visceral and social needs of animals?
- 10) The evolution of what we call higher cognitive abilities depended on a great expansion of the neocortex, especially in primates. What other brain structures expanded in a correlated fashion?