

## Study Questions on Required Readings for Lectures 7 and 8

### Rosenzweig Chapter 6 (p 149 – 175)

#### Evolution of Brain and Behavior

- 1) How did Lamarck's theory of evolution differ from the one proposed by Darwin?
  - a. In what ways does our current knowledge of genetics provide support for one of these theories?
- 2) How is the rat brain similar to the human brain? How are they different?
- 3) Describe the properties of *Aplysia* and *Drosophila* that make them useful for neuroscience research.
  - a. Name a few ways in which their nervous systems differ from the human nervous system.
- 4) What is the neocortex?
- 5) What does the encephalization factor ( $k$ ) describe?
  - a. In figure 6.13 (c), where does the value "0.69" come from?
  - b. Which mammal has the largest brain weight as a percentage of body weight? the largest  $k$ ?
- 6) What did the H. Stephan (1981) study demonstrate?
  - a. Do all regions of the brain increase in size at the same rate? (figure 6.15)
- 7) Briefly, describe the characteristics of:
  - a. australopithecines
  - b. *Homo erectus*
  - c. *Homo sapiens*
- 8) "Geoffrey Miller suggests that natural selection to obtain food and shelter is not likely to account completely for the large brain and complex intelligence of *Homo sapiens*." What does Miller propose as an additional factor to account for the large size of human brains?
  - a. How does this explain, according to evolution, other characteristic human traits?
  - b. Describe an experiment that supports Miller's hypothesis.