

*Questions based on Schneider chapter and lectures:*

1. Describe differences between place cells and head direction cells as recorded in rats.
2. Contrast the learning manifest in the two major links between olfactory inputs and motor outputs as proposed for primitive vertebrates.
3. What is the difference in location of the hippocampus of large primates and its location in the rat?
4. Where is long term potentiation (LTP) found in the hippocampus?
5. Describe the type of anatomical plasticity seen in the hippocampus after specific lesions in adulthood.
6. How might neuromodulators effect the functioning of the hippocampus during waking and sleep?

*Questions on readings: Brodal, Schneider*

1. Identify the major subregions of the hippocampus and adjacent structures.
2. What pattern of interconnectivity distinguishes area CA1 from area CA3 ?
3. What types of memory are dependent on the hippocampus? What types are not dependent on the hippocampus?
4. What is the name of the major input pathway to the hippocampus and where does it originate?
5. What is the pathway for subcortical projections to and from the hippocampus?
6. Identify a major neuromodulatory system which regulates hippocampal activity and locate the nucleus that provides this input.

*Questions on readings: Striedter*

1. What are the major kinds of evidence that has shown that the hippocampal formation of mammals is the homologue of the medial pallium of non-mammalian vertebrates?
2. In what sense are evolutionary changes in hippocampal connections like the evolutionary changes in striatal connections? (p. 291)
3. In Georg Striedter's opinion, which is conserved more in evolution, specific connections or embryonic origins?

*Questions on readings: Butler & Hodos*

4. What is the "triune brain"? How has this idea been shown to be invalid?
5. What difference in medial pallial afferents is characteristic of amniotes as opposed to anamniotes? (p 457; also see Striedter p 291 figure)

MIT OpenCourseWare  
<http://ocw.mit.edu>

## 9.14 Brain Structure and Its Origins

Spring 2009

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.