9.01 - Neuroscience & Behavior
Fall 2003
Massachusetts Institute of Technology
Instructor: Professor Gerald Schneider

Study questions for lecture 6 assigned readings.

From Rosenzweig pp. 213-234:

1. What is sensory transduction, and how do receptor cells contribute to it?
2. Describe the steps involved for a Pacinian corpuscle to signal the presence of its preferred stimulus to the nervous system.
3. What is the concept of a labeled line? According to this concept, how do we distinguish between, e.g., pain and vibration if they stimulate the same region of skin? How does the concept explain the ability to locate where a visual stimulus occurs?
4. What is the difference between a tonic and phasic receptor? What is the advantage of each?
5. Why might there be more than one map of a given receptive surface, such as the body surface in the somatosensory cortex?
6. What are a couple experiments that have demonstrated that there is plasticity in somatosensory cortical maps?
7. What is meant by saying that the somatosensory cortex has a columnar organization? Do these different columns have any approximate relation to different types of touch receptors (Pacinian corpuscle, Meissner corpuscle, Merkel disks, Ruffini's ending)?
8. What might be the advantage to having a columnar organization of somatosensory cortex?