

Readings Study Questions (on Nauta Chapter 5, for Lectures 9 and 10)

Three main pathways to the brain from a sensory stimulation of the body are the **spinothalamic tract**, the **dorsal column-medial lemniscus pathway**, and the **spinocerebellar tract**.

The spinothalamic tract carries diffuse touch, temperature, and pain information.

The medial lemniscus carries information about discriminative (fine) touch and vibration (as well as some proprioception).

The spinocerebellar tract carries proprioceptive info (position of body in space).

1. Describe the pathway of sensory information flow from the skin to somatic cortex following a vibratory stimulus.
2. Briefly describe two sensory pathways that are involved in preventing a tightrope walker from falling?
3. What feature of sensory receptor inputs might account for the fine resolution of the two-point discrimination task? Give an example of one such input.
4. Comment on the following using what you know about auditory conduction: "If a tree falls in the forest and no one hears it, does it still make a sound?"
5. It has recently been reported that some ganglion cells can fire action potentials (APs) in direct response to light without photoreceptor input. If an electrode is placed in the photoreceptor layer and one of these ganglion cells simultaneously, which should respond first to a light shined on the retina? Why?
6. Why might the initial neural response to an olfactory stimulus display a shorter latency than to any other type of sensory stimuli?