

Readings Study Questions (on Nauta Chapters 6-10, for lecture 11)

1. How might you distinguish a patient with a frontal lobe lesion from a patient with a temporal lobe lesion?

*Patients with temporal lobe lesions exhibit visual agnosia, the inability to recognize what they are seeing. Patients with frontal lobe lesions show neither sensory or motor deficits. They show a variety of symptoms, but the most striking are a change in personality and the lack of ability to inhibit inappropriate actions.*

2. Describe the circuitry in the brainstem responsible for controlling eye movements.

*The circuitry in the brainstem responsible for controlling eye movements consists of three motor nuclei on each side of the midline, as well as the superior colliculi in the midbrain. The motor nuclei control the six muscles that move the eye about in its socket. These nuclei are the abducens nucleus in the hindbrain, and the oculomotor and the trochlear nuclei in the midbrain. These nuclei receive controlling input from the superior colliculi.*

3. How would the removal of the hypothalamus affect an animal? Why?

*The animal would die, primarily because it would lose the ability to regulate its "internal milieu": blood pressure, heart rate, respiration rate, temperature, etc.*

4. If you met a patient with intact short term memory but impaired long term memory, where might he have a lesion? Why?

*The patient probably has a lesion in the hippocampus or medial temporal lobe. Such injuries spare short term memory but prevent the patient from making any new long term memories. Previously existing long term memories are relatively spared, depending on how long ago they were formed.*

5. Describe the symptoms of Parkinson's disease and discuss the brain structures involved.

*Parkinson's disease is characterized by muscular rigidity, impaired ability to voluntarily generate movements, and tremor. The brain structures involved are the corpus striatum and the substantia nigra; in particular, the dopaminergic neurons projecting from the substantia nigra to the corpus striatum degenerate.*

6. If a patient loses pain sensation on one side of his face and the other side of his body, where might he have a lesion?

*This symptom indicates a lesion in the lateral part of the rhombencephalon on the same side of the brain as the facial sensory deficit. This is because the conduction lines for pain from the body pass through the rhombencephalon after they have crossed, while the lines for pain from the face pass through it before they cross.*