

Name _____ Date _____ Period _____

Sheep Brain Dissection Pre-Lab

Complete this pre-lab before handling the specimen. Read the Mr. E Science Sheep Brain Dissection Guide, including the cranial-nerve reading and table, and watch the demonstration. Answer in your own words. Use the guide to prepare; record actual specimen observations during the lab.

Preparation check: [] Guide read [] Demonstration watched

Video: <https://www.youtube.com/watch?v=JDEUjsAx82w>

Introduction and safe handling

1. Which two organs make up the central nervous system?

2. Why is a sheep brain a useful model for studying a human brain? Give one limitation of this comparison.

3. Name two protective items you will wear and two precautions you will follow when handling or cutting the specimen.

4. Why should you use a blunt probe and keep the preserved brain supported in the tray?

Orient the brain

5. Complete these directions for a sheep brain.

Anterior (rostral): _____ Posterior (caudal): _____

Dorsal: _____ Ventral: _____

Medial: _____ Lateral: _____

6. When you turn the specimen over, does its anatomical right side become its left side? Explain.

Protective coverings

7. Name the three meninges, in order from outermost to innermost.

8. What does cerebrospinal fluid do, and which meninx closely follows the gyri and sulci?

Dorsal surface and cerebral lobes

9. Name the three major regions emphasized during the external examination.

10. Distinguish a gyrus from a sulcus. Why is folding useful in the cerebral cortex?

11. What does the longitudinal fissure separate? What does the transverse fissure separate?

12. Match each cerebral lobe to the function most closely associated with it.

Frontal _____ Parietal _____ Occipital _____ Temporal _____

- A. Visual processing B. Hearing and memory
C. Movement planning and control D. Touch and body-position information

13. How does the cerebellum help a sheep walk over uneven ground?

Ventral surface

14. Arrange these terms to trace the visual pathway: optic tracts, retinas, optic nerves, optic chiasm. What happens to some fibers at the chiasm?

15. What information reaches the olfactory bulbs?

16. How are the hypothalamus and pituitary gland connected, and how do their functions relate?

17. Name the three parts of the brainstem. Give one vital function regulated by the medulla.

18. If the pituitary gland or a nerve is missing from your specimen, what should you record? Why might it be missing?

Midsagittal section and internal anatomy

19. What makes a section midsagittal? Which external landmark helps you locate the cutting plane?

20. Compare the roles of the thalamus and hypothalamus.

21. What does the corpus callosum connect? What does the arbor vitae contain?

22. How do gray matter and white matter differ? Include neuron cell bodies, axons, and myelin in your answer.

23. What are the ventricles, and what do they contain in a living animal?

24. Which midbrain structures help orient responses to visual events, and which process sound information?

The twelve cranial nerves

Writing the names and studying the functions are required. Examining individual cranial nerves on the specimen is optional and must be assigned by your teacher before the midsagittal cut.

25. How many pairs of cranial nerves are there? Explain sensory, motor, and mixed.

26. Write the name of each cranial nerve next to its Roman numeral.

I. _____	VII. _____
II. _____	VIII. _____
III. _____	IX. _____
IV. _____	X. _____
V. _____	XI. _____
VI. _____	XII. _____

27. How does the optic nerve differ in function from nerves III, IV, and VI?

28. Choose three cranial nerves involved in eating. Give each nerve's name or numeral and explain its contribution.

29. How does the vagus nerve's distribution differ from that of nerves serving mainly the head and neck?

Connect structure with function

30. A sheep sees an obstacle and steps around it. Explain how a sensory pathway, the cerebrum, and the cerebellum contribute to its response.

31. Explain homeostasis. Give one example of how the hypothalamus helps maintain it.

Before lab: Review unfamiliar terms. Be ready to orient the brain, explain safe cutting practices, and distinguish reference information from observations of your own specimen.