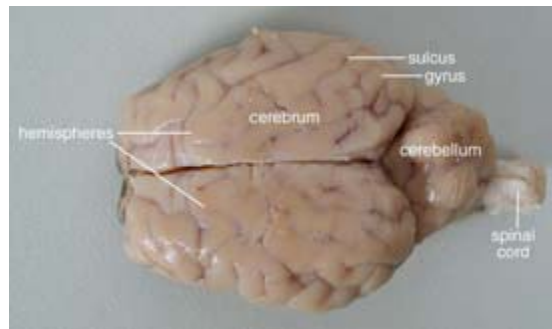


## Sheep Brain Dissection

Sheep brains, although much smaller than human brains, have similar features and can be a valuable addition to anatomy studies. See for yourself what the cerebrum, cerebellum, spinal cord, gray and white matter, and other parts of the brain look like! Use this as a dissection guide complete enough for a high school lab, or just look at the labeled images to get an idea of what the brain looks like.

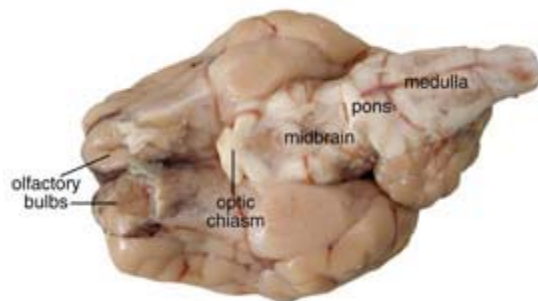
### Observation: External Anatomy

1. You'll need a [preserved sheep brain](#) for the dissection. Set the brain down so the flatter side, with the white **spinal cord** at one end, rests on the [dissection pan](#). Notice that the brain has two halves, or **hemispheres**. Can you tell the difference between the **cerebrum** and the **cerebellum**? Do the ridges (called **gyri**) and grooves (**sulci**) in the tissue look different? How does the surface feel?



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2. Turn the brain over. You'll probably be able to identify the medulla, pons, midbrain, optic chiasm, and olfactory bulbs. Find the **olfactory bulb** on each hemisphere. These will be slightly smoother and a different shade than the tissue around them. The olfactory bulbs control the sense of smell. The nerves to the nose are no longer connected, but you can see nubby ends where they were. The nerves to your mouth and lower body are attached to the **medulla**; the nerves to your eyes are connected to the **optic chiasm**. Using a magnifying glass, see if you can find some of the nerve stubs.



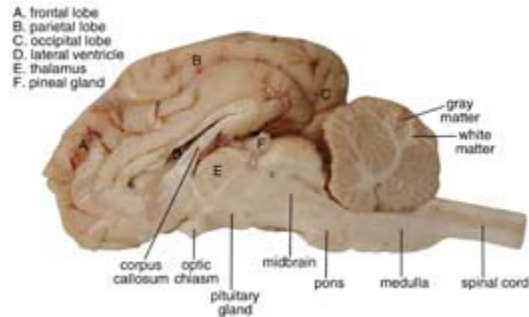
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### Dissection: Internal Anatomy

1. Place the brain with the curved top side of the cerebrum facing up. Use a [scalpel](#) (or sharp, thin knife) to slice through the brain along the center line, starting at the cerebrum and going down through the cerebellum, spinal cord,

medulla, and pons. Separate the two halves of the brain and lay them with the inside facing up.

2. Use the labeled picture to identify the corpus callosum, medulla, pons, midbrain, and pituitary gland. Use your fingers or a teasing needle to gently probe the parts and see how they are connected to each other. What does that opening inside the corpus callosum lead to? How many different kinds of tissue can you see and feel?



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The **corpus callosum** is a bundle of white fibers that connects the two hemispheres of the brain, providing coordination between the two.

The **medulla** is located right under the cerebellum. In this the nerves cross over so the left hemisphere controls the right side of the body and vice versa. This area of the brain controls the *vital functions* like heartbeat and respiration (breathing).

The **pons** is next to the medulla. It serves as a bridge between the medulla and the upper brainstem, and it relays messages between the cerebrum and the cerebellum.

The **pituitary gland**, which produces important hormones, is a sac-like area between the pons and the optic chiasm. This might be harder to locate, especially if it has been punctured.

3. Look closely at the inside of the cerebellum. You should see a branching "tree" of lighter tissue surrounded by darker tissue. The branches are **white matter**, which is made up of nerve axons. The darker tissue is **gray matter**, which is a collection of nerve cell bodies. You can see gray and white matter in the cerebrum, too, if you cut into a portion of it.

4. You can also use the letter labels on the internal anatomy picture to try to find the following:

*Ventricles* contain cerebrospinal fluid

The *occipital lobe* receives and interprets visual sensory messages

The *temporal lobe* is involved in hearing and smell. You can find this by looking on the outside of one of the hemispheres. You will see a horizontal groove called the *lateral fissure*. The temporal lobe is the section of the cerebrum below this line.

The *frontal lobe* also plays a part in smell, plus dealing with motor function

The *parietal lobe* handles all the sensory info except for vision, hearing, and smell.

The *thalamus* is a "relay station" for sensory information. It receives messages from the nerve axons and then transmits them to the appropriate parts of the brain.

The *pineal gland* produces important hormones.

Do some more research to find out about these structures in detail.

5. If you have a [microscope](#), slice off a very thin section of the cerebrum and put it on a slide, covering it with a drop of water and a coverslip. Look at it under 100X and 400X magnification. Follow the same procedure with a section of the cerebellum, then compare and contrast the two.

### **Label the Parts of a Sheep Brain**

Print out these diagrams and fill in the labels to test your knowledge of sheep brain anatomy.

Internal anatomy: [label the right side](#) (.pdf)

External anatomy: [label the top view](#) (.pdf)

External anatomy: [label the bottom view](#) (.pdf)

Last updated: 07/06/07