

Investigation 12.A: Dissection of an Eye

Question: How do the structures of a cow eye relate to their functions?

Safety Precautions



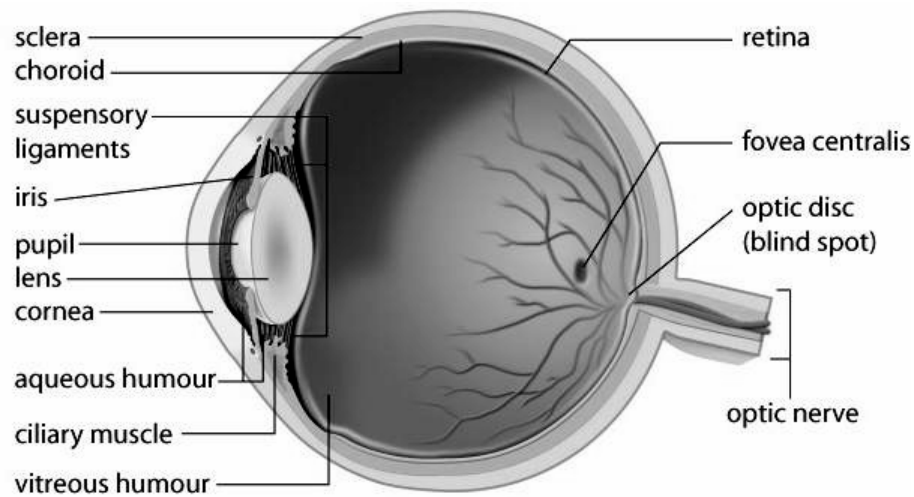
- Handle sharp instruments with care.
- Wash your hands well when you are finished.
- Disinfect the dissection equipment and area with 10 percent bleach solution when you have finished.

Materials

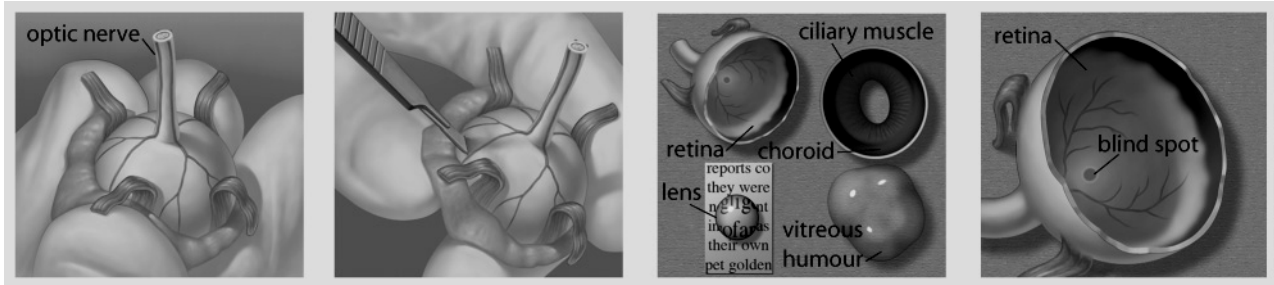
- preserved cow eye
- paper towel
- safety goggles
- 10 percent bleach solution
- apron
- dissecting tray
- dissecting kit

Procedure

1. Put on safety goggles, gloves, and an apron. Rinse off the cow eye, and place it on the dissecting tray.
2. Examine and locate the fat, muscles, and optic nerve on the back of the eye.
3. Remove as much of the outer fat as possible. Then use the scalpel to cut the eye in half. Cut in a circle, about halfway between the cornea and the optic nerve, as shown in the diagram. Do not put too much pressure on the eye; apply light slicing cuts until you penetrate the eye.
4. Use the diagrams below and on the following page to help you identify the structures of the eye. Examine the posterior (rear) chamber of the eye. Notice the clear, jelly-like vitreous humour, which fills this chamber. Identify the tough, white sclera (external layer), the black choroid (intermediate layer), and the thin retina (internal layer). Follow the converging blood vessels to locate the area where the retina is attached to the back of the eyeball at the blind spot. Identify the fovea centralis in the middle of the retina.



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5. Examine the anterior (front) chamber of the eye. Identify the large, central lens, as well as the ciliary muscle and suspensory ligaments attached to it. The aqueous humour is the fluid in the anterior chamber. Identify the iris and the pupil. Identify the cornea.
6. If the lens is not too cloudy, hold it over some typed letters on a scrap piece of paper. What do you observe?
7. Dispose of the cow eye and clean your dissecting tray and work area as instructed by your teacher.

Analysis

1. Sketch and label the structures of the eye.

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HANDOUT		

2. Use the following table to record the structures you labelled in your diagram and their functions.

Eye structure	Eye function

3. On your diagram, indicate where you would find the rods and cones. What is the function of each structure?

Conclusion

4. Summarize how the structures of the eye direct light onto the fovea centralis.