COW EYE DISSECTION: OUTER EYE OBSERVATIONS

INTRODUCTION

Introduction: (Why am I doing this lab?)

QUESTION

Question: (What do I want to do?)

HYPOTHESIS

Hypothesis: (What do you think will happen?)

RESEARCH

Research: (What do I already know, or need to know first?)

SAFETY

Safety: (What do I need to make sure I do, or don’t do?)

MATERIALS

Materials: (LIST everything I need to complete this experiment)

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PROCEDURE

Procedure: (Step-by-step how do I complete this lab?)

1. Obtain a cow eye, place it in your dissecting pan, & rinse the eye with water.
2. Rotate the eye until the larger bulge or tear gland is on the top of the eye. The eye is now in the position it would be in a body as you face the body.
3. On the outside of the eye, locate the following parts and draw a sketch below:
   - fat - surrounds the eye & cushions it from shock
   - tear or lacrimal gland - forms a bulge on the top outer area of the eye & produces tears to wash the surface of the eye
   - tear ducts - tubes to carry the tears from the gland to the eye
   - optic nerve - a white cord on the back of the eye about 3mm thick just toward the nasal side; carries messages between the eye & brain
   - muscles - reddish, flat muscles found around the eye to raise, lower, & turn (right & left) the eye
**eyelids** - two moveable covers that protect the eye from dust, bright light, and impact

**sclera** - this is the tough, white outer coat of the eye that extends completely around the back & sides of the eye

**cornea** - a clear covering over the front of the eye that allows light to come into the eye (preservative often makes this appear cloudy)

**iris** - round black tissue through the cornea that controls the amount of light that enters the inner part of the eye (may be colored in humans)

**pupil** - the round opening in the center of the eye that allows light to enter and whose size is controlled by the iris


1.
2.
3.
4.
5.

**Observations:** Describe at least THREE observations you made while examining the surface of the eye.

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**Conclusion:** (Relate to Hypothesis, What I learned, What I would do next time)

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COW EYE DISSECTION: INNER EYE DAY 2 AND DAY 3

Introduction: (Why am I doing this lab?)

Question: (What do I want to do?)

Hypothesis: (What do you think will happen?)

Research: (What do I already know, or need to know first?)

Safety: (What do I need to make sure I do, or don’t do?)

Materials: (LIST everything I need to complete this experiment)
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Procedure: (Step-by-step how do I complete this lab?)

1. Turn the eye over with the cornea up. Using the scalpel, cut a small, sideways slit through the cornea where it meets the sclera. Notice the liquid that seeps out. This is the aqueous humor.

2. Continue to cut along the edge of the cornea with the scalpel. Do not cut too deep to avoid damage to the structures underneath. After cutting around the cornea, remove and examine it. What is its texture like?

3. Take a look at the structures underneath the cornea. You should be able to see the:
   - a. Iris
   - b. Pupil
   - c. Lens

4. You can use a probe to carefully feel between the iris and the lens.

5. Using the main edge of the scalpel (not the tip!), cut through the sclera near the middle of the eye, between the anterior (where the cornea is) and posterior ends. Then use the scissors to cut around the eye, dividing it into front and back halves.

6. Flip the front portion of the eye over, and examine the back of it. The jelly-like substance is the vitreous humor, which became more solidified because of the preservation process. Remove as much of it as possible using the forceps, or even your fingers.

7. Locate the lens and the ciliary body attached to it.
8. Cut out the lens using the scalpel. Run the scalpel along the edge of the lens where it is connected to the ciliary muscles. Examine the lens.

9. Look at the inside of the other half of the eye. The thin tissue-like material is the retina. Find the optic disk / blindspot by gently lifting the retina with a probe. It will be the place where the retina is “attached” to the back of the eye.

10. The dark, shiny, iridescent surface underneath the retina is the tapetum.

11. Locate the following internal structures of the eye:
   - **cornea** - observe the tough tissue of the removed cornea; cut across the cornea with your scalpel to note its thickness
   - **aqueous humor** - fluid in front the eye that runs out when the eye is cut
   - **iris** - black tissue of the eye that contains curved muscle fibers
   - **ciliary body** - located on the back of the iris that has muscle fibers to change the shape of the lens
   - **lens** - can be seen through the pupil; use your scalpel & dissecting needle to carefully lift & work around the edges of the lens to remove it
   - **vitreous humor** - fluid inside the back cavity of the eye behind the lens
   - **retina** - tissue in the back of the eye where light is focused; connects to the optic nerve; use forceps to separate the retina from the back of the eye & see the dark layer below it

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**What did YOU do?**

1. 

2. 

3. 

4. 

5. 
Observations: List at least FIVE observations you made today.
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Conclusion: (Relate to Hypothesis, What I learned, What I would do next time)

Follow-up Questions

Day 2.

1. Name the three layers you sliced through when you cut across the top of the eye:
   a. ____________________________
   b. ____________________________
   c. ____________________________

2. Match the following parts of the eye to their function:
   (ciliary body, sclera, iris, retina, lens, & tapetum lucidum)
   ____________________________ Contains the photoreceptors for vision.
   ____________________________ The colored portion of the eye.
   ____________________________ This structure changes shape to focus light on the retina.
   ____________________________ The opening in the iris through which light passes.
   ____________________________ The iridescent portion of the choroid layer in nocturnal animals.
   ____________________________ Consists of muscles, which control and shape the lens.
   ____________________________ The white of the eye.
Day 3: Label the following parts of the eye.

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________
6. __________________________
7. __________________________
8. __________________________
9. __________________________
10. __________________________
11. __________________________
12. __________________________
Discussion

Describe your thoughts on conducting the dissection and how it improved your understanding of eye anatomy. Specifically, try to address:

1. Did you run into any difficulties? Did you see anything that you did not expect?

2. What were some of the differences between the cow eye and a human eye?

3. Did you have any specific questions about the anatomy of the eye that were addressed by doing the dissection?

4. Did the exercise raise any new questions about eye anatomy?
COW EYE DISSECTION: FULL LAB WRITE UP

(ALL DAYS)

Introduction: (Why am I doing this lab?) 5-7 sentences

Question: (What do I want to do?) One sentences that ends in a QUESTION mark

Hypothesis: (What do you think will happen?)

If, then, because statement which ends in a period.

If, ___________________________ then, ____________________________

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Research: (What do I already know, or need to know first?) 5-7 sentences

Safety: (What do I need to make sure I do, or don’t do?) 3-5 rules

Materials: (LIST everything I need to complete this experiment)

Procedure: (Step-by-step how do I complete this lab?) Minimum of 20 steps

Observations: (Including what you observed and final draft of sketches) 7-12 sentences

Conclusion: (Answer ALL of the following question or statements.)

Analyze and summarize your results. (5-10 sentences)

Relate back to your hypothesis, was it correct or wrong? (1-2 sentences)

What did you learn? (1-2 sentences)

What would you do differently next time? (1-2 sentences)

****Requirements:
- Typed
- Double spaced
- 12 point Times New Roman or Arial Font
- Headings Underlined
- Attach final drafts of sketches