

Sheep's Eye Dissection

A Complete Write-up and Instructions

Grade 8 Science

Curriculum Connection:
BC Science 8 (2016) – Ways of Sensing

Posted by BC Science Teachers' Association
Author: Lauri Roche

Grade 8 Sheep's Eye Dissection Lab

- Purpose:**
1. To learn about the various parts of the mammalian eye and their functions.
 2. To learn about and practice a biological dissection.

- Materials:** Draw and label all the equipment you use on an unlined sheet of paper.
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| sheep's eye | tweezers | length of paper towel |
| dissecting tray | dissecting scissors | disposable gloves |
| dissecting needle | | |

Procedures:

1. Prepare a dissection sheet by dividing a piece of paper towel into 8 sections and labeling each section with the parts of the eye as shown on the side blackboard. You will also need an observation sheet for writing and another sheet of unlined paper for drawing.
2. Prepare all the materials and the eye specimen in the dissecting tray and put on gloves.
3. Examine the outside of the eye. Find the **fatty tissue** and the **muscle layers**. Describe what they look like, their colour, texture and any other observations you can make (some may even have eyelashes!) and write these down on your observation sheet. Be observant and detailed.
4. Now examine the clear outer layer in the front of the eye. This is the **cornea**. What does it feel like? Look for the **iris** and the darkened **pupil** through the cornea. What is the colour of the iris? Write your observations on the look, shape, colour and texture of each of these three parts.
5. At the back of the eye there is a short, hardened cord about 2 mm in diameter extending out through the fat and muscle tissue. This is the **optic nerve**. In some of the eyes it will be easy to find but in others it may be more difficult because it will be hidden. **Draw your eye** now on your unlined paper before you do any dissecting. The drawing should be life-size and detailed. Shade in the darker sections to show contrast. Label with the following parts:
fatty tissue, muscle tissue, cornea, iris, pupil, optic nerve
6. To begin the dissection, take your scissors or tweezers and scrape or cut away (carefully) as much of the fatty tissue as you can. Do not cut into the sclera. You should be able to see the different sets of muscles extending to the side and back of the eye. You also will be able to see the optic nerve much better when all this tissue is removed. Set the fatty tissue aside on the paper towel section. Carefully cut the muscle layers off and set them down on the specified section as well.
7. The outer layer of the eye is called the **sclera**. What colour is it? What does it feel like? What is the purpose or function of this layer? Write down your observations.
8. Ask your teacher to assist you in cutting into the sclera. He/she will make the initial cut with a razor blade on the top and to the posterior end of the eyeball. Carefully slip the tip of the scissors into the opening and cut open the sclera layer until the eye is in two sections. What does the sclera feel like when you are cutting? How is the function of the sclera related to its texture? Do you think it would be able to do its job well? Why or why not? As you cut into the eye, you may have some liquid or jelly-like substance seep out. When you open the eye up fully you may see a small portion of a jelly-like substance inside. This is the **vitreous humour**. What purpose does the vitreous humour have in the eye? Write down all your answers and observations. If you can, separate this out and place on your dissection sheet in the space reserved for it.

9. On the back, inside of the eye, you should now be able to see an iridescent, blue-green layer. This is the **retina** and can be a very beautiful colour. With your tweezers, pry away the retina from the back of the eye as carefully as you can. It is very fragile and may tear. It is connected to the optic nerve so you will have to pry it off of this area with care. Place the retina on your dissection sheet and look at it with one of the hand lenses. The rods (for black/white, dim light vision) and cones (for daylight and colour vision) are light sensitive cells on the back side of the retina (not the shiny side) but you will not be able to see them as they are microscopic in size. Write your observations of the shape, colour and texture of the retina on your observation sheets.
10. The middle layer in between the sclera and retina is called the **choroid**. What colour is it? Why is it this colour? (i.e. what purpose does it serve in the eye?) Pull the choroid off the sclera with your tweezers and place it on your dissection sheet. **Note:** it probably will not come off in one piece. What does it look and feel like? How is it different from both the retina and the sclera? Write your observations down. Now put this part of the sclera that is left on your dissection sheet.
11. Examine the anterior (front) portion of the eye. With your tweezers or fingers pull the **lens** gently out of the eye cavity. Describe its shape, colour, and texture. Can you see through it? Is it transparent, translucent or opaque? What is the function of the lens in the eye? Put the lens on the dissection sheet and record your observations and answers.
12. Now comes the tricky part. Locate the **iris** inside the eye cavity. What is its shape, colour and texture? Record these observations. Carefully put your dissection needle or the point of your scissors to the back of the iris. Pry it off, lifting a bit of it at a time. If you are careful, and a bit lucky, the iris will come off in one whole piece. If not, just try to get as large and complete a piece as possible. Put it on your dissection sheet. Look at both the front and back of the iris. Describe the differences that you see and record them on your observation sheet.
13. You now should be left with the empty front cavity of the eye. Look at how the scleral layer wraps around and is joined to the front **corneal** layer. It is really all one layer but I want you to describe the main differences between the two parts. Try looking through the cornea. What can you see? Is this part transparent, translucent or opaque? What does it feel like? What is the main function of the cornea? What is its shape? Does it have the same shape as a human eye? Cut around the cornea with your scissors and remove it from the sclera. Place it on your dissection sheet. This should be your last part.
14. When all the dissection is complete, wash all of your equipment in hot soapy water and dry thoroughly. Throw out the paper towel in the dissection tray in the garbage bags set aside for that purpose. Put all the equipment in the places designated by your teacher. You are responsible for a complete clean up.
15. On your unlined paper draw and label each section of the eye that is on your dissection sheet. The drawings should be life-size or larger, very detailed and shaded or textured where necessary. These drawings are an important part of your lab write-up and must be thoroughly done. All the parts are to be thrown out at the end of the lab so you only have one chance (now!) to complete these drawings from real life.
16. When you are finished with the dissection, you are almost entirely cleaned up and all the parts are on your dissection sheet are in place ask your teacher to come and mark your dissection.
17. Complete the write-up, with these procedure sheets, your written observations and discussions and your two pages of drawings all stapled together. Now, that wasn't all that yucky, was it?

Thanks for your great participation!