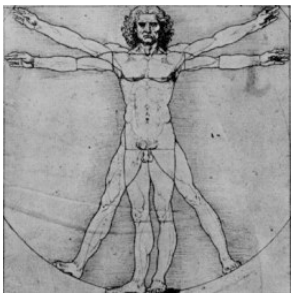
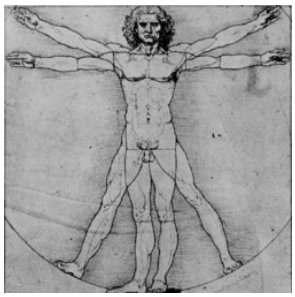


ANATOMY – PHYSIOLOGY

LAB 9-1
WHAT ARE THE PARTS OF AN EYE?



BACKGROUND INFORMATION:

The eye is a most complex sense organ. It can detect differences in light intensity, color, and motion. It's a perfect example of a body organ where form follows function. This means that each eye part (form) is perfectly designed to carry out its specific job (function).

OBJECTIVES:

In this exercise, you will:

- Observe and identify the parts on the exterior of a pig eye.
- Build an eye model to study the action of four eye muscles.
- Observe and identify the parts on the interior of a pig eye.

MATERIALS:

Preserved pig eye	scissors
Colored pencils: blue, black	ruler
Polystyrene ball (7.5 cm diameter)	paper
Dissecting pan	pen
Large paper clip	tape
4 cloth strips	

PROCEDURE:

Part A. The Exterior Parts of an Eye

1. Examine a preserved pig eye that has been placed in a dissecting pan.
2. Locate the following parts using Figure 1 as a guide: sclera, iris, pupil, eye muscles, optic nerve, cornea.
3. Describe the job or function of these eye parts. Use your text or other references for help in completing the column marked "Function" in Table 1.
4. Complete the column marked "Description." As an example, the iris can be described as "part of the eye that gives it color."

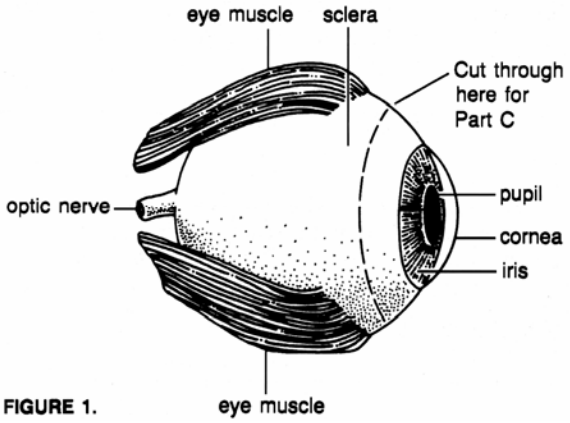


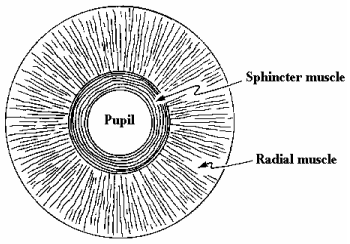
FIGURE 1.

Table 1. Function and Description of Exterior Eye Parts

Part	Function	Description
sclera		
iris		
pupil		
eye muscles		
optic nerve		
cornea		

Part B. Eye Muscles and Movement

1. Trace Figure 2 onto a sheet of paper. Color the pupil black And the iris blue. Cut the traced drawing out and tape it Onto a polystyrene ball (eye model) as shown in Figure 3. Ignore the labels of the muscles.



2. Use scissors to cut four cloth strips, each measuring 2 x 8 cm.
3. Use a pen to number the strips 1 – 4.
4. Tape the cloth strips onto the eye model as shown in Figure 3. These strips will represent eye muscles.
5. Determine the action of muscles 1 and 2 as follows:
    a. Stick the eye model onto a large paper clip as shown in Figure 4.
    b. Push the paper clip about 1 cm into the ball.
    c. Hold the paper clip between the fingers of one hand and gently pull cloth strip 1 toward the back of the eye with your other hand. The pulling of the cloth shows what happens in the eye as this muscle contracts or shortens.
    d. Note the direction that the eye model turns and record it in table 2.
    e. Repeat steps c and d, only this time pull on cloth strip 2.

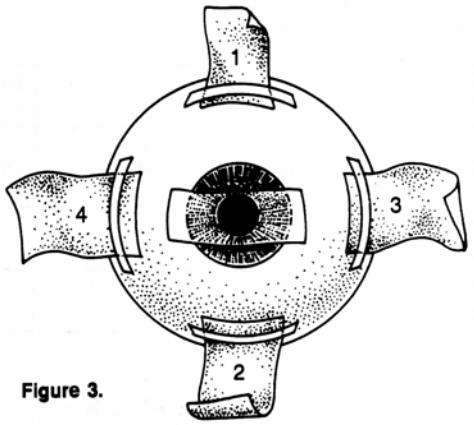


Figure 3.

6. Determine the action of muscles 3 and 4 as follows:
    a. Stick the eye model onto the open end of a large paper clip as shown in Figure 5.
    b. Push the paper clip about 2 cm into the ball.
    c. Hold the paper clip between the fingers of one hand and gently pull cloth strip 3 toward the back of the eye with your other hand.
    d. Note the direction that the eye model turns and record it in Table 2.
    e. Repeat steps c and d, only this time pull on cloth strip 4.

NOTE: Muscle 3 is on the eye side next to the ear while muscle 4 is on the eye side next to the nose.

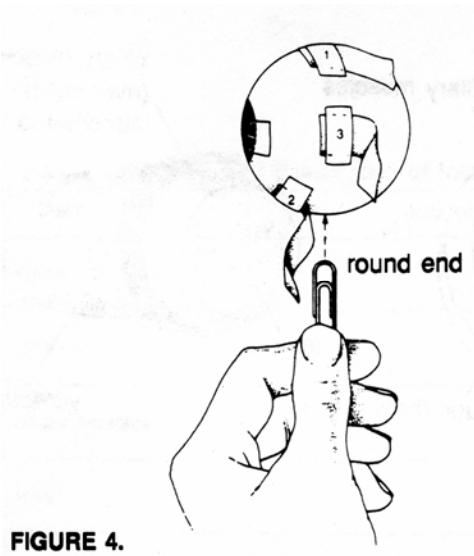


FIGURE 4.

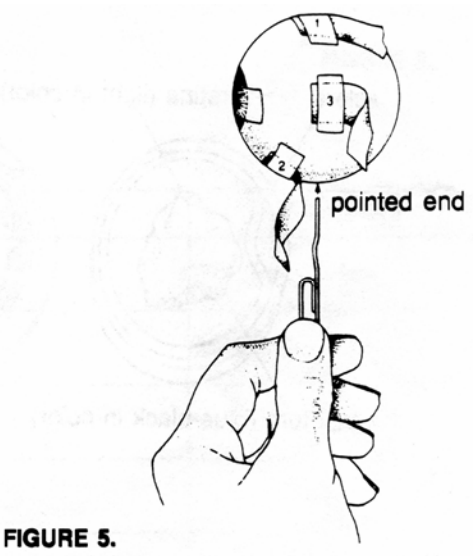


FIGURE 5.

7. Complete Table 2.

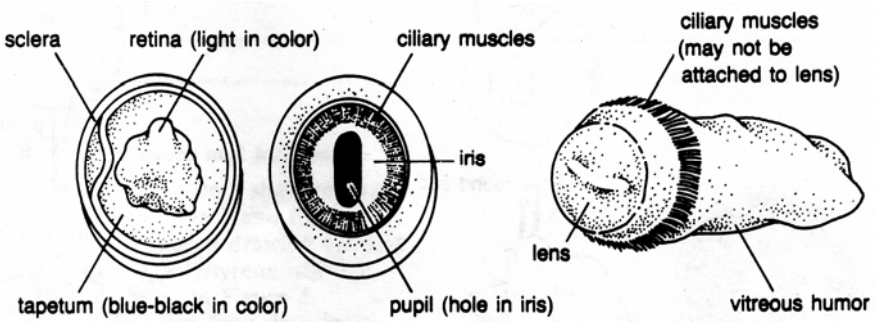
Table 2. Eye Muscle Action

Muscle	Muscle Name	Direction Eye Moves as Muscle Contracts	Location on Eye
1	Superior rectus		
2	Inferior rectus		
3	Lateral rectus		
4	Medial rectus		

Part C. The Interior of an Eye

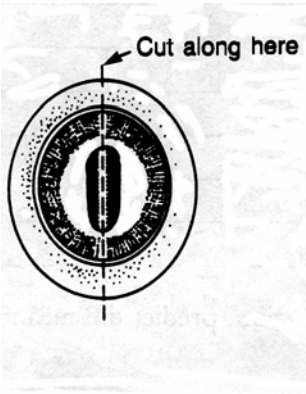
1. Using the preserved eye, make a circular cut with your scissors through the sclera. Use Figure 1 as a guide.
2. Separate the eye into two halves. A jellylike material and marbled-shaped part may fall out of the eye.
3. Locate the following eye parts using Figure 6 as a guide: retina, tapetum, ciliary muscles, lens, and vitreous humor.
4. Describe the job or function of these eye parts. Use your text or other references for help in completing the first column of Table 3.
5. Complete the column marked "Description." As an example, the lens can be described as "clear, marbled-shaped."

Figure 6.



6. To better observe the cornea and iris, do the following:
    a. Use a single-edge razor to cut the front half of the eye, as shown in Figure 7.
    b. Look at the cut edge and compare it to Figure 8.
7. Label the following parts: cornea, iris, sclera, upper eyelid, lower eyelid, and pupil.

Figure 7.



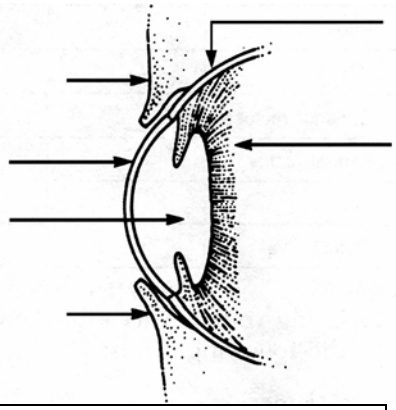


Figure 8.

Part	Job or Function	Description
retina		
tapeturn		
cililary muscles		
lens		
vitreous humor		

QUESTIONS

1. Complete the following chart. Use check marks. Some eye parts may be marked more than once in a **row.**

Eye part	Light does pass through	Light does not pass through	Muscle tissue	Can change shape	Made of nerve cells
Sclera					
Cornea					
Lens					
Cililary muscles					
Vitreous humor					
Pupil					
Retina					
Superior rectus					
Lateral rectus					
Iris					
Optic nerve					

2. Using your results with the eye model and muscle action, predict the meaning of the following terms:
    a. superior _____
    b. inferior _____
    c. lateral _____
    d. medial _____