**Name:**_____ **Period:** ____ **Date:** _____

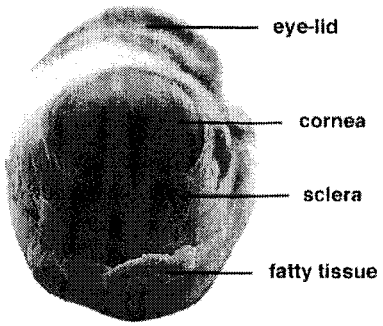
**Ms. Randall Anatomy & Physiology**
**Sheep Eye Dissection Lab**

**Background:**
The anatomy of the human eye can be better shown and understood by the actual dissection of an eye. One eye of choice for dissection, that closely resembles the human eye, is that of the sheep. Sheep eyes are removed at the time the animal is slaughtered and then preserved for later use. Differences between the two eye types will be mentioned as the dissection is completed.

**Objective:** To compare and relate the anatomy and functions of a sheep eye and the human eye.

**Materials**: sheep eye, dissecting pan, surgeon's gloves, dissecting kit, paper towels.

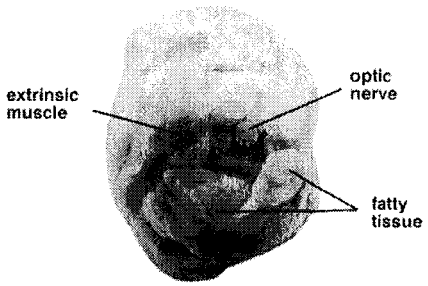
**Procedure**



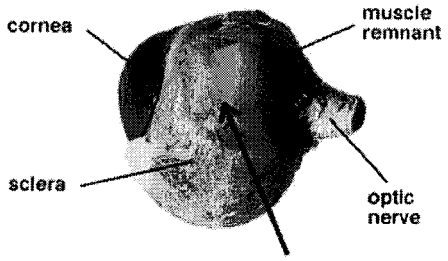

**Step 1:** Wash the sheep eye in running water to remove the preservative fluid. Dry the eye with paper towel. Examine the front of the eye and locate the **eye-lid**, **cornea**, **sclera** (white of the eye) and **fatty tissue**. Examine the back of the eye and find **extrinsic muscle bundles,** fatty tissue and the **optic nerve.**

The four extrinsic muscles (humans have six) move the sheep eye while the fatty tissue cushions the eye. If the optic nerve is not visible use the probe to move the fatty tissue around until the nerve is exposed.

**Step 2**: Use your scissors to cut away the **eye-lid, muscle and fatty tissue** from both the front and rear surfaces of the eye. Be careful **not to remove** the **optic nerve.**

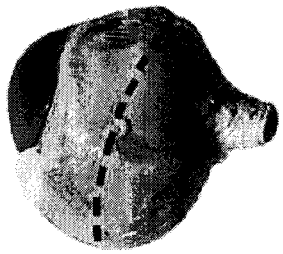



**Step 3:** Cut along the surface of the sclera until all the tissue is removed and your specimen looks similar to the photographs you see here. The sclera is very tough so you do not need to worry about cutting into this layer of the eye. When you have finished removing the tissue surrounding the eye identify the **sclera, cornea, optic nerve**, and the remaining **extrinsic muscle remnants.** The cloudy nature of the cornea is caused by the death of this tissue. It is transparent in the living state.

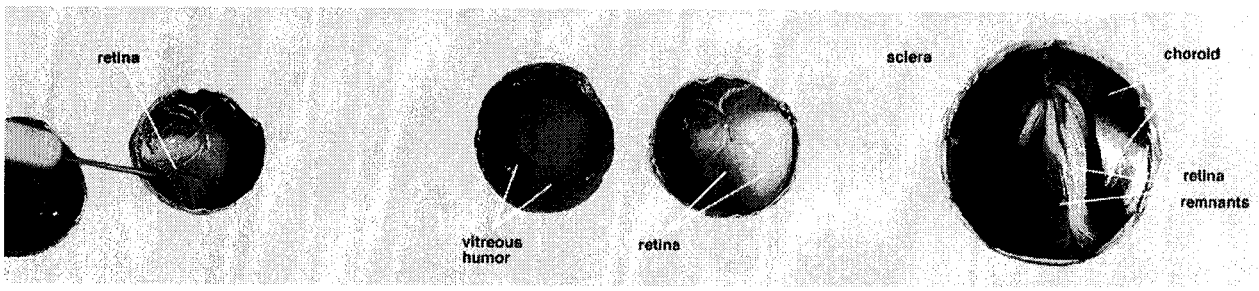



**Step 4:** Place your eye specimen in the dissection pan. Turn the specimen so the cornea is on the left and the optic nerve is on your right. Select a place to make an incision of the sclera midway between the cornea and optic nerve. ***Use the point of a very sharp scalpel to make a small cut through the sclera***. Fluid should slowly ooze out of the eyeball when you have cut deeply enough. You will be reminded of how tough the sclera is when you make this cut.

**Step 5:** Insert the point of the scissors into the slit made by the scalpel blade and cut the sclera with a shallow snipping motion; you do not want to cut the other tissues of the eye. Turn the eye as you continue the cutting action. Cut the sclera all the way around the ball of the eye. You will need to support the eye in the palm of your hand while you complete this step of the dissection. Do not be surprised if some fluid from the eye oozes from the slit as you make this cut.

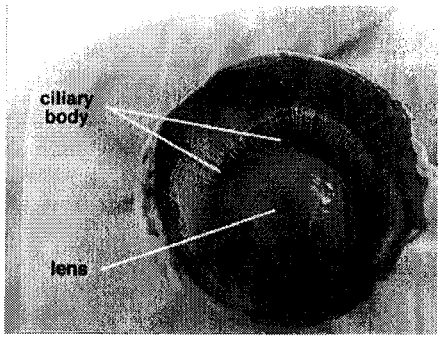


Insert the point of the scissors into the slit and cut the sclera all the way around the ball of the eye.



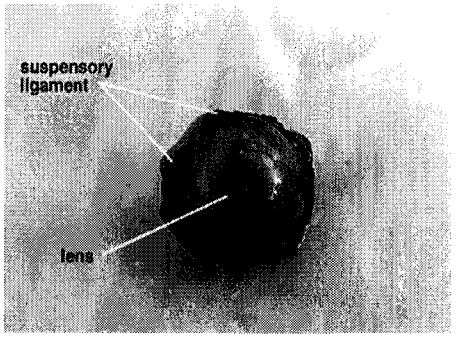

**Step 6:** Arrange the two hemispheres of the eye as you see in the above photograph. Observe the jelly-like **vitreous humor** that fills the center of the eye. It is transparent in the living eye but might be cloudy in the preserved specimen. The vitreous humor along with the **aqueous humor** helps to maintain the shape of the eye.

**Step 7:** Take the back piece of the eye. The **retina** (which contains the rods and cones) lines the back cavity of the eye. Use your probe to lift and pull the retina back from the underlying **choroid layer**. See the photograph on the right side above. Notice that the retina is only firmly attached to the choroid at one place. This region is the **optic disc or blind spot**. Here the nerve fibers leave the retina and form the **optic nerve** which is directly behind the blind spot.



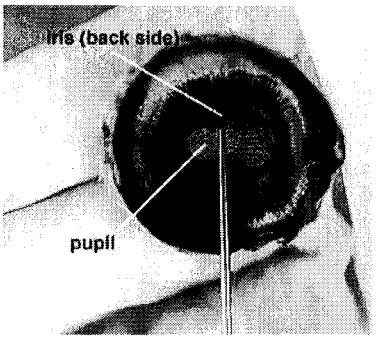

**Step 8:** Take the front part of the eye. Use your tweezers and probe to remove the vitreous humor from the anterior hemisphere of the eye. Try not to disturb the **lens** that is just below the vitreous humor.

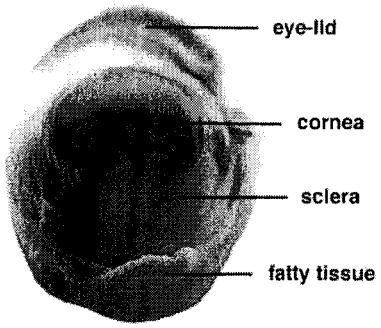
**Step 9:** Removal of the vitreous humor reveals the **lens**, **ciliary body** and **suspensory ligaments**. In the normal condition the lens is transparent. The normal lens is convex shaped and somewhat elastic. It is held in place by the suspensory ligaments that in turn join with the smooth muscle containing ciliary body.

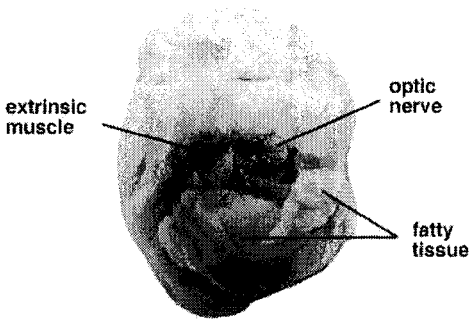


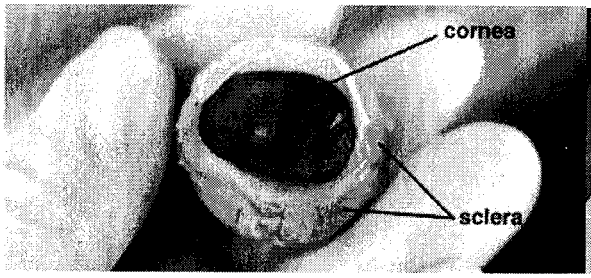

**Step 10:** Remove the lens by pulling it free from its attachments. Note the shape of the lens, its stiffness and opaqueness.

**Step 11:** When the lens is removed, an opening, allowing light to enter the eye is seen. This opening, the **pupil** is located in the center of the iris. Note the oblong shape of the sheep pupil; in humans the pupil is circular. The back side of the iris can be seen just above the pointer in the photograph. A second cavity or space is present between the iris and the cornea. This space is filled with a second semi-liquid fluid, the **aqueous humor**. This fluid, like the vitreous humor helps to maintain the shape of the eye.

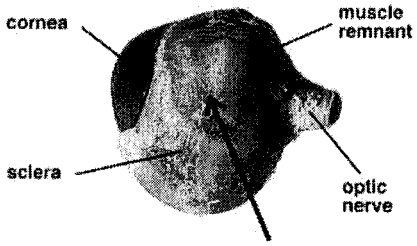


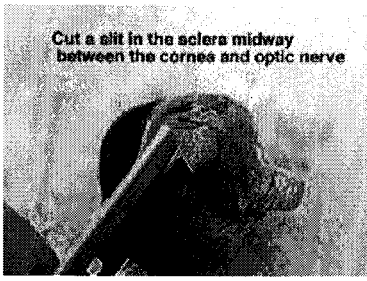

eye-lid
cornea
sclera
fatty tissue

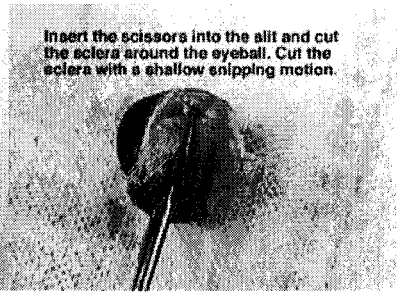

extrinsic muscle
optic nerve
fatty tissue

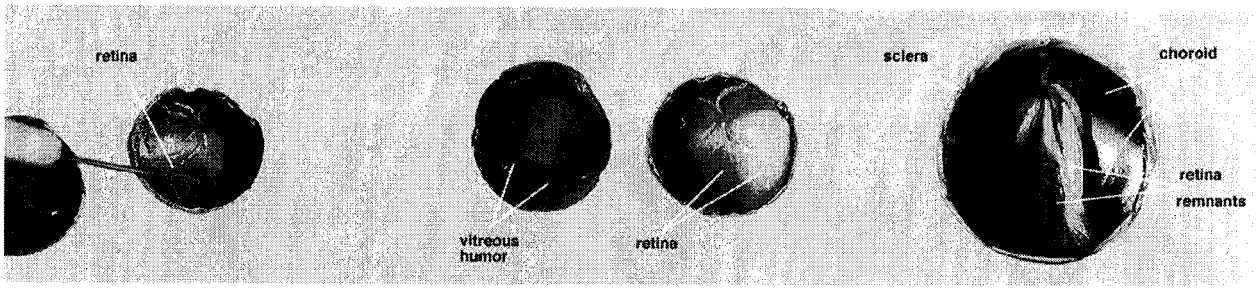

cornea
sclera

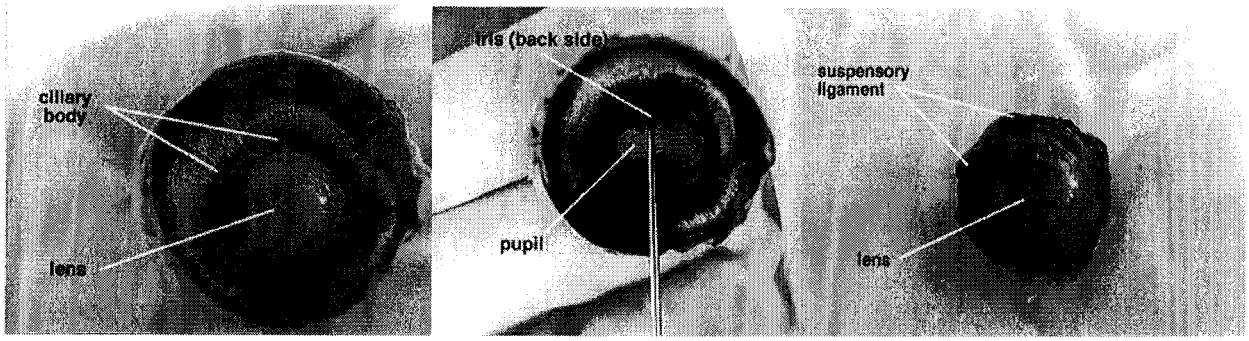

optic nerve
muscle remnant


cornea
muscle remnant
sclera
optic nerve


Cut a slit in the sclera midway between the cornea and optic nerve


Insert the scissors into the slit and cut the sclera around the eyeball. Cut the sclera with a shallow snipping motion.


retina
vitreous humor
retina
sclera
choroid
retina remnants


ciliary body
lens
iris (back side)
pupil
suspensory ligament
lens