

Procedure B—Cow's Eye Dissection

1. Obtain a mammalian eye, place it in a dissecting tray, and dissect it as follows:
 - a. Trim away the fat and other connective tissues but leave the stubs of the *extrinsic muscles* and of the *optic nerve*. This nerve projects outward from the posterior region of the eyeball.
 - b. The *conjunctiva*, which lines the inside of the eyelid, is reflected over the anterior surface of the eye, except for the cornea. Lift some of this thin membrane away from the eye with forceps and examine it.
 - c. Locate and observe the *cornea*, *sclera*, and *iris*. Also note the *pupil* and its shape. The cornea from a fresh eye will be transparent; when preserved, it becomes opaque.
 - d. Use sharp scissors to make a coronal section of the eye. To do this, cut through the wall about 1 cm from the margin of the cornea and continue all the way around the eyeball. Try not to damage the internal structures of the eye (fig. 31.7).
 - e. Gently separate the eyeball into anterior and posterior portions. Usually the jellylike vitreous humor will remain in the posterior portion, and the lens may adhere to it. Place the parts in the dissecting tray with their contents facing upward.
 - f. Examine the anterior portion of the eye, and locate the *ciliary body*, which appears as a dark, circular structure. Also note the *iris* and the *lens* if it remained in the anterior portion. The lens is normally attached to the ciliary body by many *suspensory ligaments*, which appear as delicate, transparent threads.
 - g. Use a dissecting needle to gently remove the lens and examine it. If the lens is still transparent, hold it up and look through it at something in the distance and note that the lens inverts the image. The lens of a preserved eye is usually too opaque for this experience. If the lens of the human eye becomes opaque, the defect is called a cataract (fig. 31.8).
 - h. Examine the posterior portion of the eye. Note the *vitreous humor*. This jellylike mass helps to hold the lens in place anteriorly and helps to hold the *retina* against the choroid coat.
 - i. Carefully remove the vitreous humor and examine the retina. This layer will appear as a thin, nearly colorless to cream-colored membrane that detaches easily from the choroid coat. Compare the structures identified to figure 31.9.
 - j. Locate the *optic disc*—the point where the retina is attached to the posterior wall of the eyeball and where the optic nerve originates. There are no receptor cells in the optic disc, so this region is also called the “blind spot.”



Figure 31.7 Prepare a coronal section of the eye.

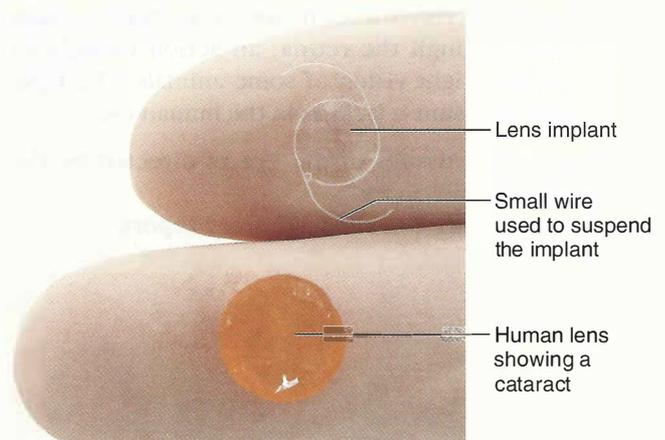


Figure 31.8 Human lens showing a cataract and one type of lens implant (intraocular lens replacement) on tips of fingers to show their relative size. A normal lens is transparent.

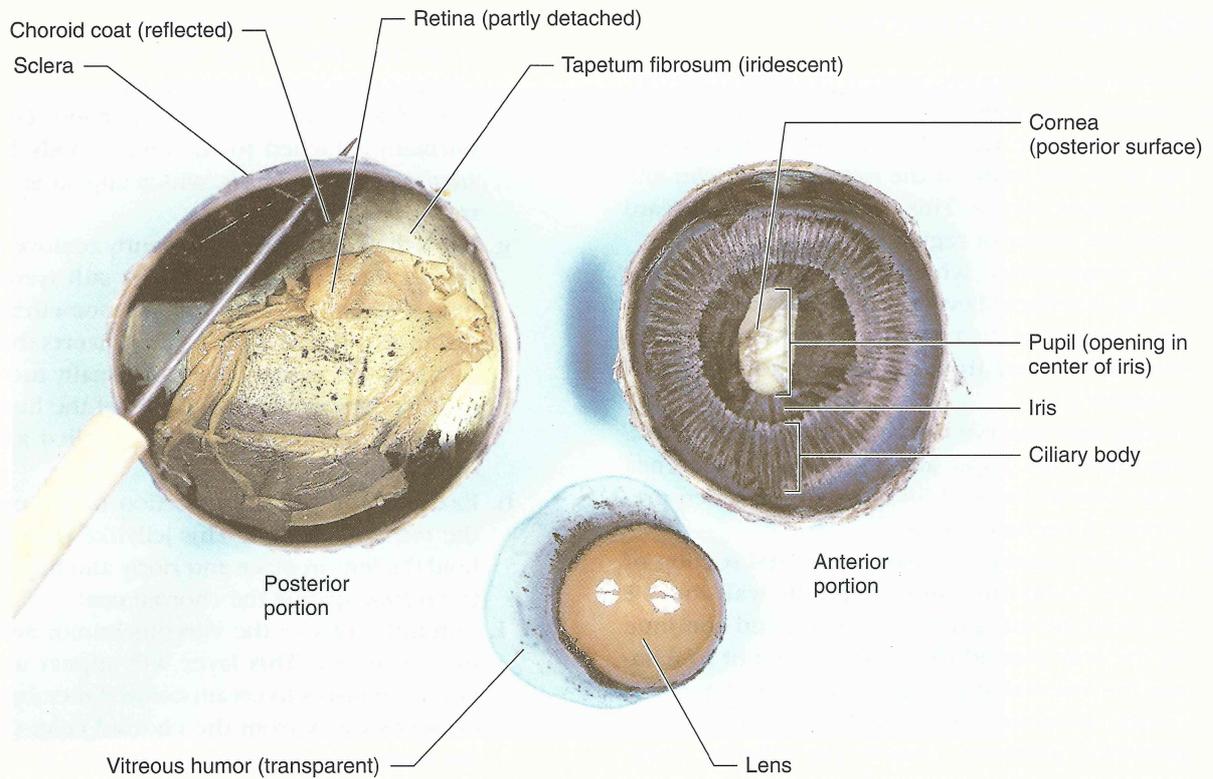


Figure 31.9 Internal structures of the beef eye dissection.

k. Note the iridescent area of the choroid coat beneath the retina. This colored surface in ungulates (mammals having hoofs) is called the *tapetum fibrosum*. It serves to reflect light back through the retina, an action thought to aid the night vision of some animals. The tapetum fibrosum is lacking in the human eye.

2. Discard the tissues of the eye as directed by the laboratory instructor.
3. Complete Part B of the laboratory report.



Critical Thinking Application

A strong blow to the head might cause the retina to detach. From observations made during the eye dissection, explain why this could happen.
