

External (Extraocular) Anatomy

EXTRAOCULAR MUSCLES:

The eye has six muscles work together to move it, similar to the strings on a marionette or the reins of a horse. These muscles come from the eye socket (orbit) and help move the eye up, down, side to side, and rotate it.

1. **Superior Rectus:** This muscle on top of the eye moves it upward.
2. **Inferior Rectus:** Located at the bottom of the eye, moves it downward.
3. **Medial Rectus:** Sits on the eye near the nose, it moves the eye inward toward the nose.
4. **Lateral rectus:** Attached to the eye near the temple, it moves the eye outward.
5. **Superior oblique:** This muscle starts from the back of the eye socket, moves through a pulley (called the trochlea) near the nose, and then attaches to the top of the eye. It moves the eye in 3 ways 1) rotates or spins the eye inward; 2) moves the eye downward and 3) moves the eye outward.
6. **Inferior Oblique:** Starting in the front of the eye socket near the nose attaching to the bottom part of the eyeball, this muscle also moves the eye in 3 ways: 1) rotates or spins the eye outward; 2) moves the eye upward; and 3) moves the eye outward.

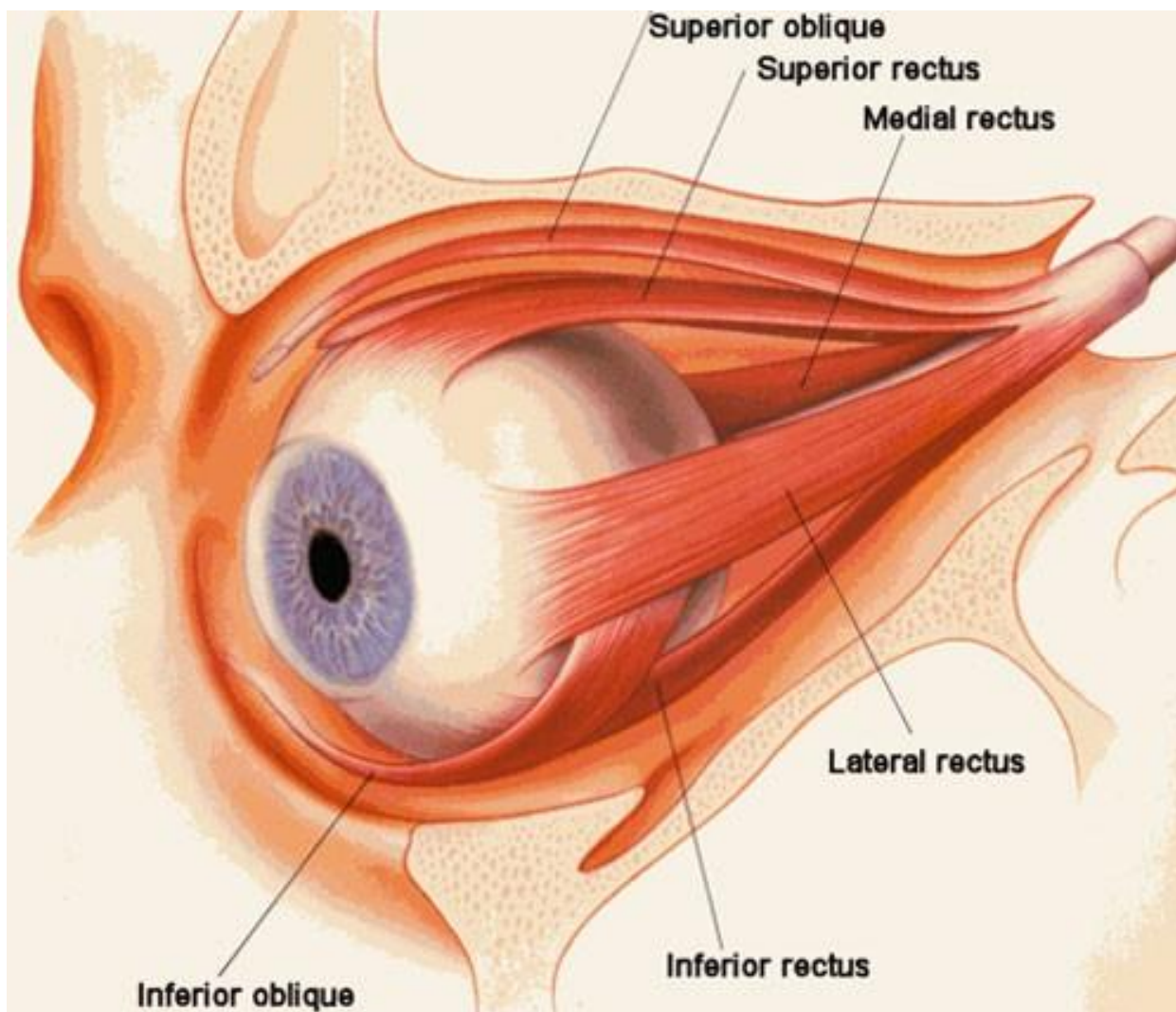


Fig. 1: Extraocular Muscle Anatomy

CONJUNCTIVA:

The conjunctiva is a clear film or membrane covering the inner surface of the eyelids and the eyeball itself. When it is irritated or infected, it turns red or pink. This is called [conjunctivitis](#) or “pink eye”.

LACRIMAL GLAND:

The lacrimal gland, found under the outer edge of the eyebrow, makes tears that keep the eye wet..

TENON’S CAPSULE:

Tenon's capsule is a layer of tissue between the conjunctiva and the sclera/white surface of the eye.

SCLERA:

The sclera is the eye's tough, white outer wall made of collagen fibers. It is where the six extraocular muscles connect to the eye.

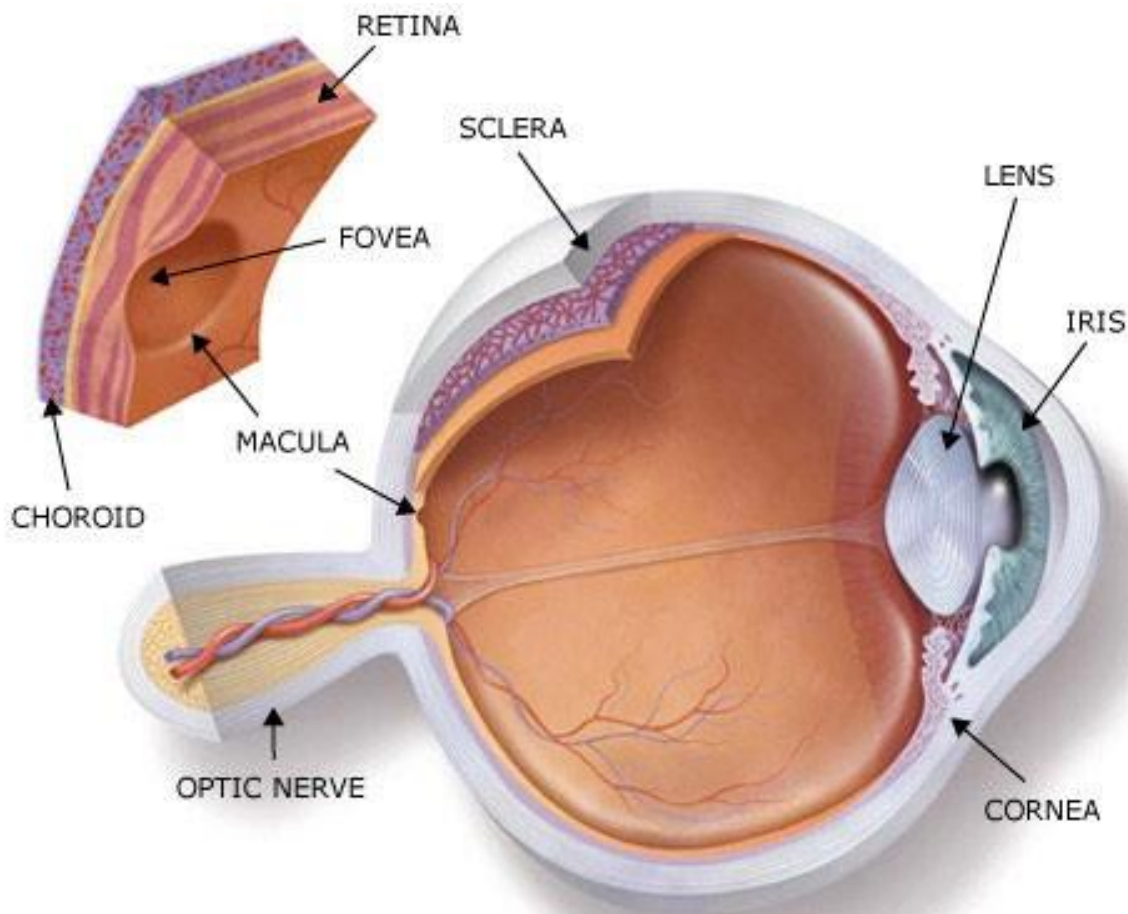


Fig. 2: The cornea is the front clear part of the eye.

CORNEA:

The cornea is the clear front part of the eye, located in the center part of the eye's outer wall. It is made of special collagen fibers. You can see the iris and pupil through it. The



cornea bends incoming light, focusing it on the retina. Contact lenses are placed on the cornea.

Internal (Intraocular)Anatomy

ANTERIOR CHAMBER:

The anterior chamber is a space inside the eye filled with a fluid called aqueous humor. It is located behind the cornea and in front of the iris and pupil.

IRIS/PUPIL:

The iris, the eye's colored part, has a hole in the center called the pupil. Muscles in the iris make the pupil shrink in bright light and expand in dim light. This change in pupil size controls how much light goes into the back part of the eye.

LENS:

The lens of the eye is behind the pupil. It bends incoming light to focus on the retina. The lens changes shape to help focus on nearby objects. It is held in place by tiny fibers (zonules) connecting its capsule (the shell or bag around the lens) to the eye's wall.

CILIARY BODY:

The ciliary body is connected to the outer edge of the iris, close to the eye's wall. It makes the fluid (aqueous humor) that fills the eye providing nourishment. It also helps the lens change shape for focusing.

VITREOUS:

The vitreous is a space between the lens and the retina, taking up 4/5 of the space in the eye's back part. It is filled with a jelly-like substance called the vitreous humor, which nourishes the inside parts of the eye. Light enters the eye through the pupil, travels through the vitreous to reach the retina.

RETINA:

The retina is a thin, see-through layer of the inner wall of the eye and is similar to the film in an old-time camera. It is where light forms images before turning into electric signals



sent through the optic nerve to the brain. The retina has 10 layers of specialized cells including rods and cones which are photoreceptor cells. The retina also has blood vessels providing oxygen and removing waste products, to keep it healthy.

PHOTORECEPTORS:

Photoreceptors are special parts of the retina that change light into electrical signals to send to the brain through a nerve. The two types: rods for black and white vision, and side vision, and night vision; and cones for color vision and fine central vision.

MACULA:

The macula is a small part of the retina that helps with central vision and allows us to see fine details.

RETINAL PIGMENT EPITHELIUM (RPE):

The retinal pigment epithelium is a layer of cells deep in the retina. It supports photoreceptor cells by processing vitamin A, recycling used photoreceptors, absorbing light, and transporting nutrients in and out of photoreceptor cells.

CHOROID:

The choroid is a layer of tissue between the retina and the sclera. It has many blood vessels that nourish the retina.

UVEAL TRACT:

The uveal tract is a colored part of the eye and is made up of different parts 1) the iris, 2) the ciliary body, and 3) the choroid.

OPTIC NERVE:

The optic nerves connect each eye to the brain, like a video cable that sends pictures to be processed. The optic nerves meet up at the optic chiasm (see below). In adults, the optic nerve is the width of a pencil and contains over 1 million nerve cells.

OPTIC CHIASM:



The optic chiasm is the place where the two optic nerves meet in the brain. Here, nerve fibers are sorted so that the right side of the brain processes images in left visual space and the left side of the brain processes images in right visual space [See figure 3].

VISUAL CORTEX:

The visual cortex, located in the back part of the brain (the occipital lobe) gets information from the retina and optic nerves. It processes details like color, composition, and position in space. These details are then sent to other parts of the brain for more advanced activities.

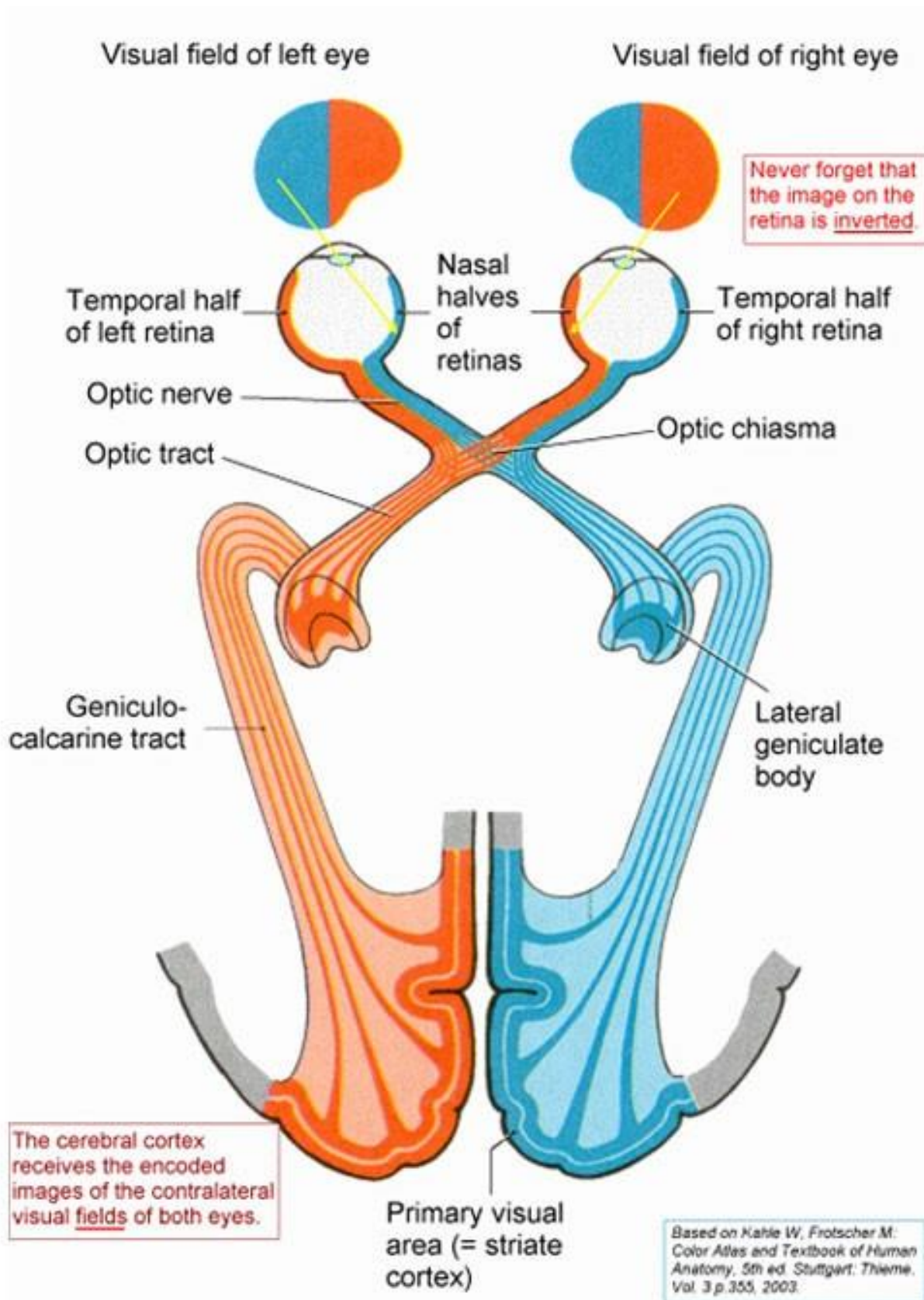




Fig. 3: The optic chiasm is the place in the brain where the two optic nerves meet.

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