



Dr. Bbosa Science

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Theme: Coordination in animals

S3 New Curriculum Biology-Chapter 6– Receptor organs in human body

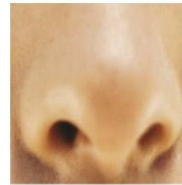
Receptor organs



Eye



Ear



Nose



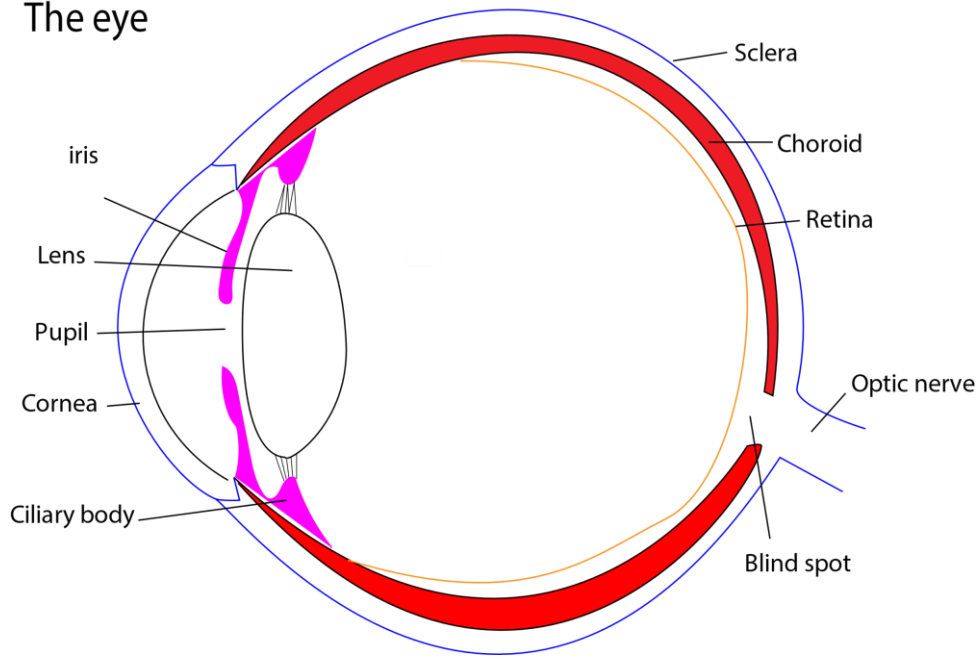
Skin

Receptor organs are specialized structures in the body that detect and respond to various stimuli from the environment or within the body. These organs contain sensory receptors, which are cells designed to convert different types of stimuli—such as light, sound, touch, temperature, and chemical signals—into electrical signals that the nervous system can interpret.

Examples of receptor organs include:

- **Eyes** (for detecting light and allowing vision)
- **Ears** (for perceiving sound and balance)
- **Skin** (for sensing touch, pressure, pain, and temperature)
- **Tongue** (for tasting different flavors)
- **Nose** (for smelling odors)

The eye



Functions of the parts of the eye

1. Lens refracts light to the retina
2. Iris adjust the size of the pupil
3. Retina is where the image forms
4. Pupil allow light to pass through into the eye.

Controlling amount of light entering the eye

The amount of light entering the eye is controlled by the iris.

In bright light, the iris circular muscles to contract and pupil constricts.

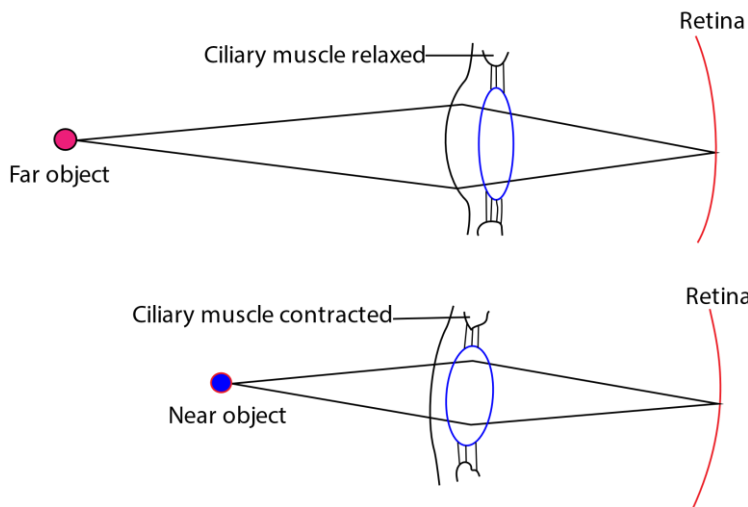
In dim light iris radial muscles contract and the pupil widens.

Accommodation

Is the ability of the eye to see near and far objects

- (a) To see near objects, the ciliary muscle contract, releases the tension on the lens allowing it to adopt a more spherical shape. The lens then refracts light strongly.
- (b) To view distant objects, the ciliary muscles relax, the suspensory ligament exert a pull on the lens and it flattens.

The figure shows the lens shape changes depending on whether a distant or near object is being viewed



Eye defects

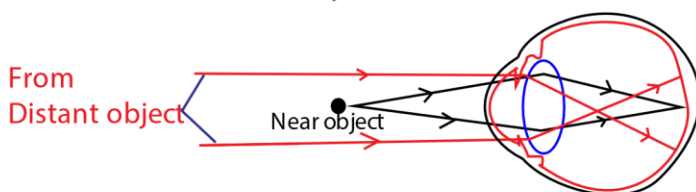
Short sightedness is inability to see distant objects clearly because rays from a distant object are focus in front of the retina.

Causes (i) Lens too strong

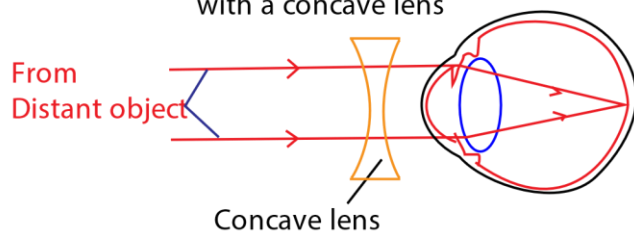
(ii) eyeball too long

Correction: by use of a concave or diverging lens

In sort sightedness (myopia) rays from distant object are focused in front of the retina



Short sightedness is corrected with a concave lens



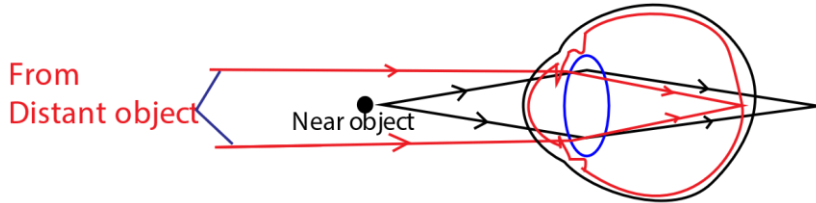
Long sightedness is inability to see near objects clearly because rays from a near object are focused behind the retina

Cause (i) lens too weak

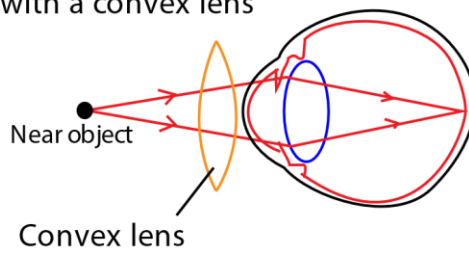
(ii) eyeball too short

Correction: by use of a convex lens

In long sightedness (hyper myopia) rays from near object are focused behind the retina



Long sightedness is corrected with a convex lens

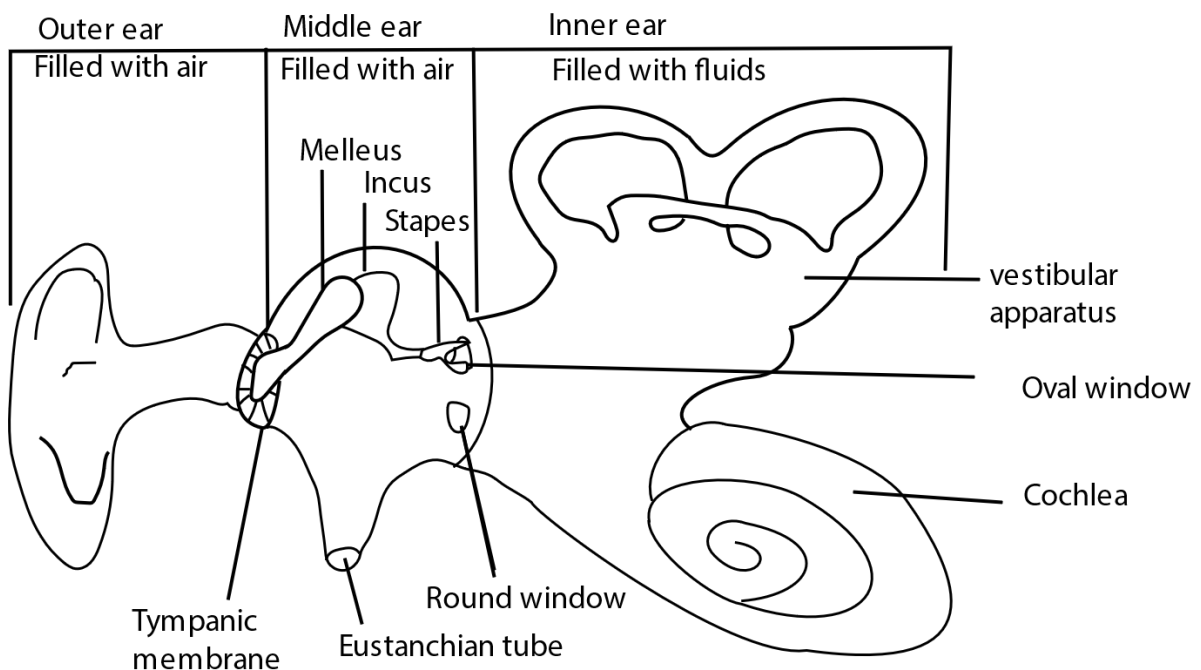


The human Ear

The mammalian ear has two major functions

- (a) Detecting sound through the cochlea
- (b) Maintenance of body balance by the semicircular canal

Structure of mammalian ear



The has three main parts

- (a) Outer ear
- (b) Middle ear
- (c) Inner ear

The middle ear is separated from the outer ear by **tympanic membrane, or ear drum**. The middle ear is separated from the inner ear by an **oval window (fenestra ovalis)** and **round window (fenestra rotunda)** both of which are covered by membranes.

Spanning the middle ear from the tympanic membrane to the oval window are three tiny bone called **ossicles** (the **malleus, incus** and **stapes**). The Eustachian tube, which connects the middle ear with the pharynx, ensures that the air pressure on the both side of the tympanic membrane are equal.

The Eustachian tube regulates pressure.

Hearing

- (i) Sound funnels into the ear canal and causes the eardrum to move.
- (ii) The eardrum vibrates with sound.
- (iii) Sound vibrations move through the ossicles to the cochlea.
- (iv) Sound vibrations cause the fluid in the cochlea to move.
- (v) Fluid movement causes the hair cells in Organ of Corti to distort.
- (vi) Distortion of hair cells causes firing of impulses through Auditory nerves to the brain that interprets the nature of sound.

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Thanks

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