

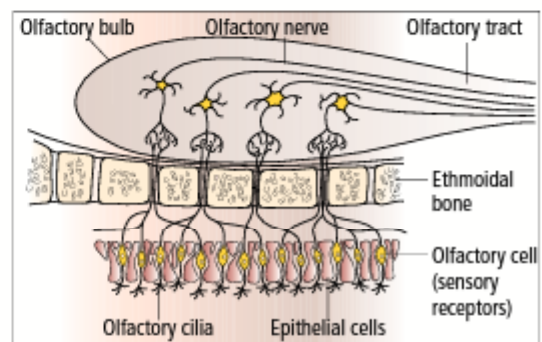
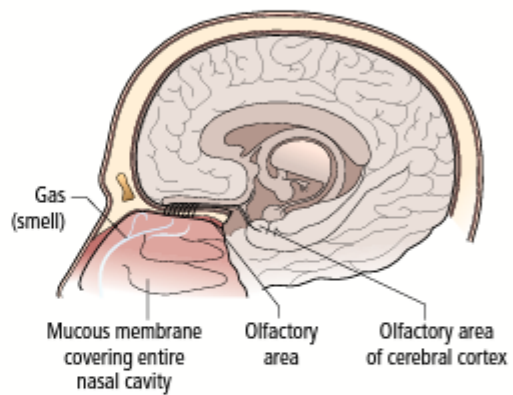
Olfactory system

The olfactory system is concerned with our sense of smell, an important sense that evokes memories and essential bodily instincts such as hunger. The olfactory nerves culminate at the olfactory bulb where the nerve cell bodies can be found. Other nerve fibres from the bulb extend backwards along the olfactory tract towards the temporal lobe of the cerebrum where the sense of smell is perceived.

Structure and function of the olfactory system

The structures of the olfactory system are as follows:

- **Nose:** the external organ of the olfactory and respiratory systems, through which the chemicals that we perceive as smell are delivered.
- **Mucous membrane:** the lining of the nose that is made up of ciliated epithelial cells and contains a rich blood supply; air is warmed as it passes over the lining.
- **Cilia:** tiny, hair-like structures that filter larger particles from the air before it enters the other structures of the respiratory system. Specialised versions in the roof of the nasal cavities become the dendrites of the olfactory nerve cells and are stimulated by the chemicals or odour to register the sense of smell.
- **Olfactory cells:** situated in the lining of the mucous membrane in the upper nasal cavity. The axon of these cells passes upwards through the ethmoid bone to a portion of the brain called the olfactory bulb.
- **Olfactory bulb:** the area of the brain where the sense of smell is perceived. It is connected via nerve cells to the limbic system or area where the odour can evoke an emotion, memory or more a more basic instinct such as hunger.



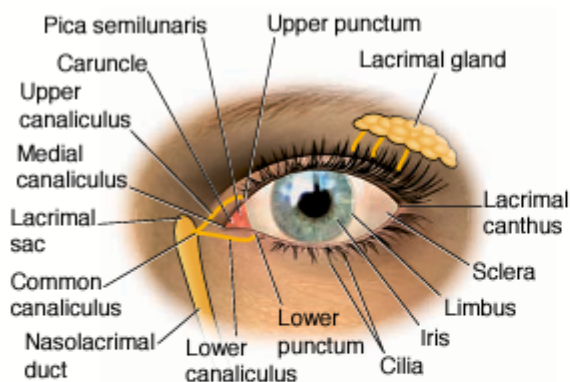
△ Structures and position of the olfactory system

The eye

The eye is a sensory organ that is sensitive to light and is responsible for the sense of sight.

The external structures of the eye are as follows:


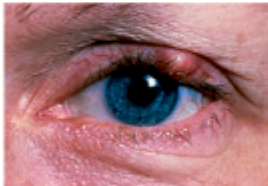
- **Eyelids:** the upper and lower eyelids are thin flaps of skin containing muscle fibres that enable them to open and close over the surface of the eyeball. The lids contain hairs called eyelashes which form protective filters to prevent particles from entering the eye. The lashes are replaced, on average, every 4–6 weeks.
- **Eyeball:** the eyeball sits within a bony structure surrounding the eye called the eye socket which protects it from physical harm. It is held in place by many small muscles that are able to move the eyeball to make full use of the light available and to focus the light from a specific object.



△ External structures of the eye

- Iris: the coloured portion of the eye. It contains circular muscles which control the diameter of the pupil and therefore the amount of light that is permitted to enter.
- Pupil: light passes through the pupil and through a lens immediately behind it and onto the light sensitive cells of the retina at the back of the eyeball. The stimulation is then conveyed to the brain by the optic nerve.
- Conjunctiva: a thin transparent membrane that covers the surface of the eye and lines the eyelids.
- Lacrimal glands and ducts: the glands produce a fluid secreted through the ducts that bathes and disinfects the outer surface of the eyeball and eyelids to keep them moist and allows the eyelids to move freely over the surface of the eyeball. Excess fluid is commonly called tears.

Disorders associated with the eye

Disease/disorder	Cause	Description
Conjunctivitis 	Bacterial infection of the conjunctiva of the eye	Redness of the conjunctiva with a gritty feeling and with a yellowy discharge. Can easily spread to both eyes
Stye (hordeolum) 	Bacterial infection of the hair follicle of the eyelashes	Red, painful swelling of the eyelid; there maybe weeping and pus formation
Pink eye	Viral rather than bacterial	Similar symptoms to conjunctivitis, but usually only affects one eye and there is no yellowy discharge