B.SC - Semester 2

(Core course – Theory)

Course Code – 1ZOOTC0201

Course Title - Comparative anatomy and developmental biology of vertebrates

UNIT: 4

Topic : Olfactoreceptors (Organ of smell)

The receptors for smell occur in the olfactory epithelium which lines the nasal sacs and open out by external nares and may also open into the buccal cavity or pharynx by internal nares

Structure

Olfactory epithelium is a modified pseudo stratified epithelium having three types of cell

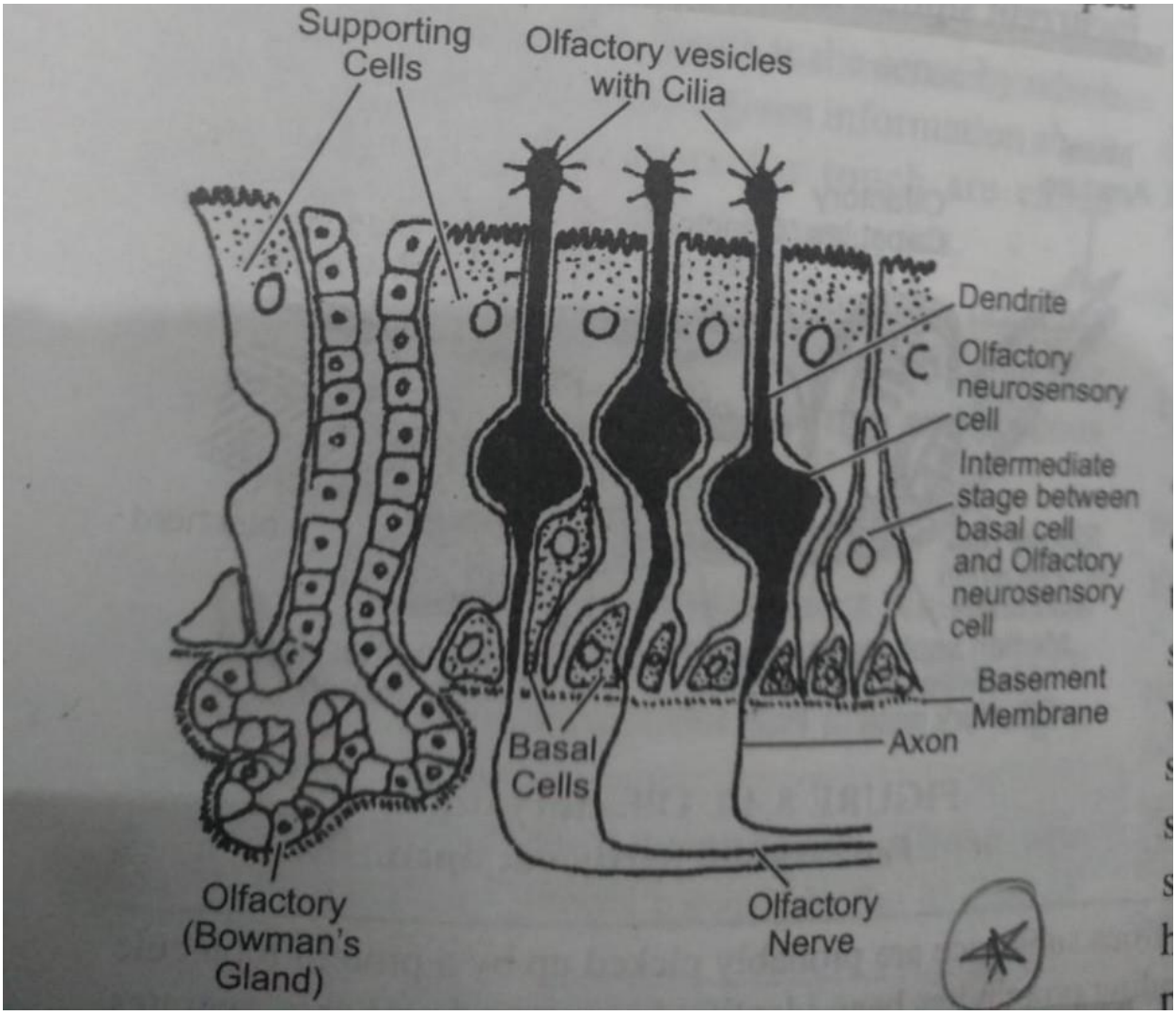
1) Receptor cells. They are spindle –shaped bipolar neurons with rounded nuclei in the middle wide region .they are ectodermal in origin. Dendrine of an olfactory cell extends to the surface of the epithelium where it enlarges into an olfactory vesicle which bears a few (5 to12) shorts nonmotile cilia or olfactory hair,each about 2 micrometer long .the no. of olfactory here varies with the species. The olfactory vesicle contains tiny granules, one at base of each cilium, looking like the basal bodies in the ciliated cells. The unmyelinated axons start from the opposite end of the olfactory cell, from the olfactory nerves which make a direct contact with the olfactory bulb of the brain, from here, bundles of nerves fibers extended via olfactory tract to the smell center in the cerebral cortex. The olfactory cells serving as sensory receptors as well as conducting neuron. The neuron carries the impulse directly to the brain without the need of other nerve cells called nerve fibers to relay the impulse.

2) **Supporting cells.** These are columnar cells with oval nuclei they lie between the olfactory cell to support them.

3) **Basal cells.** These are small cells that do not reach the surface. They give rise to new olfactory cells to replace the worm out ones because olfactory cells survive only for about two months.

Olfactory glands. These are branched tubulasacular olfactory glands, also called glands of bowman, occur beneath the olfactory epithelium. The ducts of these glands pass through the olfactory epithelium to open on its surface. They secrete mucus which spreads over the epithelium to keep it moist the volatile substance must dissolve in mucus before stimulating in olfactory cells. The continuous secreating of bowman's glands removes old stimulating chemicals, thus enabling the olfactory hair to respond to new substances. The mucus also protect in cell from dust and bacteria.

Role of taste. The olfactory receptor also plays an important role in tasting of food.



The various form of taste other then four basic ones (sweet , salty, sour, bitter) are really due to the odours that reach the smell receptor through the throat. This is why the food do not give their characteristic flavor and are less enjoyable to a person with in Flammarion of the nasal lining due to a cold. About (75 to80) % of flavor come from smell. Thus a flavor combines sensations of smell and taste.