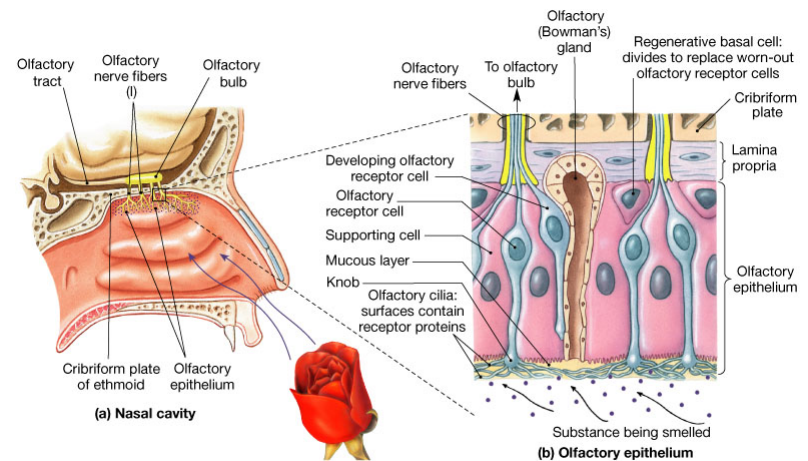


BI204 CHAP 17

SPECIAL SENSES

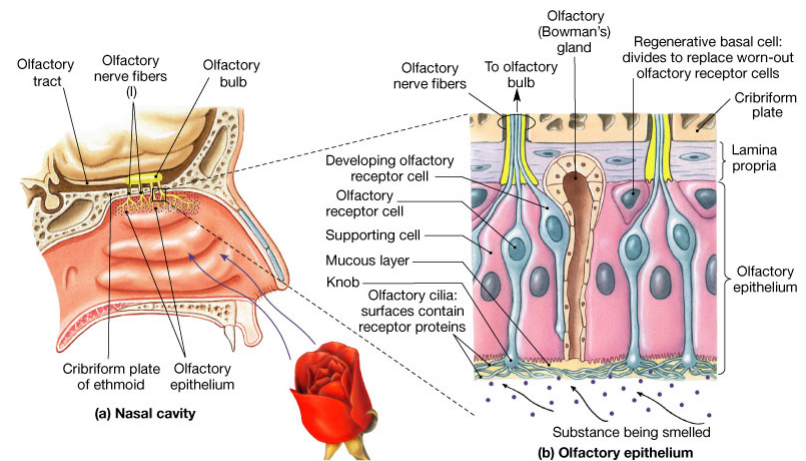
Olfaction

- Olfactory organs – in nasal cavity on each side of nasal septum
- 2 layers – olfactory epithelium & lamina propria
- Olfactory epithelium contains olfactory receptors, supporting cells, basal or stem cells



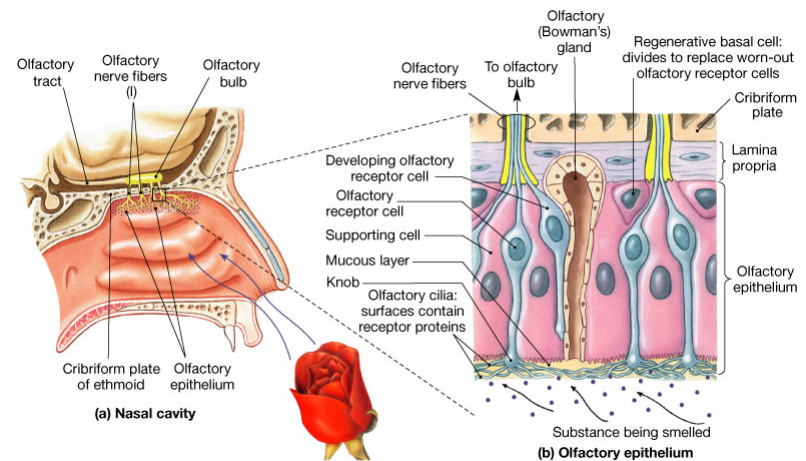
Olfaction cont.

- Lamina propria is underneath & consists of areolar CT, blood vessels & nerves, Bowman's or olfactory glands whose secretions absorb water & produce thick mucus



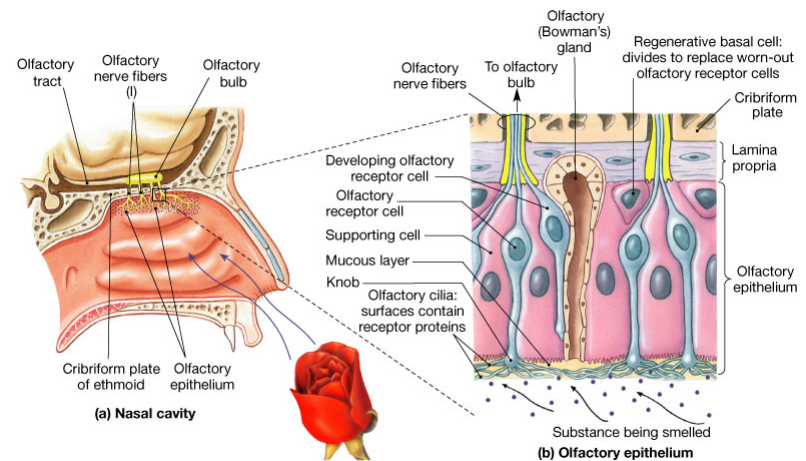
Olfaction cont.

- Olfactory receptors are highly modified neurons which have knobs at epithelial surface & knobs have many cilia projecting into nasal cavity & covered with thick mucus for dissolving odorants which bind to G-protein type receptors on cilia



Olfaction cont.

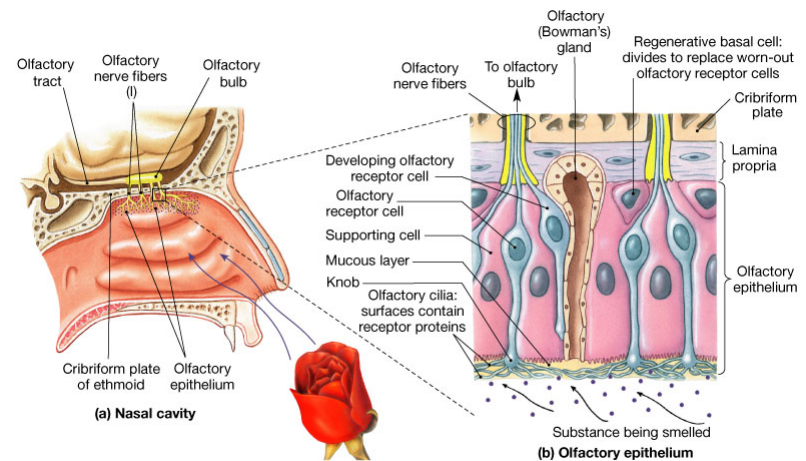
- Receptor cell axons go through the holes in cribriform plate to olfactory bulbs on either side of crista galli & synapse
- Receptor cells replaced by supporting cells which differentiate into receptor cells supporting cells replaced by division of basal cells



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Olfaction cont.

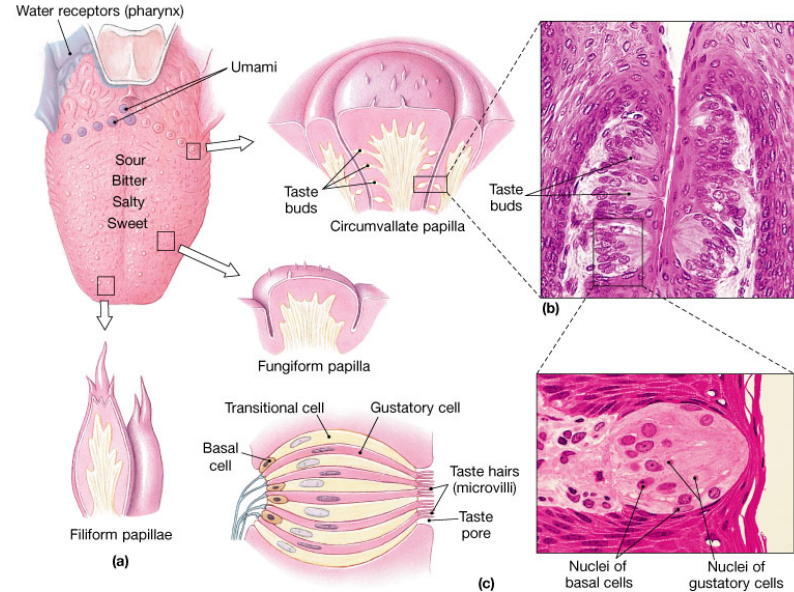
- Detect some 50 ‘primary’ smells but can distinguish 2000-4000 different chemical stimuli
- Sensitivity varies for different chemicals but can detect beta-mercaptan in few ppb so added to odorless natural gas or propane so can be detected



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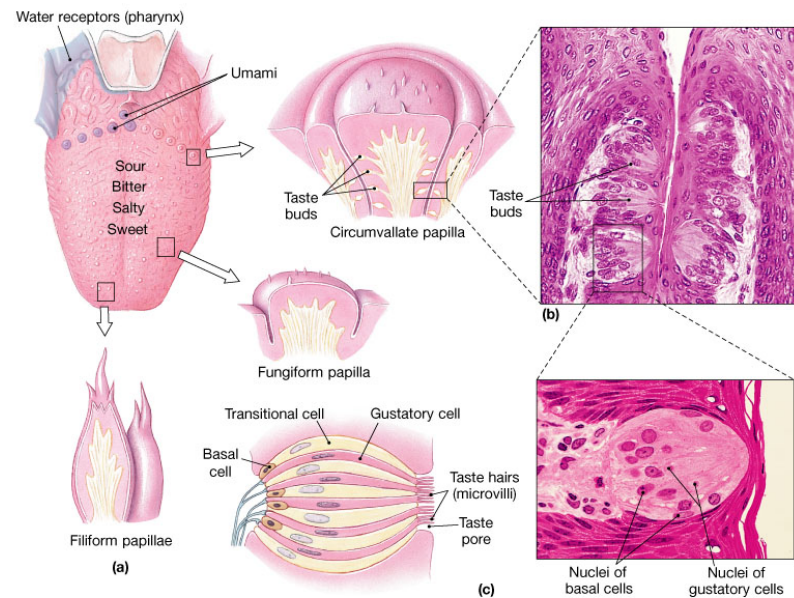
Gustation

- Taste or gustatory receptors are distributed over superior surface of tongue & portions of pharynx & larynx
- Taste receptor cells & supporting cells form structures called taste buds which come in 3 forms – filiform, fungiform, circumvallate which are differentially distributed



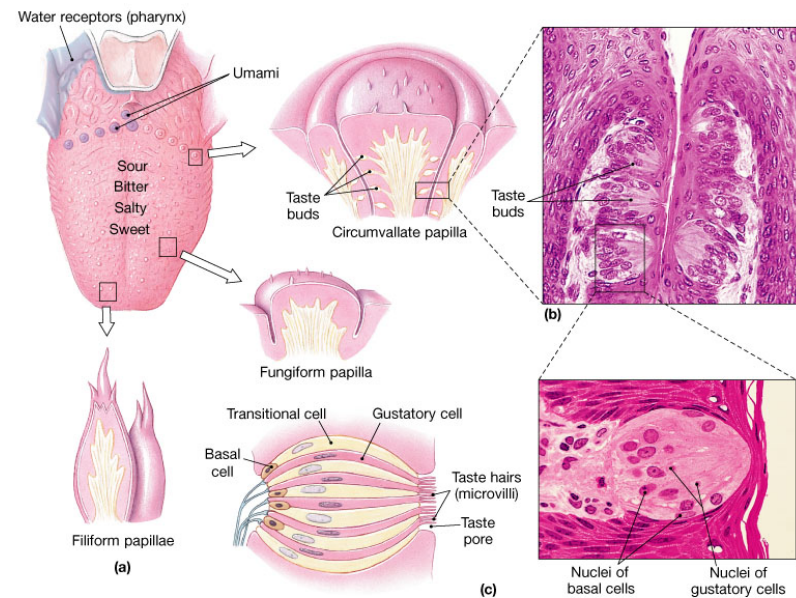
Gustation cont.

- Taste buds monitored by 7th, 9th, 10th cranial nerves
- 4 primary taste sensations – sweet, salty, sour, bitter
- Gustatory cells replaced by supporting cells which come from division of basal cells



Gustation cont.

- 2 other taste sensations seen in humans
 - 1) umami in beef or chicken broth, parmesan cheese, & linked to presence of amino acids or peptides
 - 2) water receptors in pharynx



Vision