



Special senses

Vision

Hearing

Smell

Taste

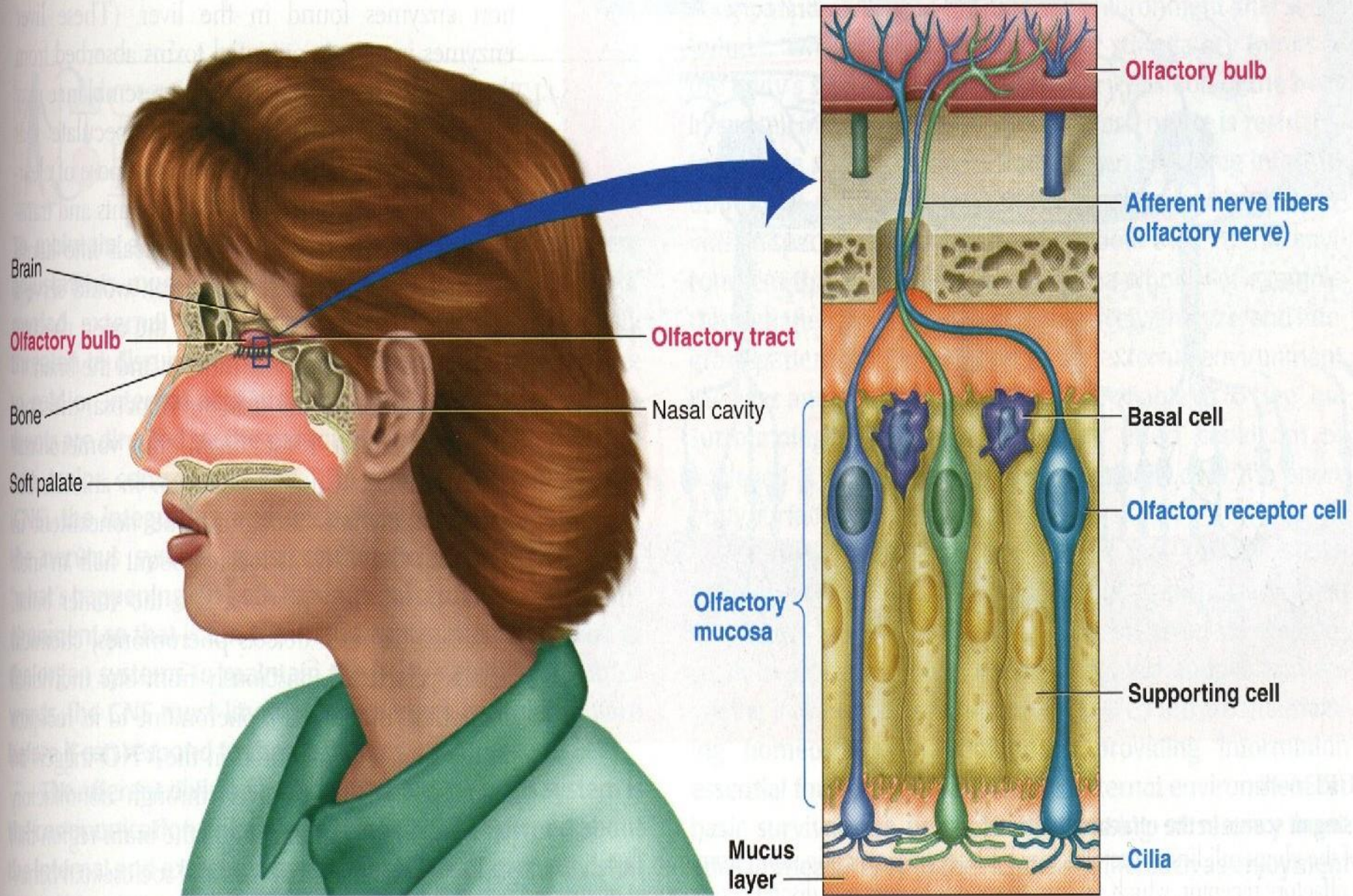
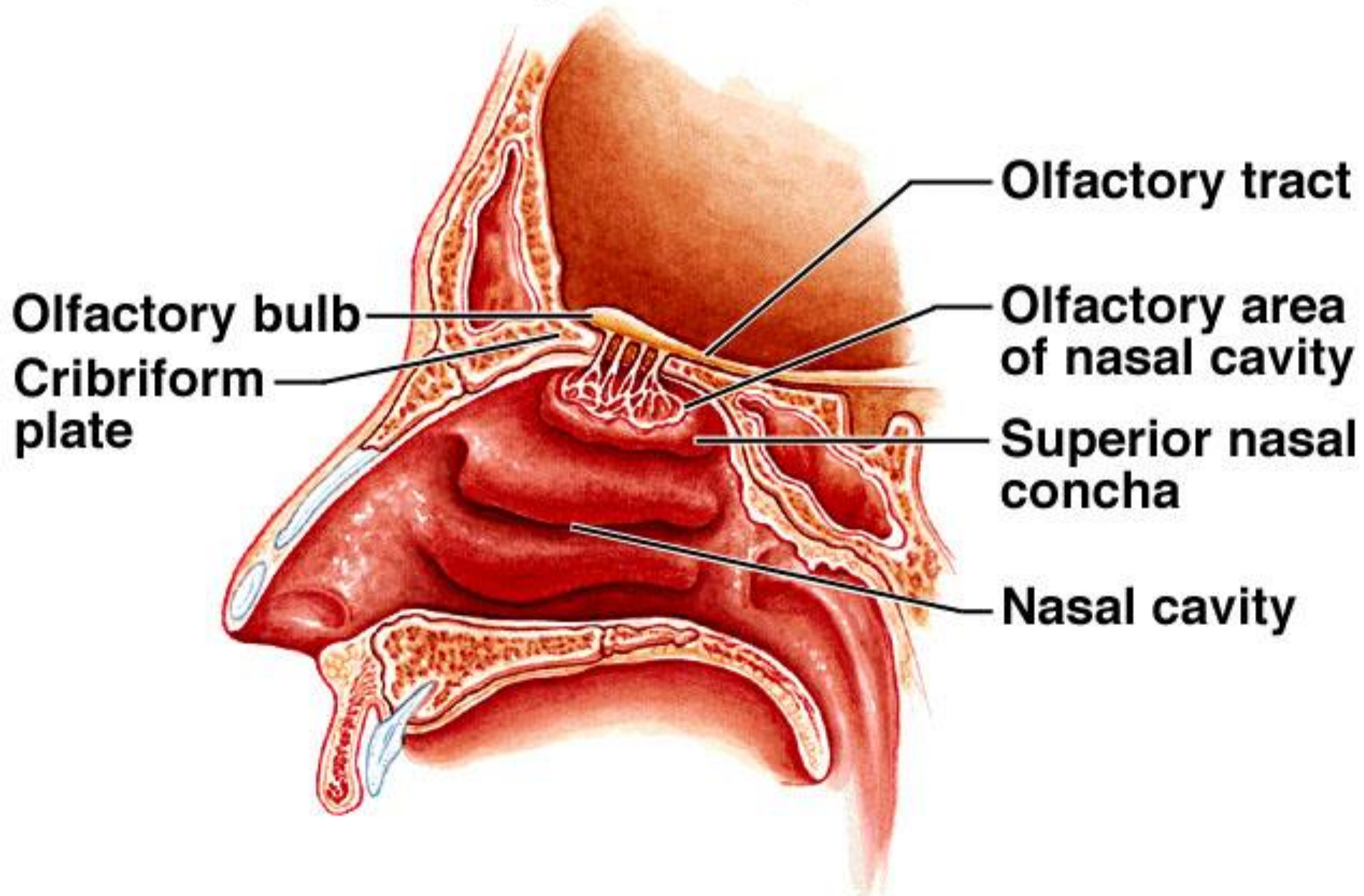


FIGURE 6-47

Location and structure of the olfactory receptors

Olfactory Receptor Cells





Smell

- **Anatomy**
 - **Olfactory mucus: in the roof of nasal cavity near the septum**
 - **Contain olfactory receptors (bipolar neurone)**
 - **Axons collected in bundles called fila olfactoria**

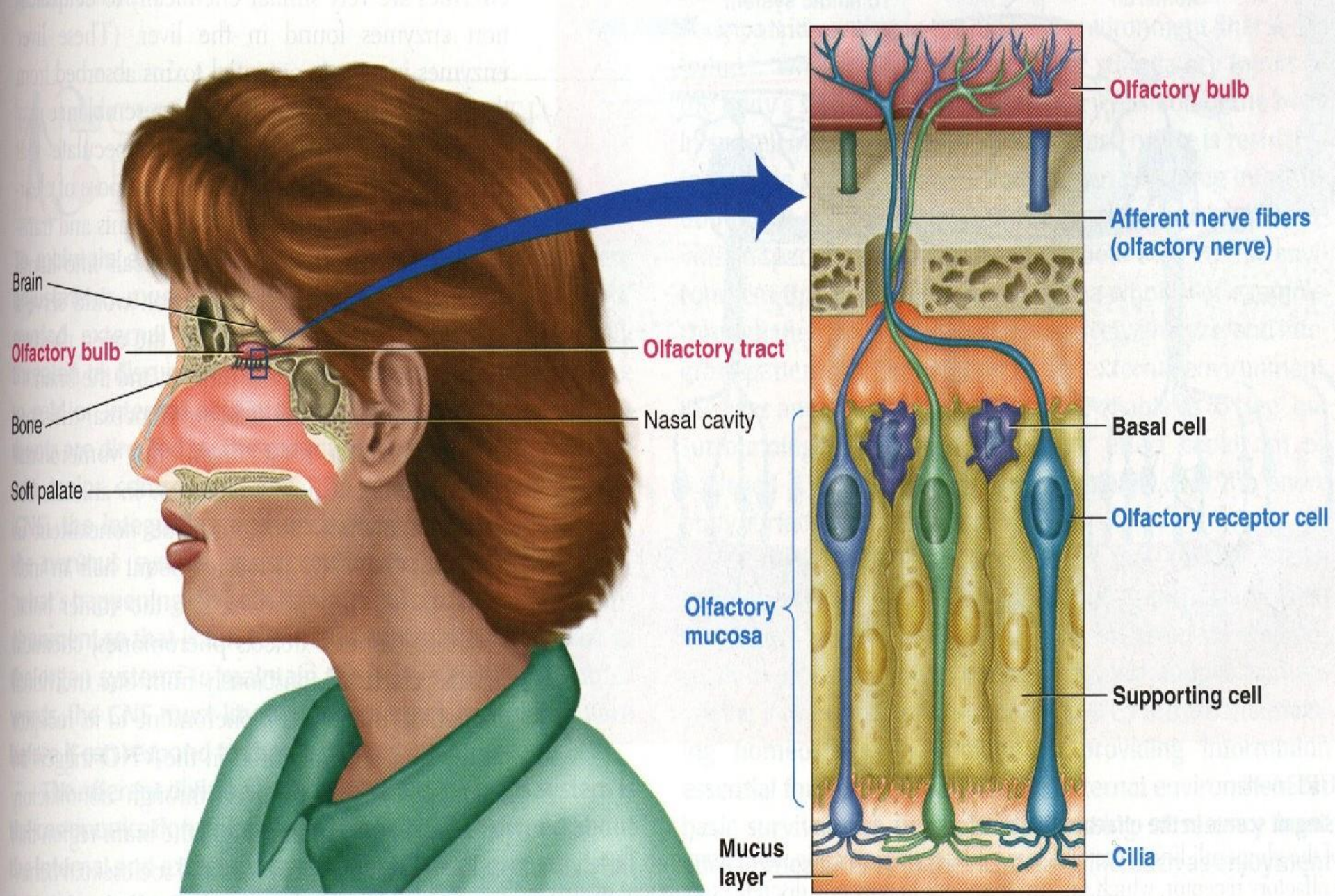


FIGURE 6-47
Location and structure of the olfactory receptors

Brain

Olfactory bulb

Mitral cells

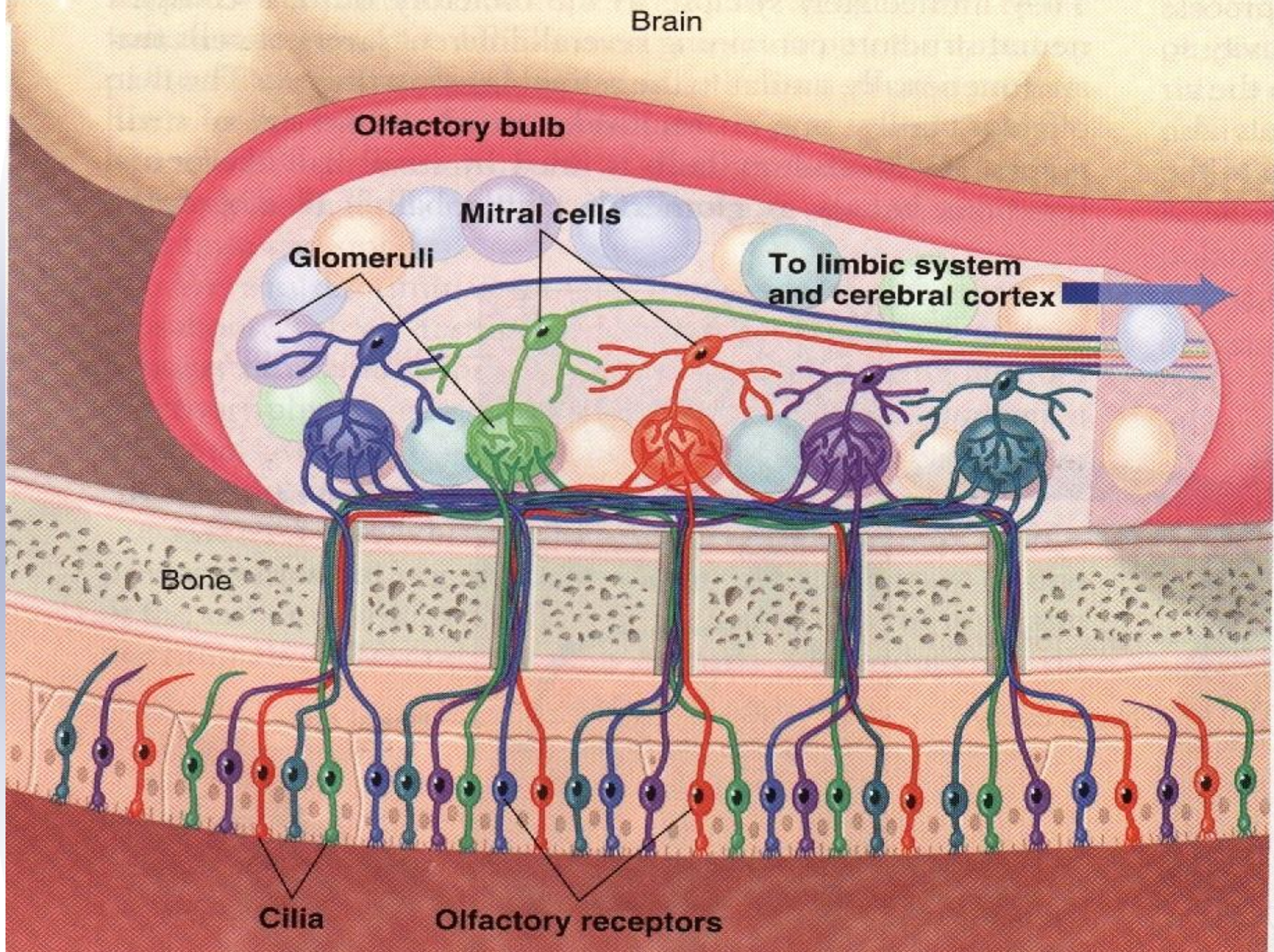
Glomeruli

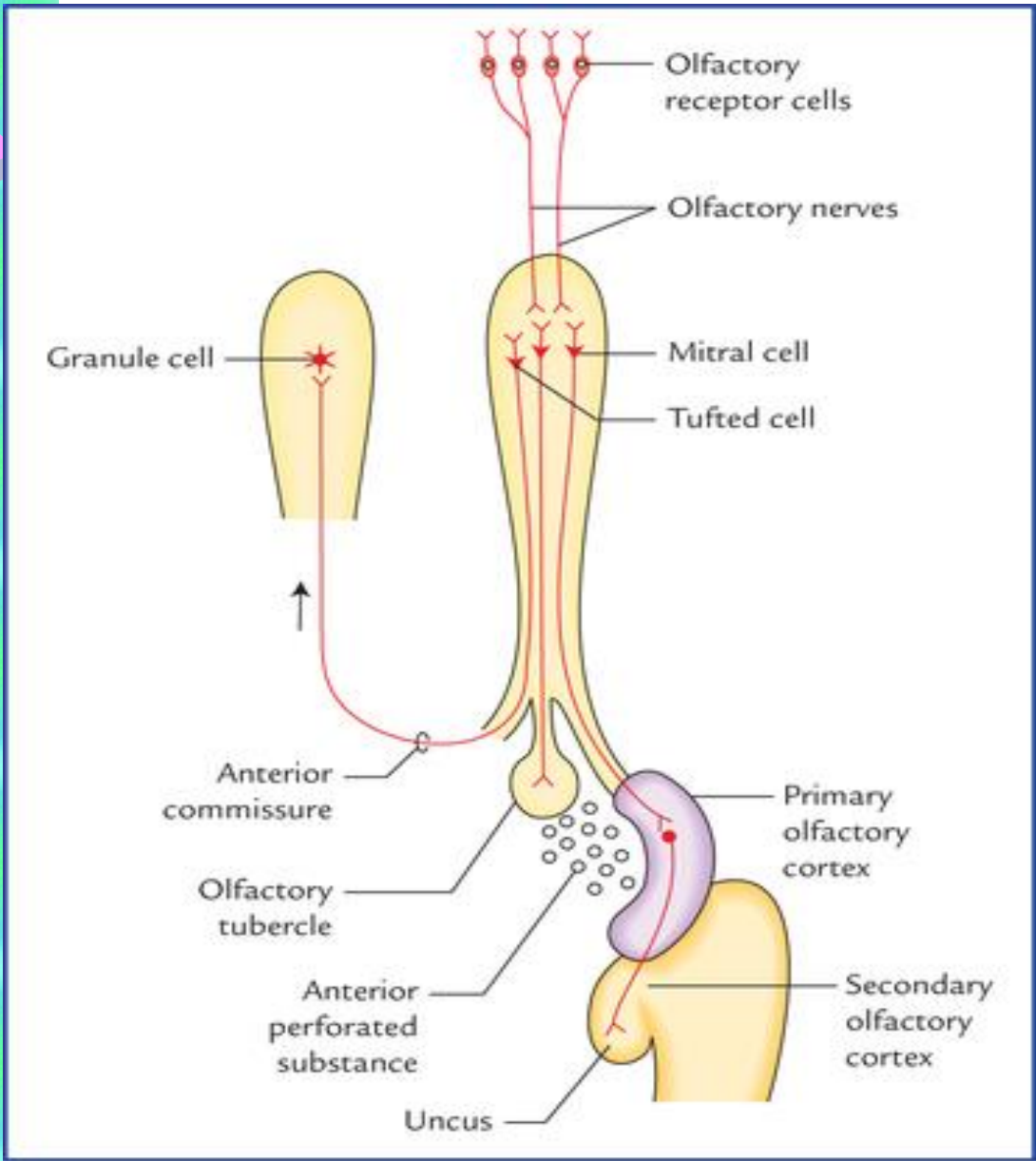
To limbic system
and cerebral cortex

Bone

Cilia

Olfactory receptors

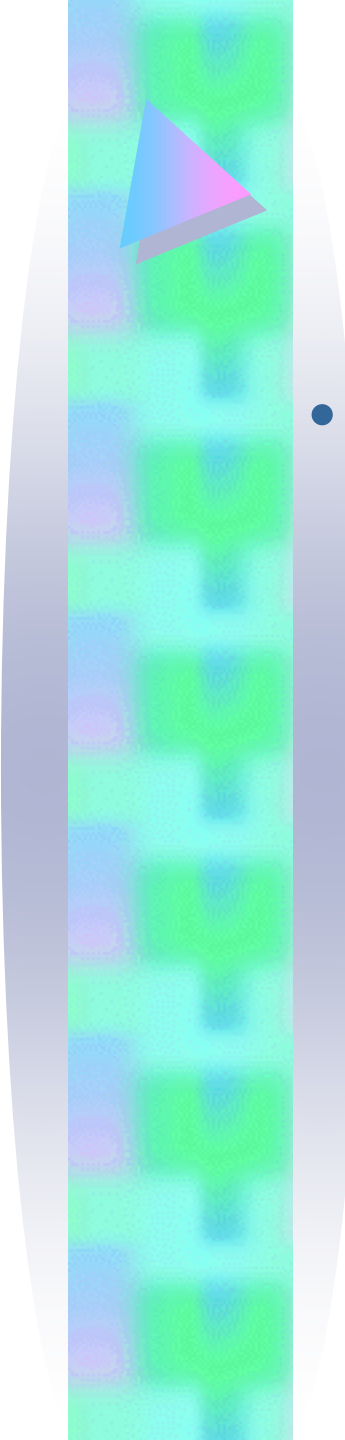


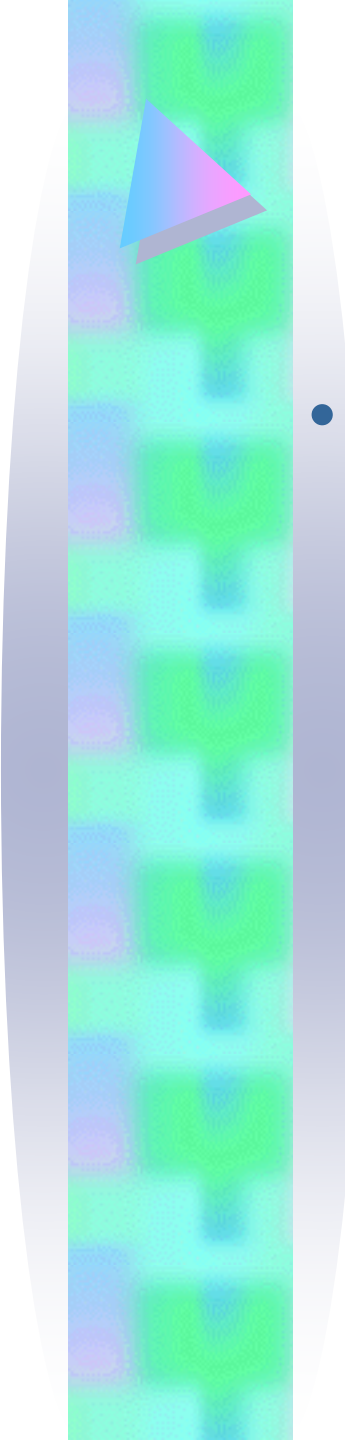


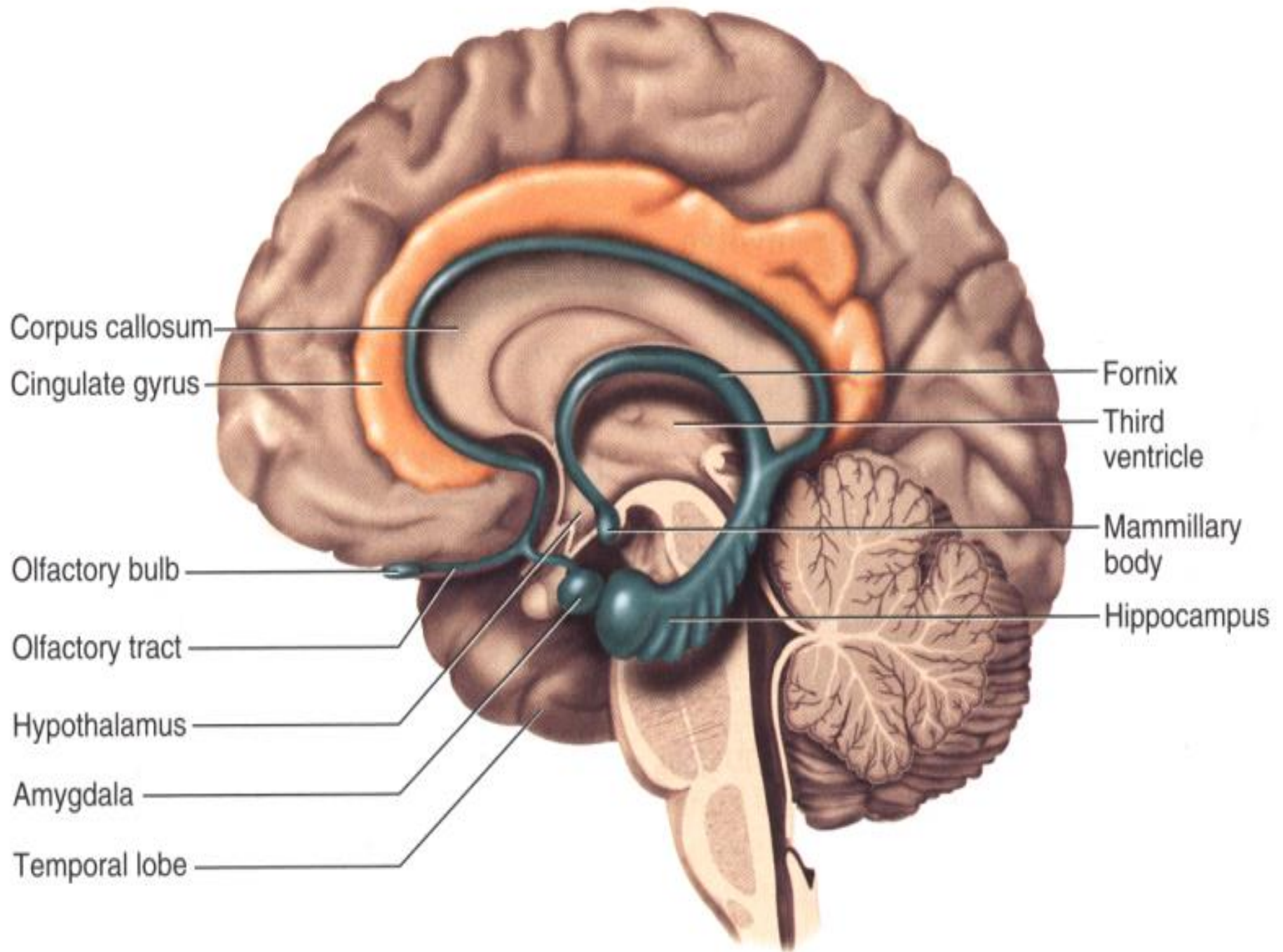


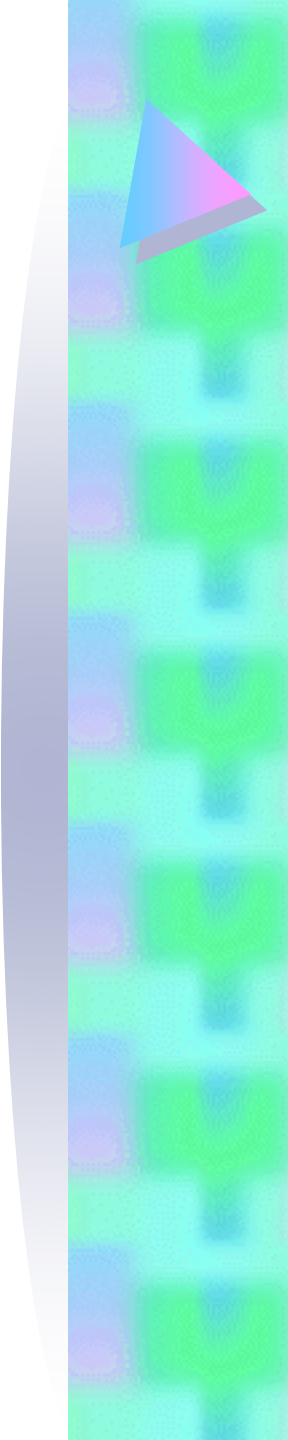
Olfactory pathway

- **Fila olfactoria inter olfactory bulb**
»»»» **synapse with mitral and tufted cells :**

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- **»»»» from mitral cells lateral and intermediate stria start »»»» end on ipsilateral cortex**

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- A vertical decorative bar on the left side of the slide, featuring a colorful triangle at the top and a blurred, multi-colored background below. The triangle is composed of blue, purple, and pink segments. The background of the bar shows a grid of blurred squares in shades of green, blue, and purple.
- **»»»» from tufted cells medial striatum start then cross the midline & end on granular cells in opposite side (contralateral)**



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- **Impulses travel along the olfactory tracts to the limbic system**
 - (also involved in emotions and memory)
 - **Impulses are interpreted in olfactory cortex**
 - Deep in temporal lobe and base of frontal lobe



Physiology of olfaction

- **Molecules dissolve in mucus layer**
» » » » **combine with receptors on cilia**
- **» » » » stimulate adenylat cyclase**
» » » » increase intracellular cAMP
- **» » » » opening of Na channels » » » »**
receptors potential » » » » AP in
olfactory pathway

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Physiology of olfaction

- **Human can differentiate between 2000-4000 odours**
- **Adaptation can occur to pleasant and nasty smells due to changes both in receptors and central connections**

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Pathophysiology

- **Anosmia: loss of smell sensation**
- **Due to damage to olfactory epithelium**



Pathophysiology

- **Parosmia (dysosmia)**
- **Alteration in smell sensation**



Pathophysiology

- **Hyperosmia (increase in smell sensation)**
- **Adrenal insufficiency**

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Pathophysiology

- **Hyposomia (decreased smell sensation)**
- **Vitamin A deficiency**