Lecture title: Digestive system

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Secretory cells of the respiratory epithelium extend from the basal lamina to the epithelial surface. Their luminal surface bears microvilli.

Globular mucous cells,known as **goblet cells,** have nuclei pressed to the base of the cell by the supranuclear mass of large mucous granules.

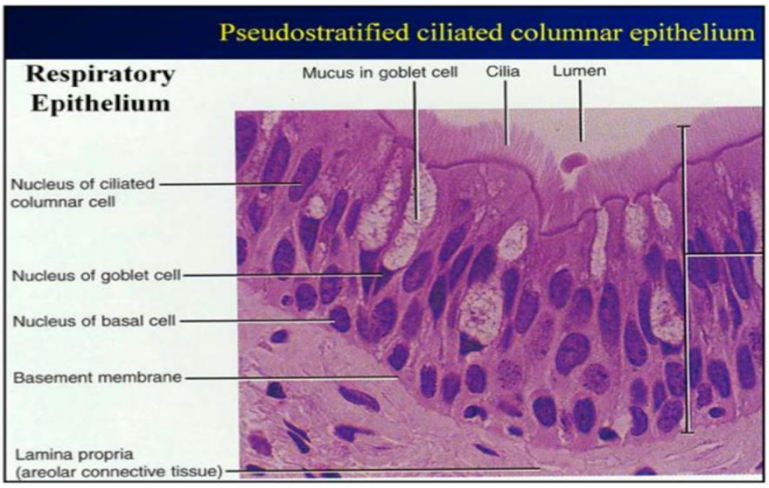
Granules of **serous epithelial cells** have electron-dense cores, contain neutral glycoproteins, and are smaller than those of mucous cells.

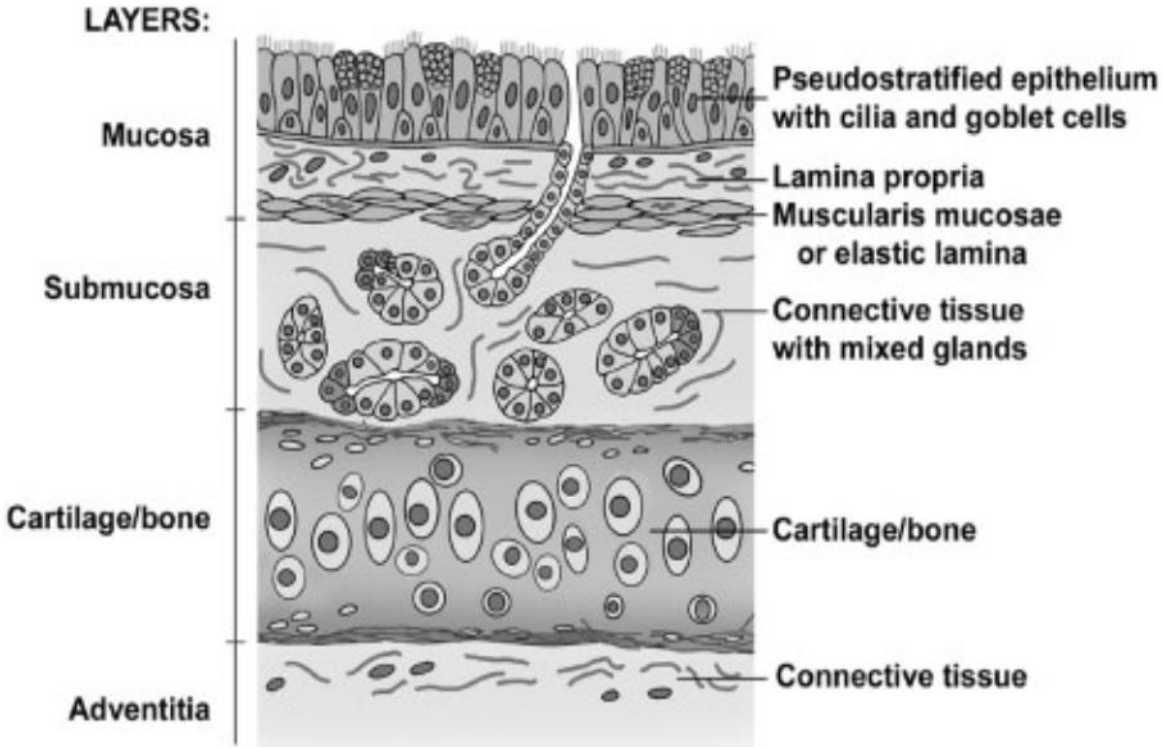
Brush cells have long, thick microvilli and a cytoplasm containing mitochondria and many filaments. These cells may be sensory receptors associated with endings of the trigeminal nerve.

Basal cells are small polyhedral cells located along the basal lamina. The cytoplasm of basal cells contains numerous bundles of tonofilaments and free ribosomes.

The respiratory mucosa (respiratory epithelium plus underlying propria-submucosa) of the nasal cavity is more vascular than the mucosae of the cutaneous, transitional, or olfactory regions.

The highly vascular propria-submucosa, in which arteries and large, thin-walled veins are oriented rostrocaudally, is called the **cavernous stratum**





Olfactory Region

The olfactory region comprises the dorsocaudal portion of the nasal cavity, including some of the surfaces of the ethmoid conchae,

dorsal nasal meatus, and nasal septum.

The olfactory mucosa is lined by a ciliated pseudostratified columnar epithelium, the **olfactory epithelium,** consisting of three primary cell types: neurosensory, sustentacular, and basal cells .

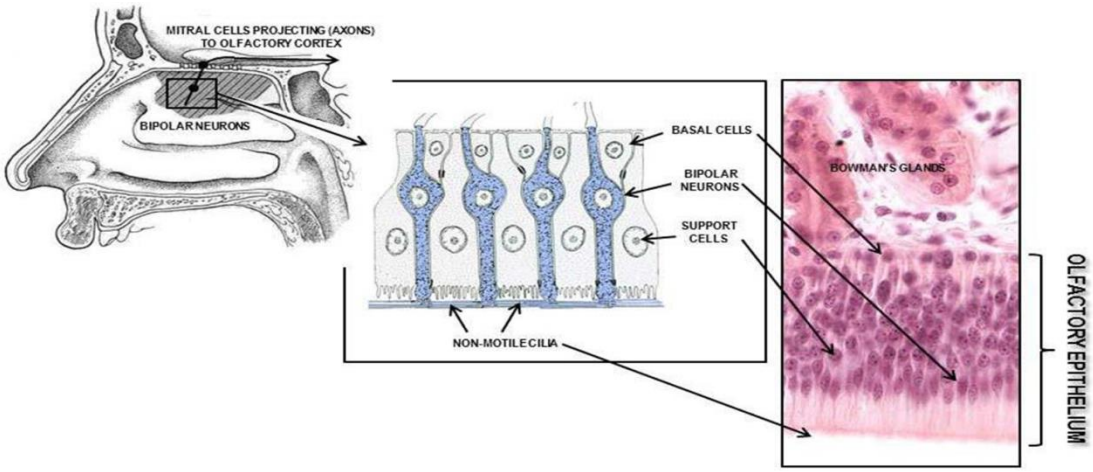
Neurosensory olfactory cells are bipolar neurons with dendrites extending to the lumen,and axons reaching the olfactory bulb of the brain.

Neurosensory cells are continuously replaced during the life of the animal by cells derived from basal cells.

Sustentacular cells are columnar cells with a narrow base and a wide apical portion. Their oval nuclei form the most superficial nuclear layer in the epithelium. Microvilli, often branched, cover the luminal surface of sustentacular cells**. Juxtaluminal junctional complexes** occur between sustentacular cells and the adjacent dendrites of neurosensory cells. Pigment granules are present in the infranuclear cytoplasm. Sustentacular cells are also replaced by basal cells.

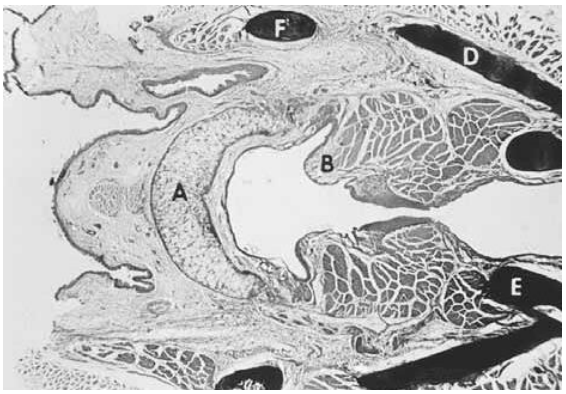
Basal cells of the olfactory mucosa are similar in structure to those of the nonolfactory epithelium.

Olfactory glands, the cells of which contain pigment granules, are located in the propria-submucosa. The intraepithelial portion of their ducts is lined by squamous cells. The glands secrete a watery product, which may serve to enhance the solubility of airborne odorants and cleanse the cilia, facilitating access for new odorants.



LARYNX

The **larynx** opens rostrally into the laryngopharynx and is continuouscaudally with the trachea. It is lined by mucosa and supported by cartilage.

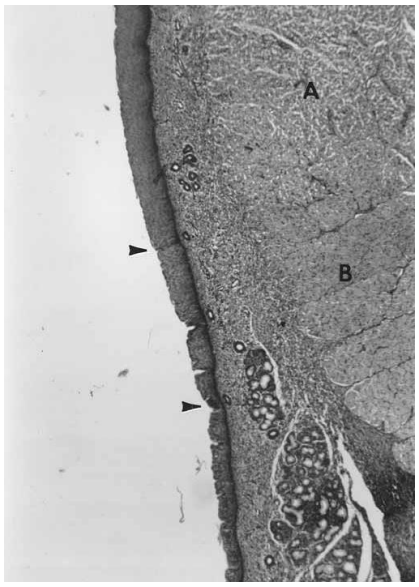


Horizontal section through a feline larynx. Epiglottis cartilage (A); vestibular fold (B); vocal ligament (C),thyroid cartilage (D); cricoid cartilage (E); thyrohyoid bone (F)

The epithelium lining the epiglottis, laryngeal vestibule, and vocal folds is non keratinized stratified squamous; the laryngeal epithelium caudal to the vocal fold gradually changes into respiratory epithelium.

The epithelium on the laryngeal surface of the epiglottis, aryepiglottic folds, and arytenoid cartilages may contain taste buds in all species except horses.

The propria-submucosa beneath the stratified squamous epithelium is a dense, irregular connective tissue; the propria submucosa beneath the respiratory epithelium is a loose connective tissue rich in elastic fibers, leukocytes, plasma cells, and mast cells. Diffuse lymphatic tissue or solitary lymphatic nodules are frequently observed. Mixed glands occurin the propria-submucosa but are absent in the vestibular and Vocal folds. Numerous elastic fibers are present in the vocal ligament and, to a lesser extent, in the vestibular ligament.



Horizontal section through the caudal portion of a feline vocal fold. Vocal ligament (A); vocal muscle (B). Note the thick stratified squamous epithelium on the vocal fold and its gradual decrease in height toward the trachea. After a short transitional zone (between arrowheads), the epithelium becomes respiratory in nature.