

Salivary glands

The oral cavity contains **small salivary glands** in the mucous membrane and **large salivary glands** that are located around the cavity. The major salivary glands include: **glandula parotis** (parotid gland), **glandula submandibularis** (submandibular) and **glandula sublingualis** (sublingual).

General histology of glands

General characteristics

The large salivary glands are surrounded by a capsule, which is made up of dense collagen fibers. Fibrous septa extend from the capsule, dividing the gland into individual lobes (lobules). Numerous blood vessels and nerve fibers run through the septa. These are **exocrine-type** glands, which means that the secretion they produce is transported to the target site through a duct system. They are therefore composed of a duct system and a secretory component, which is made up of exocrine cells. These cells are of two types – serous and mucinous. According to the predominant number of the given type of cells, we distinguish which type of gland it is.

Serous cells

Serous cells form **serous alveoli** (acini). These cells usually have a pyramidal shape, they are basophilic, they have a light nucleus located in the central part of the cell, they sit on the basal lamina with their wide base, and in the apical part there are zymogen granules that these cells release by exocytosis. In the area below the nucleus, they have a richly developed endoplasmic reticulum, which means that they secrete proteins. They have a massively developed Golgi complex and few mitochondria.

Mucinous cells

Mucinous cells are typical mucus-secreting cells. They are cubic or cylindrical in shape and form **mucinous tubules**. The cores are oval, stored in the base. Like serous cells, these cells also produce proteins and have a richly developed endoplasmic reticulum, Golgi complex, and numerous mitochondria. There are light mucinous granules in the apical part.

Ducts

The glandular duct system begins with **inserted ducts** that are lined by mesothelium. They connect into **intralobular ducts, annealed ducts**. The cells that line the annealed ducts have eosinophilic cytoplasm and longitudinal annealing in the basal region, which forms the so-called **basal labyrinth**. They are the folds of the cell membrane on which the active transfer of ions takes place using the sodium pump. Numerous mitochondria are oriented perpendicular to the lamina basalis. The annealed ducts merge into **interlobular** ducts, located in thin septa that separate the individual lobules of the salivary glands. They are lined with a single-layered columnar epithelium. The interlobular ducts further join to form **lobar ducts** and finally one **main duct**. Cylindrical stratified epithelium occurs in larger ducts. The main duct, which opens into the oral cavity, is lined with a multi-layered non-keratinized squamous epithelium.

Myoepithelial cells

The glands also contain **myoepithelial cells**, which are flat epithelial cells that lie between the basal lamina and the secretory cell, which they surround with their thin projections. They contain actin and myosin filaments, which enable them to contract. The protrusions slightly "squeeze" the secretory cell to expel the secretion faster. Due to the presence of filaments responsible for contraction, this type of cell is referred to as muscular epithelium (it has the same structure as smooth muscle cells).

Large salivary glands

- innervation from the pterygopalatine ganglion
- they produce on the basis of a nerve stimulus
- the vascular supply is ensured by a. fascialis (submandibular gland), a. temporalis superficialis (parotid gland), a. lingualis (sublingual gland) and v. jugularis externa
- **glandula sublingualis** – seromucinous with a predominance of the mucinous component
 - the main outlet of this gland exits together with the outlet gl. submandibularis on the floor of the oral cavity on the mucous papilla – caruncula sublingualis
- **glandula submandibularis** – seromucinous with a predominance of serous component
 - outlet of the gland – ductus submandibularis – the outlet is common with gl. sublingualis – caruncula sublingualis
- **glandula parotis**
 - 90% serous, 10% mucinous
 - outlet – ductus parotideus (outlet into vestibulum oris at the level of the second molar)
 - the facial nerve passes through the gland, but does not innervate it, it continues to the facial muscles

- innervation from the otic ganglion via the auriculotemporalis nerve

Mnemonic

pa-ro-tis = se-rous

sub-man-di-bu-la-ris = se-ro-mu-ci-nous

sub-lin-gua-lis = mu-ci-nous

Small glands

- innervation from the pterygopalatine ganglion
- saliva production is continuous
- everywhere in the oral cavity (glandulae labiales, buccales, molares, palatinae, linguales)

Synthopy

- submandibular glands – outside the oral cavity, along the mylohyoideus muscle
- sublingual glands – inside the oral cavity

Clinical notes

- sialogram – contrast imaging of salivary glands with ducts
 - the duct may be blocked by a stone: sialolithiasis
- the pancreas has a similar structure, hence its name (pancreas) is derived from this similarity

References

Related articles

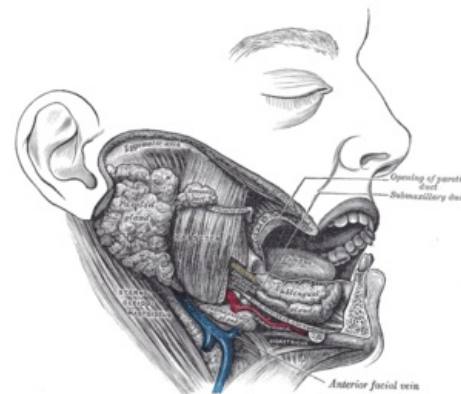
- Innervation of salivary glands
- Gl. parotis (SFLT)
- Glandula parotis (picture)
- Parotis (preparation)
- Glandula submandibularis
- Glandula submandibularis (picture)
- Submandibularis (preparation)
- Glandula sublingualis (picture)

Practicing histological preparations

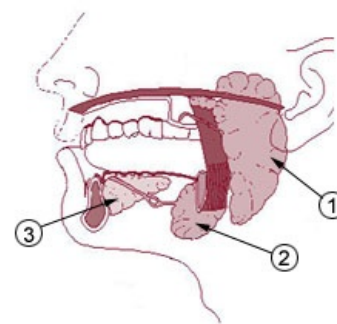
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Source

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Position of the major salivary glands



1 is Parotid gland, 2 is Submandibular gland, 3 is Sublingual gland