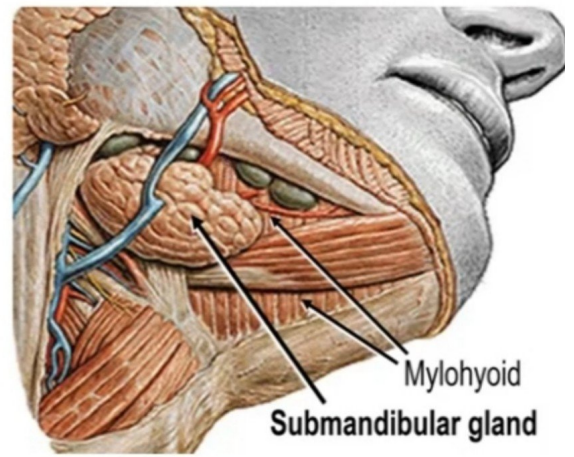
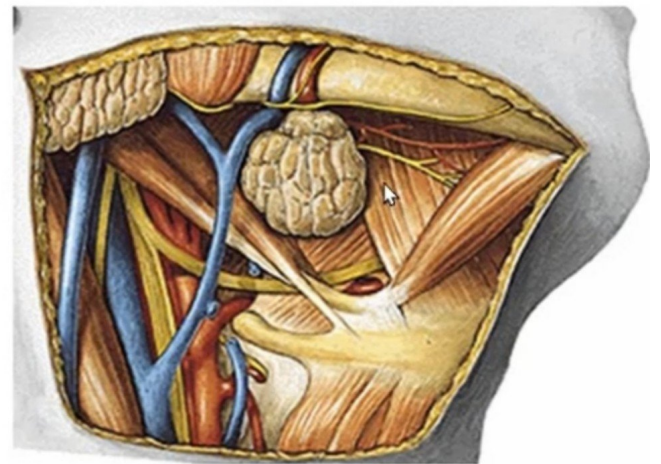


Submandibular Salivary Gland



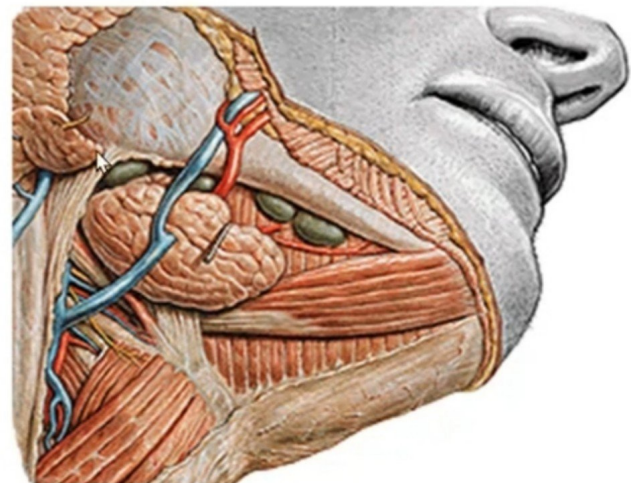
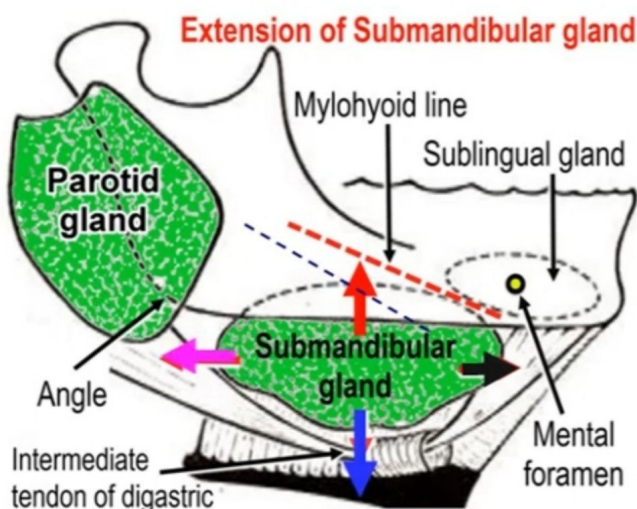
POSITION:

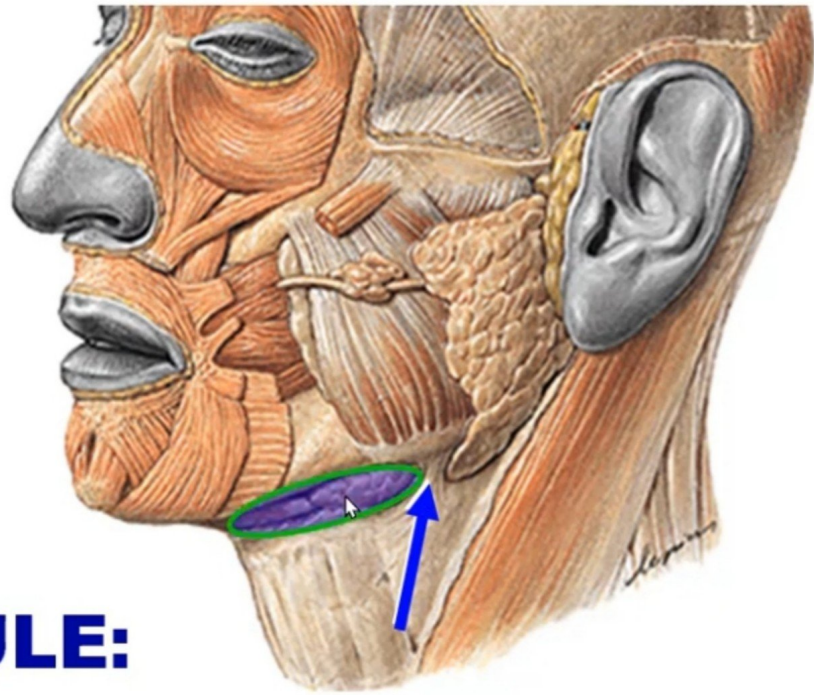
- ▶▶ It lies below and deep to the mandible in the digastric triangle
- ▶▶ It lies over the mylohyoid muscle



EXTENSION: It extends

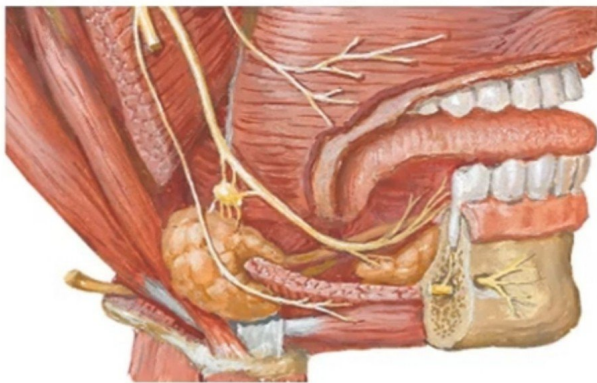
1. **Superiorly:** deep to the mandible to the mylohyoid line
2. **Inferiorly:** overlap the intermediate tendon of the digastric muscle
3. **Anteriorly:** to the level of the mental foramen
4. **Posteriorly:** to the angle of the mandible





CAPSULE:

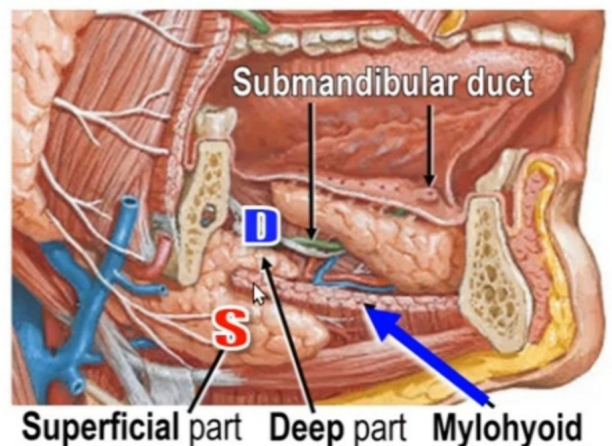
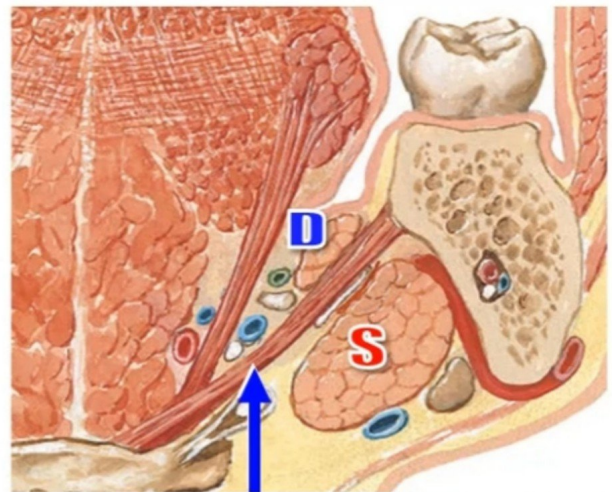
- ▶▶ **From** the investing layer of the deep cervical fascia.
- ▶▶ **It is separated from** the parotid gland by the stylomandibular ligament



PARTS: 2

It is divided by the **mylohyoid muscle** into 2 parts:

1. **Superficial part:** superficial to the mylohyoid
2. **Deep part:** deep to the mylohyoid (between the mylohyoid and hyoglossus)



Surfaces of the Superficial Part

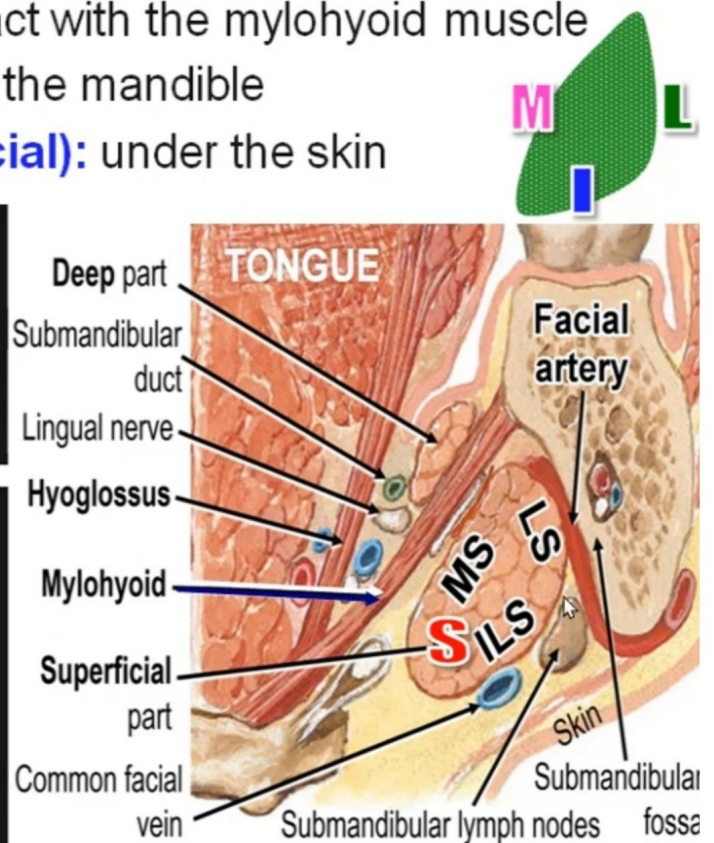
1. **Medial (deep):** in contact with the mylohyoid muscle
2. **Lateral:** in contact with the mandible
3. **Infero-lateral (superficial):** under the skin

Lateral Surface:

1. **Mandible:** subman fossa
2. **Facial artery**
3. **Medial pterygoid**

Infero-lateral Surface:

1. **Skin and fascia**
2. **Cervical branch of VII n**
3. **Common facial vein**
4. **Submandibular lymph n**



Deep Relation of the Submandibular Gland

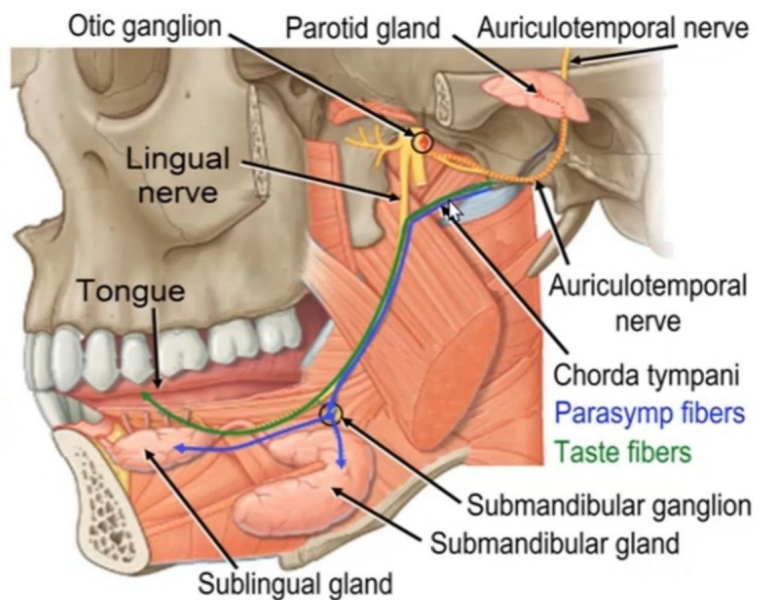
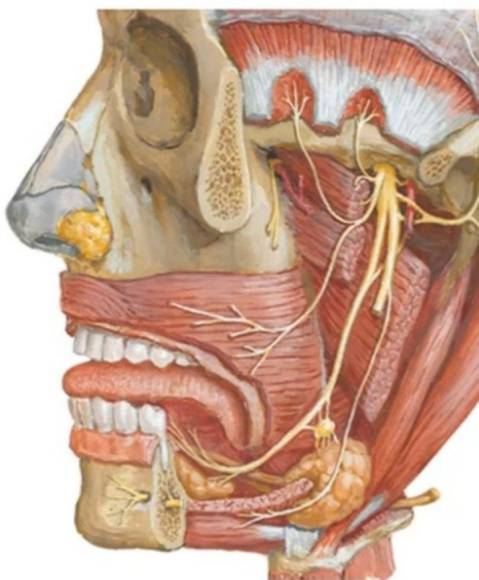
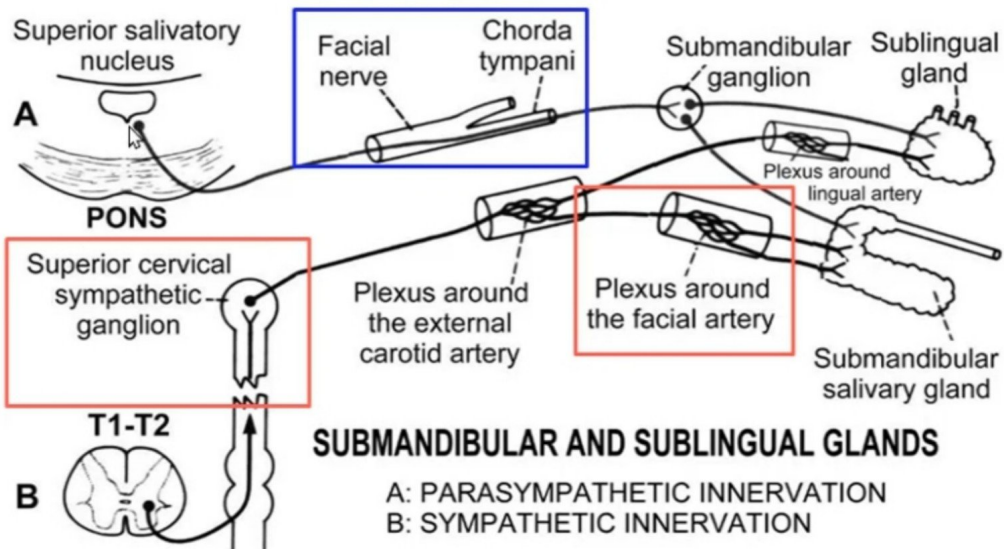
1. Mylohyoid & digastric
2. Lingual nerve & submandibular ganglion
3. Deep part of submandibular gland & submandibular duct
4. Hypoglossal nerve
5. Stylohyoid muscle



Arterial Supply: Facial artery

Nerve Supply

- 1. Parasympathetic:** Facial nerve >> chorda tympani
- 2. Sympathetic:** Plexus around facial artery from SCSG
- 3. Sensory:** Lingual nerve

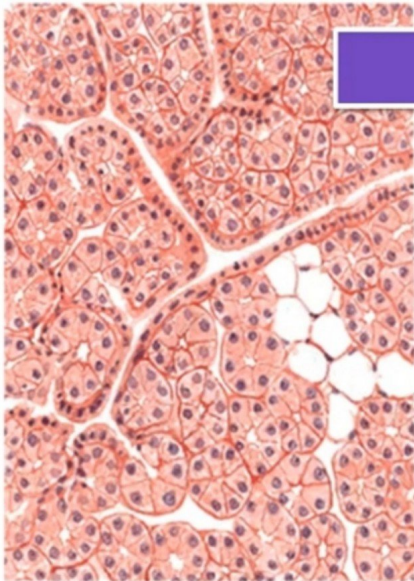


Parasympathetic Fibers to Submandibular Gland

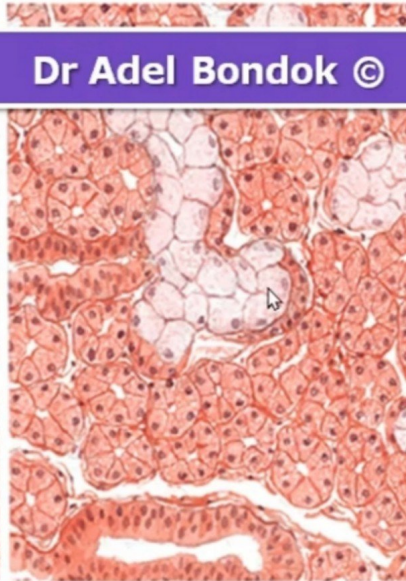
Superior salivatory nucleus → facial nerve → chorda tympani → lingual nerve → submandibular ganglion → submandibular salivary gland

Salivary Gland Secretions

Dr Adel Bondok ©



Parotid Gland:
Totally watery serous



Submandibular Gland:
Mostly serous



Sublingual Gland:
Mostly mucous

Submandibular Duct

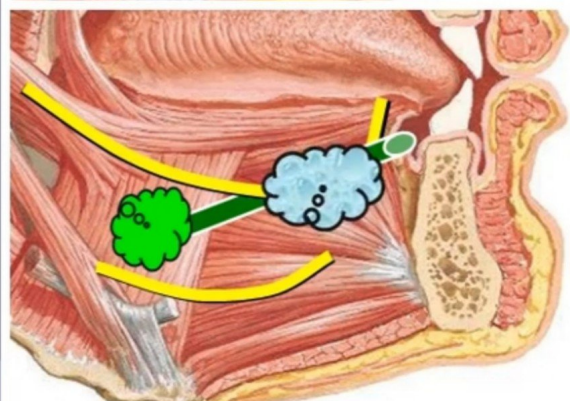
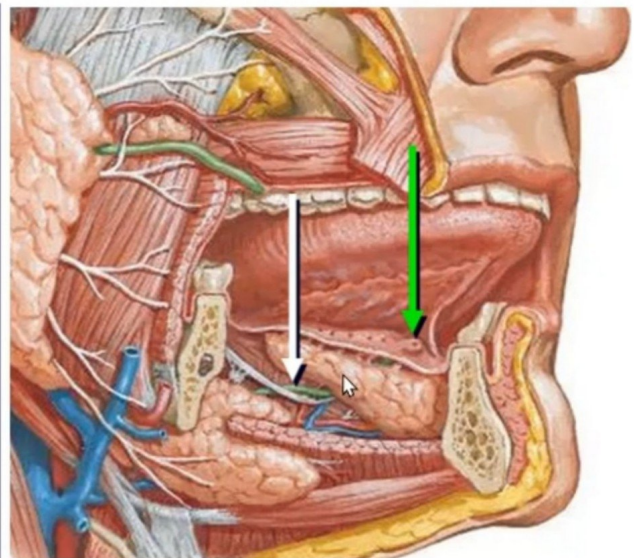
Length: 5 cm (2")

Beginning: from the medial surface of the gland

Termination: opens in the floor of the mouth at the side of the frenulum of the tongue

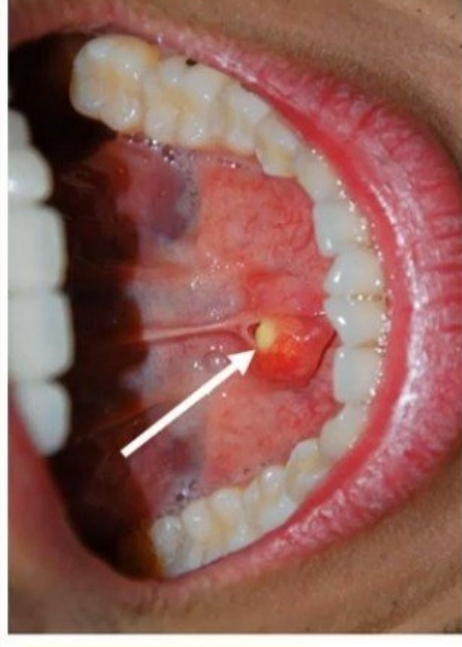
Course:

1. **Lies between** the mylohyoid and hyoglossus
2. **Passes between** the lingual nerve and hypoglossal nerve
3. **The lingual nerve** hooks around the duct.
4. **The terminal part** lies deep to the sublingual gland



Submandibular Duct Stone

The submandibular duct is more prone to obstruction by stone; **WHY?**



1. **Its saliva** is thicker than that of the parotid gland.
2. **Its saliva** contains high concentration of calcium & phosphate.
3. **Its saliva** has higher mucous content.
4. **The duct** has antigravity flow.
5. **The parotid secretion** is watery.
6. **The sublingual ducts** are short and many

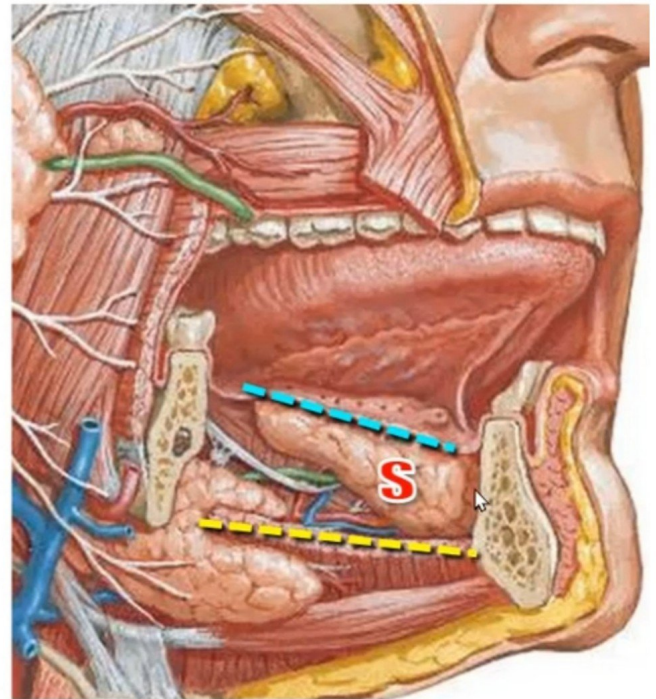
Dr Adel Bondok ©

Sublingual Salivary Gland

POSITION:

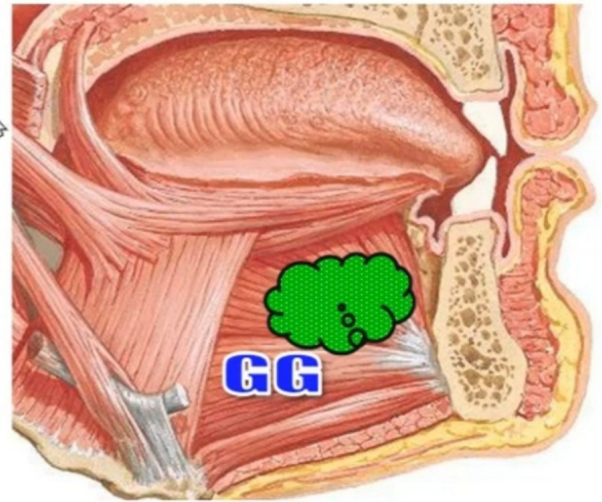
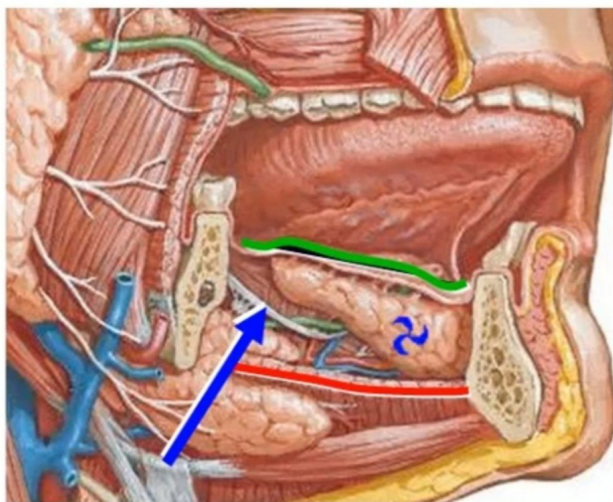
In the floor of the mouth:

1. **Below the** mucous membrane
2. **Above the** mylohyoid muscle
3. **In the** sublingual fossa of the mandible



Relations

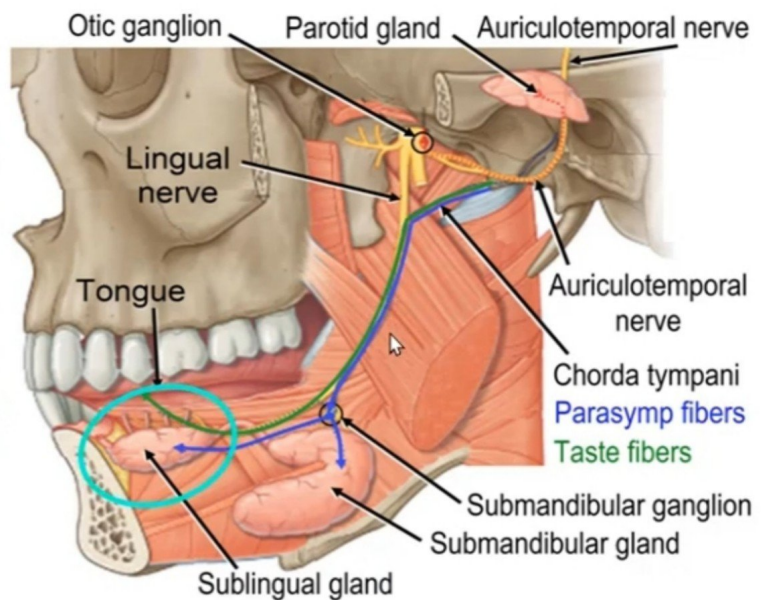
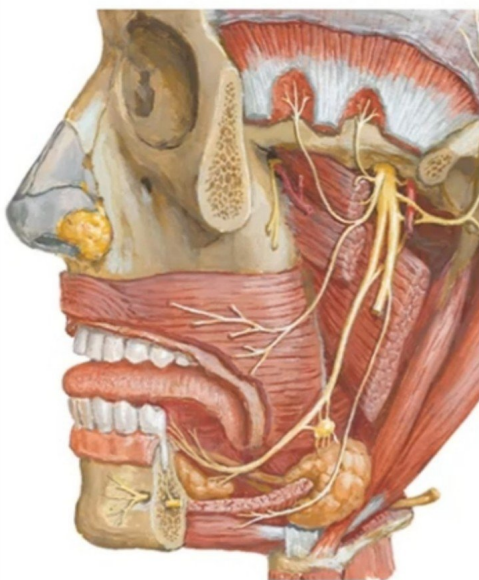
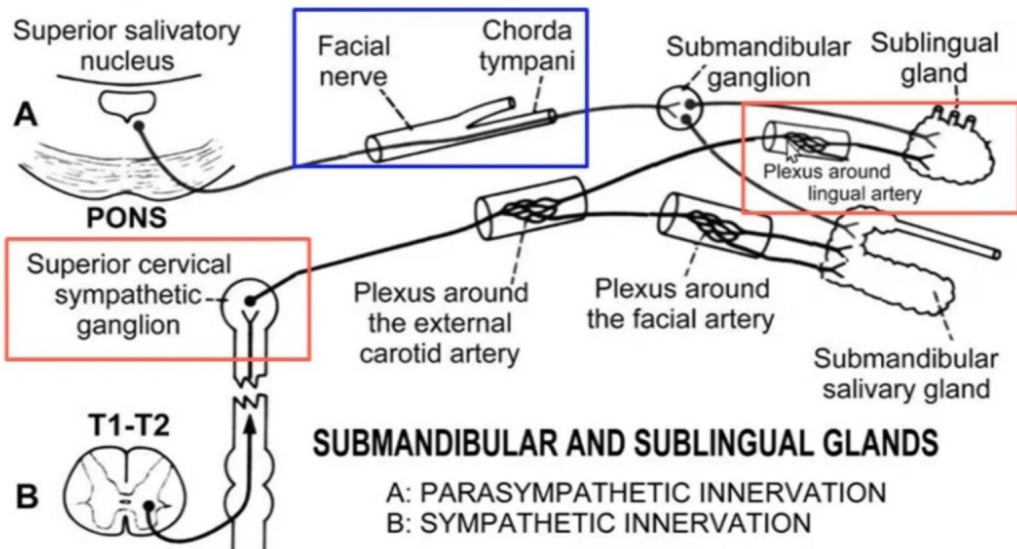
1. **Superior:** mucous membrane of floor of the mouth
2. **Inferior:** mylohyoid muscle
3. **Medial:** genioglossus, lingual nerve & submandibular duct
4. **Lateral:** sublingual fossa of the mandible



Arterial Supply: Lingual artery

Nerve Supply

- 1. Parasympathetic:** Facial nerve >> chorda tympani
- 2. Sympathetic:** Plexus around lingual artery from SCSG
- 3. Sensory:** Lingual nerve



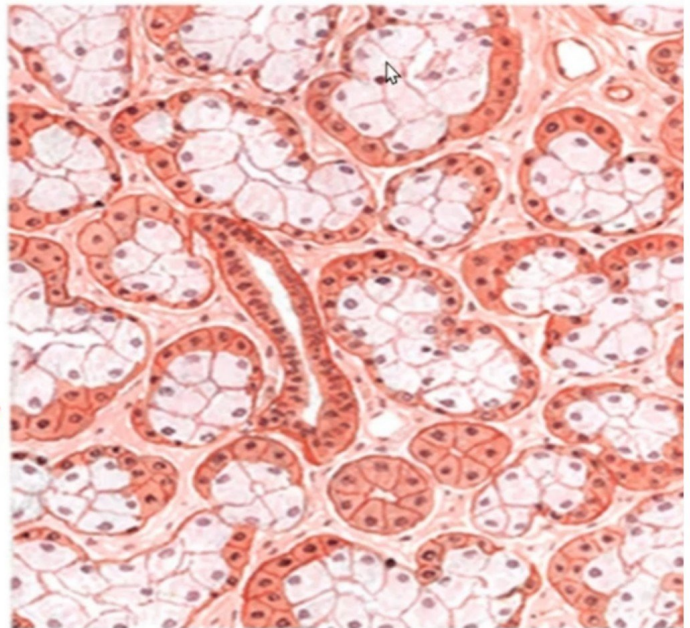
Parasympathetic Fibers to the Sublingual Gland

Superior salivatory nucleus → facial nerve → chorda tympani → lingual nerve → submandibular ganglion → sublingual salivary gland

Sublingual Gland Secretion

The gland contains **sero-mucous acini** but **mostly mucous acini**.

The secretion is **mostly mucous**.



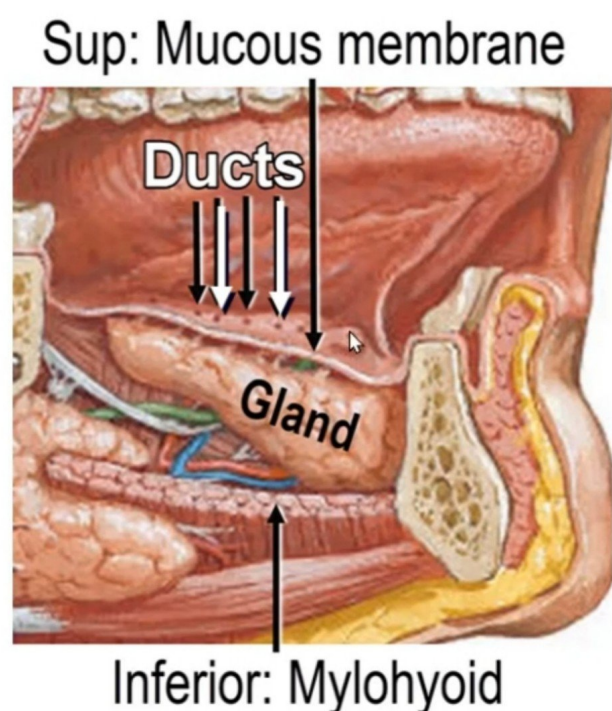
Dr Adel Bondok ©

Sublingual Ducts

Number: 10 – 20

Termination:

- open directly into the floor of the mouth
- Some join the submandibular duct

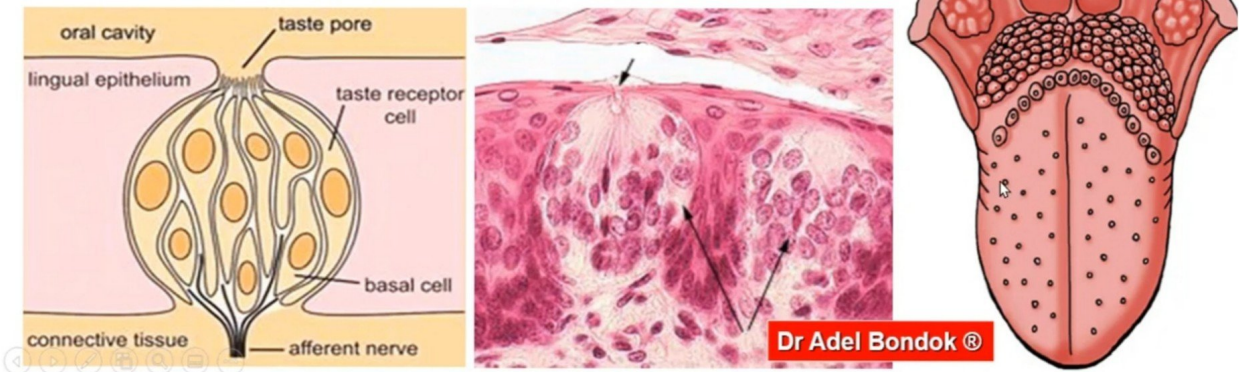


Taste Pathway

Taste Receptors

Taste buds in the tongue, epiglottis, soft palate & oropharynx

They are associated with lingual papillae: fungiform, circumvallate and foliate papillae

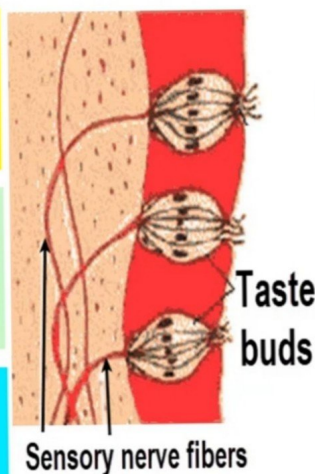


3 Cranial Nerves Containing Taste Fibers

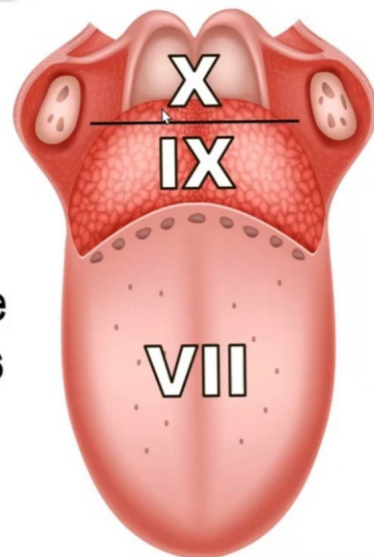
Facial nerve (chorda tympani):
sensation from the anterior 2/3 of the tongue

Glossopharyngeal nerve:
sensation from the posterior 1/3 of the tongue

Vagus nerve:
sensation from the most posterior part of the tongue & epiglottis



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First Order Neuron

1. **Geniculate ganglion** of the facial nerve

2. **Inferior ganglion** of the glossopharyngeal nerve

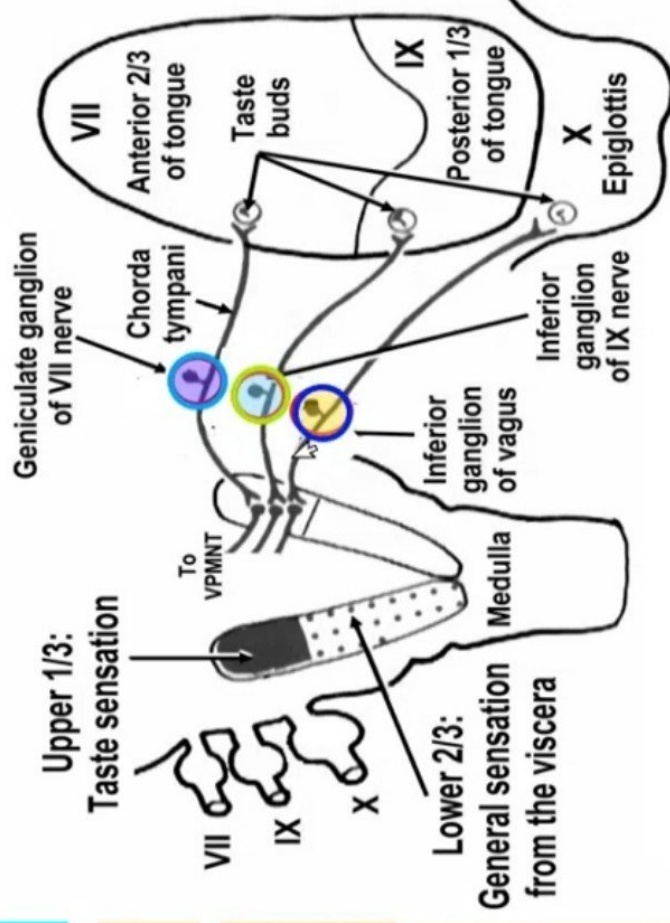
3. **Inferior ganglion** of the vagus nerve

They contain pseudounipolar nerve cells

The peripheral branches terminate on taste buds

The central branches form the tract of nucleus solitarius which ends in the upper 1/3 of nucleus solitarius

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Second Order Neuron

Upper third of the nucleus solitarius in the medulla

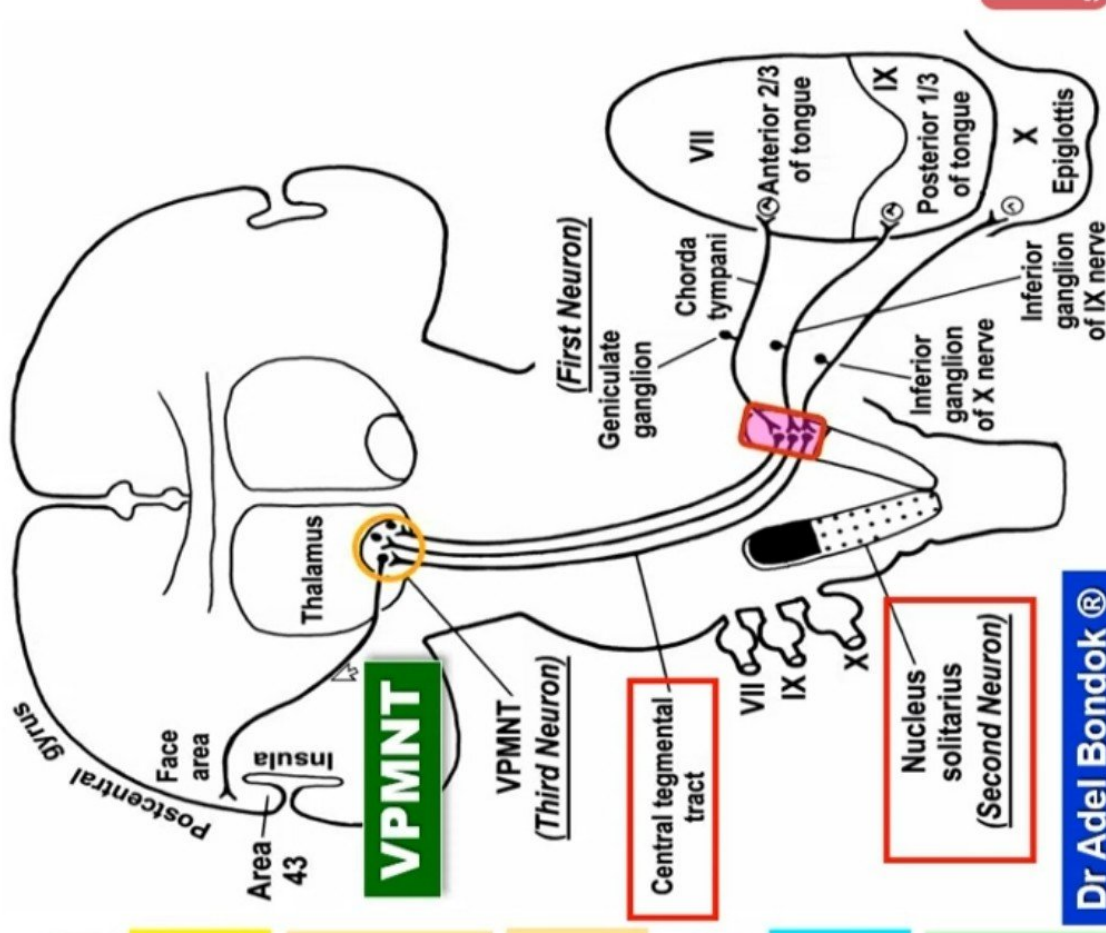
Axons cross to the opposite side and ascend in the central tegmental tract dorsal to the medial lemniscus

Axons terminate in the ventral posterior medial nucleus of the thalamus **VPMNT**

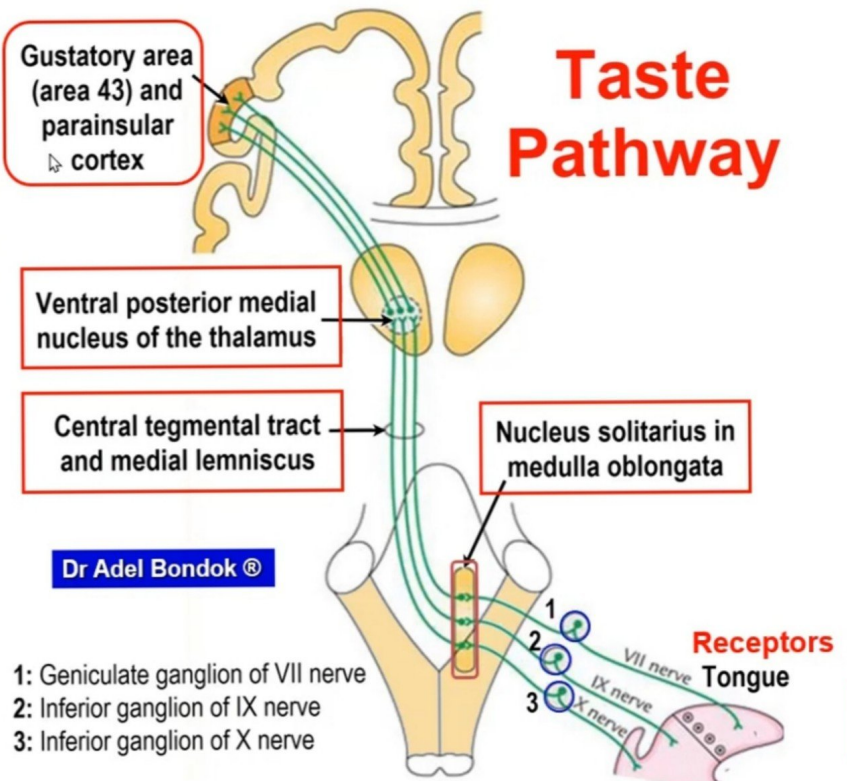
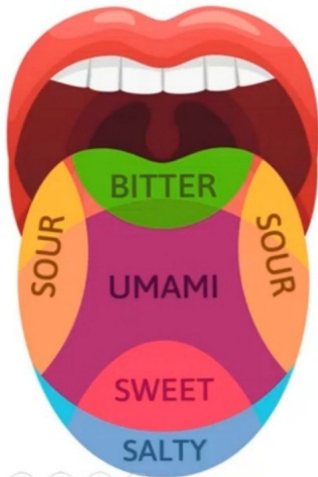
Third Order Neuron

VPMNT ventral posterior medial nucleus of the thalamus

Axons ascend in the posterior limb of the internal capsule to end in the gustatory area (area 43)

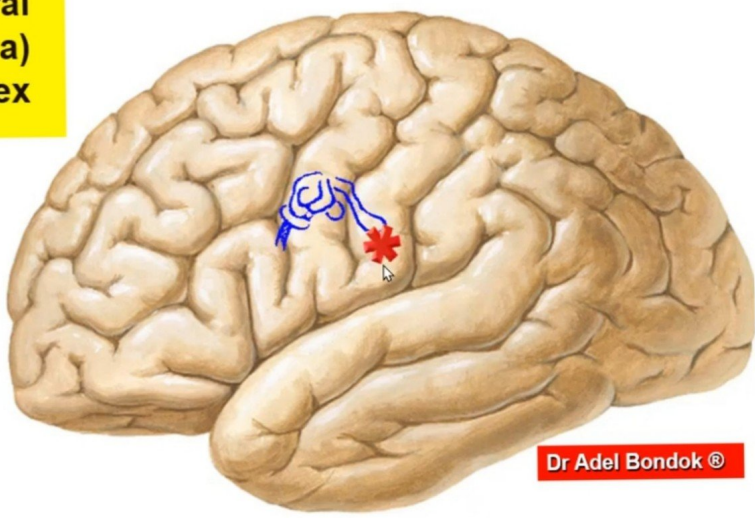
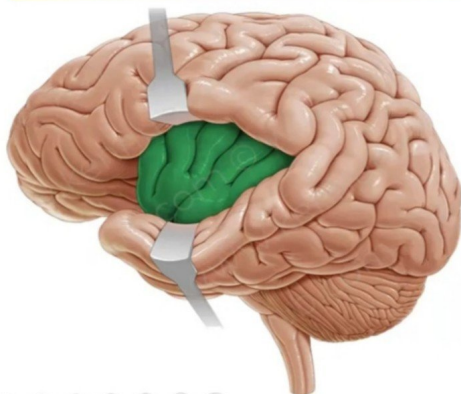


Taste Pathway



Gustatory (Taste) Area # 43

Lower end of the postcentral gyrus (general sensory area) and in the parainsular cortex



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Summary of the Taste Pathway

Receptors: taste buds

First order neuron: ganglia of the facial, glossopharyngeal and vagus nerves

Tract of nucleus solitarius

2nd O.N: Upper third of nucleus solitarius

Central tegmental tract

3rd ON: Ventral posterior medial thalamic nucleus

Posterior limb of the internal capsule

Gustatory area # 43

