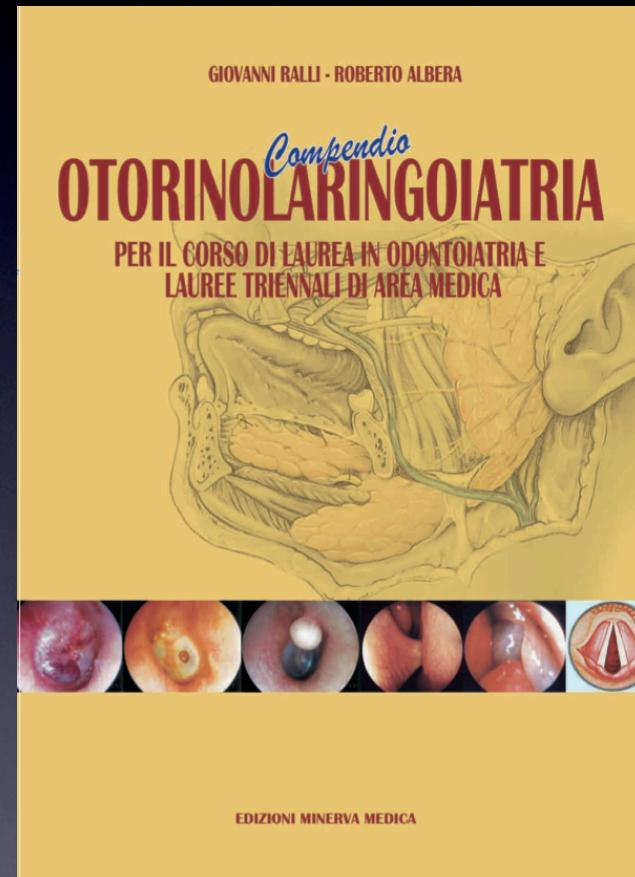


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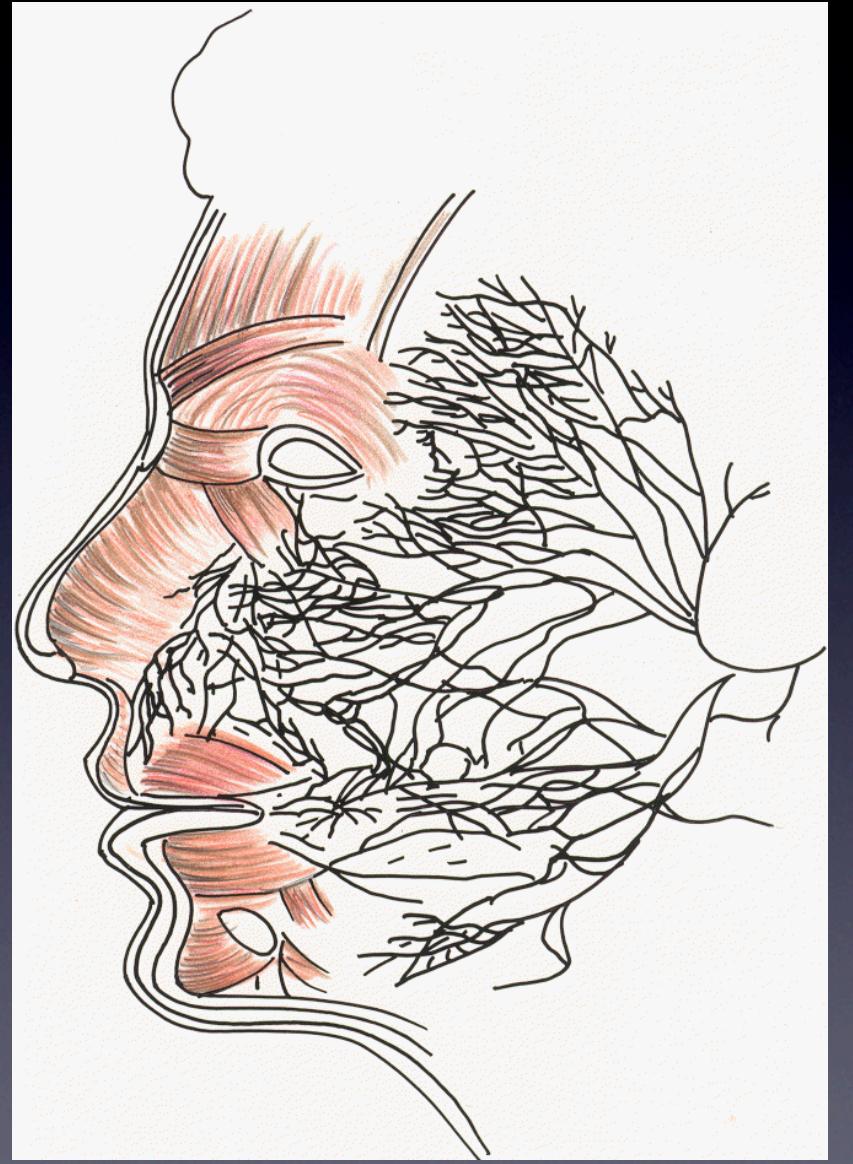
**Dipartimento di Organi di Senso
Università “La Sapienza” di Roma**

Lezione III

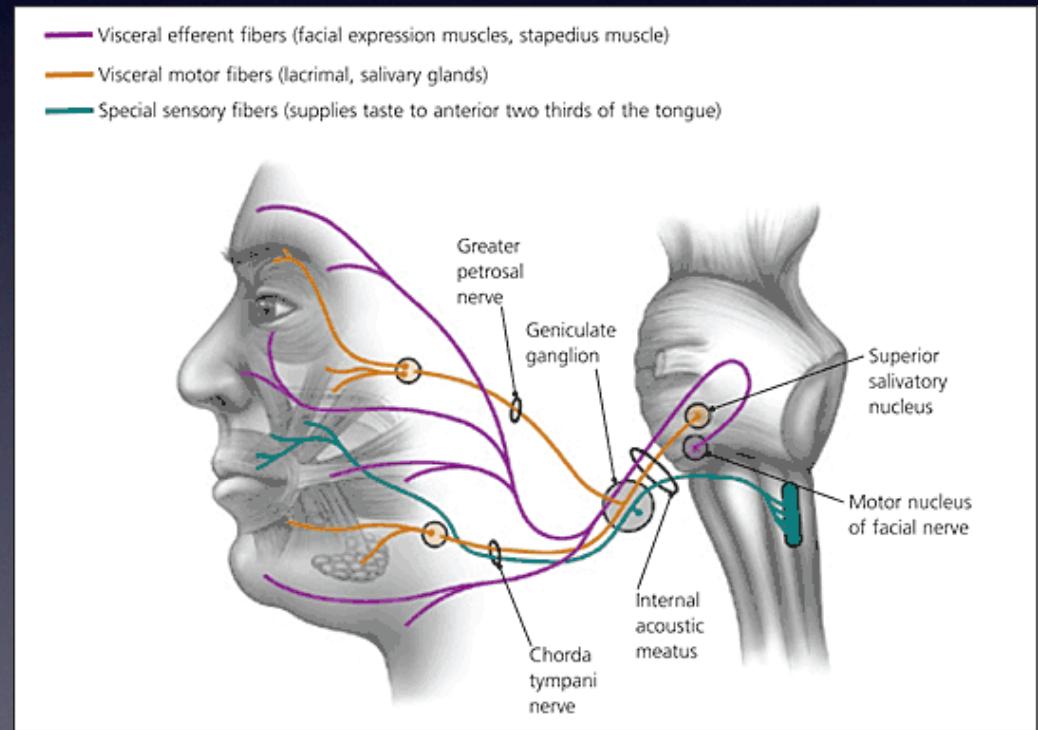
PARALISI DEL FACIALE



Il nervo facciale è il settimo paio di nervi cranici ed è un nervo principalmente motorio.



È composto da circa 7000 fibre nervose ed ha un decorso molto complesso, che lo porta dall'emergenza dal tronco dell'encefalo, fino ai muscoli del volto.

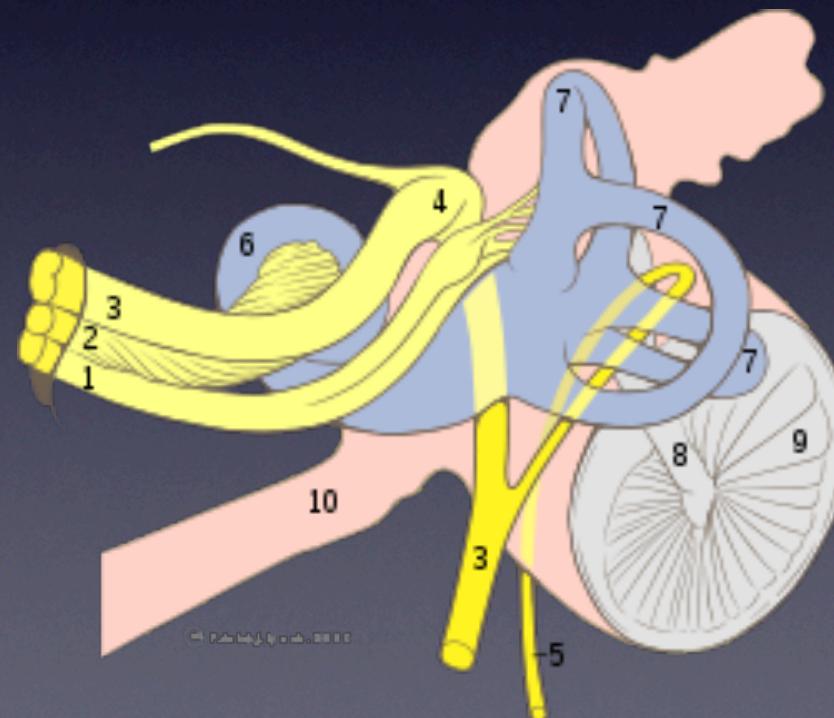


Tale decorso è suddiviso nelle seguenti porzioni:

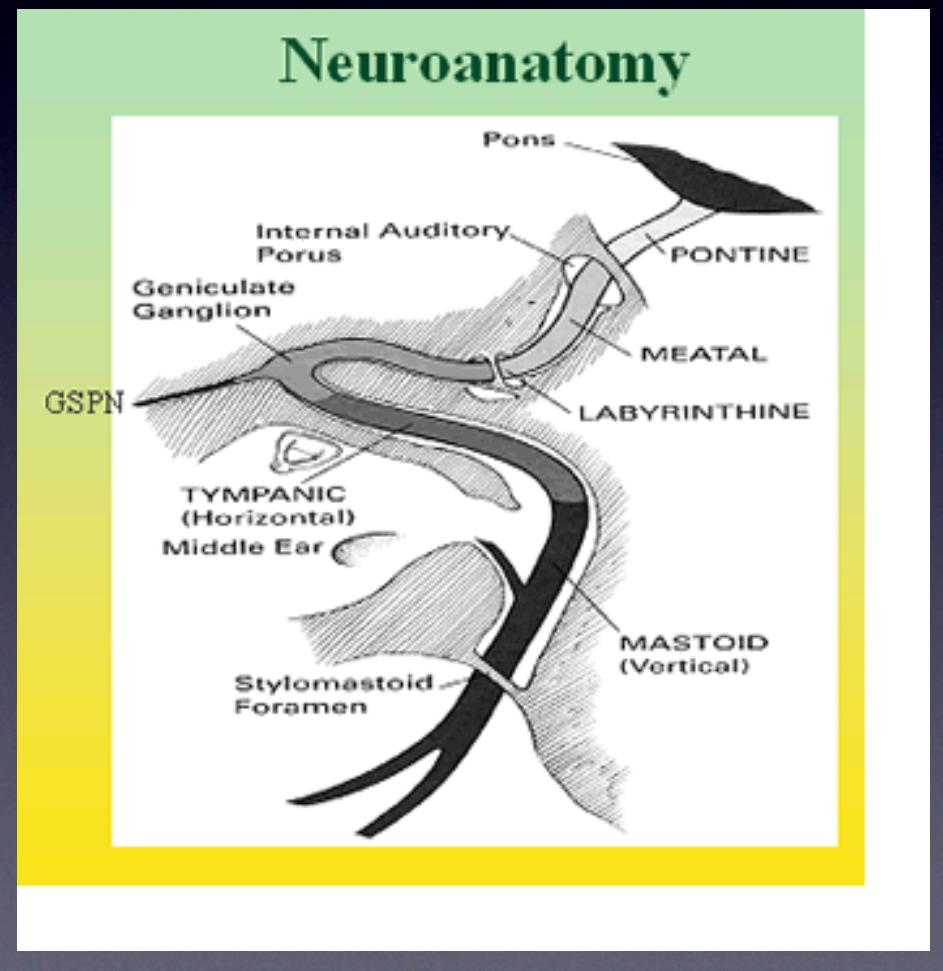
- intracranica;
- intratemporale;
- extracranica.

Nel suo tratto intracranico il nervo decorre dalla superficie del tronco dell'encefalo, da cui origina, fino all'osso temporale. Nella parte terminale di questo tragitto il nervo passa all'interno del condotto uditivo interno.

In questo canale il facciale è in stretta associazione con l'VIII nervo cranico (coleo-vestibolare), attraverso cui raggiungono il cervello le sensazioni uditive e quelle provenienti dal labirinto posteriore.



Il nervo facciale entra nell'osso temporale a livello del fondo del condotto uditivo interno e ne fuoriesce dal forame stilomastoideo, rimanendo sempre all'interno di un canale osseo che lo contiene, canale di Falloppio.



In questo tratto il nervo è suddiviso in 3 ulteriori porzioni (labirintica, timpanica e mastoidea), intervallate da 2 ginocchi. Il tratto extracranico infine inizia a livello del forame stilomastoideo; dopo alcuni centimetri il nervo entra nella ghiandola parotide dove inizia a ramificarsi per poi distribuirsi alla muscolatura dell'emifaccia

Il nervo ha le seguenti funzioni:

- motilità dell'emifaccia;
- controllo della lacrimazione;
- controllo della salivazione;
- sensibilità gustativa dei 2/3 anteriori della lingua;
- sensibilità tattile e dolorifica della conca del padiglione.

Il sintomo più caratteristico di un danno a carico del nervo è costituito da un deficit della funzione motoria, che si evidenzia con:

- segni statici;
- segni dinamici.



DR P. MARAZZI/SCIENCE PHOTO LIBRARY

Asimmetria del viso con:

- spianamento delle rughe della fronte;
- ampliamento della rima palpebrale con impossibilità a chiudere le palpebre (lagoftalmo);
- assenza dell'ammiccamento;
- stiramento della commessura labiale verso il lato sano.

Per evidenziare i segni dinamici si chiede al paziente di eseguire
alcune manovre:

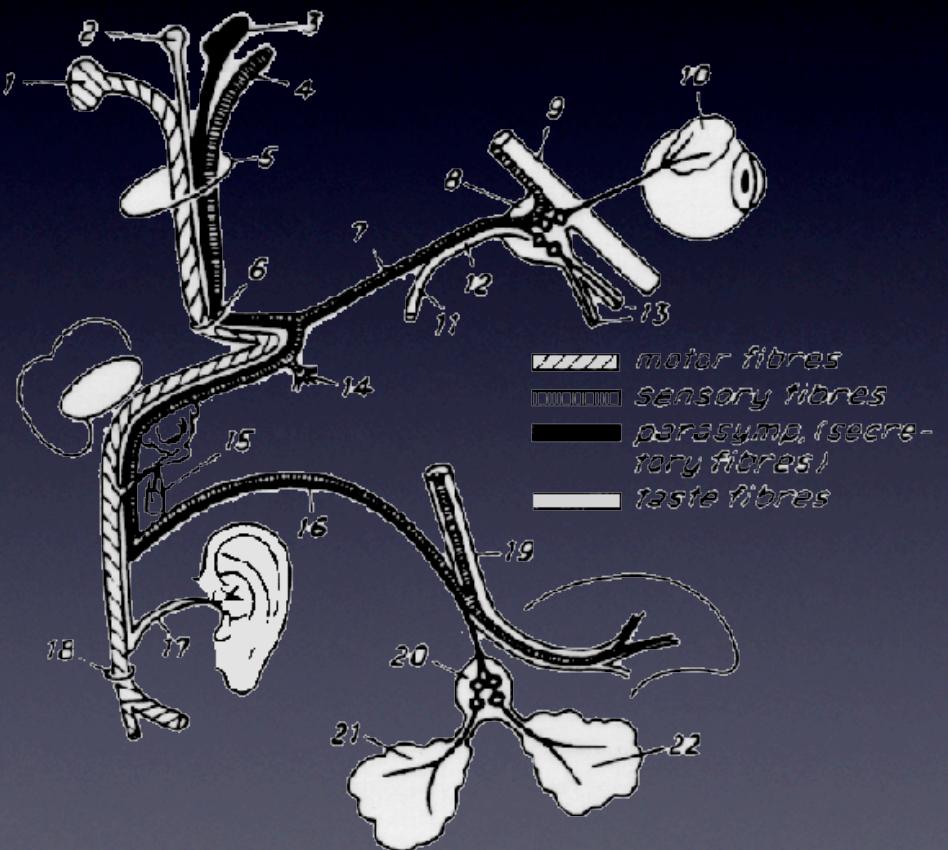
- chiudere gli occhi;
- mostrare i denti;
- aprire la bocca;
- gonfiare le guance.

Diagnosi strumentale

- Otoscopia (ricerca di flogosi in orecchio medio);
 - Elettromiografia;
 - Elettroneuronografia.

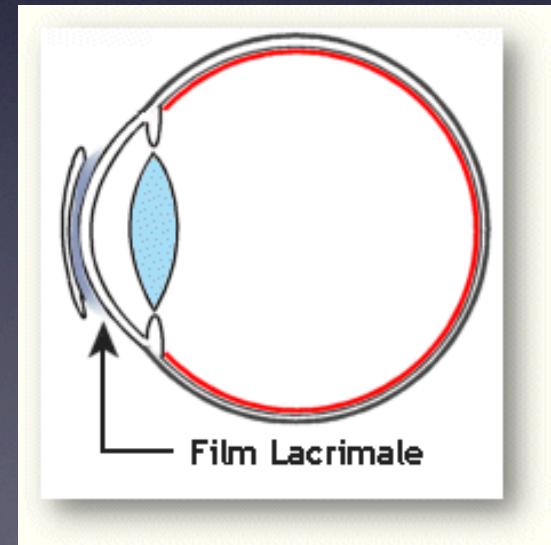
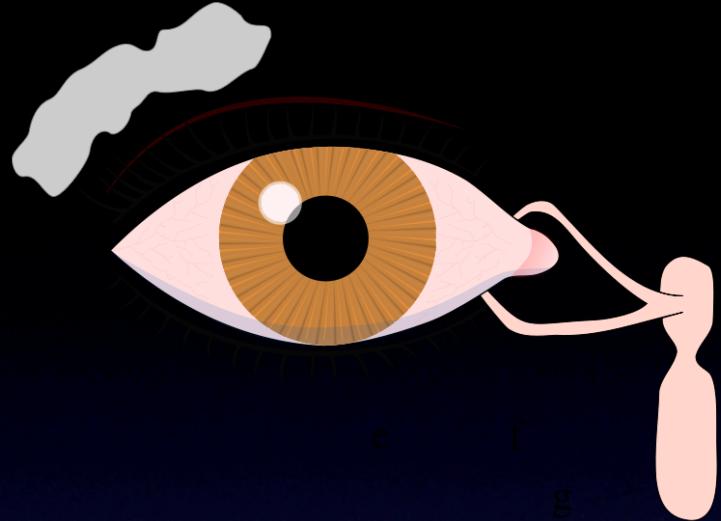
The facial nerve includes nervous fibers for specific reflexes and sensitivity:

1. Lacrimal reflex
2. Stapedial reflex
3. Gustatory sensitivity



LACRIMAL REFLEX

Eyes are protected by tears, continuously produced by the main lacrimal gland, located under the side of the eyebrow, and accessory lacrimal glands, located in the conjunctiva; the lacrimal glands secrete the aqueous layer of the tear film.



LACRIMAL REFLEX

Reflected secretion can be due to a peripheral stimuli involving cornea, conjunctiva, skin, nasal and oral mucosa, to a central stimuli involving retina or to an emotional stimuli.

The specific stimuli induces the rupture of the tear film that triggers the reflected secretion.

The lacrimal reflex arc involves the lacrimal nerve (V cranial nerve, sensory, afferent pathway) and the great superficial petrosal nerve (VII cranial nerve, secretory, efferent pathway).

LACRIMAL REFLEX

The parasympathetic fibers leave the lacrimal nucleus through the VII cranial nerve (facial nerve), passing in the internal auditory meatus and then cross the geniculate ganglion and emerge from the middle cranial fossa as Greater superficial petrosal nerve.

Parasympathetic stimulation induces a depolarization of secretory cells resulting in degranulation and constriction of the ducts .



LACRIMAL REFLEX

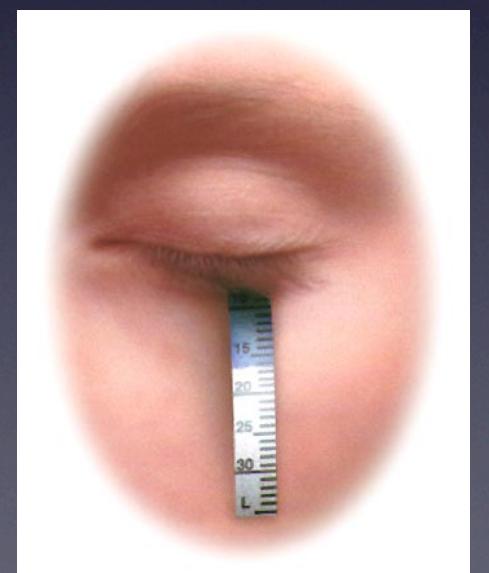
Schirmer test is the most widely used technique to study the lacrimal secretion, and in particular to verify the functionality of the lacrimal gland.

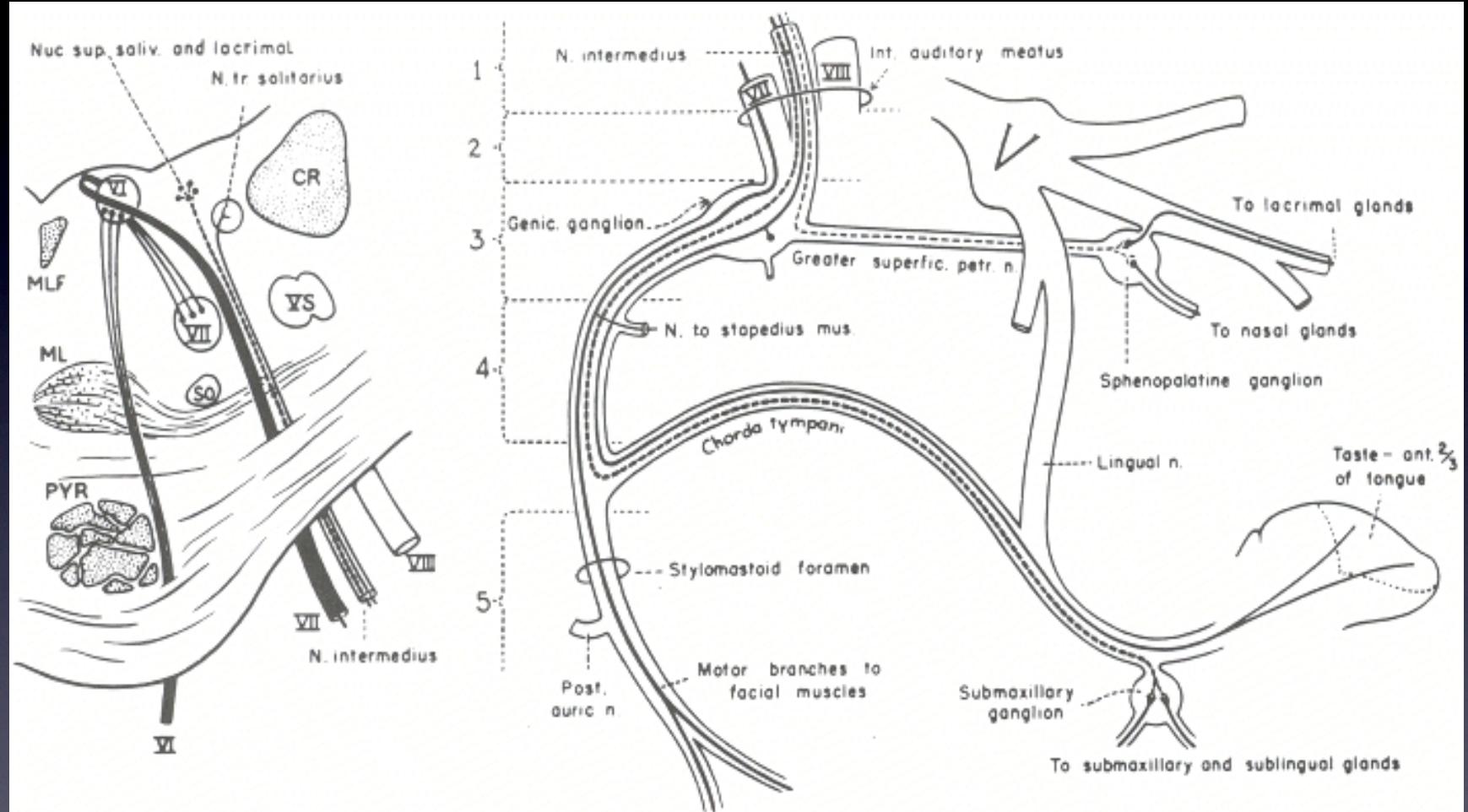


LACRIMAL REFLEX

The Schirmer test is performed by introducing the rounded end of a strip of tissue paper (5 mm x 35 mm) between the middle third and the nasal third of the lower eyelid margin.

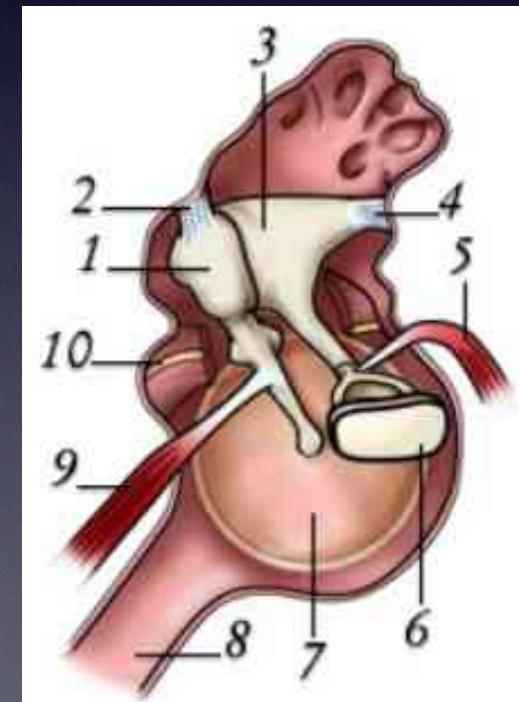
After 5 minutes the strip is removed; lacrimal secretion can be measured using the length of the moistened area.





STAPEDIAL REFLEX

A sound stimulus at the level of discomfort can stimulate a contraction of the stapedial muscle, an involuntary striated muscle, innervated by the stapedial nerve.



STAPEDIAL REFLEX

The stapedial reflex depends on the activation of reflected stapedial-cochlear arc.

This includes the VIII nerve, the Medulla oblongata and Pons nuclei of acoustic nerve, the neurogenic correlations between the acoustic nuclei, the superior olive complex and the facial nuclei; thus there is the facial nerve with its branches for the stapedial muscle.

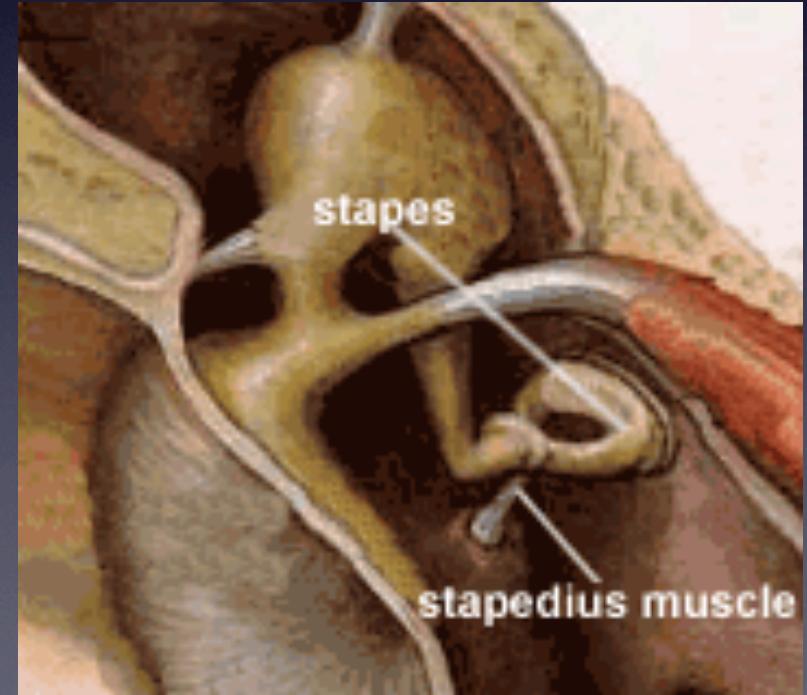
STAPEDIAL REFLEX

Stapedius nerve

The stapedius nerve emerges from a pinpoint foramen in the apex of the pyramidal eminence (a hollow, cone-shaped prominence in the posterior wall of the tympanic cavity), and inserts into the neck of the stapes.

STAPEDIAL REFLEX

The stapedius muscle pulls the stapes away from the oval window . The reflex decreases the transmission of vibrational energy to the cochlea .



STAPEDIAL REFLEX

Examen of the stapedial reflex

A typical setup to measure the stapedial reflex is a tympanometer having a method of delivering both a sound to either ear as well as measuring the admittance of the tympanic membrane.



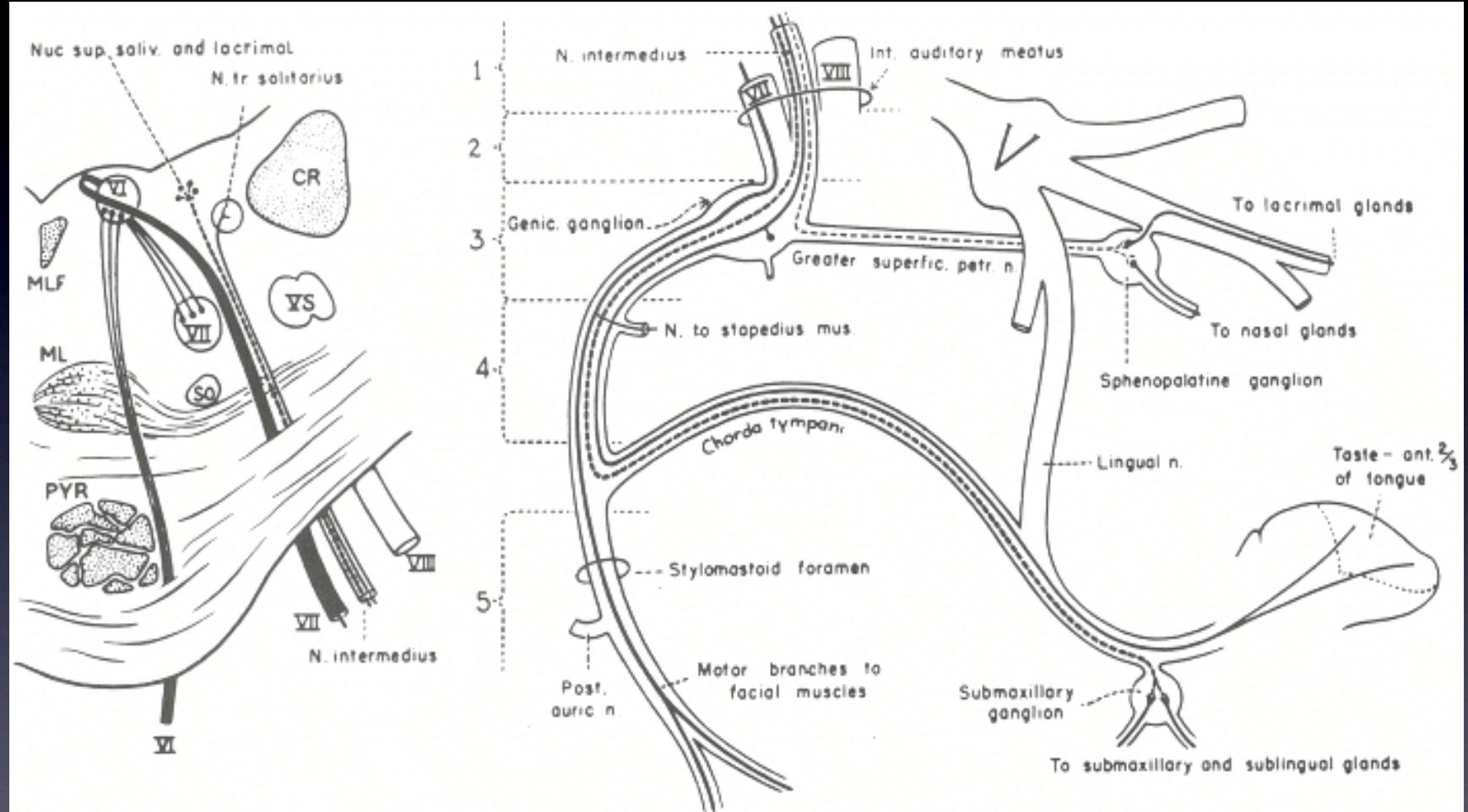
STAPEDIAL REFLEX

Reflexes may be elicited at 500, 1000 and 2000 Hz, using 110 db HL. The amplitude of the reflex, latency, and timing (sustained or rapidly decaying) can be quantified.

Typical reflex latencies in normal subjects are 107 msec, ranging from 40-180.

A normal hearing subject needs a 70-90 dB sound to produce a stapedial reflex.





GUSTATORY SENSITIVITY

The gustatory sensitivity provides information about some characteristics of chemical substances that come into contact with mucous membranes of the oropharynx.

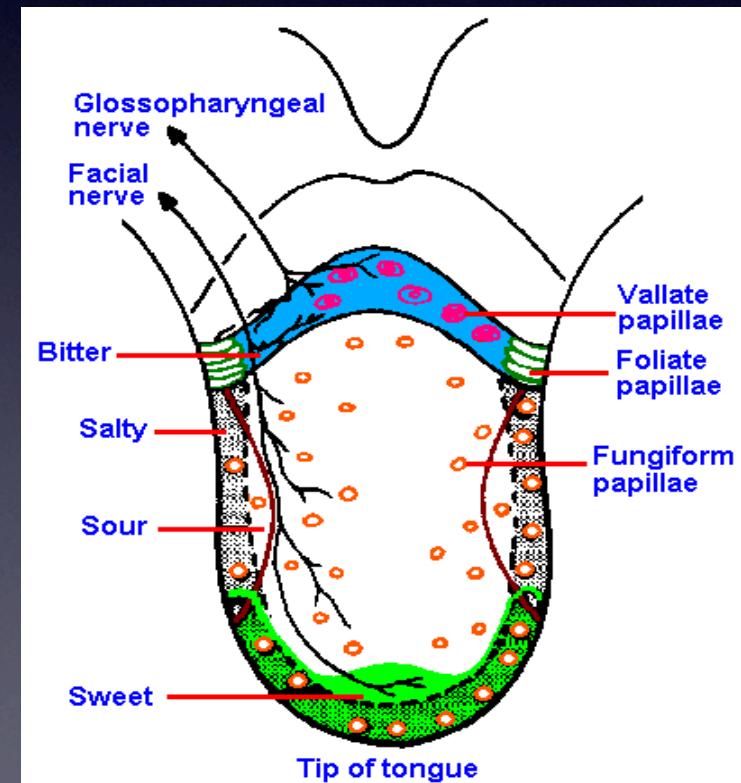
Taste receptors (gustatory primary cells) interact with molecules that are dissolved in saliva and convert chemical signals into nervous signals.

GUSTATORY SENSITIVITY

Taste depends on the composition of the substance.

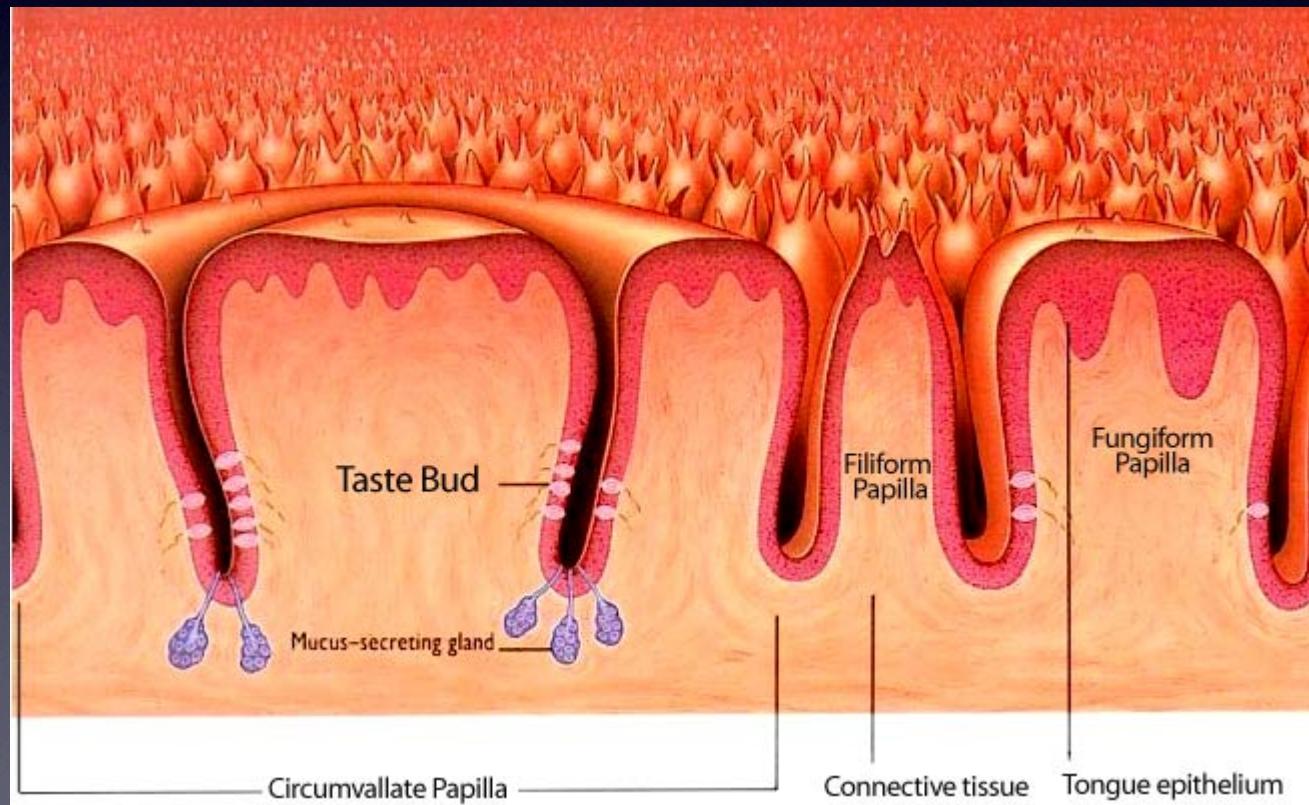
It is estimated that several hundred flavors can be perceived combining primary qualities:

- Sweet
- Salty Salato
- Bitter Amaro
- Sour Acidò



GUSTATORY SENSITIVITY

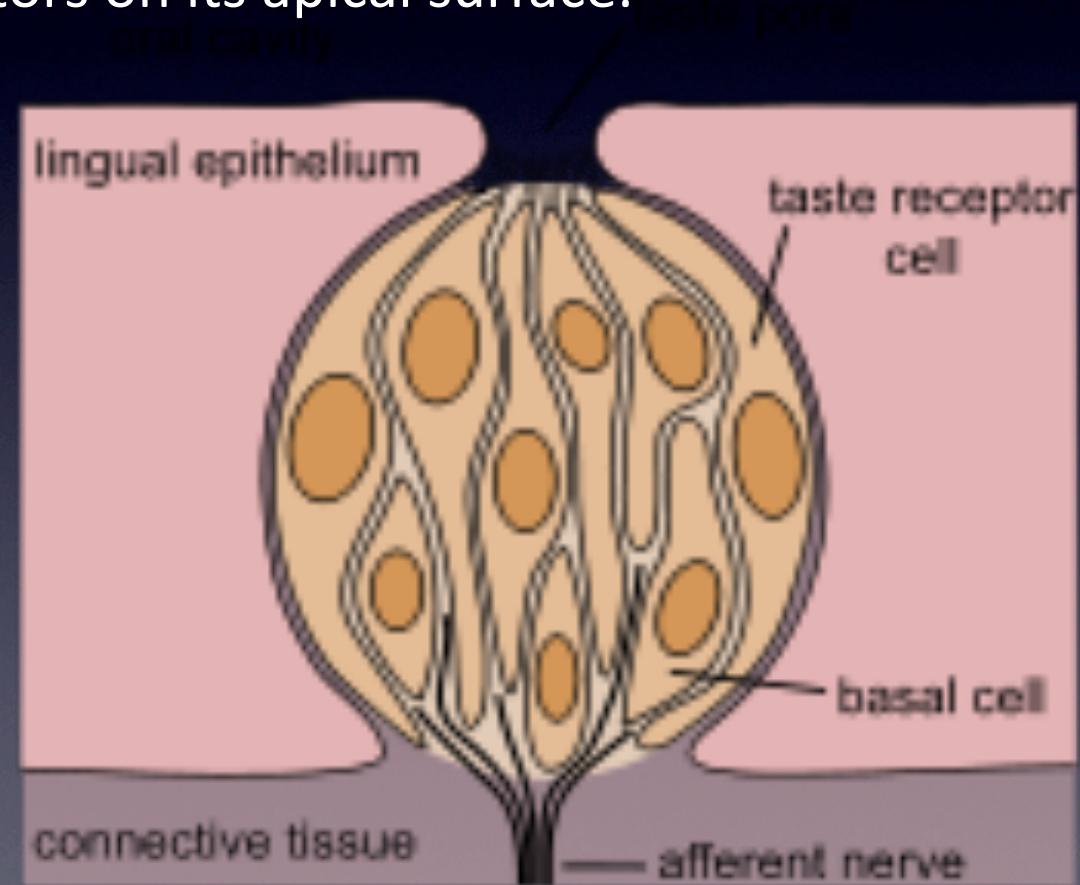
Taste receptors are specialized epithelial cells organized in structures called taste buds (boccioli) .



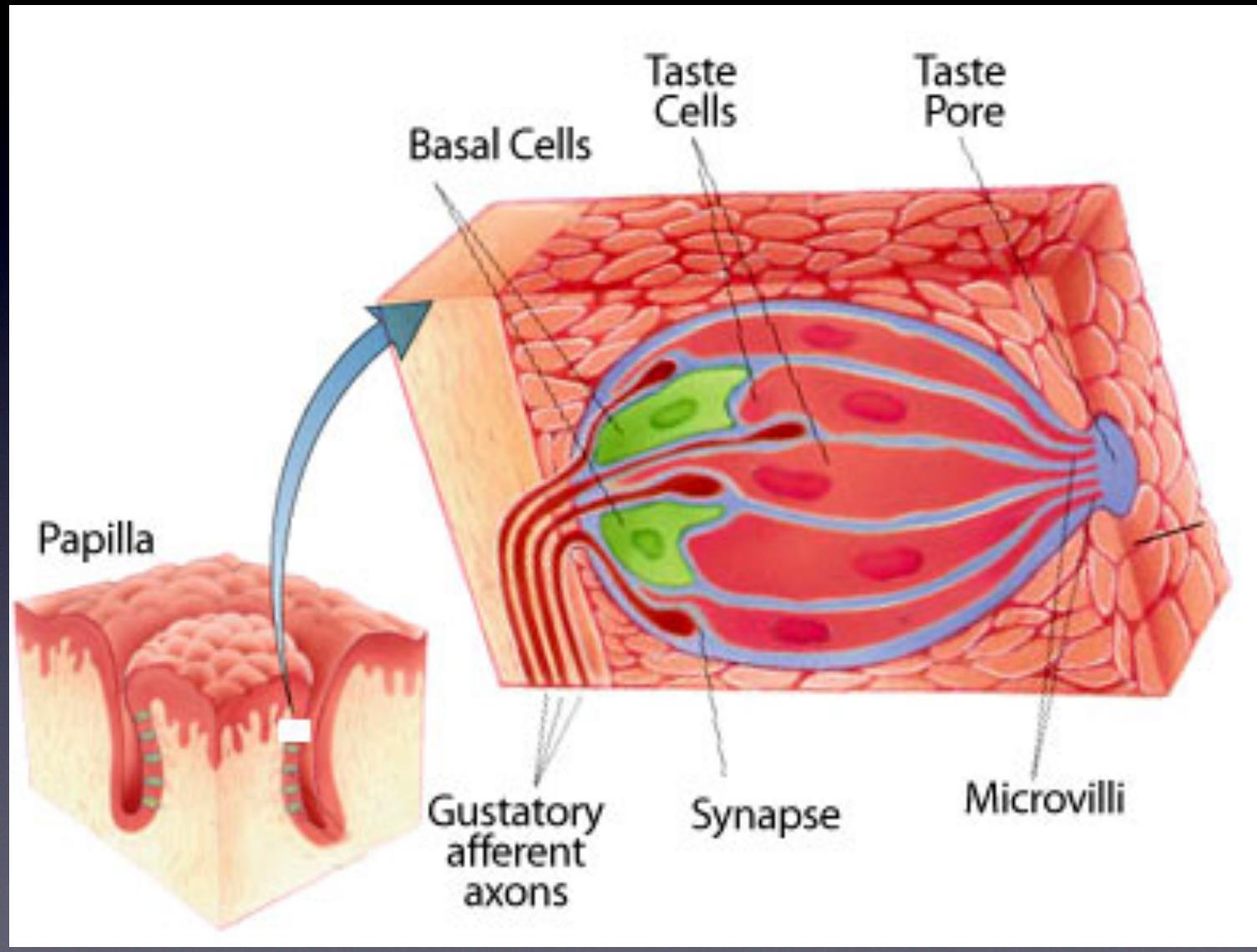
GUSTATORY SENSITIVITY

A single taste bud contains 50–100 taste cells representing all taste sensations.

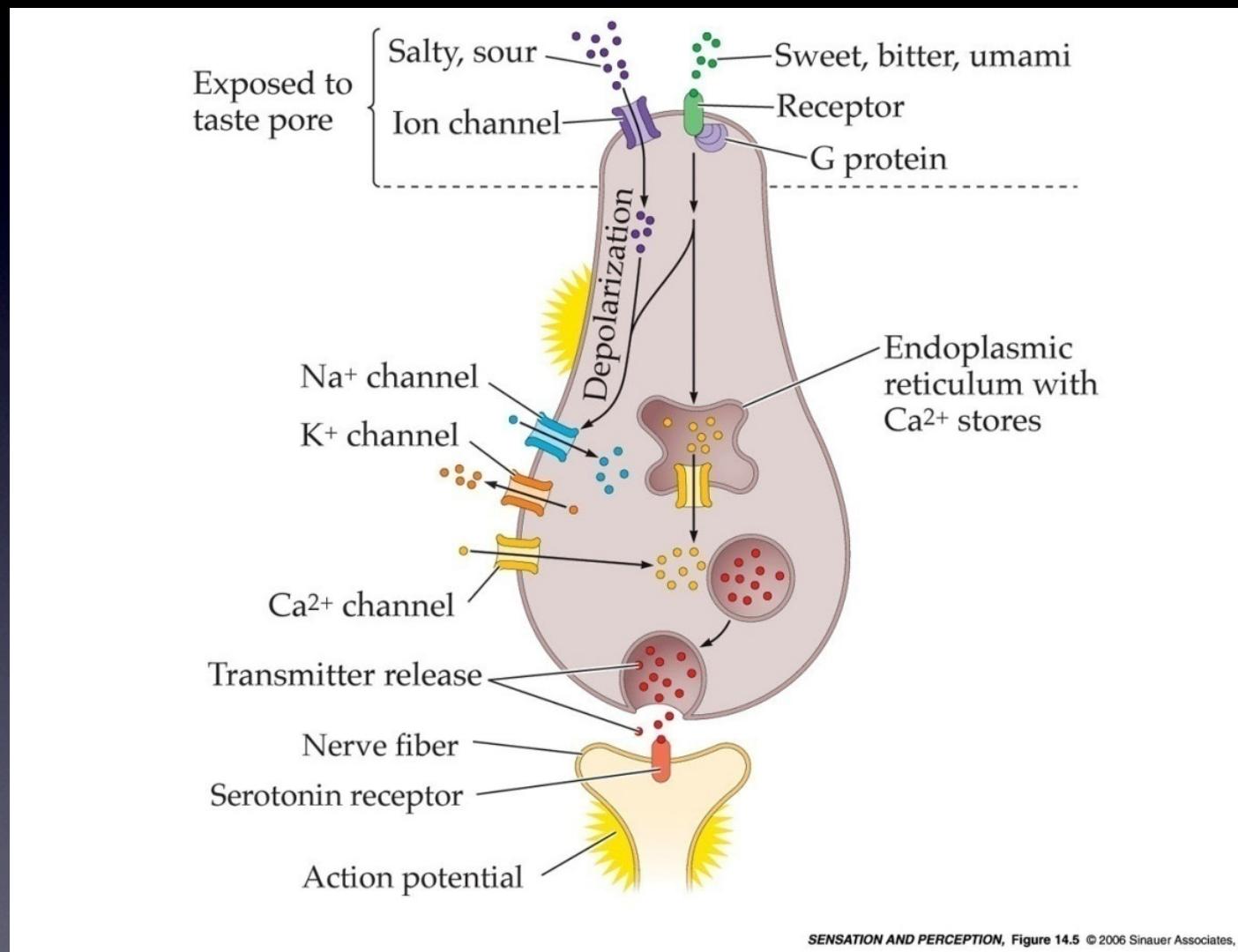
Each taste cell has receptors on its apical surface.



GUSTATORY SENSITIVITY



GUSTATORY SENSITIVITY

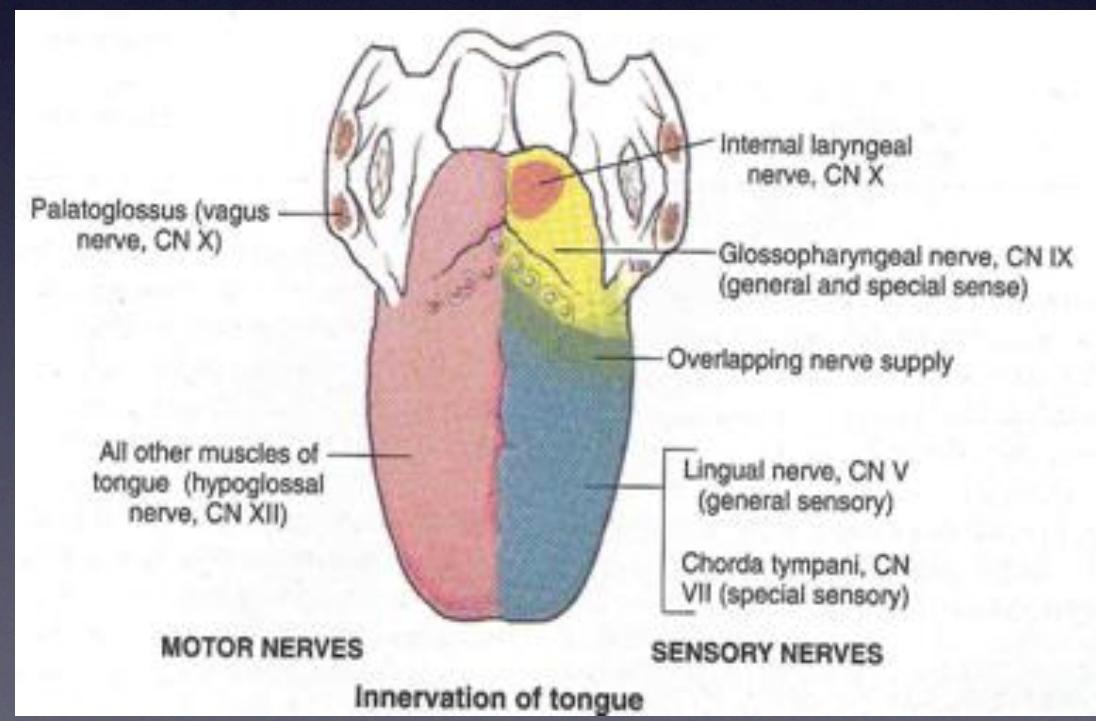


GUSTATORY SENSITIVITY

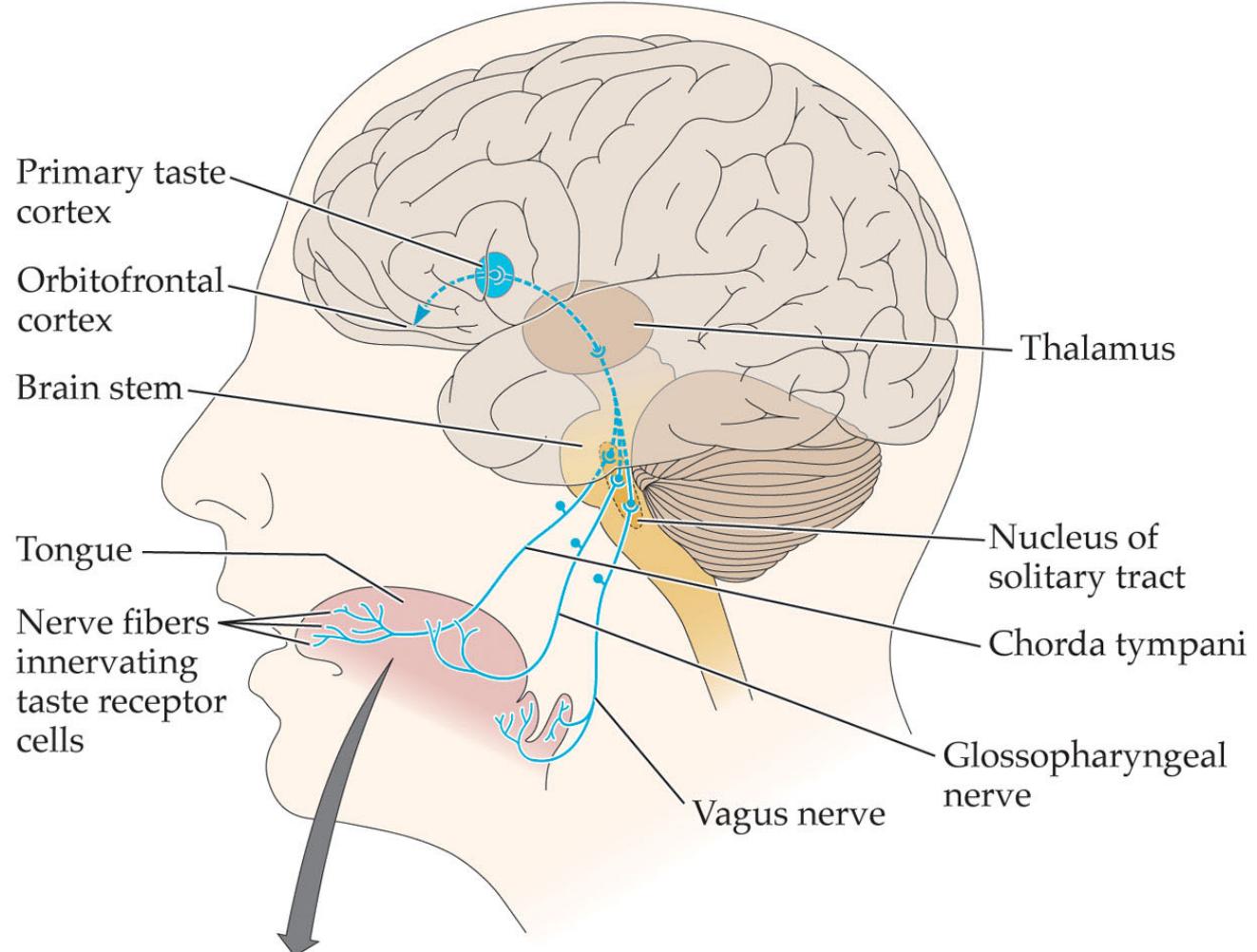
However, a single sensory neuron can be connected to several taste cells in each of several different taste buds.

GUSTATORY SENSITIVITY

The stimuli from the receptors are carried by the Chorda Tympani (VII), the Glossopharyngeal nerve (IX) and Vagus nerve (X) to the Medulla oblongata, in the Nucleus of solitary tract.



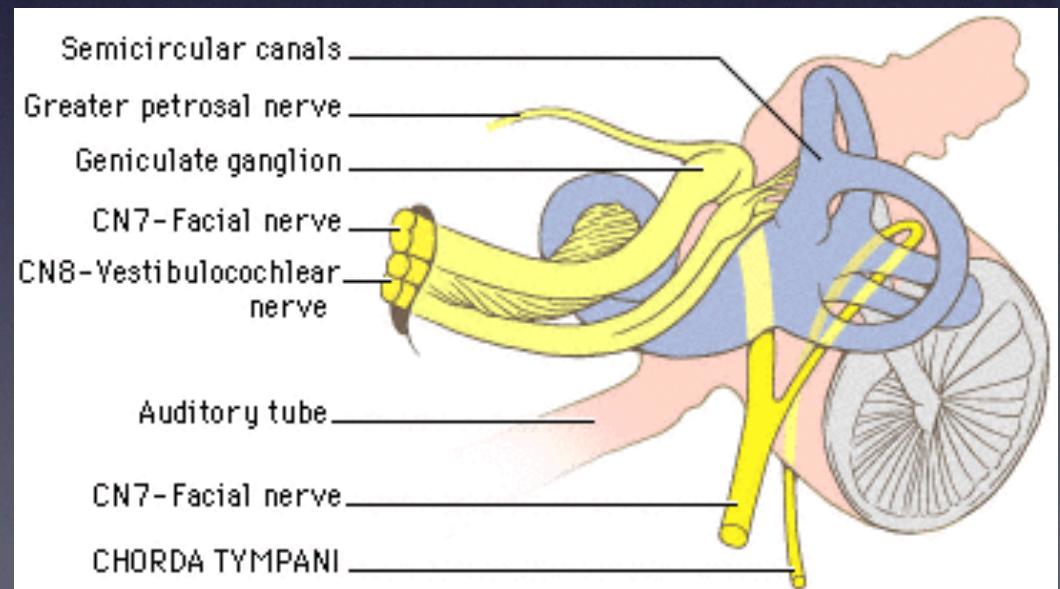
GUSTATORY SENSITIVITY



GUSTATORY SENSITIVITY

Chorda tympani

The Chorda Tympani is a nerve that branches from the facial nerve inside the facial canal, just before the facial nerve exits the skull via the stylomastoid foramen.



GUSTATORY SENSITIVITY

Electrogustometry

It's the measurement of taste threshold by passing controlled anodal current through the tongue.

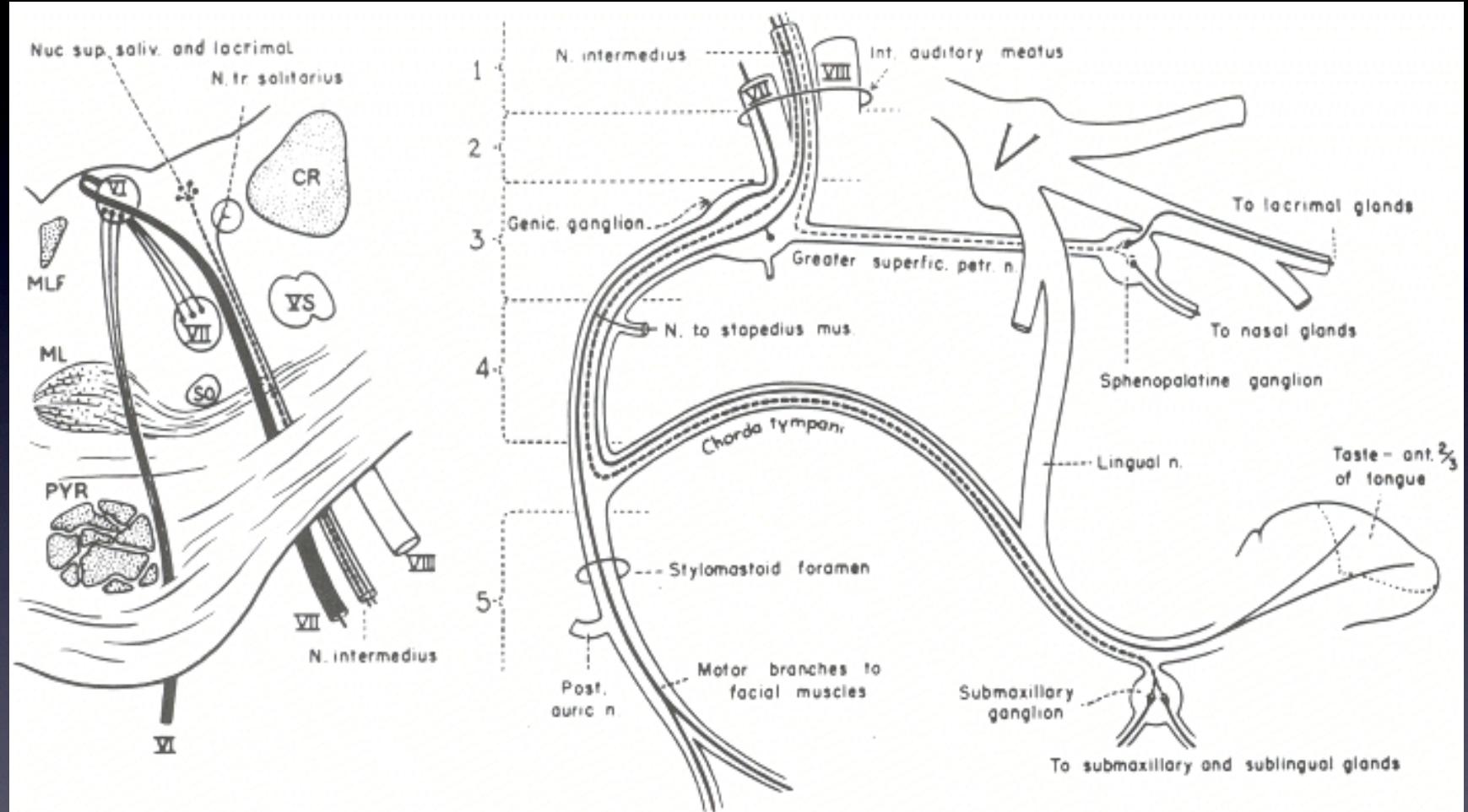
When current passes through the tongue a unique and distinct metallic taste is perceived.

The evoked gustative sensation doesn't refer to sapid substances but is described as a metallic sensation.

GUSTATORY SENSITIVITY

The electrogustometer was equipped with a stainless steel, flat, circular stimulus rod (5 mm in diameter) and a larger indifferent electrode (a neck band).





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Lezione III

PARALISI DEL FACIALE

