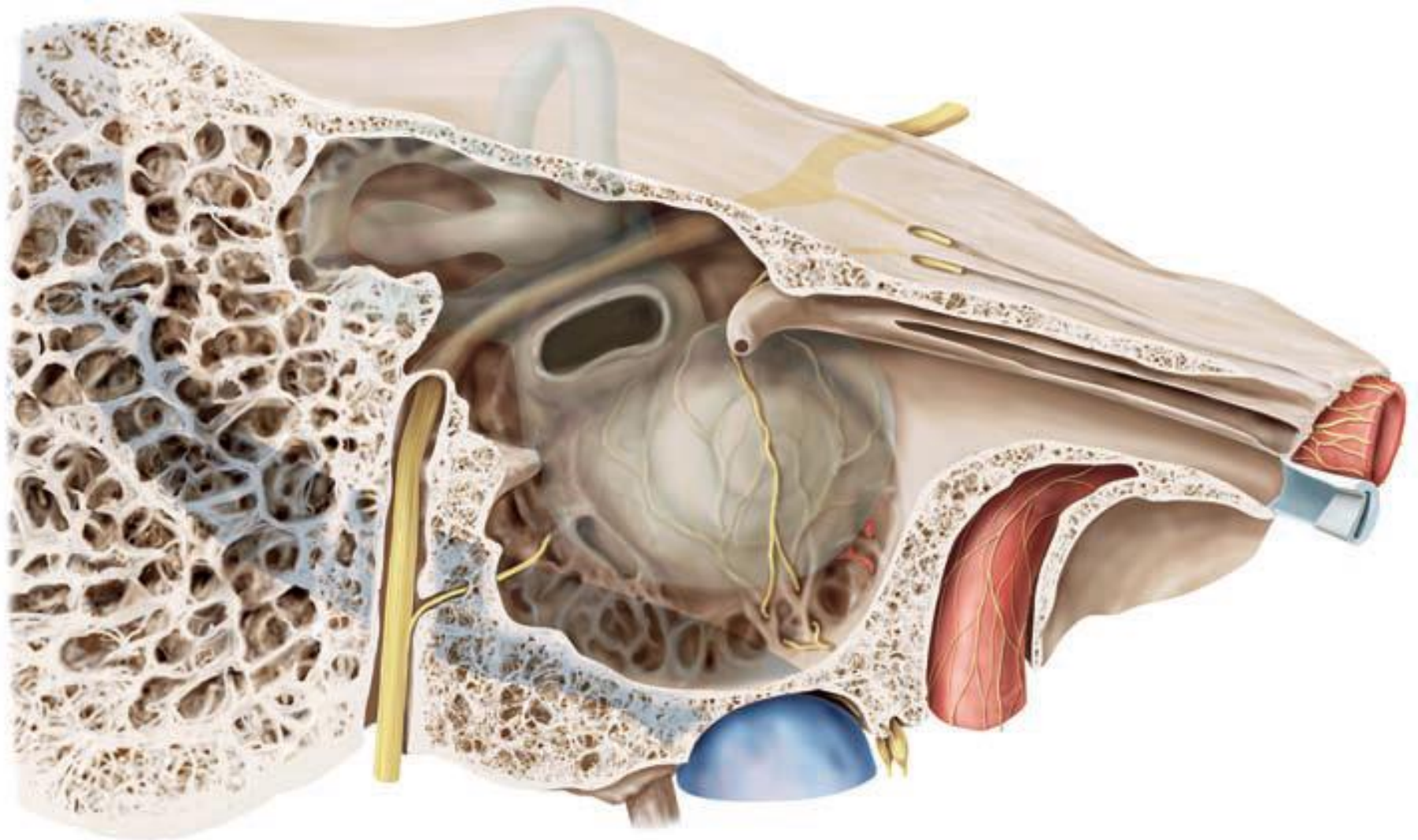


Temporal bone and ear



Os temporale

♦ Pars squamosa

- ♦ Squama
- ♦ Processus zygomaticus
- ♦ Fossa mandibulae

♦ Pars petrosa

- ♦ Processus mastoideus
- ♦ Processus styloideus
- ♦ Pyramis
- ♦ Canalis caroticus
- ♦ Meatus acusticus internus

♦ Pars tympanica

- ♦ Meatus acusticus externus



Os temporale

♦ Pars squamosa

- ♦ Squama
- ♦ Processus zygomaticus
- ♦ Fossa mandibulae

♦ Pars petrosa

- ♦ Processus mastoideus
- ♦ Processus styloideus
- ♦ Pyramis
- ♦ Canalis caroticus
- ♦ Meatus acusticus internus

♦ Pars tympanica

- ♦ Meatus acusticus externus



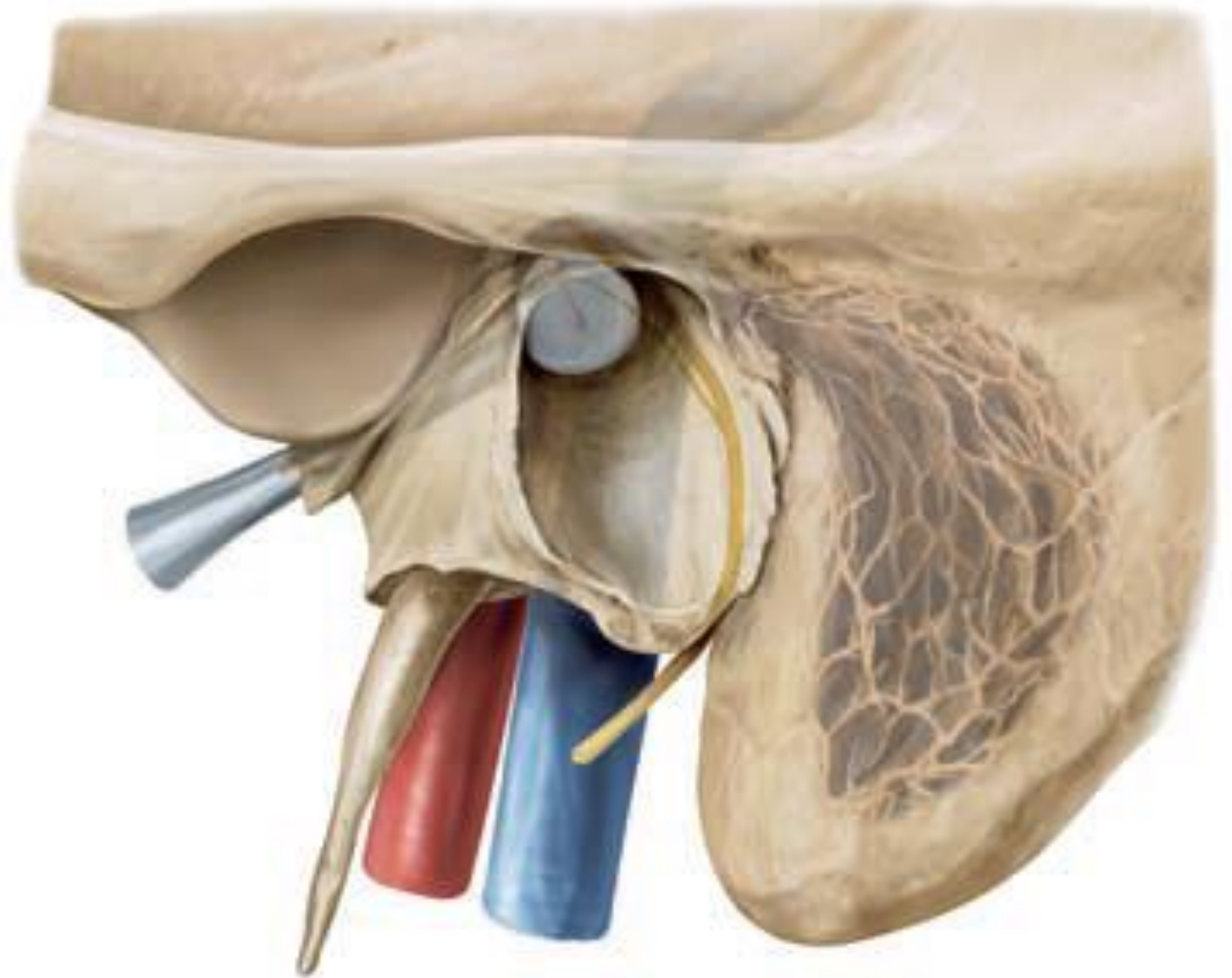
Os temporale

- ♦ **Canalis caroticus**
- ♦ **Meatus acusticus internus**
- ♦ **Meatus acusticus externus**
- ♦ **Foramen stylomastoideum**
- ♦ **Impresio sinus sigmoidei - fossa jugularis**

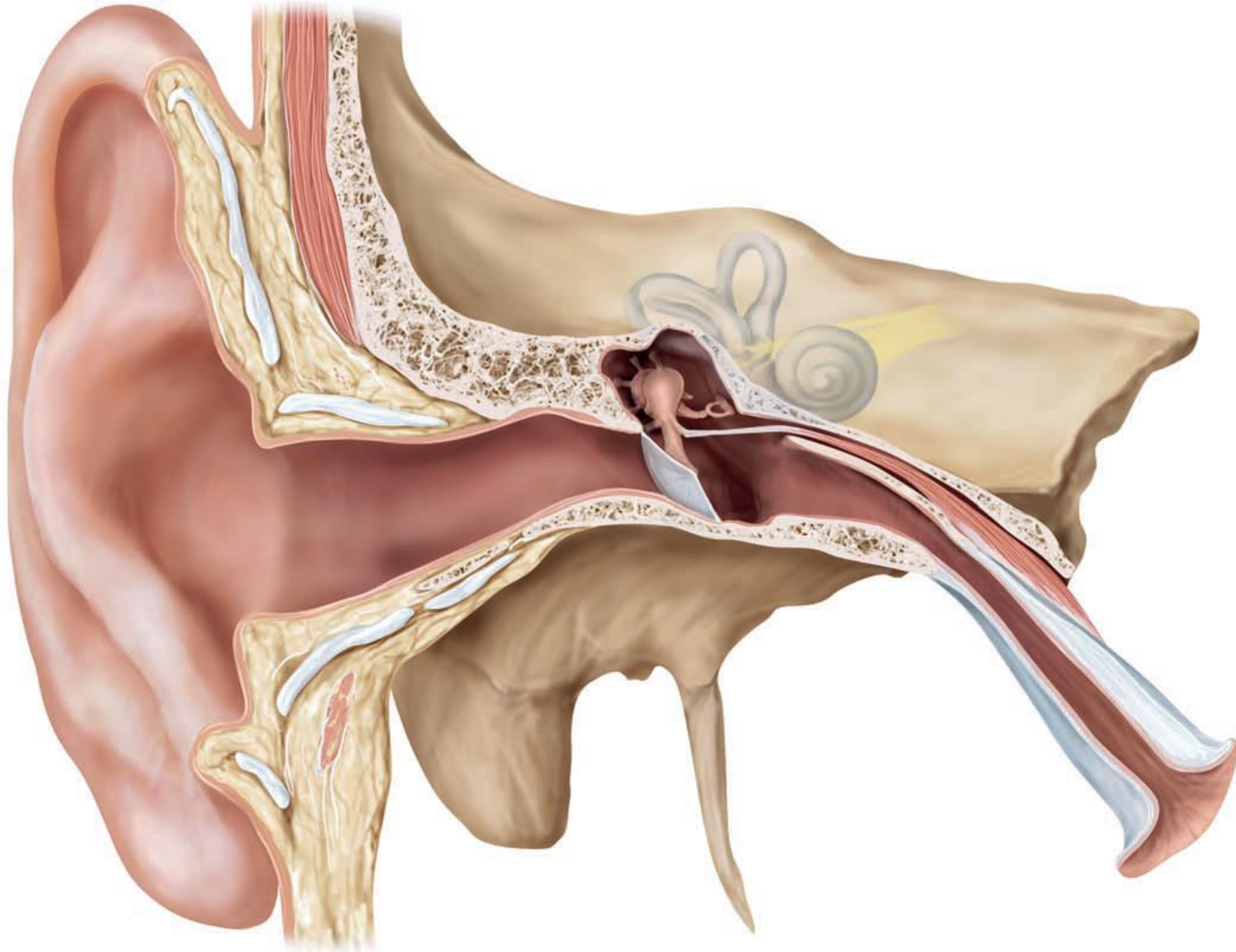


Os temporale

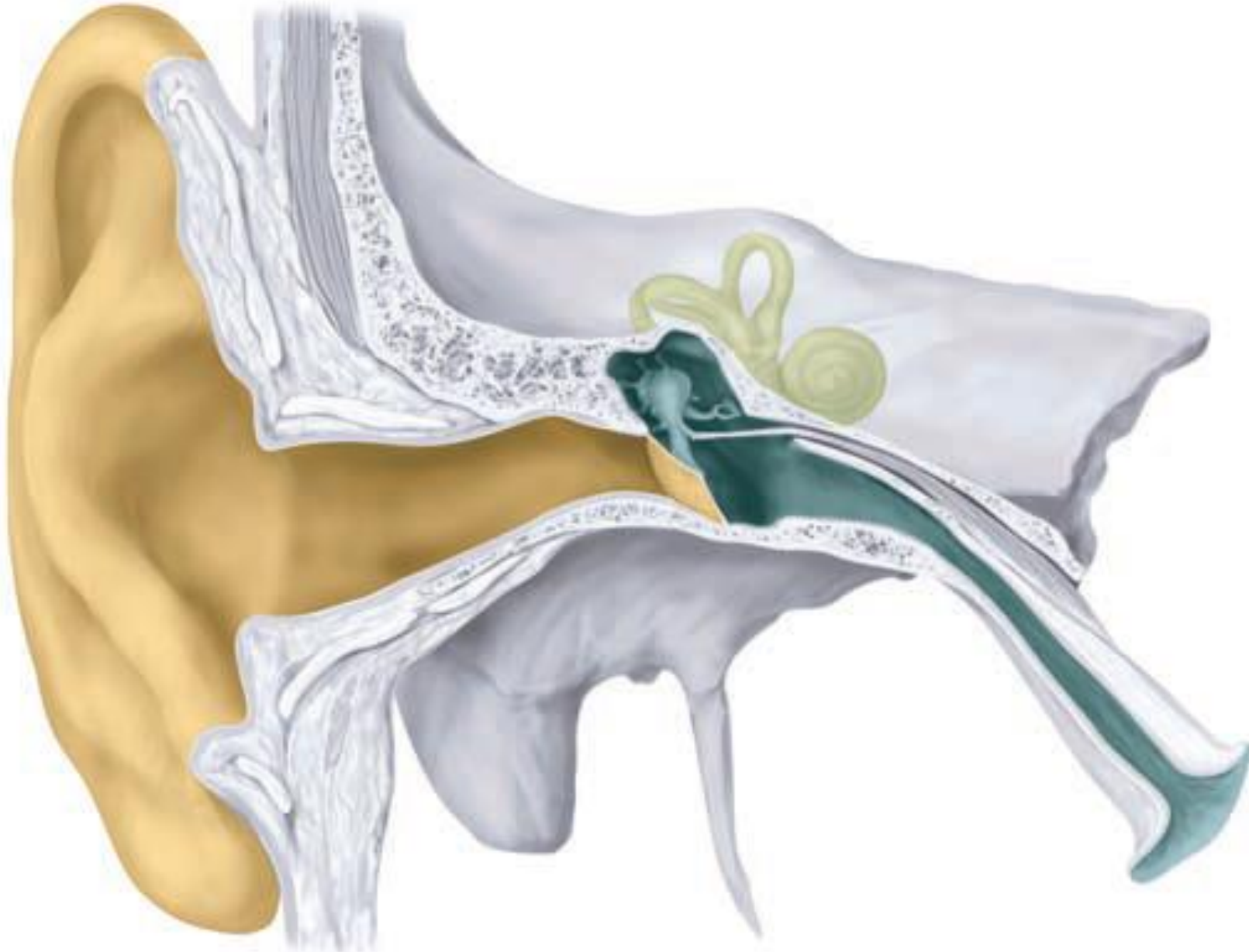
- Nervus facialis VII
 - A. carotis interna
 - V. jugularis - sinus sigmoideus
 - Tuba pharyngotympanica
 - Membrana tympani
 - Cellulae mastoideae
-
- Processus styloideus
 - Processus mastoideus
 - Arcus zygomaticus
 - Art. temporomandibularis



auris - ear - ucho

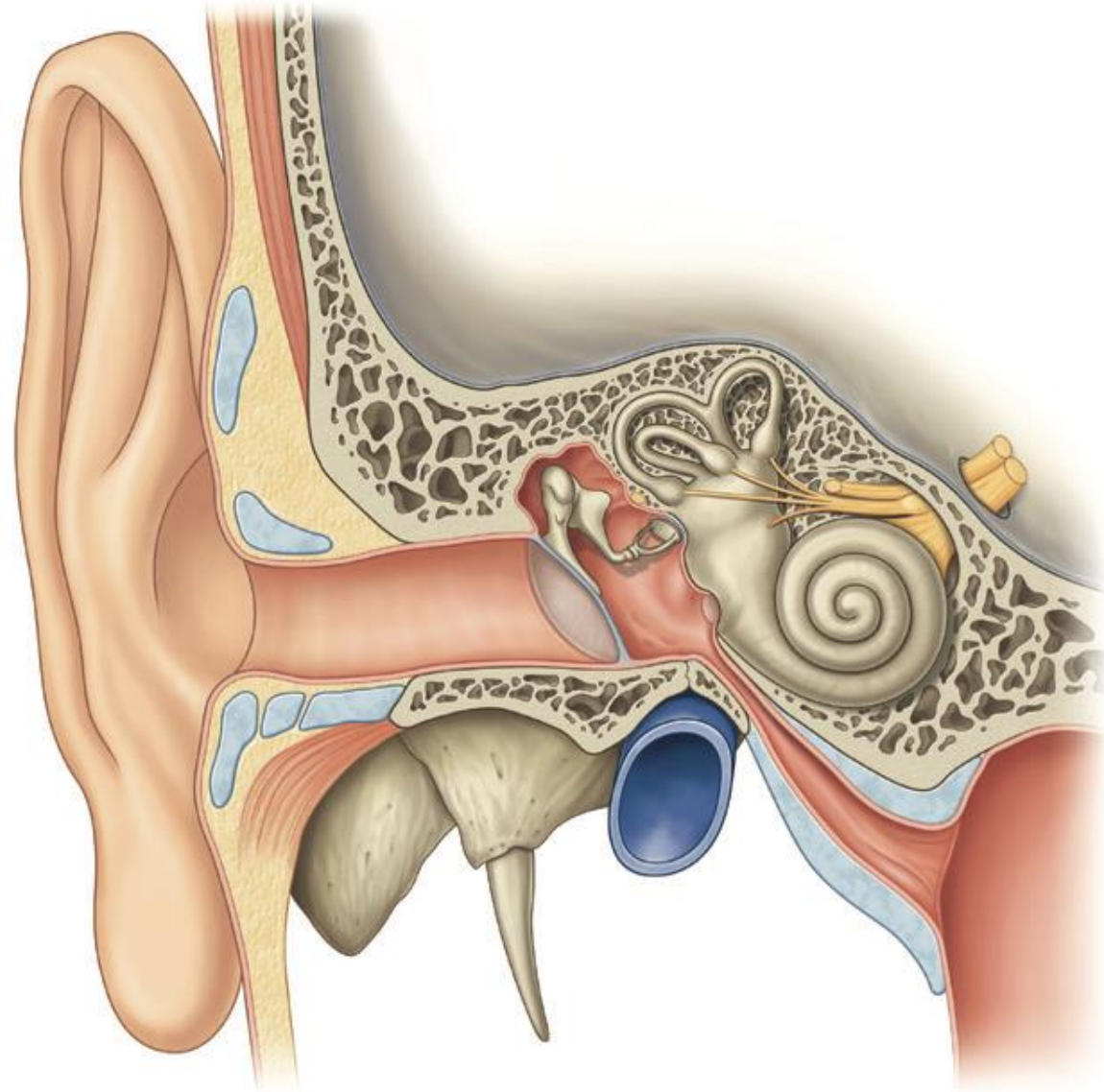


auris - ear - ucho



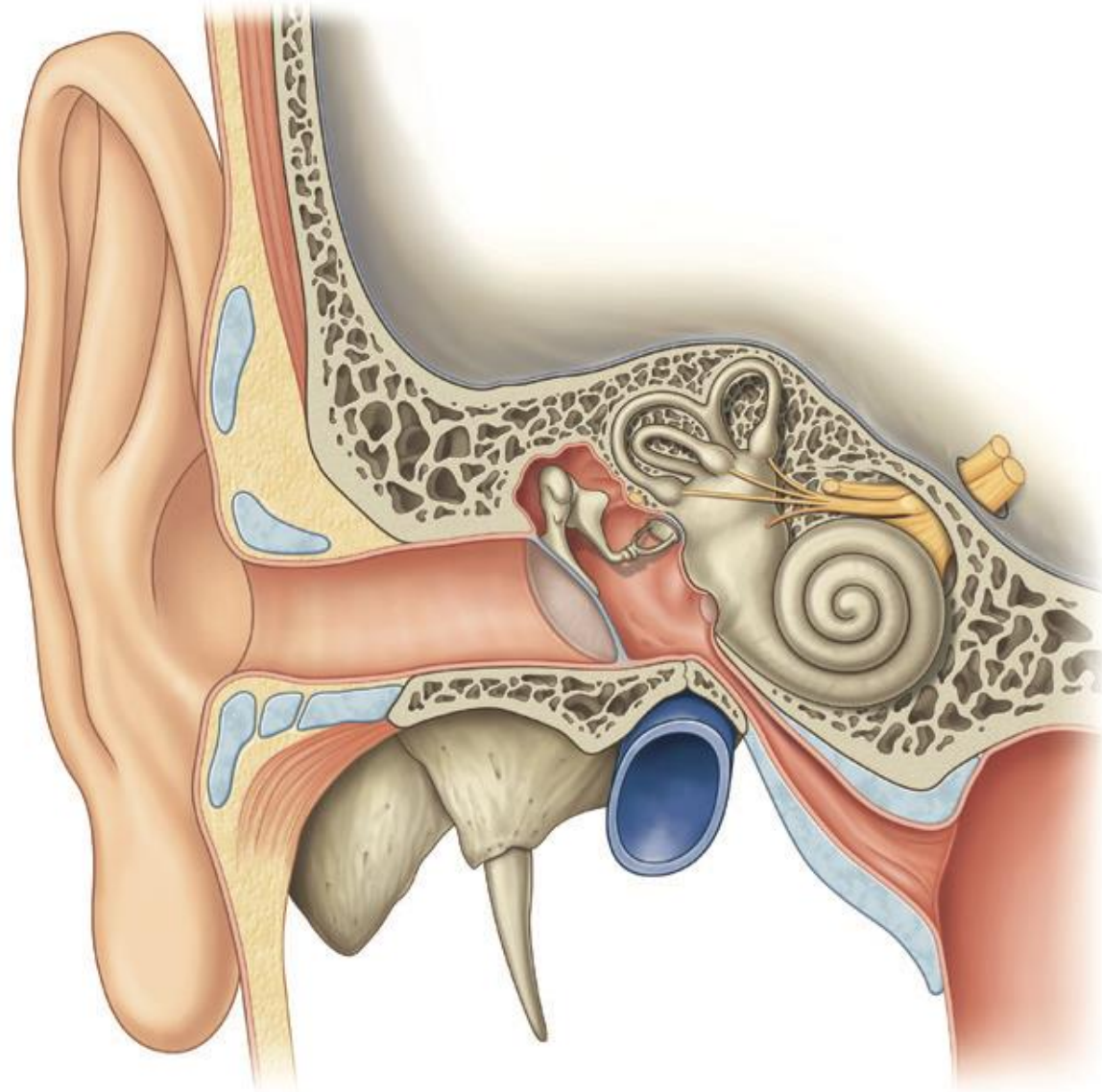
Organum vestibulocochleare

- ♦ Auricula
- ♦ Meatus eacusticus externus
- ♦ Cavum tympani
- ♦ Labyrinth
- ♦ Cochlea
- ♦ N. statoacusticus
- ♦ Ncc. cochleares
- ♦ Ncc. vestibulares



Organum vestibulocochleare

- ♦ Auricula
- ♦ Meatus eacusticus externus
- ♦ Cavum tympani
- ♦ Labyrinth
- ♦ Cochlea
- ♦ N. statoacusticus
- ♦ Ncc. cochleares
- ♦ Ncc. vestibulares

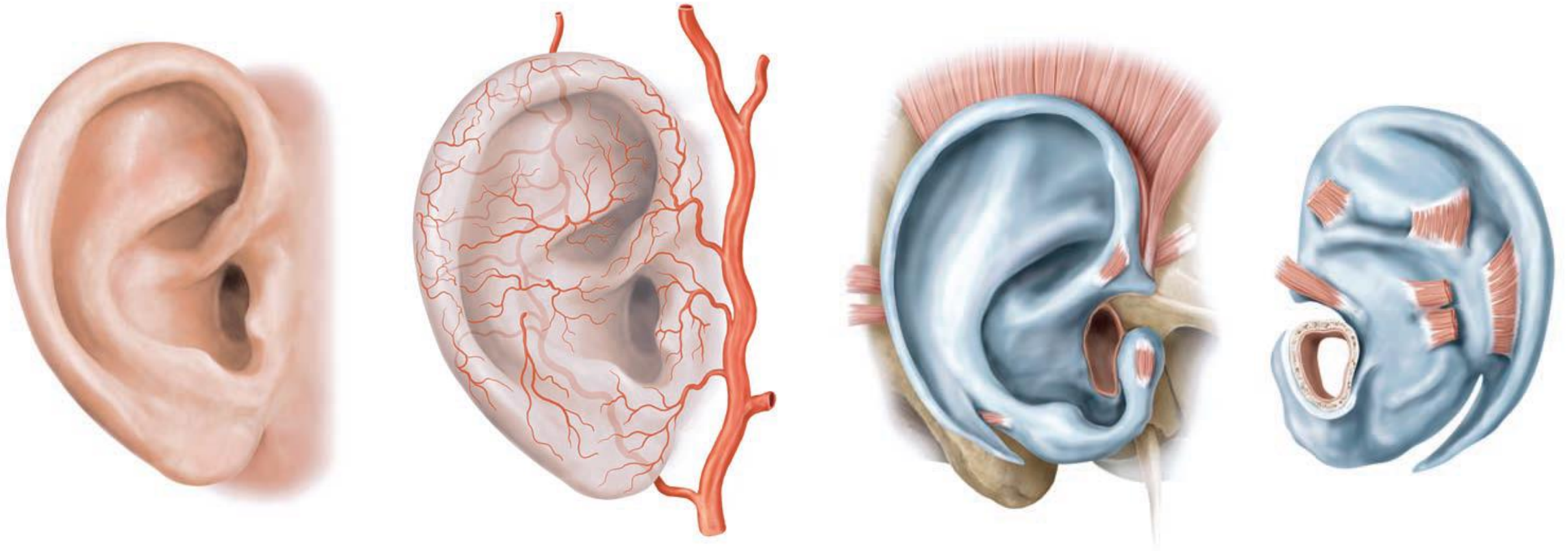


Auricula

- **Helix**
- **Antihelix**
- **Tragus**
- **Antitragus**
- **Concha**
- **Lobulus**
- **Meatus acusticus externus**

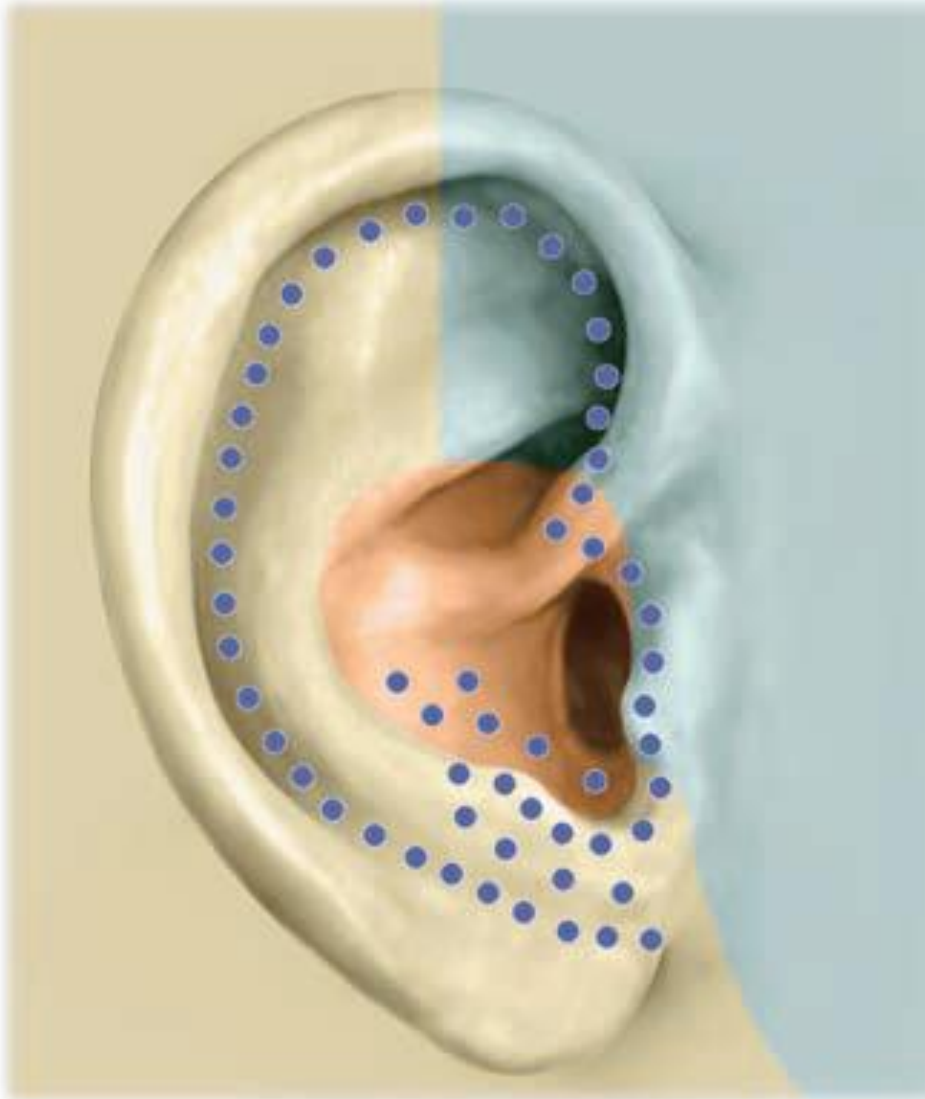


Auricula



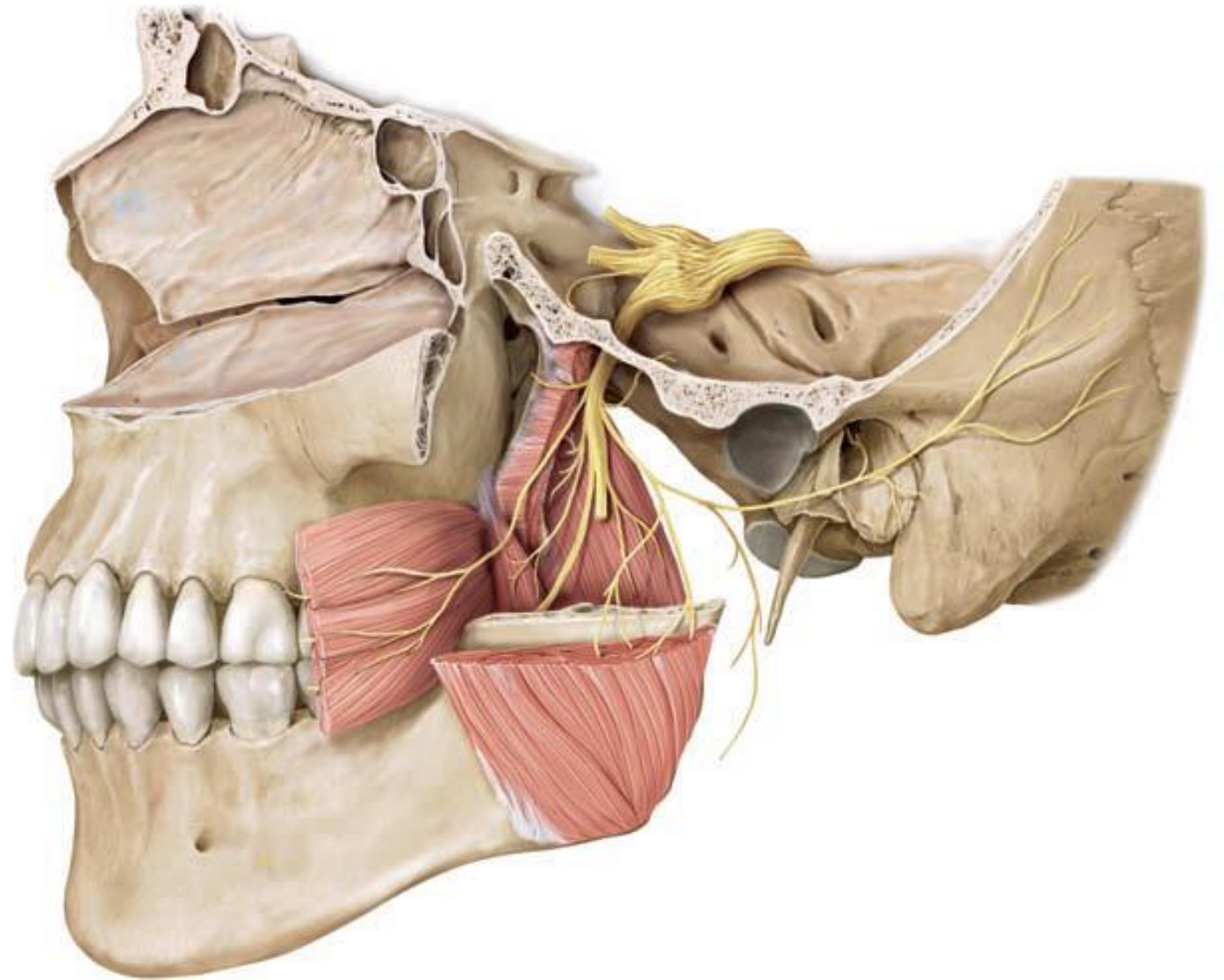
Auricula

- ♦ N. auriculotemporalis (V3)
- ♦ N. occipitalis minor (C2)
- ♦ N. auricularis major (C2,3)
- ♦ N. facialis (VII)
- ♦ N. vagus (X)



n. auriculotemporalis

🔴 Meatus acusticus internus



Vasa et nodi lymphatici auris

- ♦ **Pars posterior**

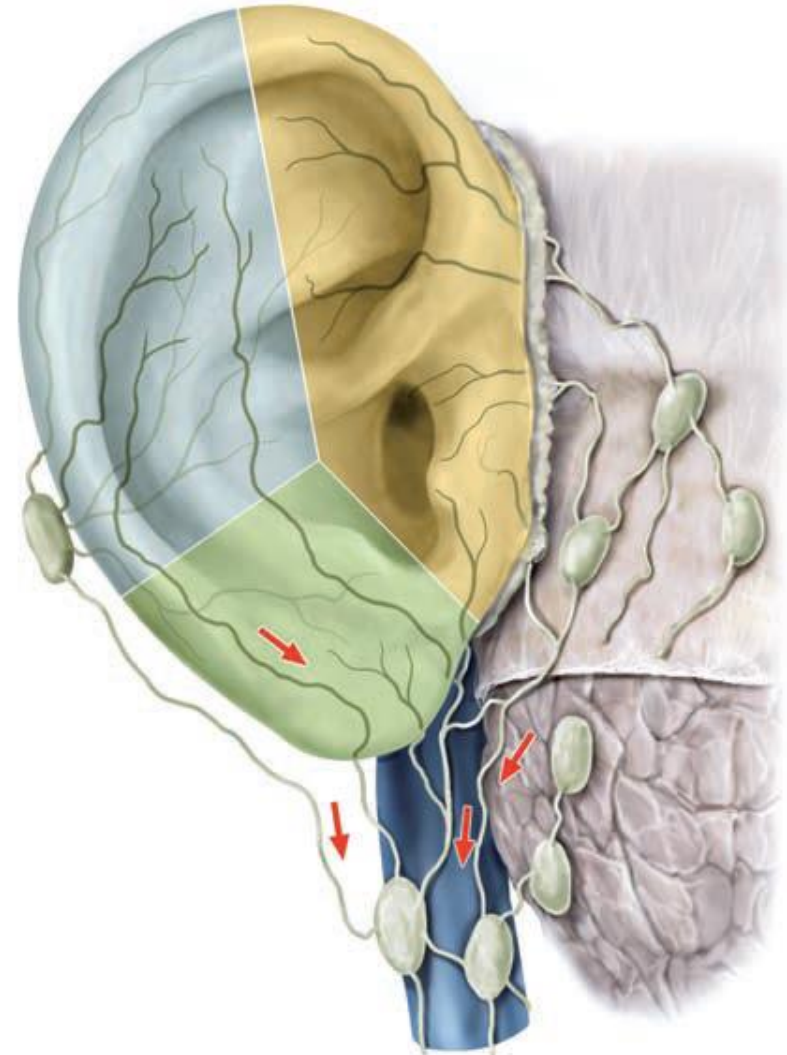
- ♦ *Nodi mastoidei*

- ♦ **Pars anterior**

- ♦ *Nodi parotidei superficiales*
- ♦ *Fascia parotidea*
- ♦ *Nodi parotidei profundi*

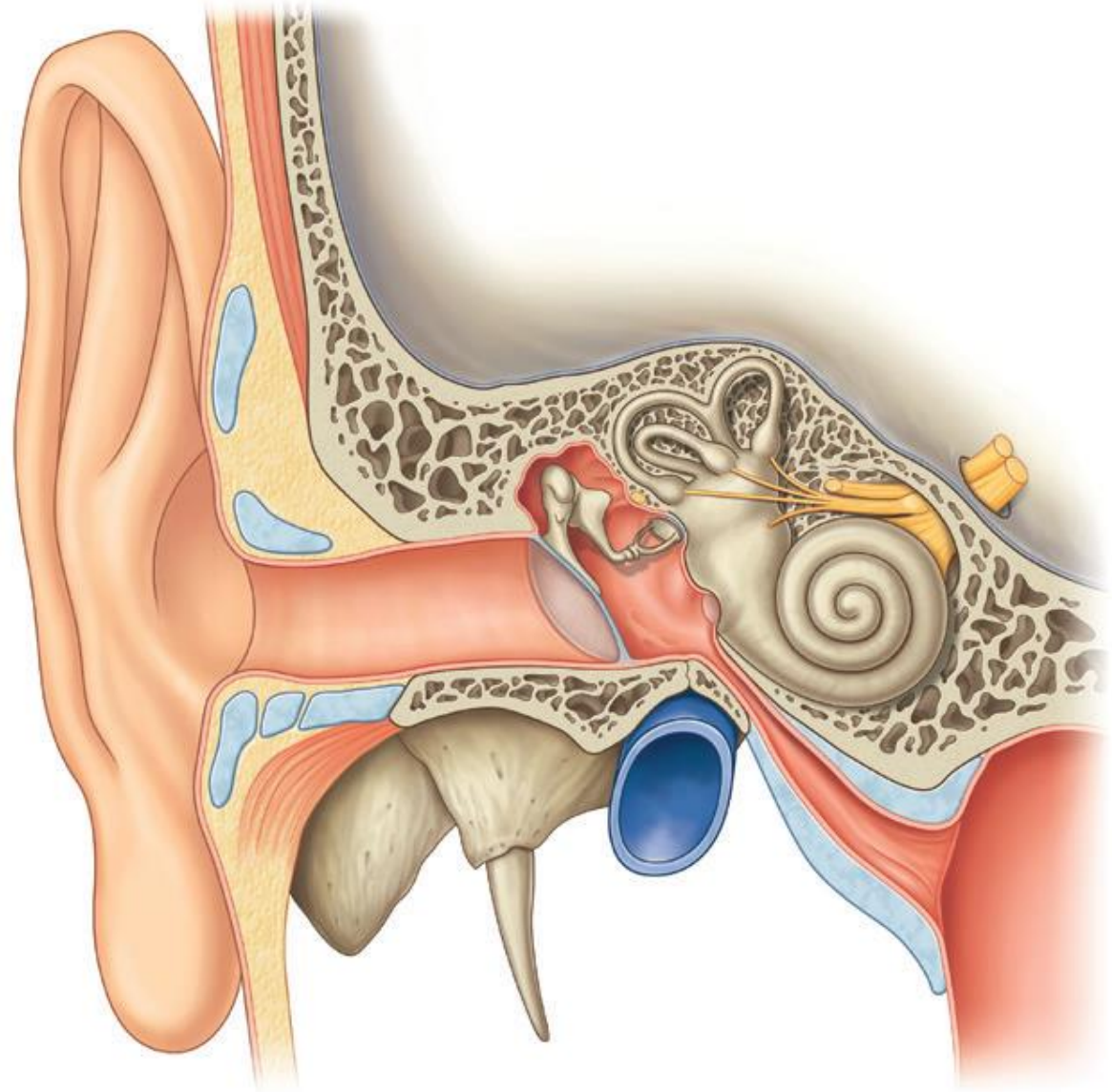
- ♦ **Pars inferior**

- ♦ *Nodi jugulares superiores*



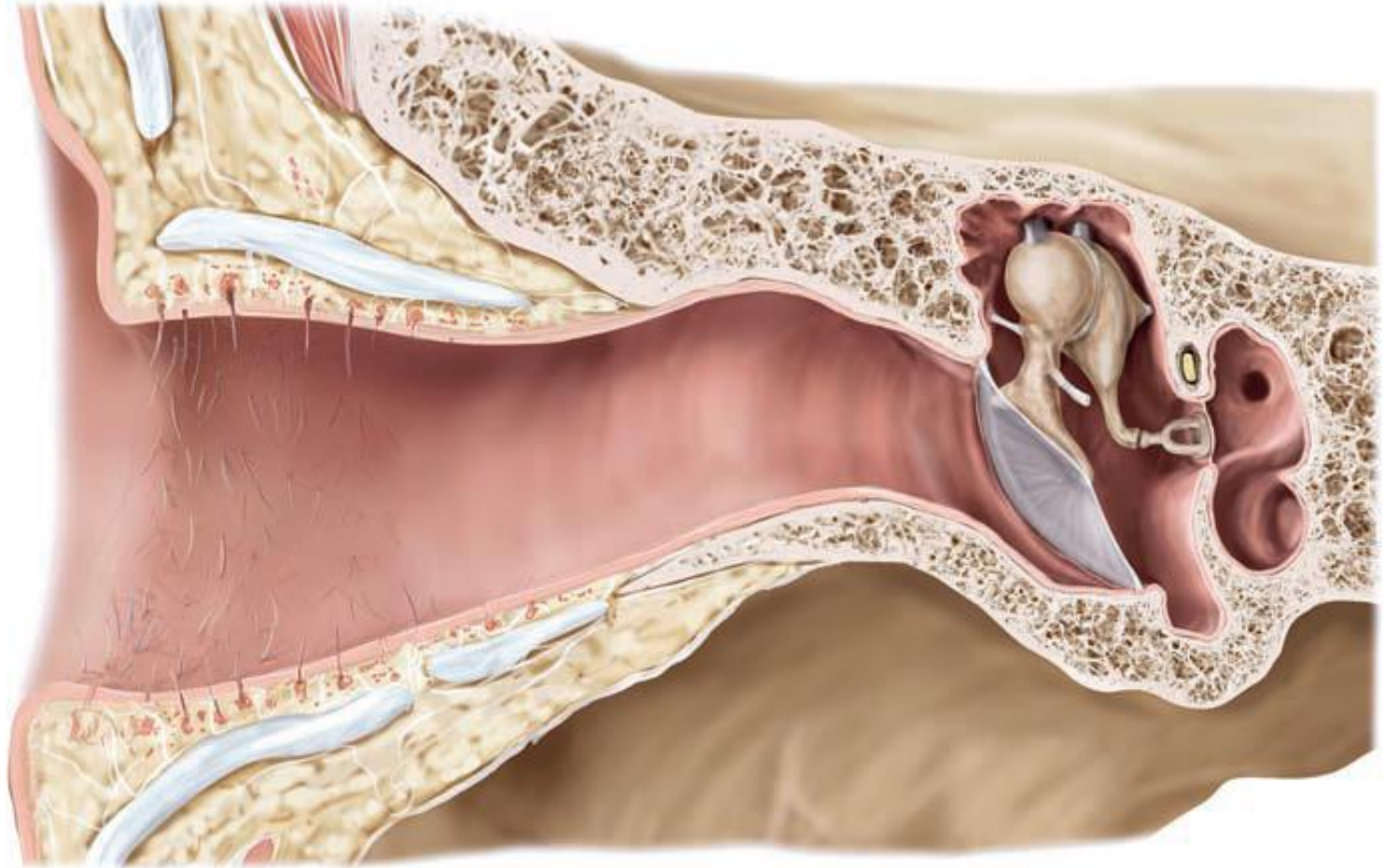
Meatus acusticus externus

- length 2,5 cm
- Cartilaginous part
- Osseous – inner 2/3
- Membrana tympani
- Glandulae ceruminales



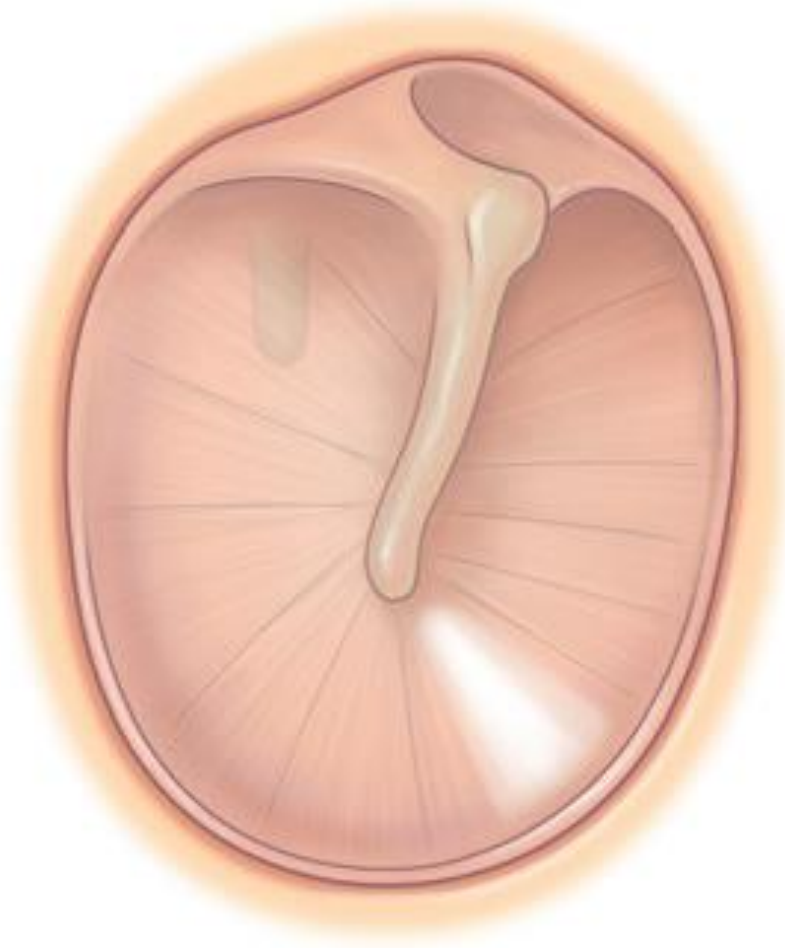
Meatus acusticus externus

- ♦ Pars cartilaginea
- ♦ Glandulae ceruminales
- ♦ *Pars ossea*



Membrana tympani

- Fibrocartilagineous ring
- Obliquely medially to cavum tympani
- Pars flaccida
- Pars tensa
- Processus lateralis mallei
- Manubrium mallei
- Umbo
- Plica malleolaris anterior
- Plica malleolaris posterior



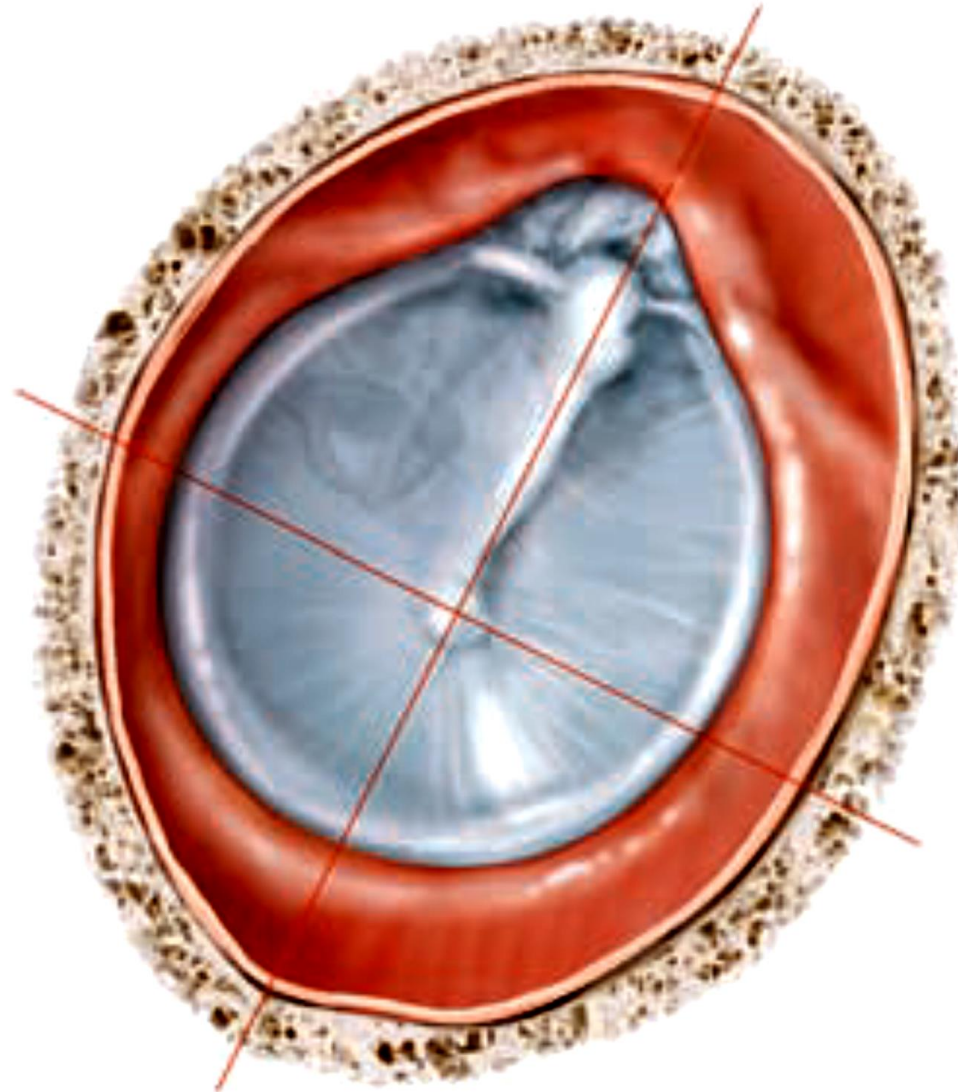
Membrana tympani

- ♦ **Pars flaccida**

- ♦ *Nodi mastoidei*

- ♦ **Pars tensa**

- ♦ *Umbo*
 - ♦ *Stria malleolaris*
 - ♦ *Plica malleolaris posterior*
 - ♦ *Plica malleolaris anterior*
 - ♦ **Quadranti**
 - ♦ **Reflex lucis - quadrantus anterior inferior**



posterior

anterior

Cavum tympani osseum

♦ **Paries membranaceus – lateralis**

- ♦ Membrana tympani
- ♦ Recessus epitympanicus - caput mallei, corpus incudis

♦ **Paries tegmentalis - superior**

- ♦ Tegmen tympani

♦ **Paries jugularis - inferior**

- ♦ Canaliculus tympanicus
- ♦ a. tympanica inferior (a. phar.asc.), n. tympanicus (IX)

♦ **Paries caroticus – anterior**

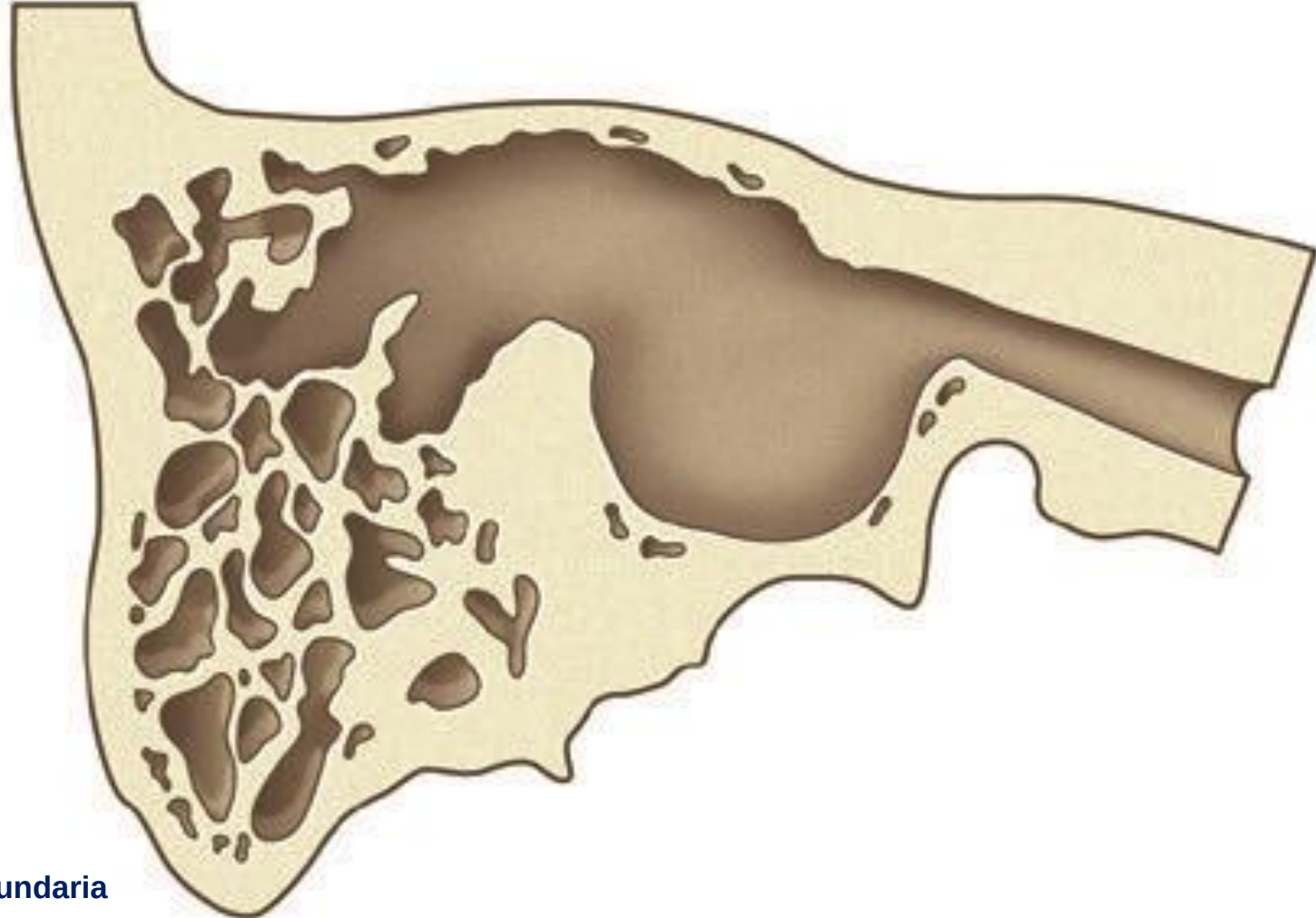
- ♦ Nn. caroticotympanici (sympaticus)
- ♦ Canalis musculotubalis
- ♦ Processus cochleariformis

♦ **Paries mastoideus - posterior**

- ♦ Aditus ad antrum mastoideum
- ♦ Antrum mastoideum
- ♦ Cellulae mastoideae

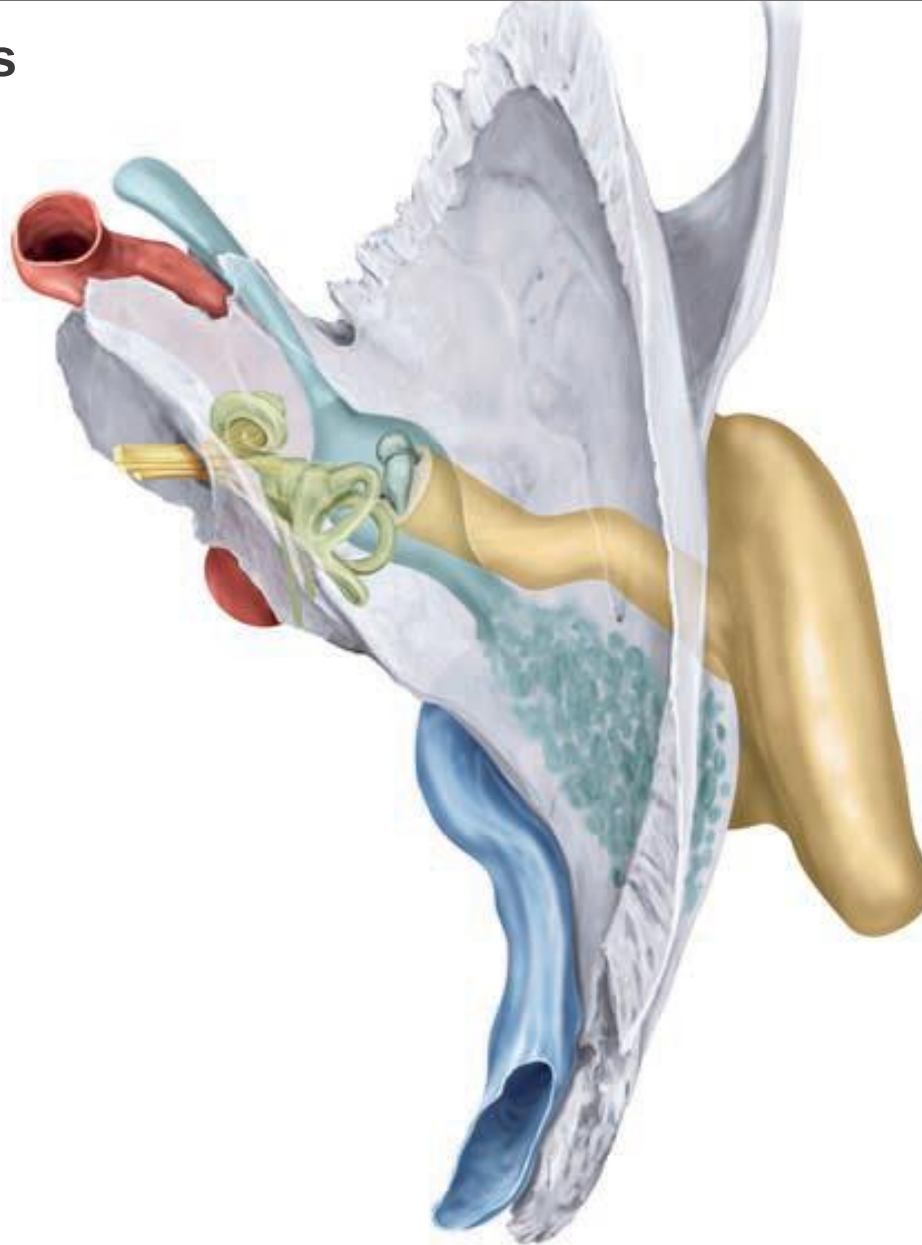
♦ **Paries labytrinthicus - medialis**

- ♦ Promontorium – basal round of cochlea
- ♦ Fenestra vestibuli (ovalis)
- ♦ Fenestra cochleae (rotunda) – membrana tympani secundaria
- ♦ Prominentia nervi facialis

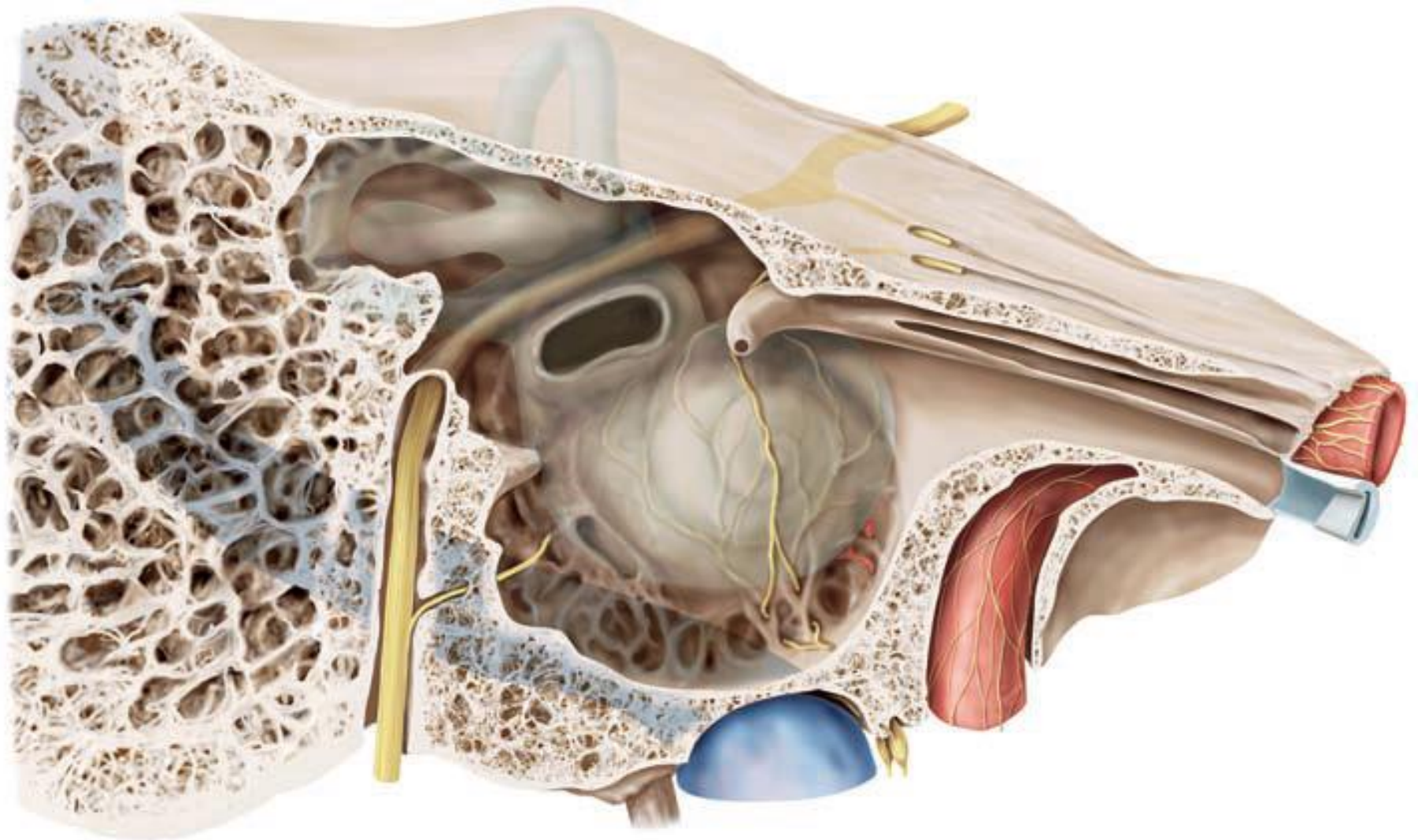


Cavum tympani

- ♦ **Meatus acusticus externus**
- ♦ **Tuba pahryngotympanica**
 - ♦ *nasopharynx*
- ♦ **Antrum mastoideum**
 - ♦ *Cellulae mastoideae*
- ♦ **Sinus sigmoideus**
- ♦ **Bulbus jugularis**
- ♦ **A. carotis interna**
- ♦ **Labyrinth**
- ♦ **Cochlea**

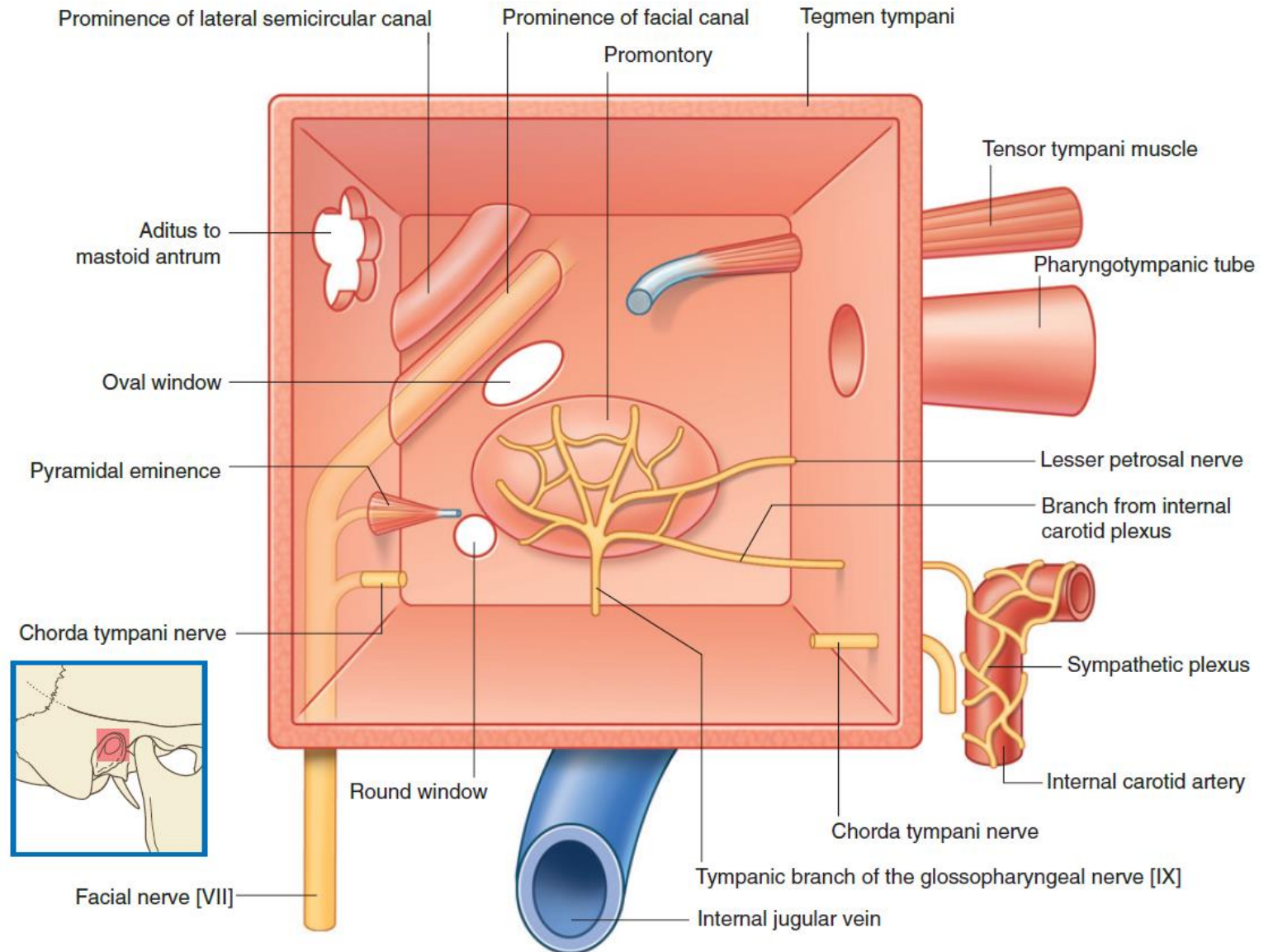


Cavum tympani



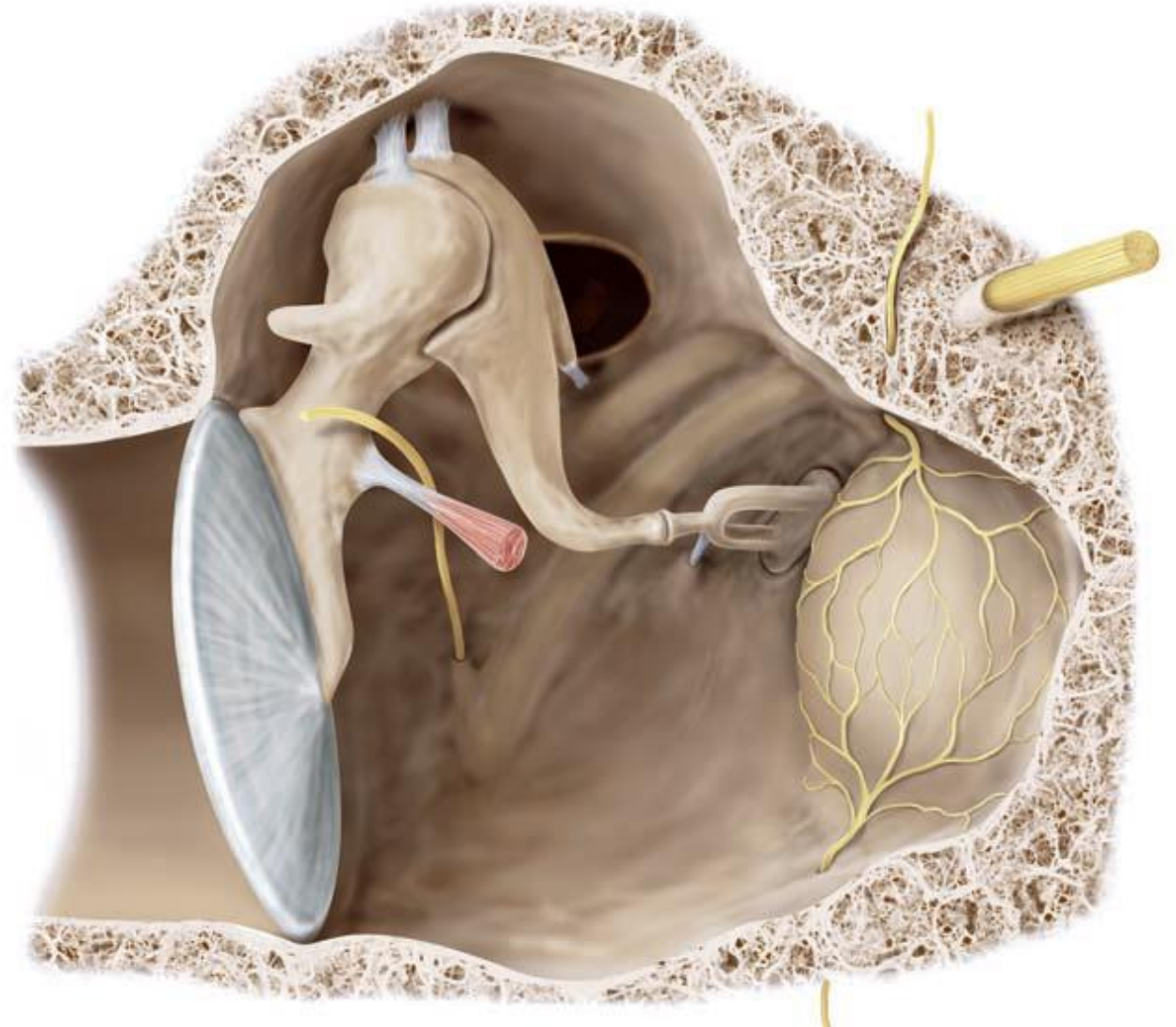
Cavum tympani

- Membrana tympani
- M. tensor tympani
- Malleolus, incus, stapes
- M. stapedius
- Fenestra ovalis
- Fenestra rotunda
- Tuba pharyngotympanica
- Antrum mastoideum
- Chorda tympani
- Plexus tympanicus



Cavum tympani

- ♦ Membrana tympani
- ♦ Malleus
 - ♦ *M. tensor tympani*
- ♦ Incus
- ♦ Stapes
 - ♦ *M. stapedius*
- ♦ Aditus ad antrum mastoideum
- ♦ Prominentia canalis semicircularis lateralis
- ♦ Prominentia canalis facialis
- ♦ Promontorium
- ♦ Chorda tympani
- ♦ Plexus tympani
 - ♦ *Nervus petrosus minor*
 - ♦ *Nervus tympanicus*



Tela mucosa cavi tympani

♦ Plica mallearis posterior

- ♦ Recessus membranae tympani posterior
- ♦ Recessus membranae tympani superior (Prussak)

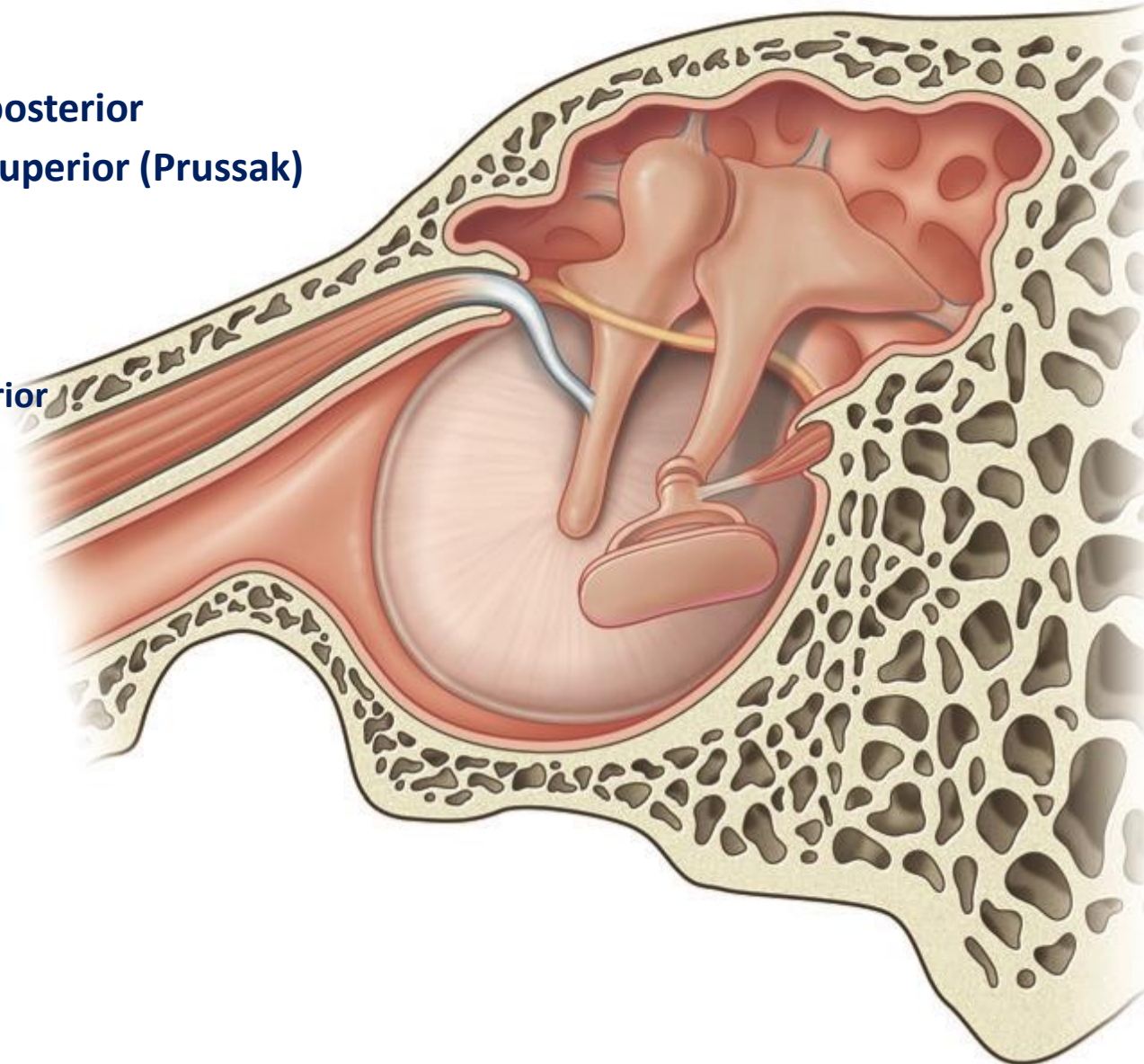
♦ Plica chordae tympani

♦ Plica mallearis anterior

- ♦ Recessus membranae tympani anterior

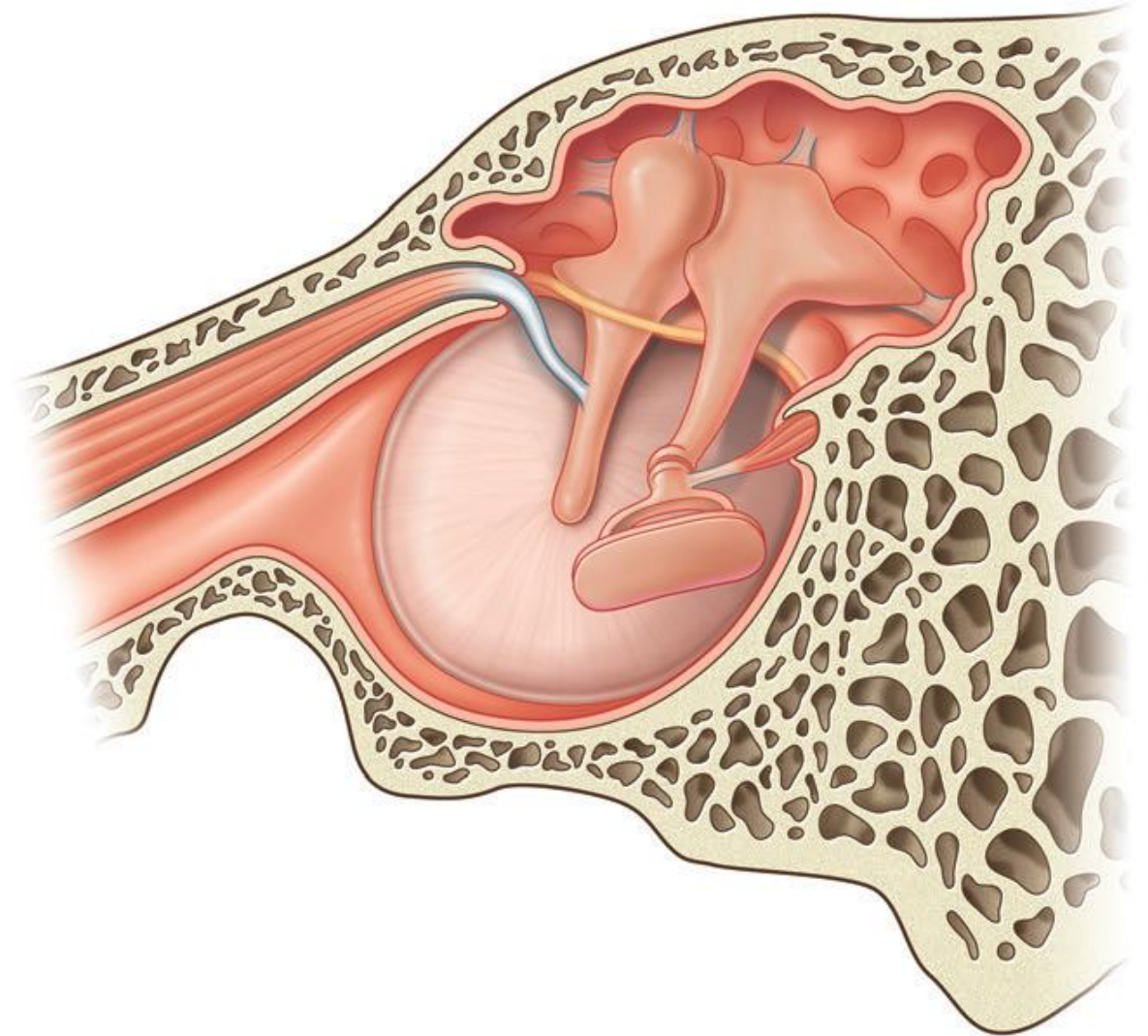
♦ Plica stapedis

- ♦ Přes krček a šlachu m. stapedius



Cavum tympani

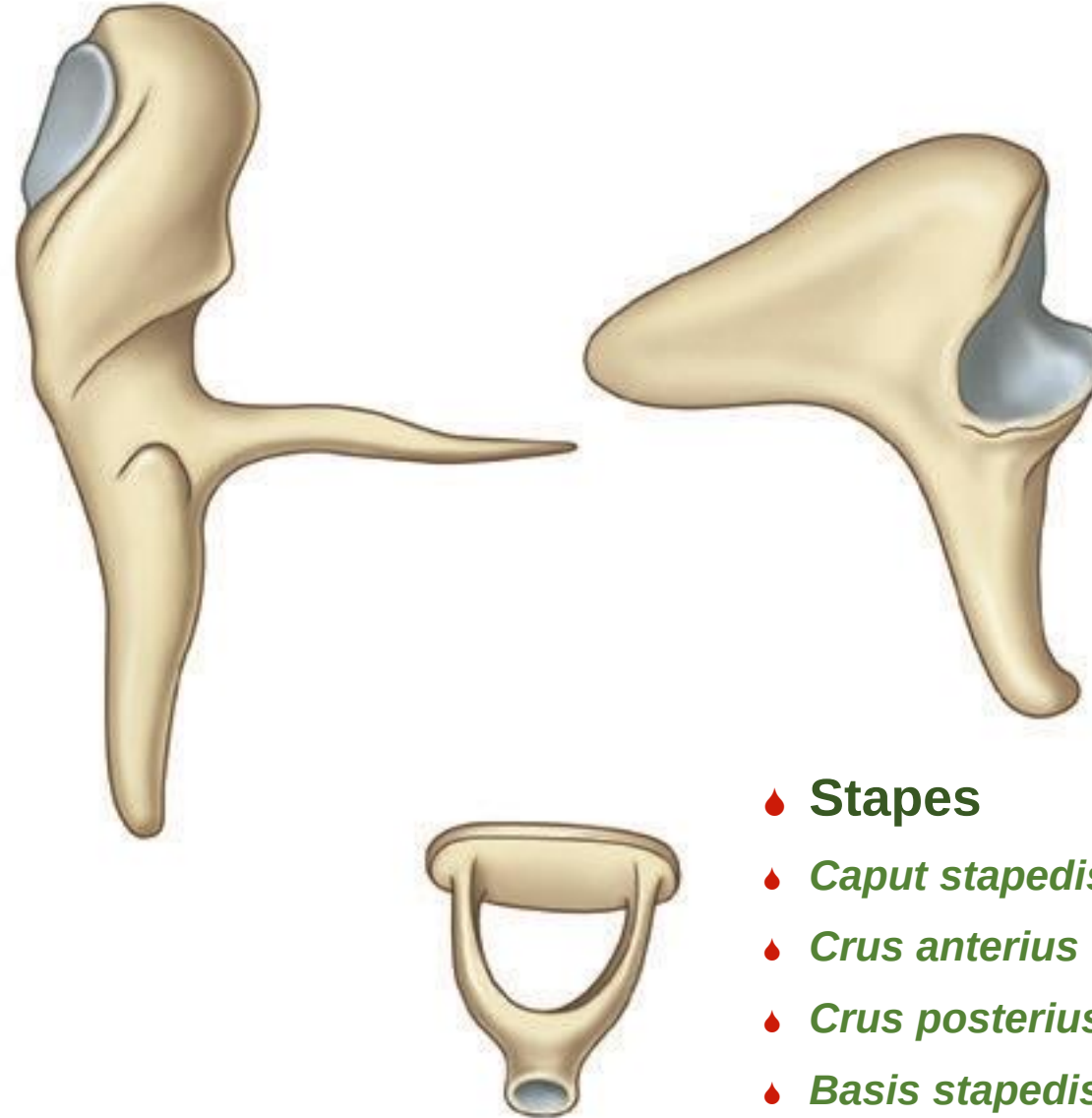
- ♦ **M. tensor tympani (V3) – own channel**
 - ♦ **tuba pharyngotympanica + os sphenoidale**
 - ♦ *Tension of tympanon*
- ♦ **Processus anterior malleoli**
 - ♦ Anterior wall - lig. mallei anteriorus
- ♦ **Caput malleoli - facies articularis - incus**
 - ♦ Crus breve – dorsal wall - lig. posterius
- ♦ **Crus longum incudis - stapes**
- ♦ **M. stapedius (VII)**
 - ♦ **emminetia pyramidalis**
 - ♦ *Tension of stapedial neck*
- ♦ **Basis stapedis - foramen ovale**



Ossicula

♦ Malleus

- ♦ *Caput mallei*
- ♦ *Facies articularis*
- ♦ *Collum mallei*
- ♦ *Processus anterior*
- ♦ *Processus lateralis*
- ♦ *Manubrium mallei*



♦ Ligamenta

- ♦ *Mallei anterior*
- ♦ *Mallei superius*
- ♦ *Incudis superius*
- ♦ *Incudis posterius*
- ♦ *Membrana stapedia*
- ♦ *Anulare stapedis*

♦ Incus

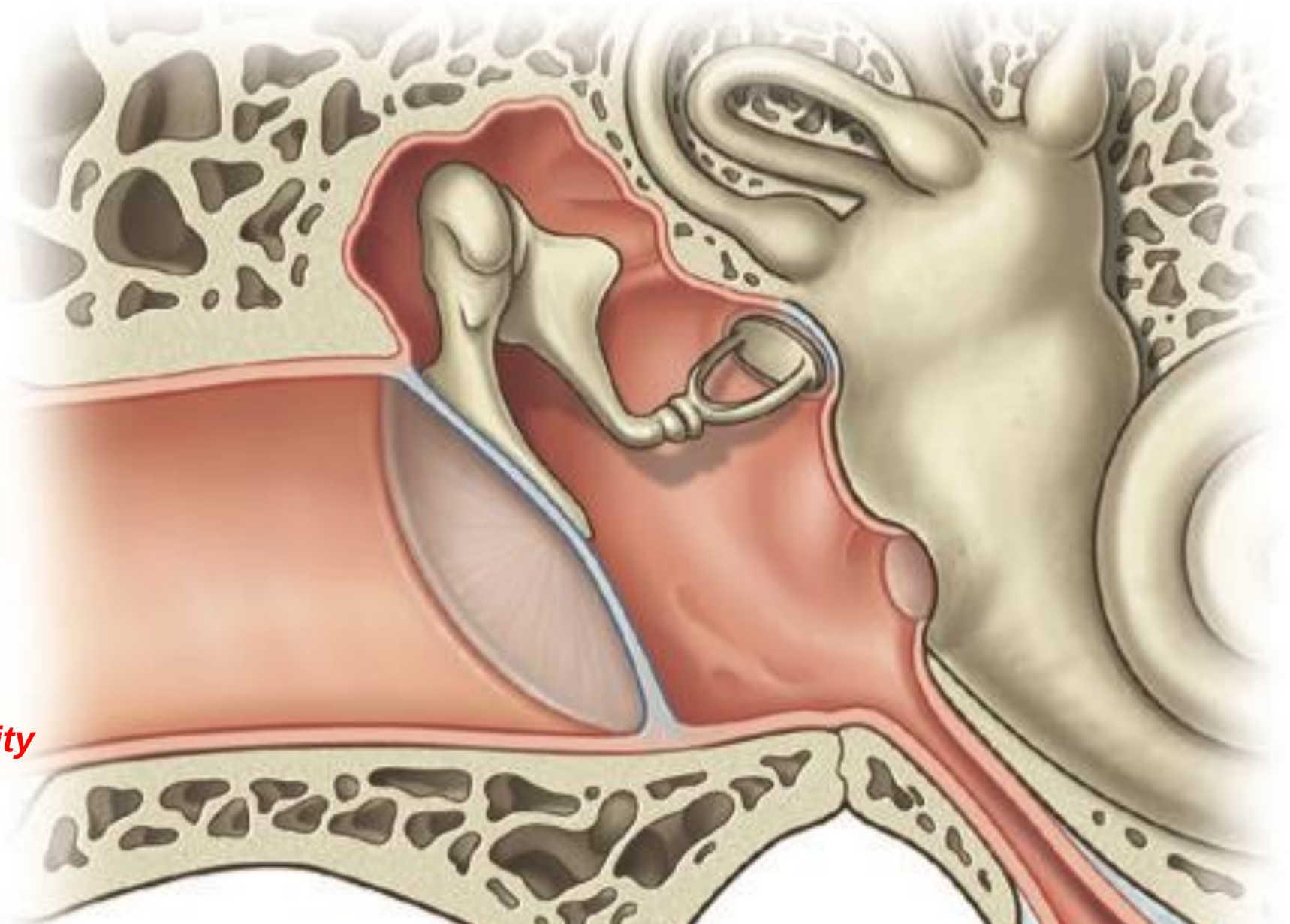
- ♦ *Corpus incudis*
- ♦ *Facies articularis*
- ♦ *Crus breve incudis*
- ♦ *Crus longum incudis*
- ♦ *Processus lenticularis*
 - ♦ *Cartilago*

♦ Stapes

- ♦ *Caput stapedis*
- ♦ *Crus anterior*
- ♦ *Crus posterior*
- ♦ *Basis stapedis*

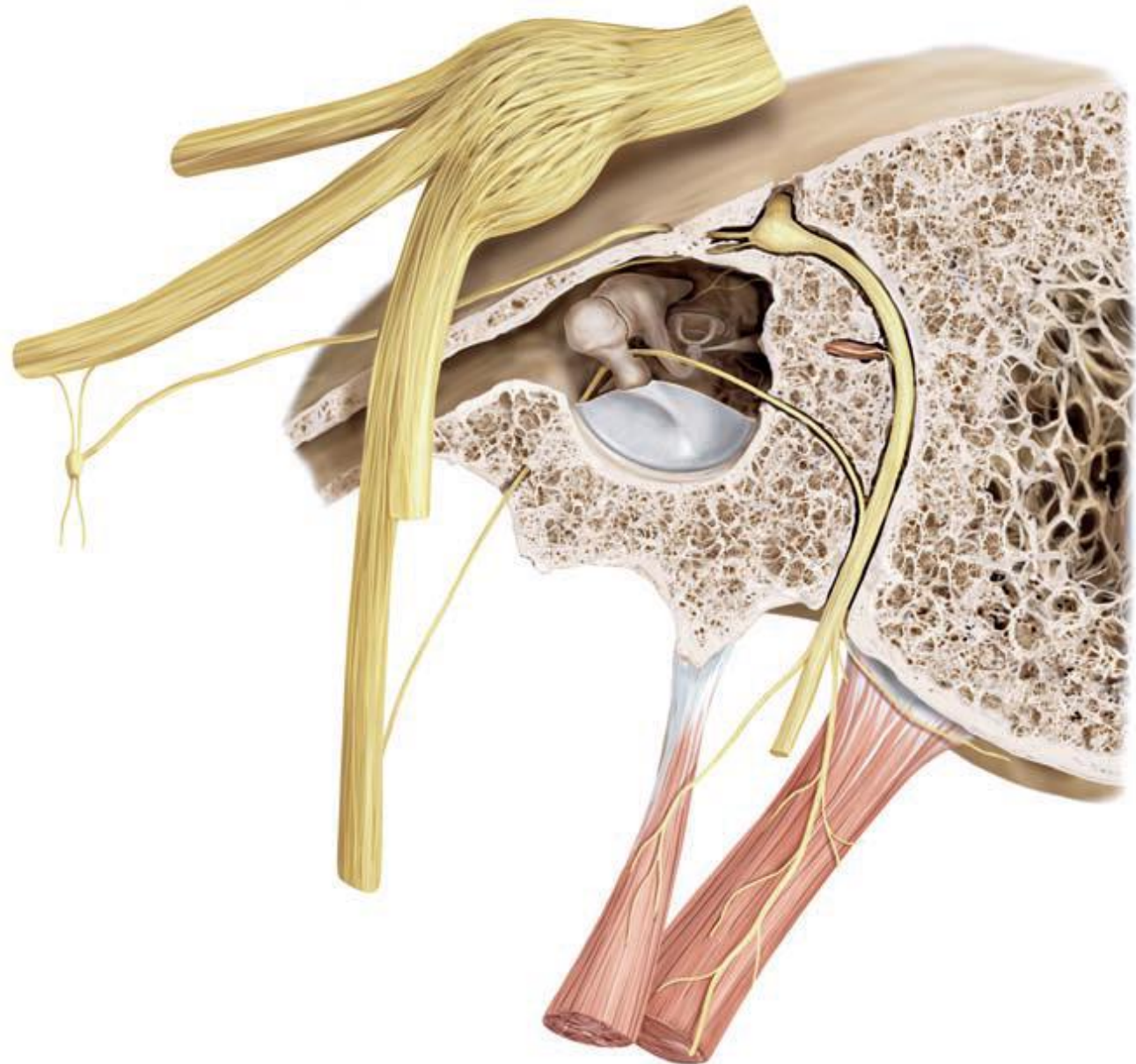
Ossicula

- ♦ Meatus acusticus externus
 - ♦ Membrana tympani
 - ♦ Malleus
 - ♦ Incus
 - ♦ Stapes
 - ♦ Foramen ovale
 - ♦ Labyrinth osseum
-
- ♦ Assymetric lever
 - ♦ *Big amplitude, low intensity*
 - ♦ *small amplitude, grande intensity*



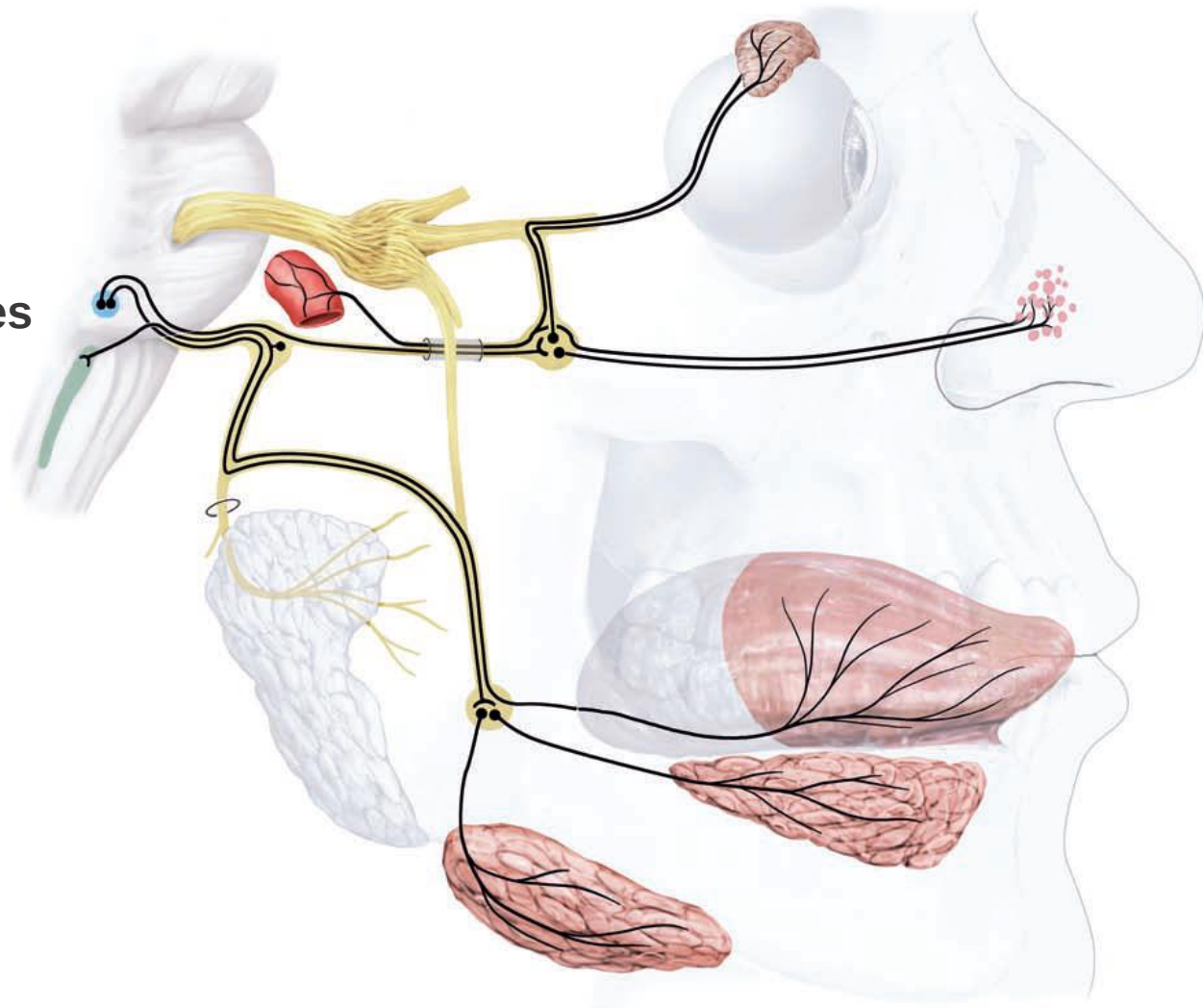
Os temporale

- ♦ Nervus trigeminus V
- ♦ Ganglion n. trigemini Gasseri
- ♦ Impresio ganglii nervi trigemini
- ♦ Nervus facialis VII
- ♦ Ganglion geniculatum
- ♦ Chorda tympani
- ♦ Nervus petrosus majo



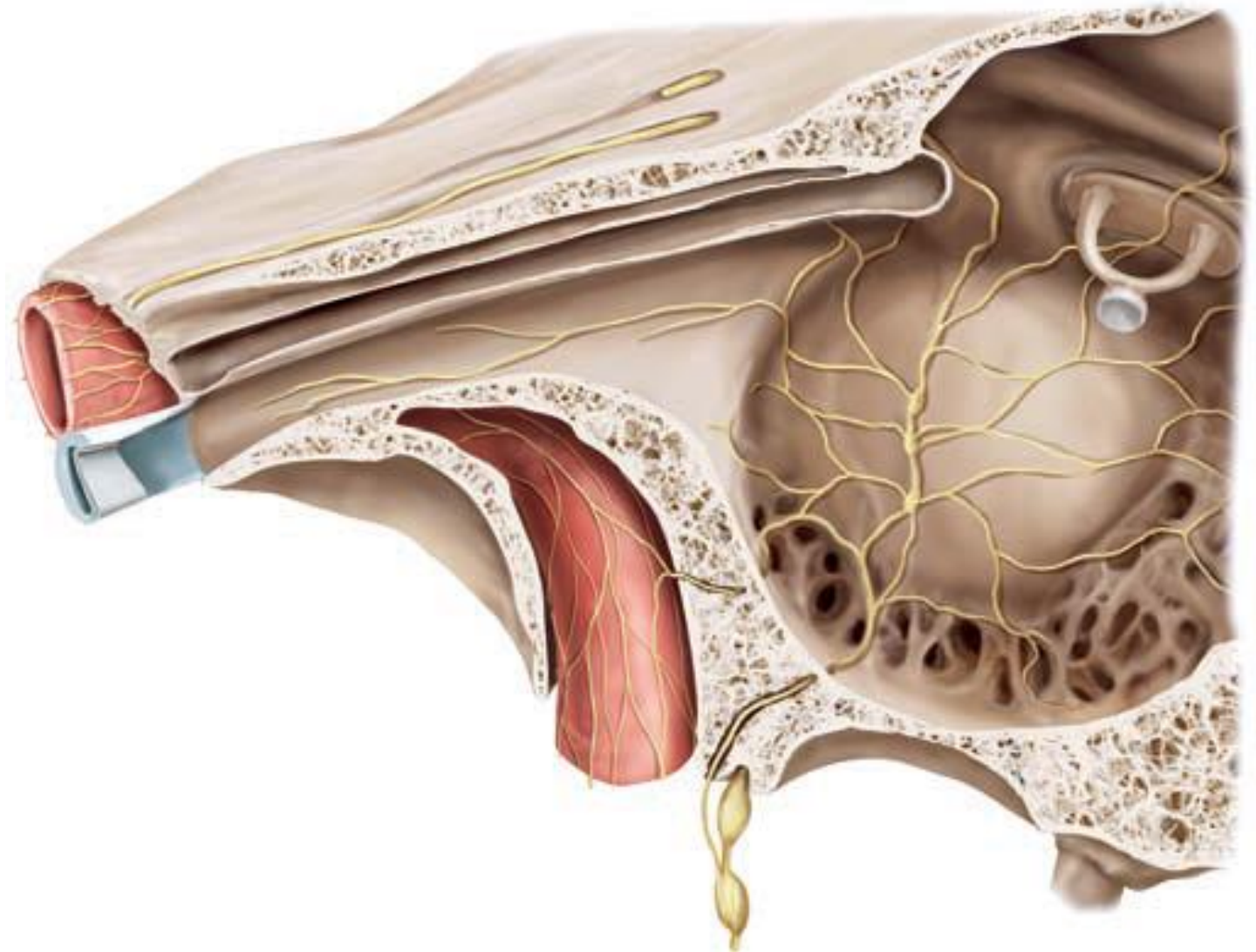
n. facialis VII

- ♦ **Ganglion geniculatum**
- ♦ analogon ganglion spinale
- ♦ Gustus apicis linguae
- ♦ Chorda tympani
- ♦ **Ganglion pterygopalatinum**
- ♦ Glandula lacrimalis, gl. nasales
- ♦ **Ganglion submandibulare**
- ♦ Glandulae submandibularis
- ♦ Glandula sublingualis



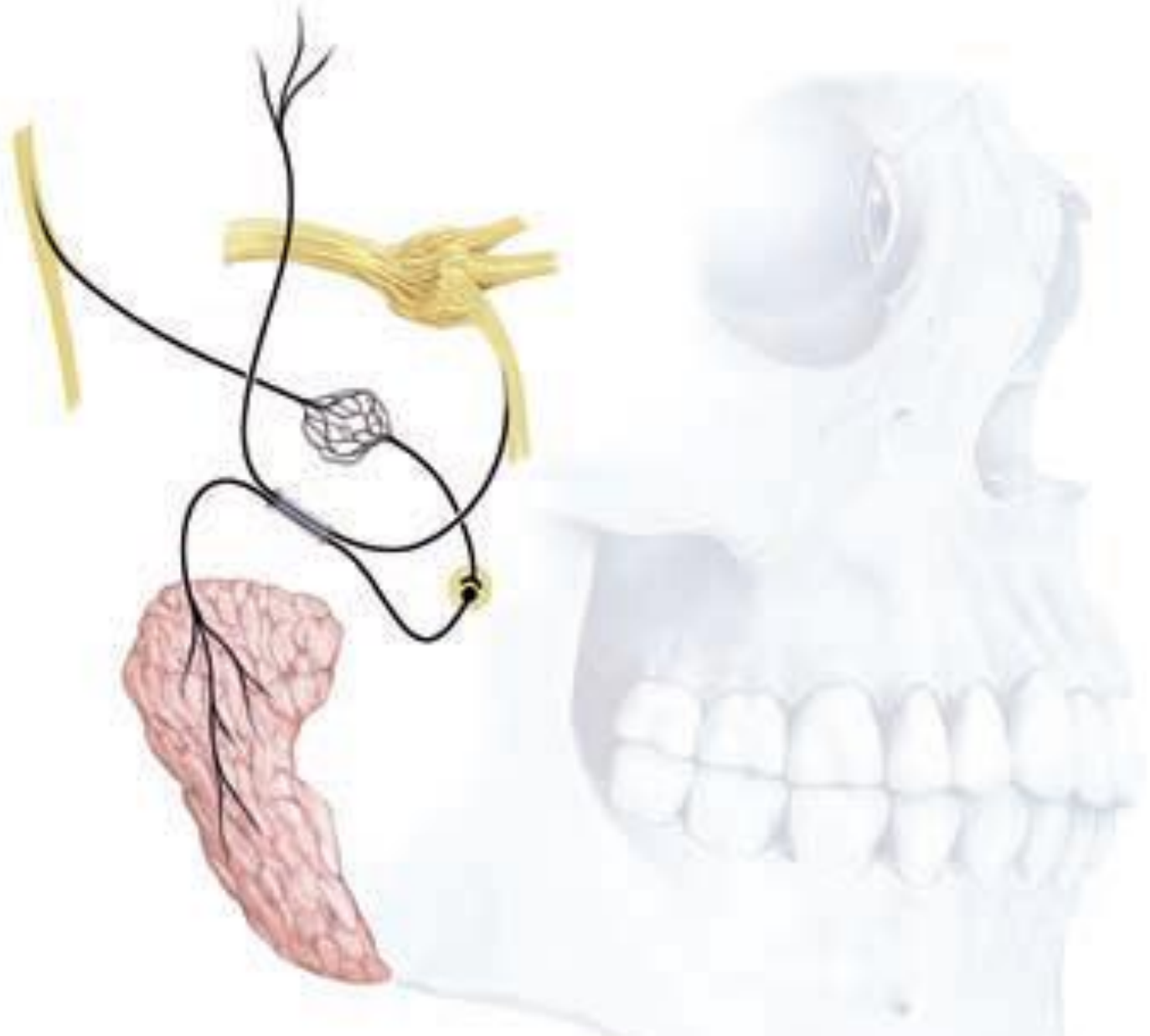
n. glossopharyngeus IX

- ♦ **Nervus tympanicus**
- ♦ **Plexus tympanicus**
- ♦ **Plaxus sympatikus carotideus**
- ♦ **Nervus petrosus minor**
- ♦ **Ganglion oticum**



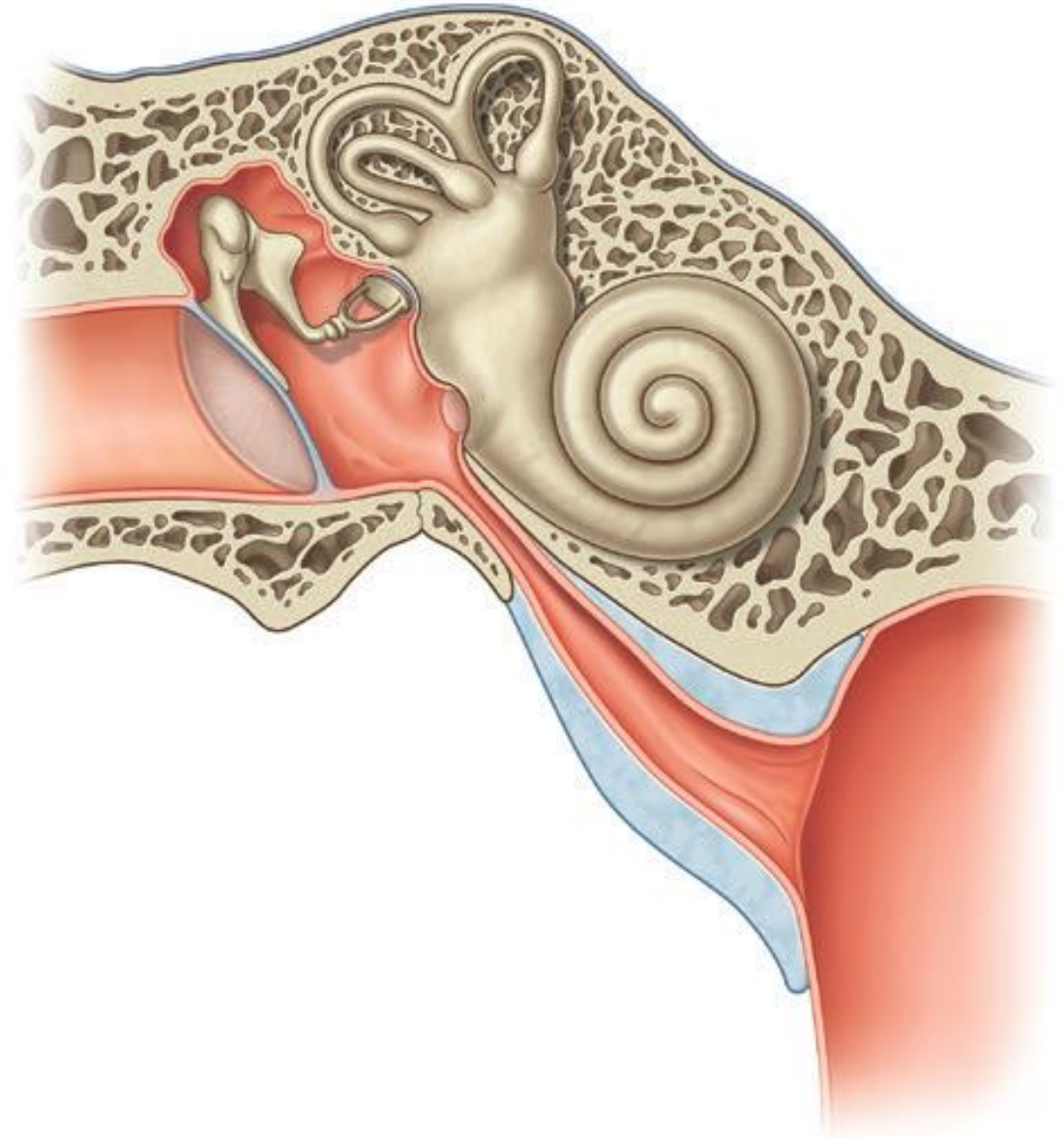
n. glossopharyngeus IX

- ♦ **Ganglion oticum**
- ♦ **Parasympaticus**
- ♦ ***Gl. parotis***



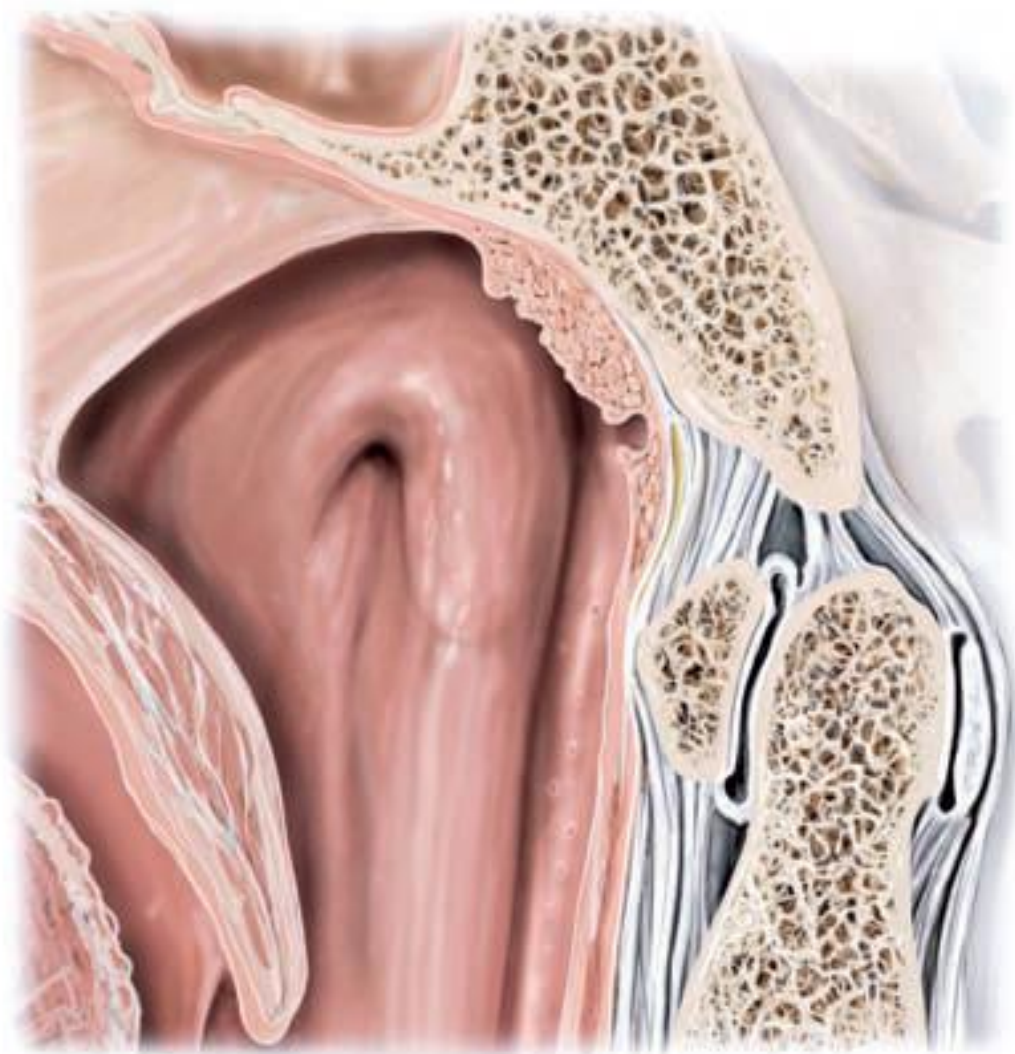
Tuba pharyngotympanica

- ♦ Bottom end canalis musculotubalis
- ♦ Connection
- ♦ Nasopharynx
- ♦ Cavum tympani
 - ♦ Pars ossea - 1/3 – 1 cm
 - ♦ Pars cartilaginea - 2/3 – 2.5 cm
- ♦ opening
 - ♦ outside the foramen ovale et spinosum
- ♦ Junction of squamous and petrosal part
- ♦ Pressure balancing
- ♦



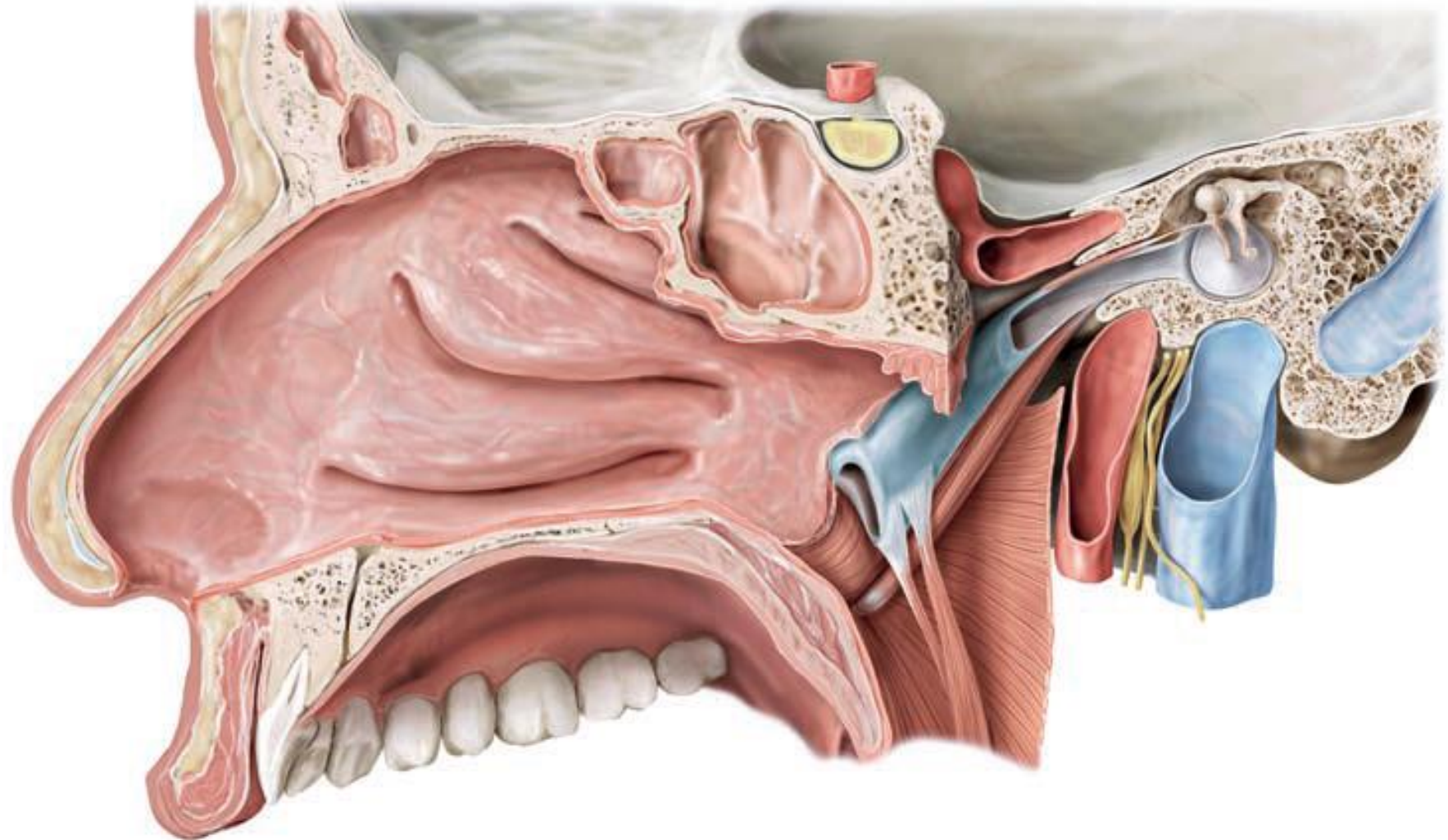
Tuba pharyngotympanica

- Torus tubarius
- Nasopharynx
- Tonsilla pharyngica
- Choana
- Palatum molle



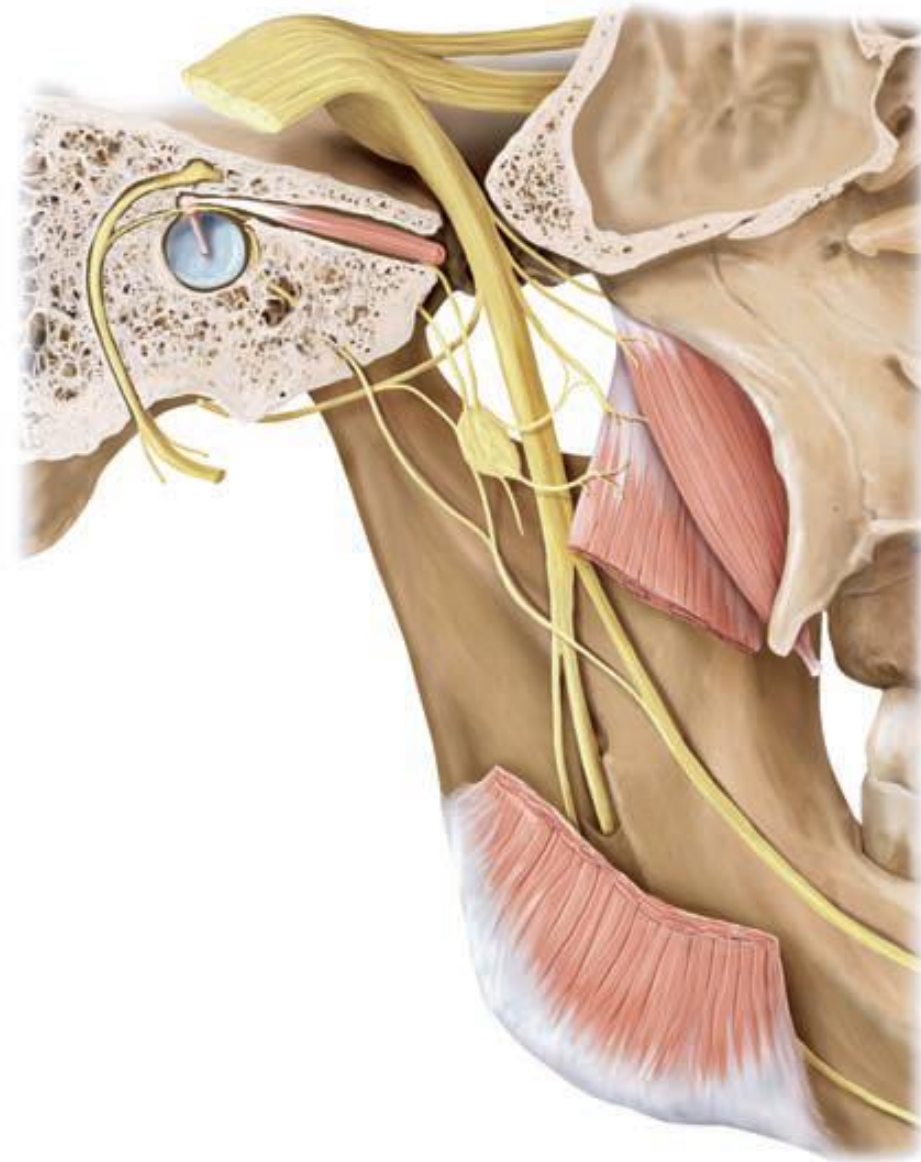
Tuba pharyngotympanica

- ♦ **M. tensor tympani**
- ♦ **M. levator velli palatini**
- ♦ ***M. salpingopharyngeus***
- ♦ ***M. tensor velli palatini***
- ♦ ***Pars cartilaginea***

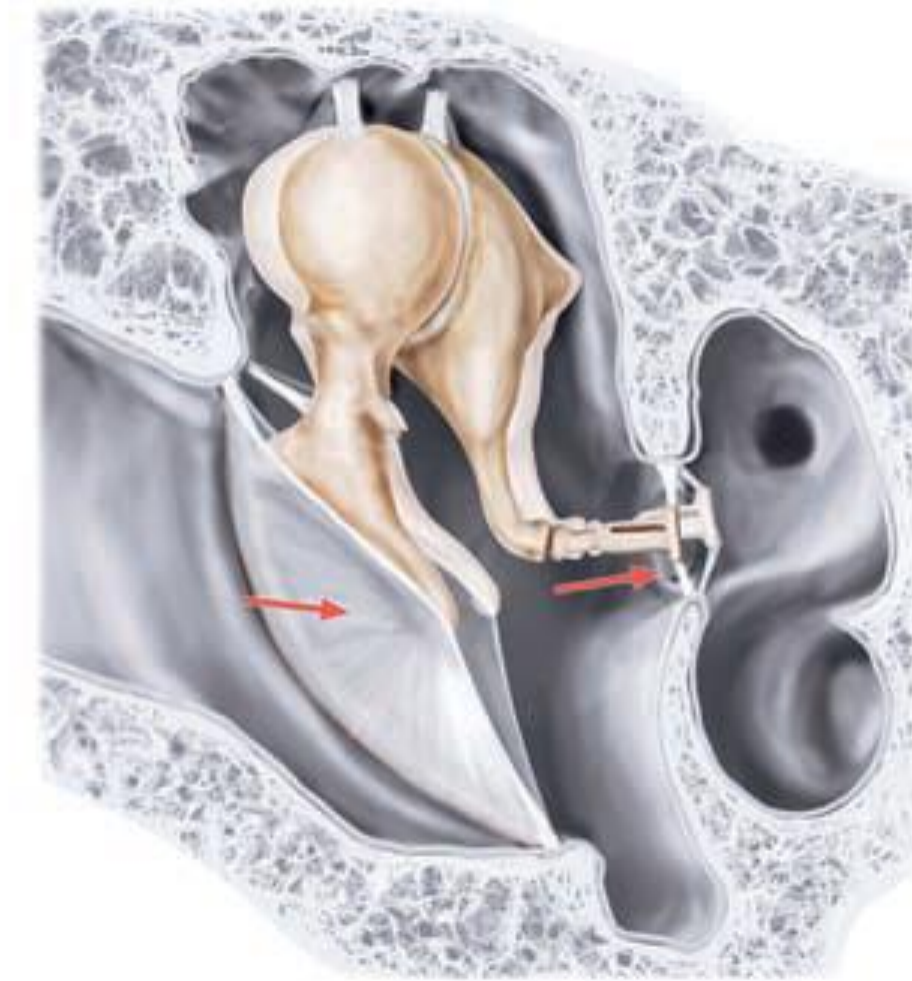


m. tensor tympani

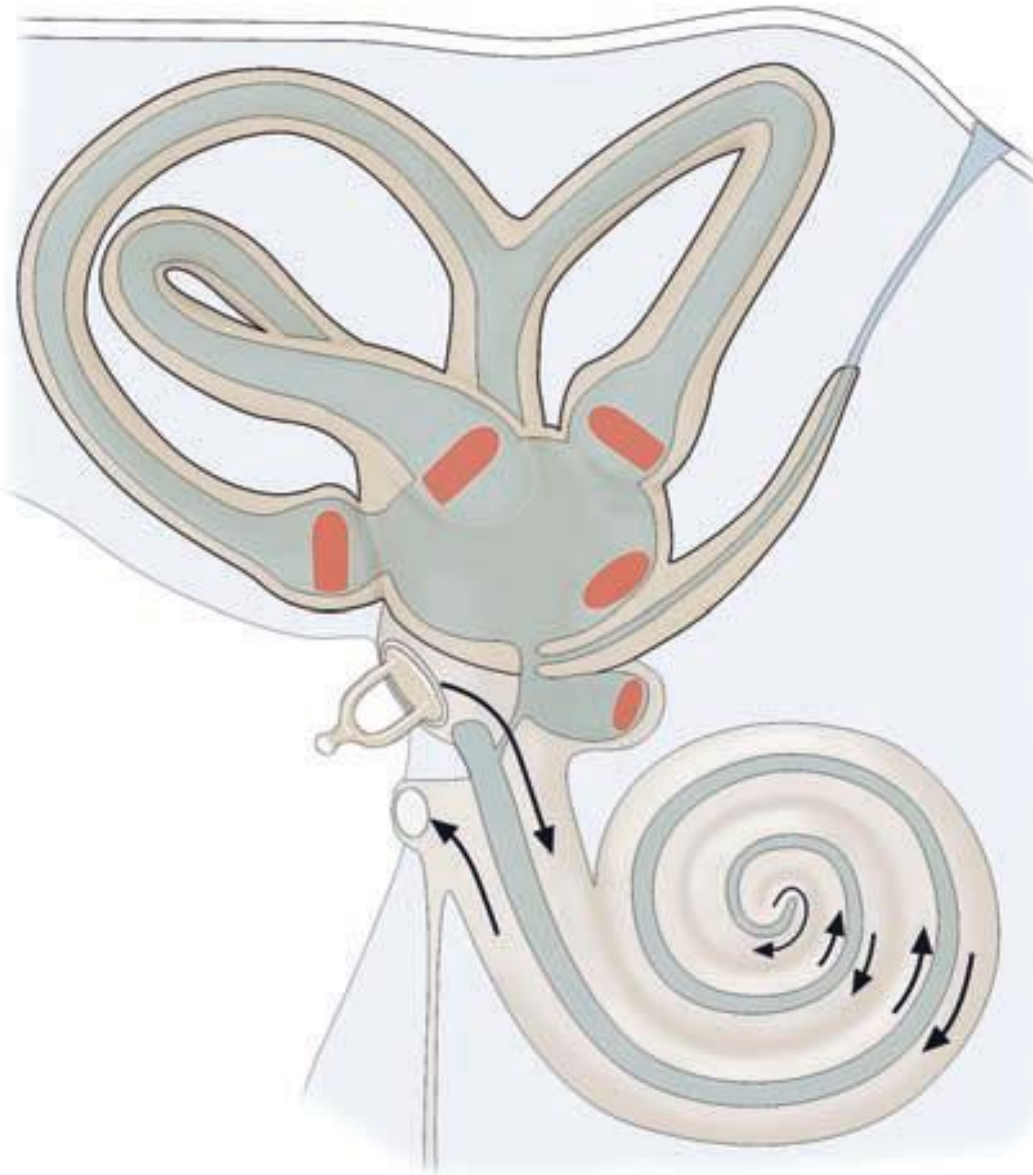
- Origo
- insertion
- Functio
- Innervatio: n. mandibularis V3



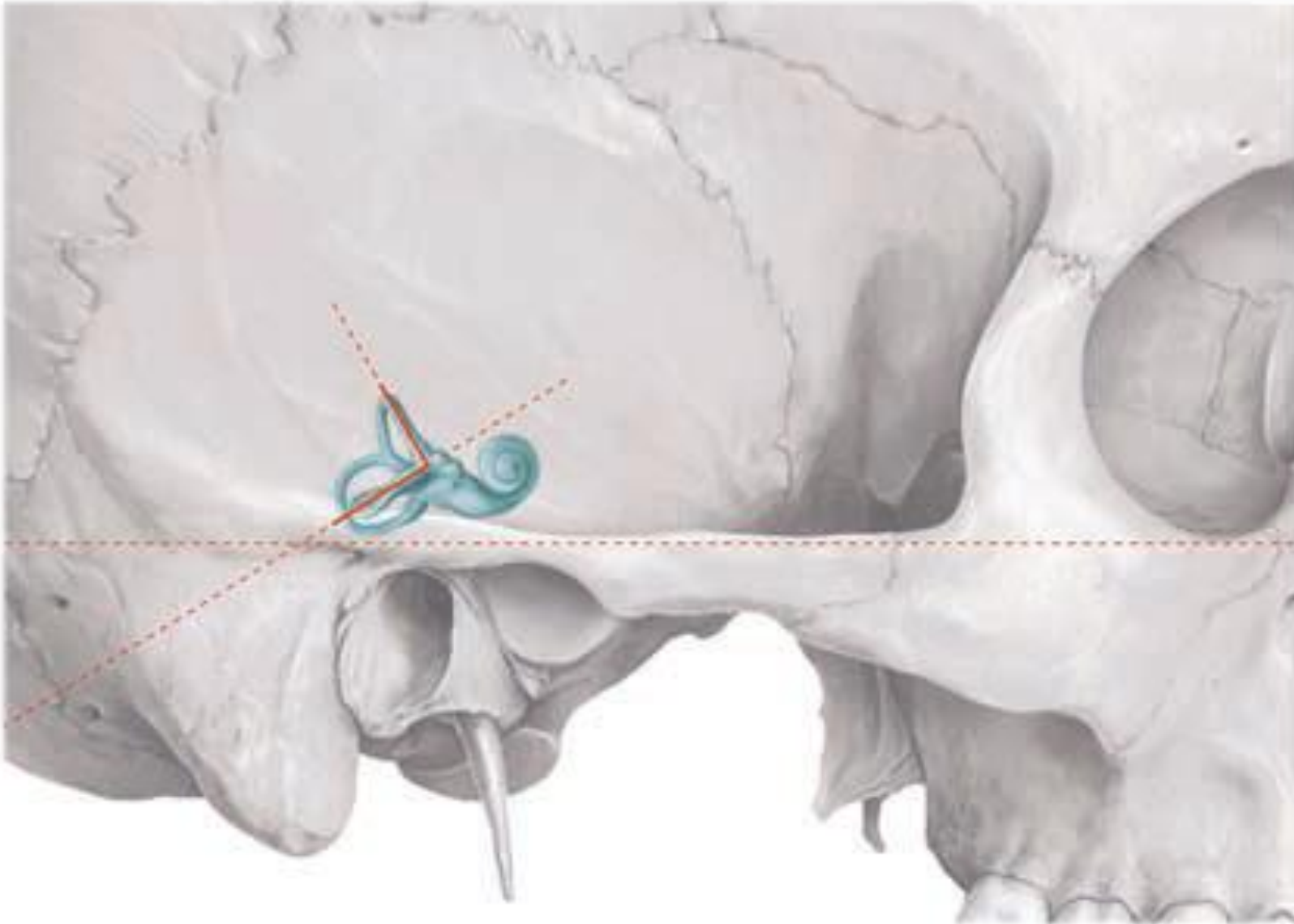
Cavum tympani - acoustic mechanics



Labyrinthus - acoustic mechanics

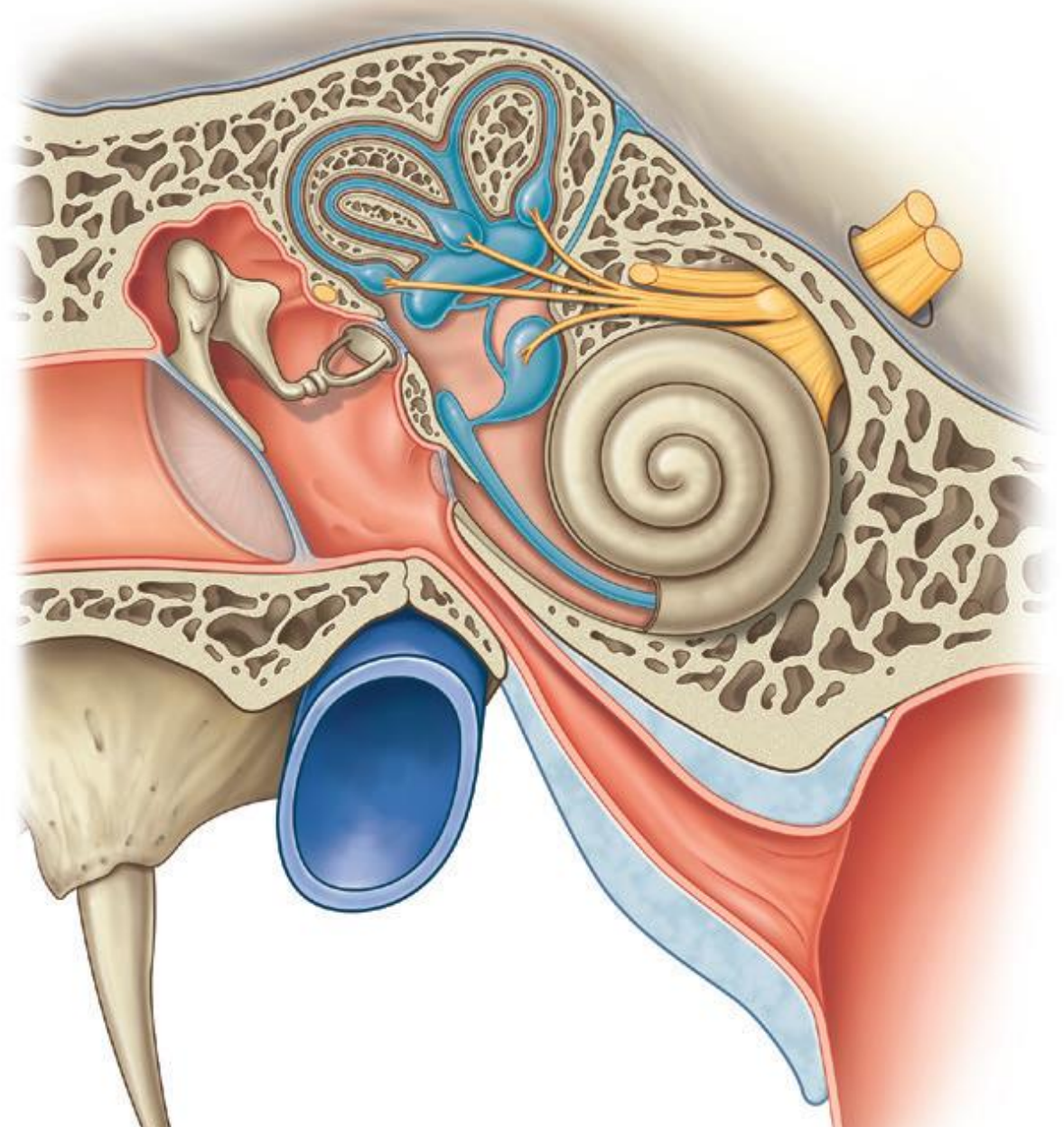


Labyrinthus



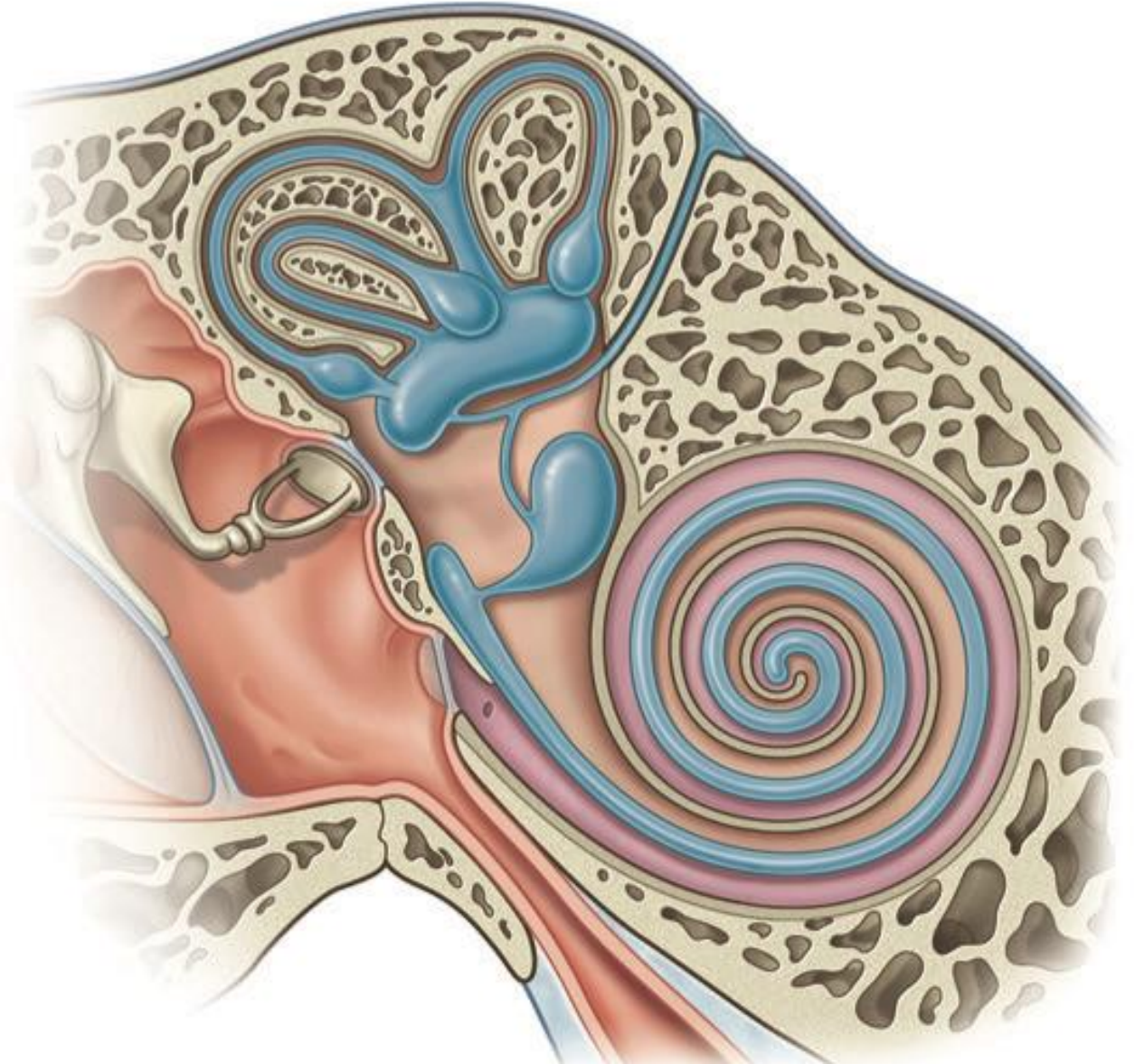
Labyrinthus osseus

- ♦ **Perilympa**
- ♦ **Fenestra ovalis (vestibuli)**
- ♦ **Vestibulum**
 - ♦ **Crista vestibuli**
 - ♦ **Recessus ellipticus – utriculus**
 - ♦ **Recessus sphaericus – sacculus**
 - ♦ **Recessus cochlearis - cochlea**
- ♦ **Canales semicirculares (3)**
 - ♦ *Anterior, lateralis, posterior*
- ♦ **Crura ossea**
 - ♦ *communum – canalis anterior et posterior*
 - ♦ *simplex - canalis lateralis*
- ♦ **Cochlea**
 - ♦ **Modiolus – conic osseous axis**
 - ♦ **Lamina spiralis ossea – incomplete**
 - ♦ *lamina/membrana basalis - membrana vestibularis*
 - ♦ **Scala vestibuli – ductus cochlearis – scala tympani**



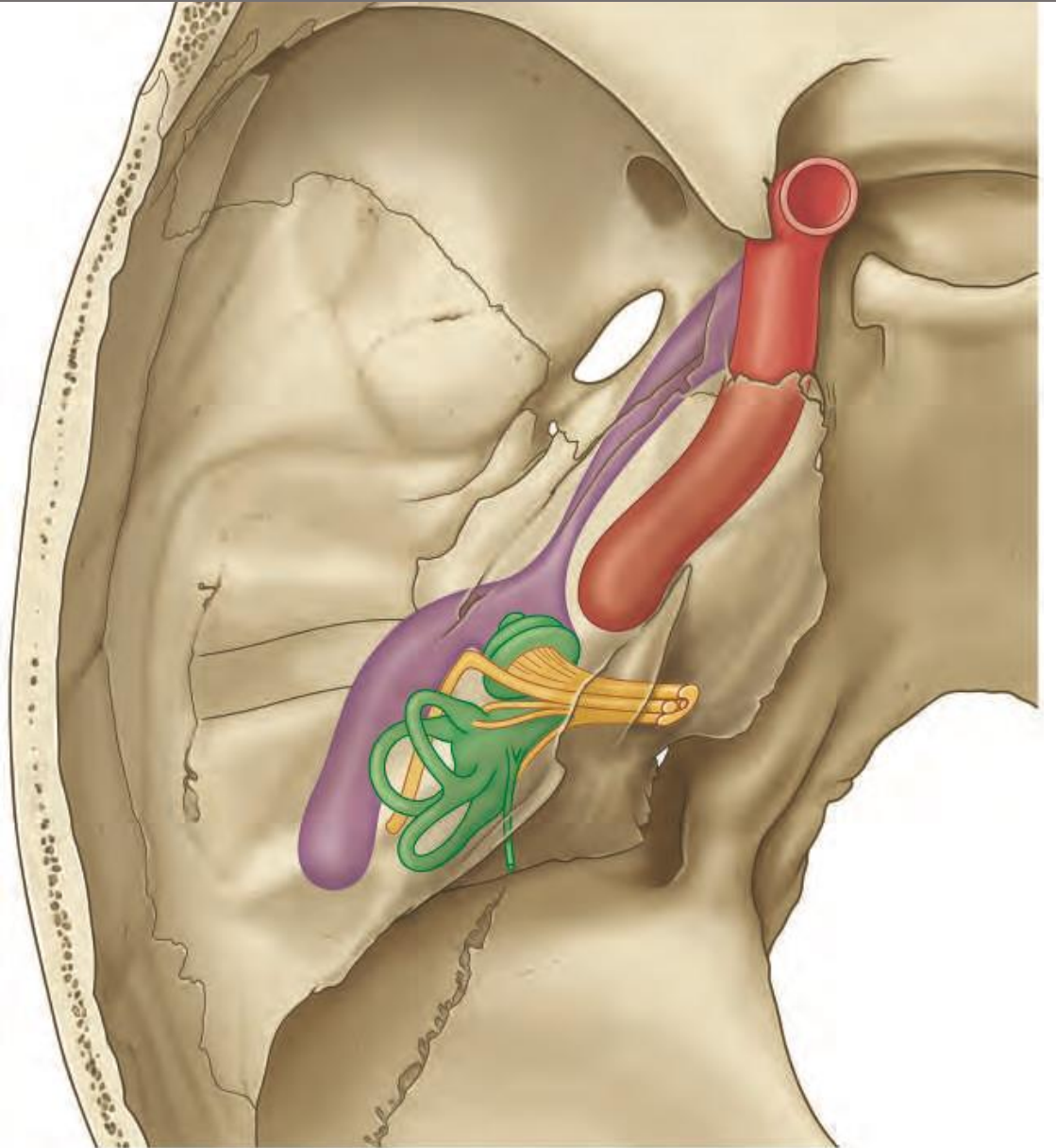
Labyrinthus membranaceus

- ♦ **Ductus semicirculares**
 - ♦ *Anterior, lateralis, posterior*
 - ♦ **Ampulae**
 - ♦ **Crura**
- ♦ **Ductus cochlearis**
- ♦ **Utriculus – protracted 2,5 . 3,5 mm**
- ♦ **Ductus utriculosaccularis**
- ♦ **Sacculus – spheric – 2 – 3 mm**
- ♦ **Ductus reuniens**
- ♦ **Ductus endolymphaticus**
 - ♦ *Aqueductus vestibuli*
- ♦ **Saccus endolymphaticus**
 - ♦ *Blind end between two leaves of dura mater*
- ♦ **Endolympha**



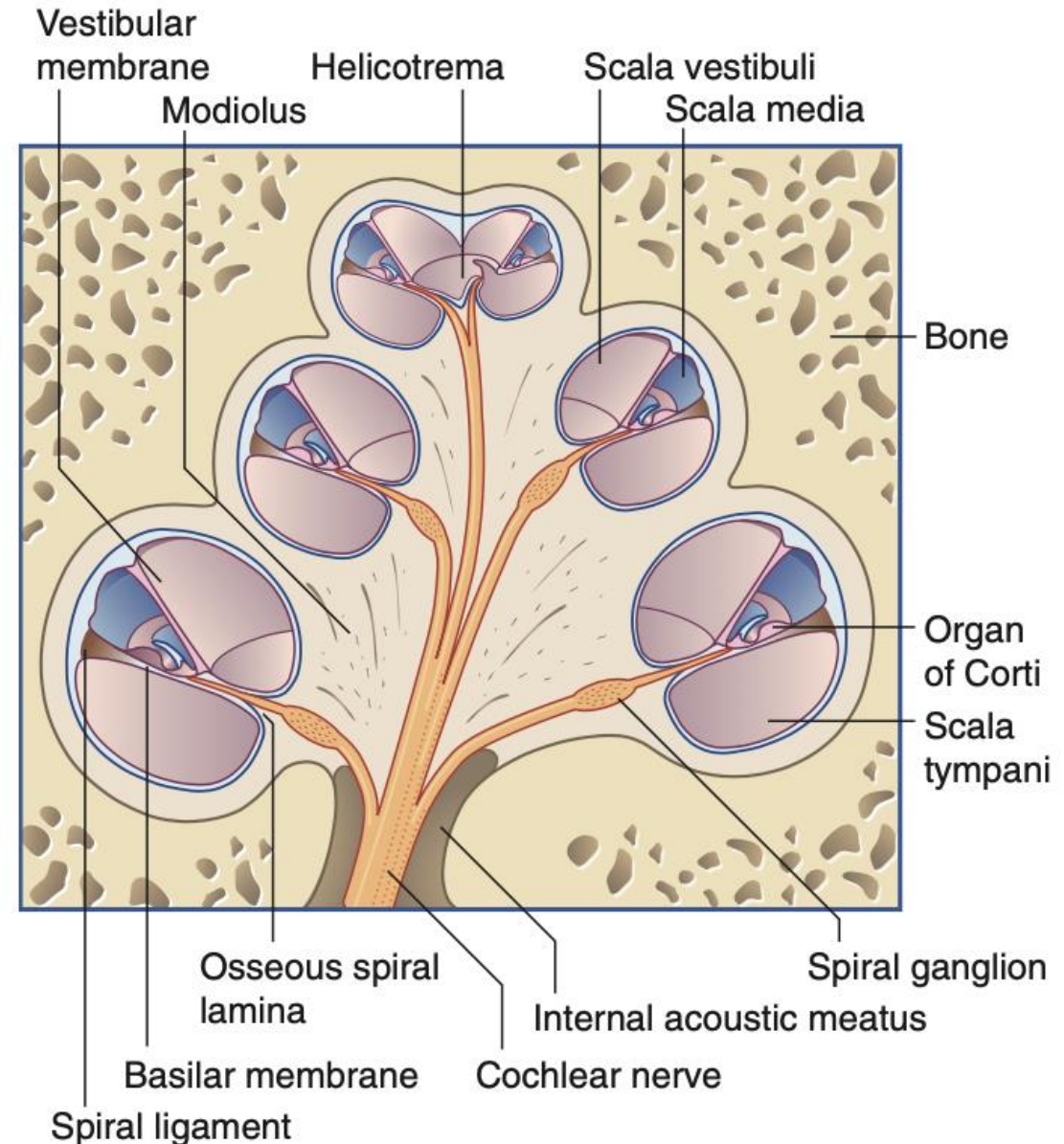
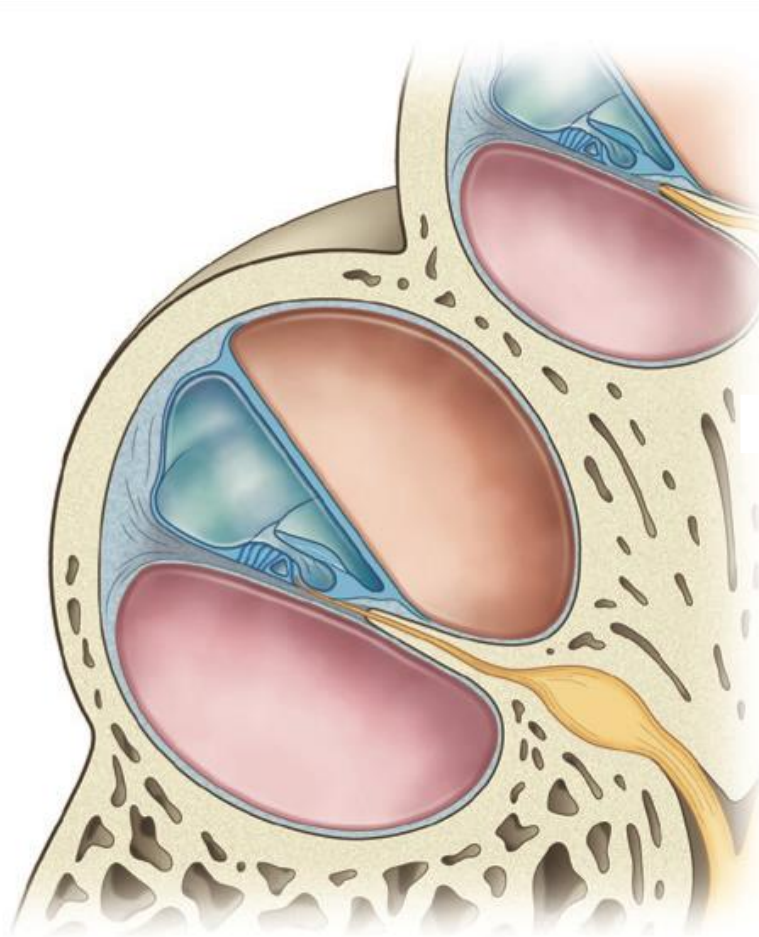
Labyrinthus membranaceus

- ♦ **Ductus semicirculares**
 - ♦ *Anterior, lateralis, posterior*
 - ♦ **Ampulae**
 - ♦ **Crura**
- ♦ **Ductus cochlearis**
- ♦ **Utriculus – protracted 2,5 . 3,5 mm**
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- ♦ **Ductus endolymphaticus**
 - ♦ *Aqueductus vestibuli*
- ♦ **Saccus endolymphaticus**
 - ♦ *Blind end between two leaves of dura mater*
- ♦ **Endolympha**



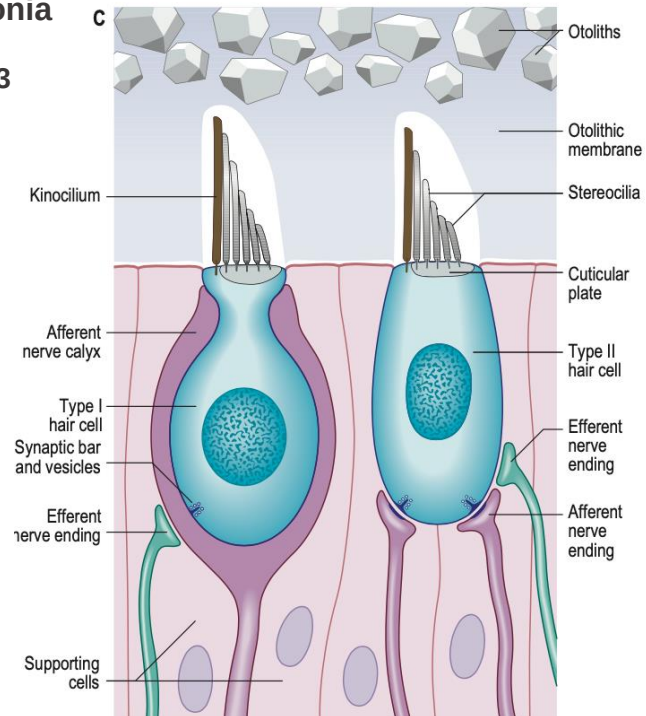
Cochlea

- **Scala vestibuli**
- **Scala media – ductus cochlearis**
- **Scala tympani**
- **Helicotrema**

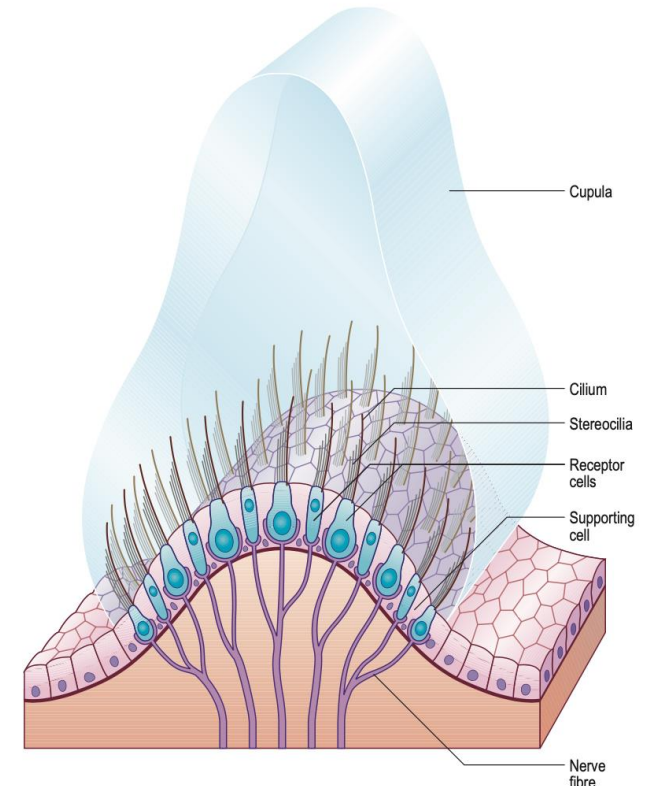
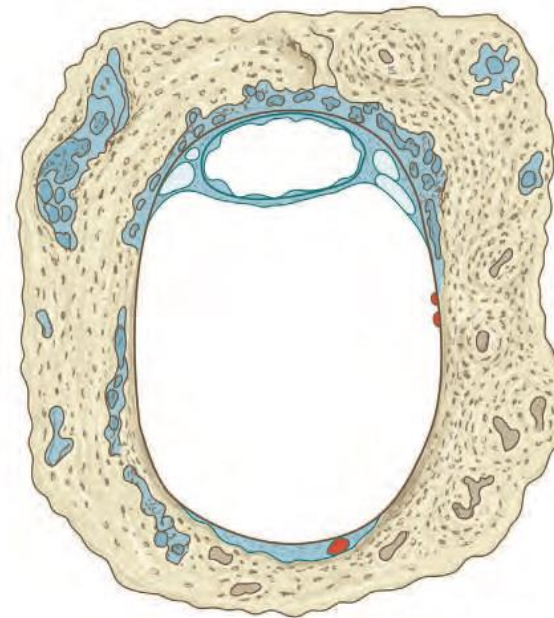


Labyrinthus vestibularis

- Macula statica utriculi
- Macula statica sacculi
- Hairy cells
 - Sterocilie
 - Cillium – one long hair
 - Glykoproteinous gelatinous film
 - Otolits
 - otoconia, statoconia
 - Crystals of CaCO_3

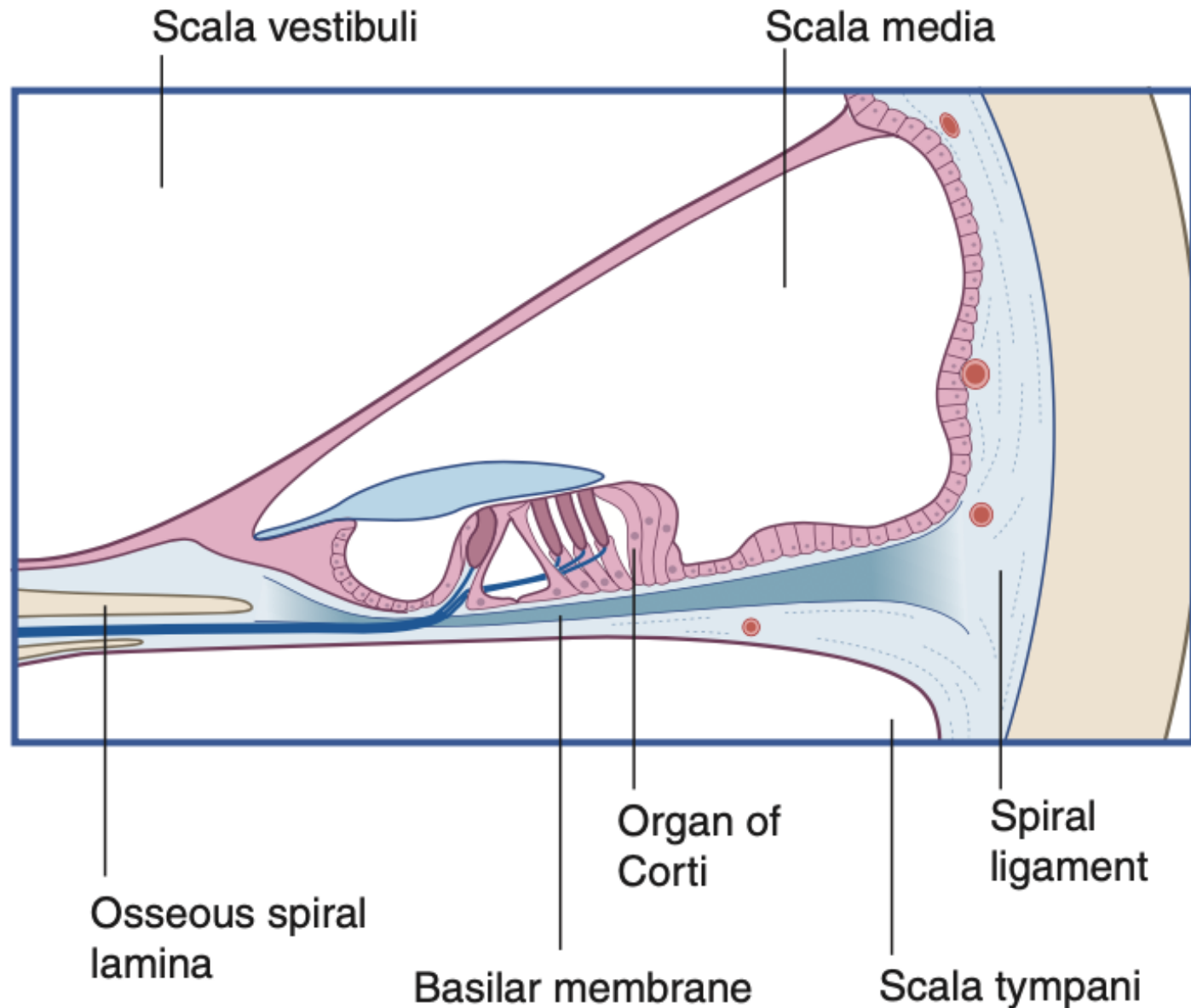


- Canalis semicircularis
- Ductus semicircularis
- Ampulae - cristae ampulares – vláskové bb.
 - One long hair - cilia
 - Gelatinous cupula
 - Angle acceleration



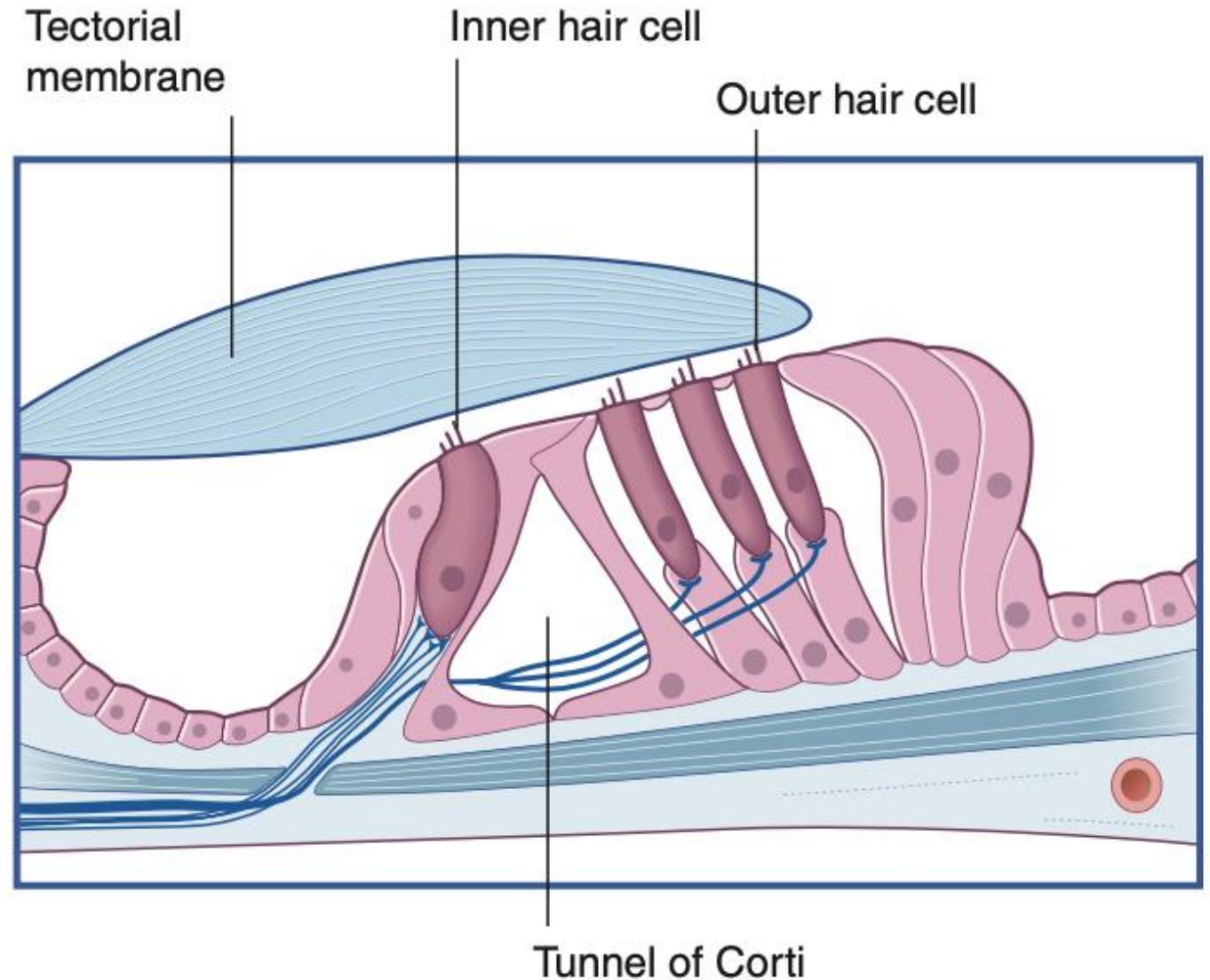
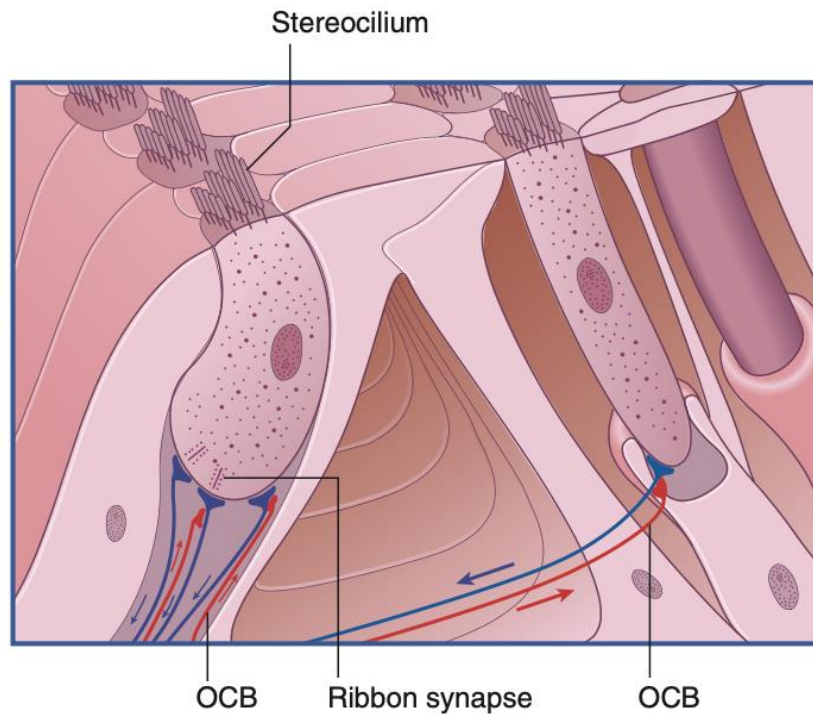
Labyrinthus cochlearis

- ♦ **Scala media**
- ♦ **Ductus cochlearis**
 - ♦ Caecum vestibulare
 - ♦ Caecum cupulare
 - ♦ Ductus reuniens
- ♦ **Organum spirale Corti**
 - ♦ Sensoric cells
 - ♦ Supporting cells
- ♦ **Prominentia spiralis**
 - ♦ Vas prominens
 - ♦ Stria vascularis
 - ♦ Endolymph production



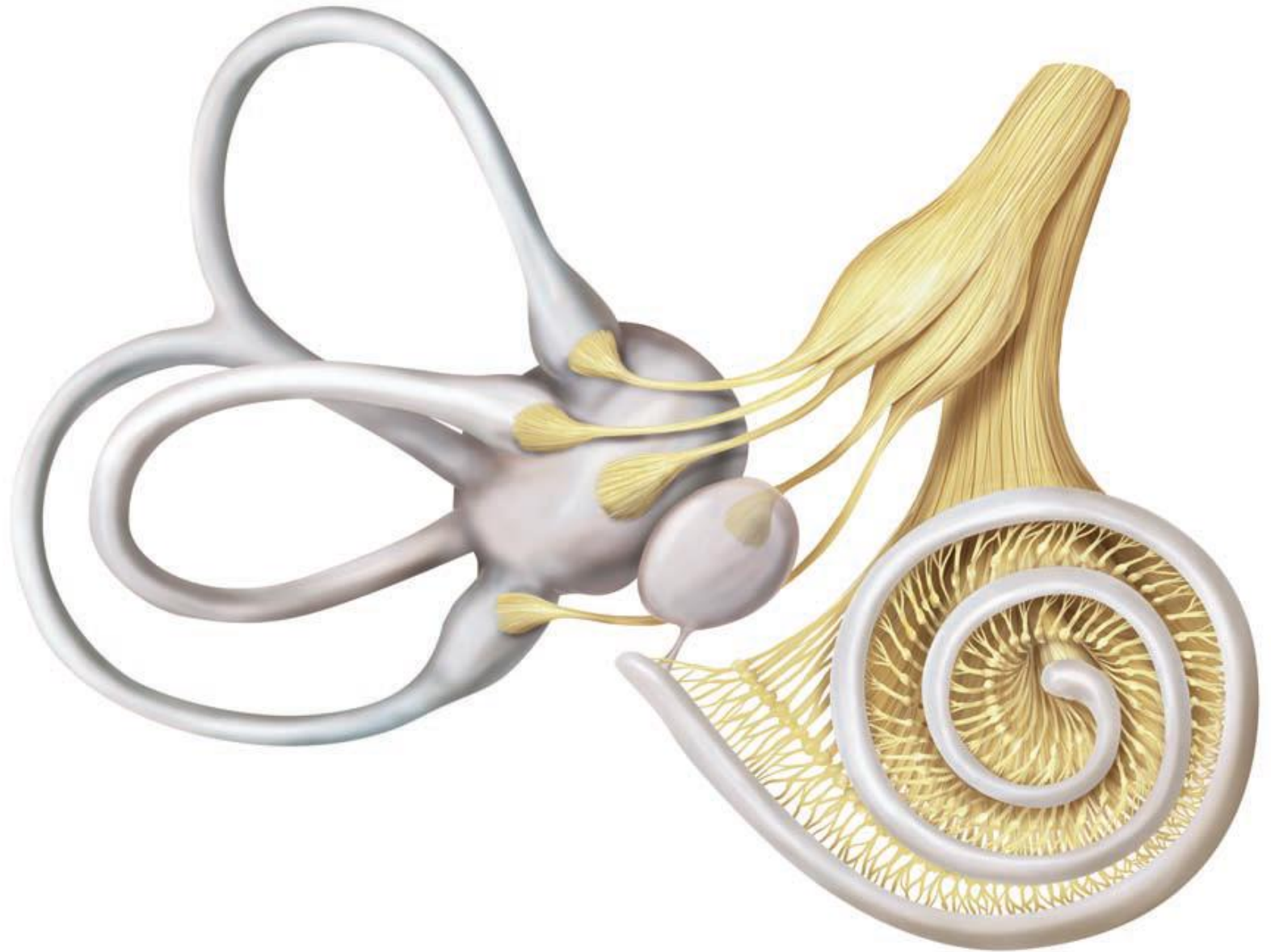
Organum corti

- ♦ Tunnel of Corti
- ♦ Membrana tectoria
 - ♦ Cell-less
- ♦ Vlásokové buňky
 - ♦ Outer and inner
 - ♦ 40 – 50 stereocilias in 3 – 4 rows

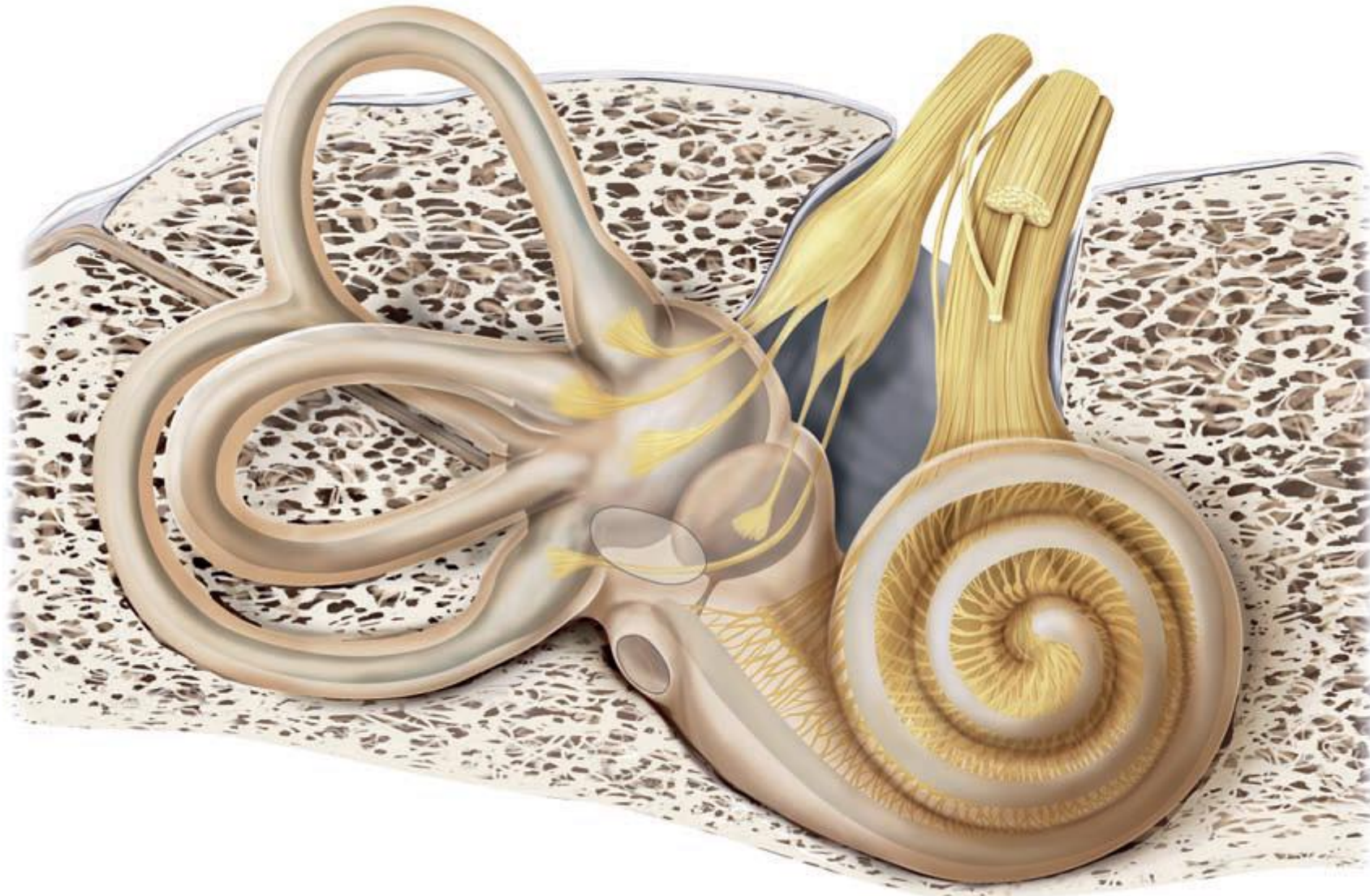


nervi

- ♦ Ganglia et nervi
- ♦ Nervus ampularis anterior
- ♦ Nervus ampularis lateralis
- ♦ Nervus ampularis posterior
- ♦ Nervus utricularis
- ♦ Nervus saccularis
- ♦ Ganglion spirale
- ♦ Nervus cochlearis

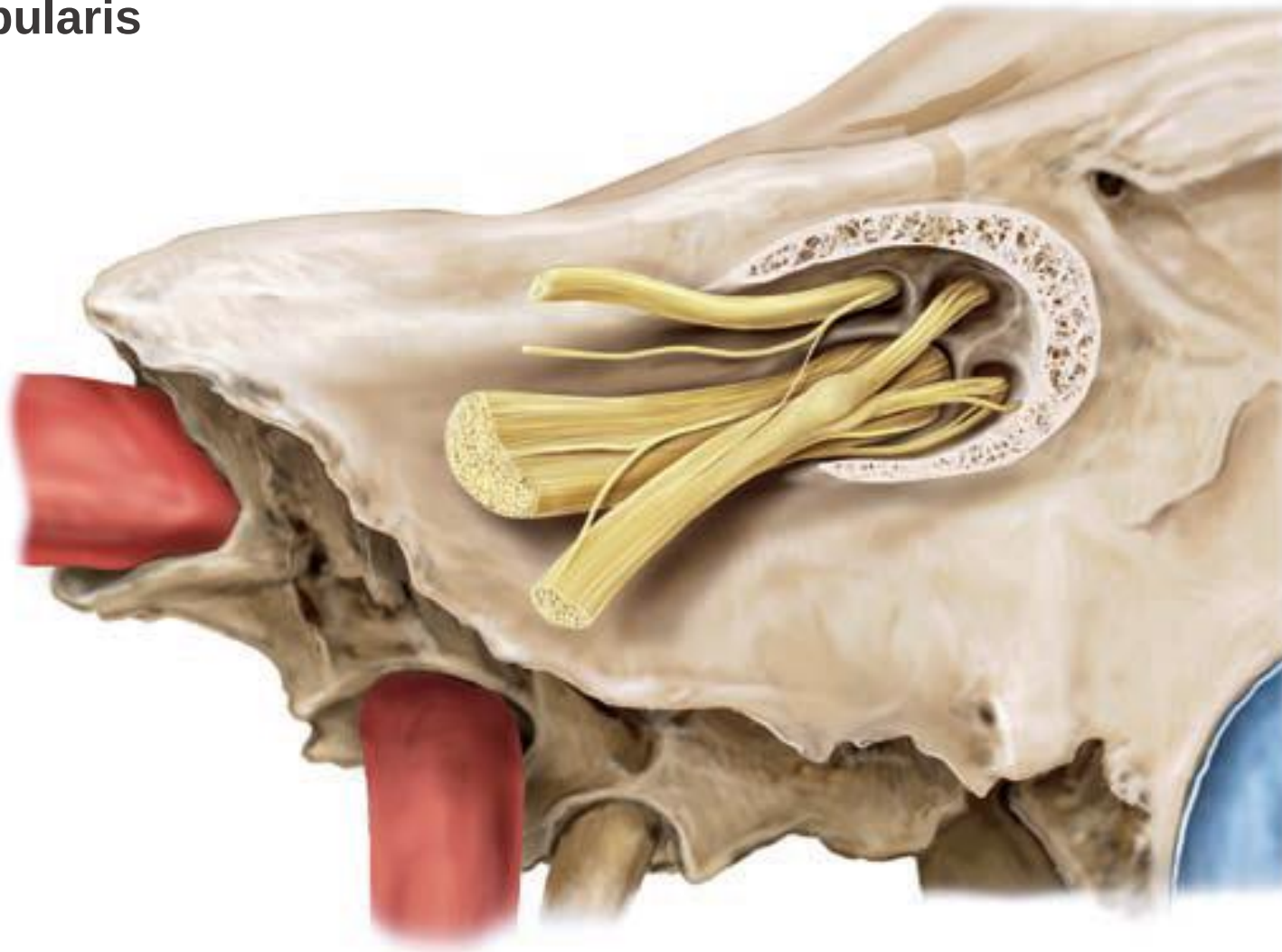


nervi

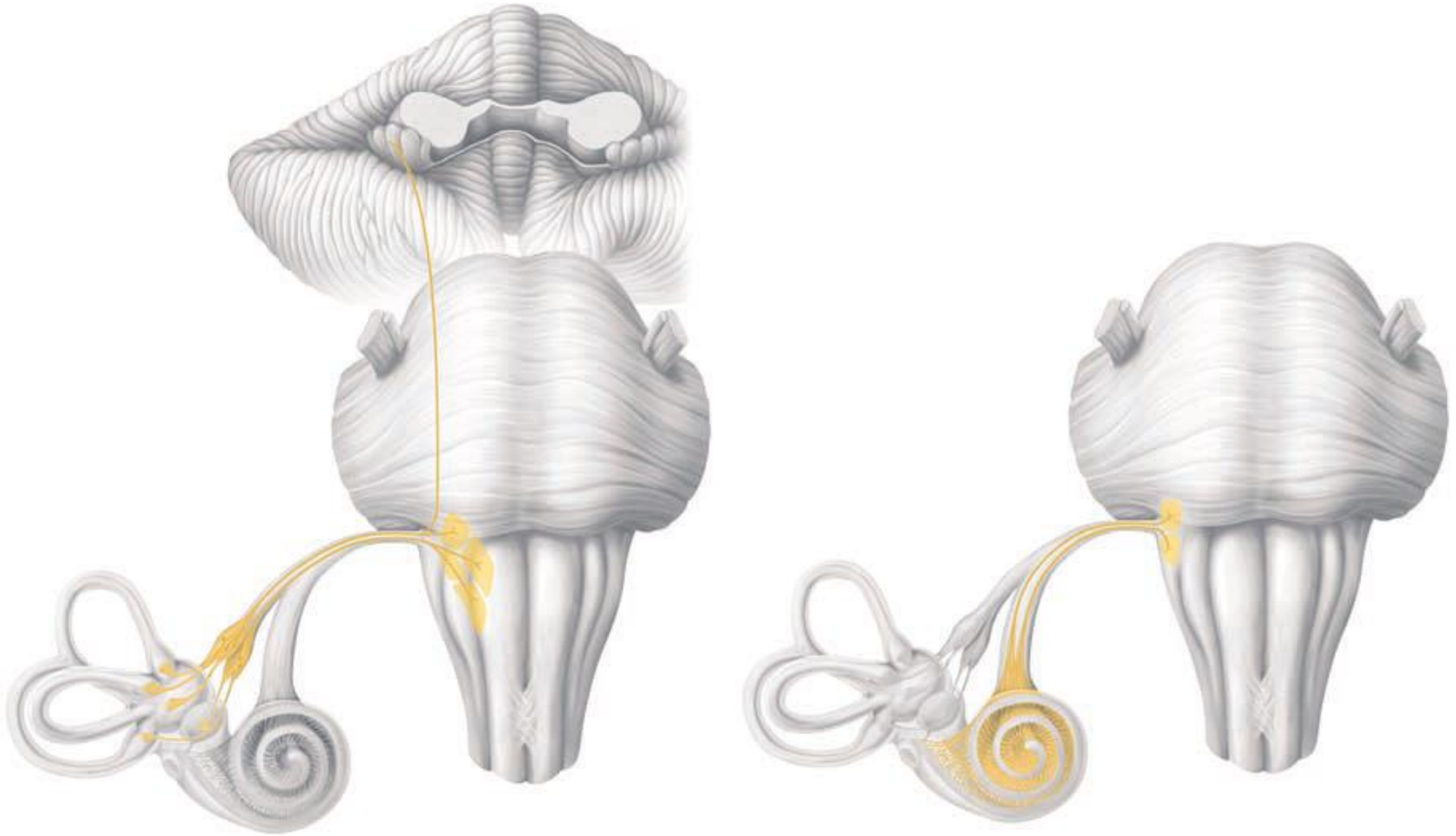


N. vestibulocochlearis et N. facialis in meatus ac. int.

- ♦ N. sacculoampularis
- ♦ N. utriculloampularis
- ♦ N. cochlearis
- ♦ N. facialis



Temporal bone and ear



Temporal bone and ear

