

ORGAN SLUHA I RAVNOTEŽE, UVO

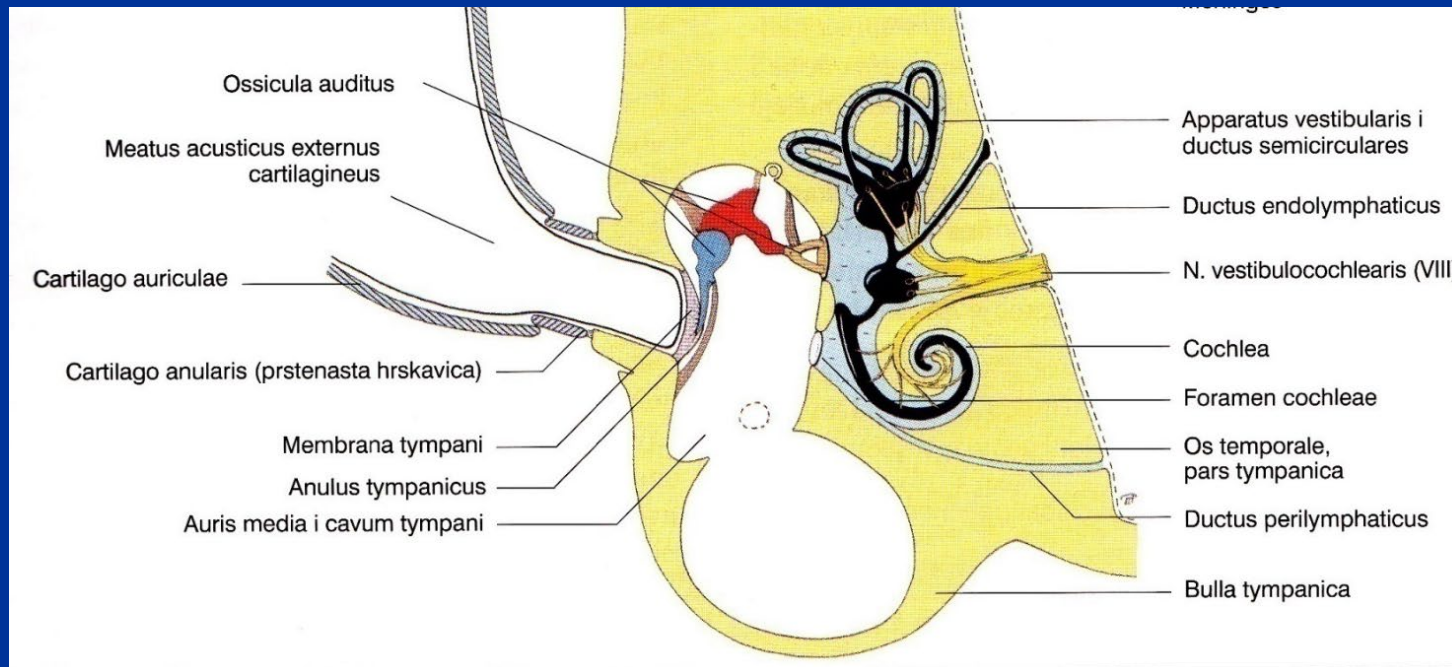
Organum vestibulocochleare s. Auris

dr Ivana Nešić

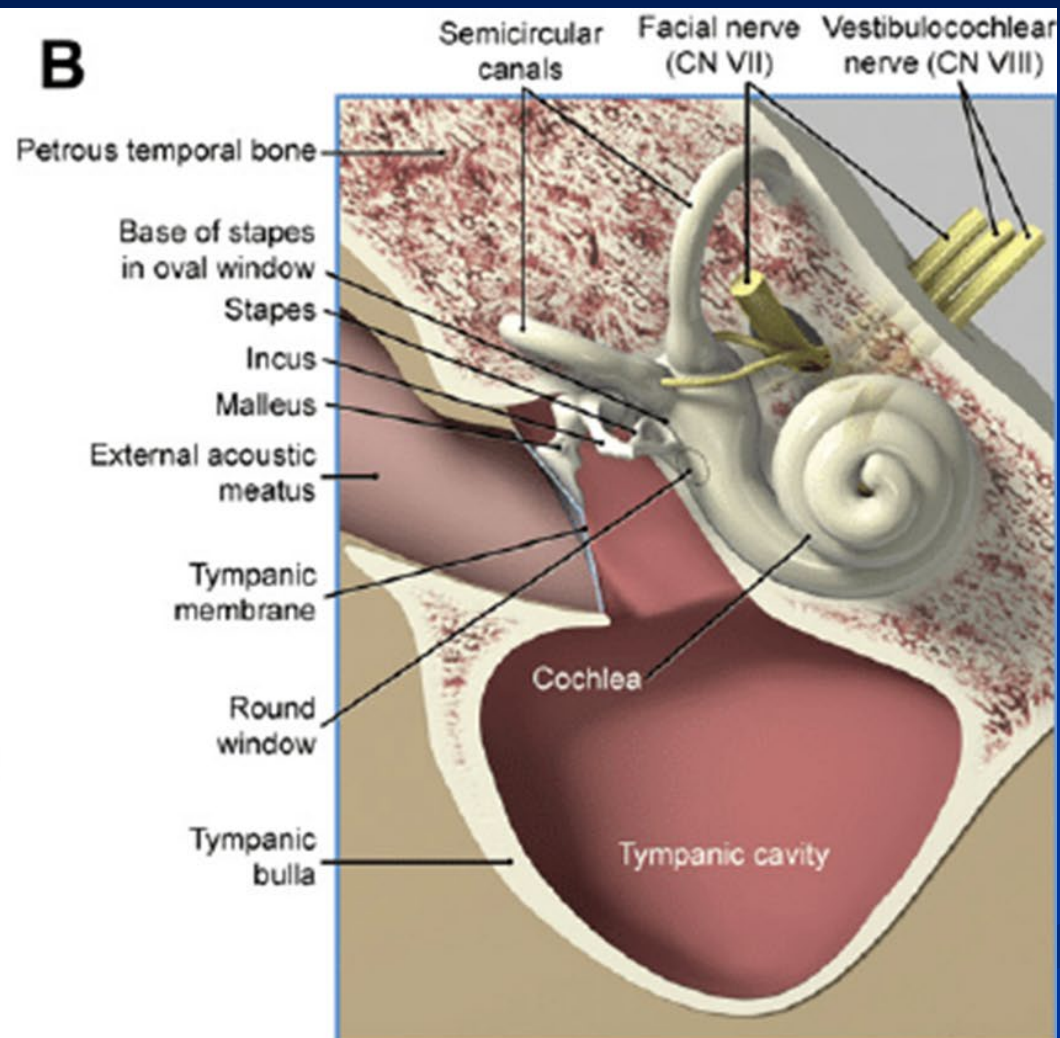
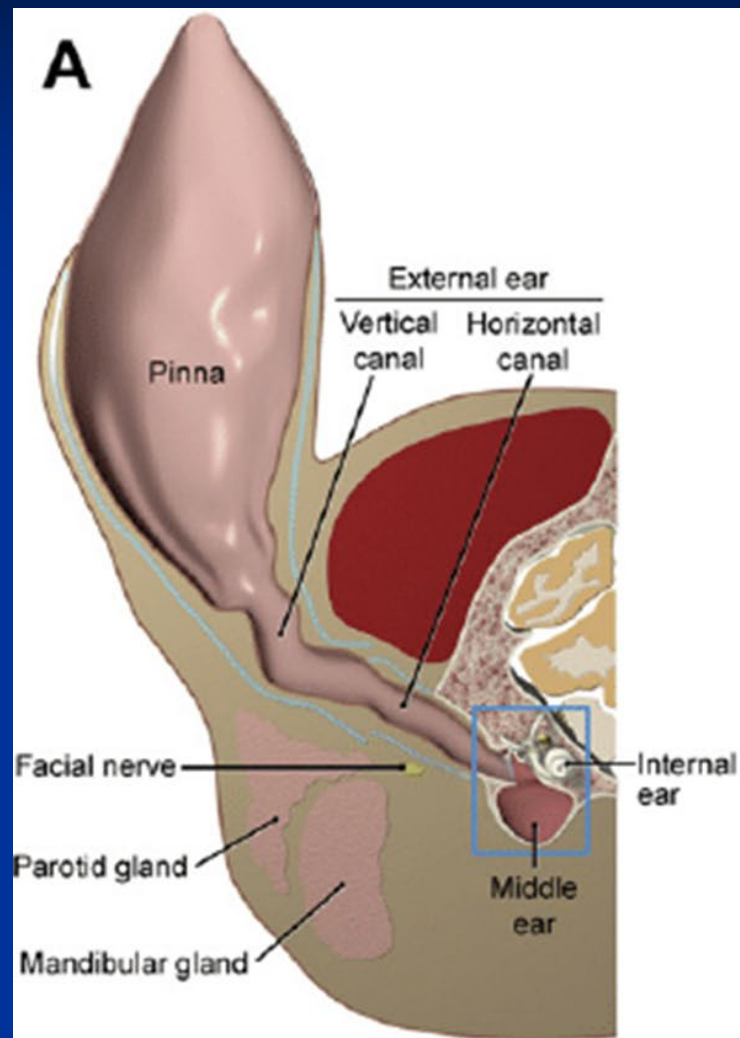
ORGAN SLUHA I RAVNOTEŽE

(Organum vestibulocochleare)

- SPOLJAŠNJE UVO (Auris externa)
- SREDNJE UVO (Auris media)
- UNUTRAŠNJE UVO (Auris interna)

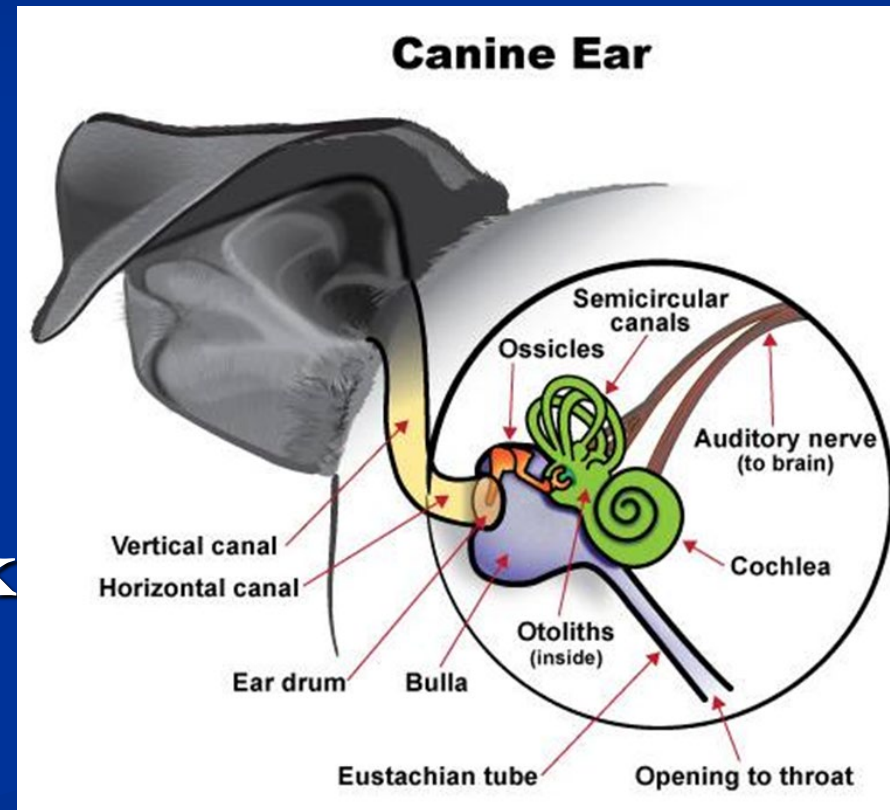


Šematski prikaz uva psa



SPOLJAŠNJE UVO (*Auris externa*)

- Ušna školjka
(*Auricula*)
- Spoljašnji slušni hodnik
(*Meatus acusticus externus*)





UŠNA ŠKOLJKA (Auricula)

- levkasti, kožno-mišićni organ, oblika fišeka
- u središtu ušne školjke leži elastična rskavica (*Cartilago auriculae*)
- dobro pokretna

Funkcija:

Prikupljanje, usmeravanje i sprovođenje zvučnih talasa prema drugim delovima organa sluha

Položaj ušne školjke kod konja:

- uspravne,
- dobro pokretne,
- male,
- oštrog vrhova



Slika 18-12. Nježne rešetkaste dlake (tragi) na ulazu u vanjski zvukovod konja.



Osnovni delovi ušne školjke:

- *Dorsum auriculae*
- *Scapha*
- *Margo auriculae*
- *Apex auriculae*
- *Basis auriculae*



Položaj ušne školjke kod govečeta:

- postavljene po strani
- dobro pokretne



Položaj ušne školjke kod ovce:

- postavljene po strani i napred
- zašiljenih vrhova
- pokretne



Položaj ušne školjke kod svinje:

- relativno velike, klempave uši



Položaj ušne školjke kod mačke:

- male,
- skoro uspravno postavljene,
- oštarih vrhova,
- dobro pokretne

Cartilago auriculae

- elastična rskavica
- daje oblik ušnoj školjci



KONJ



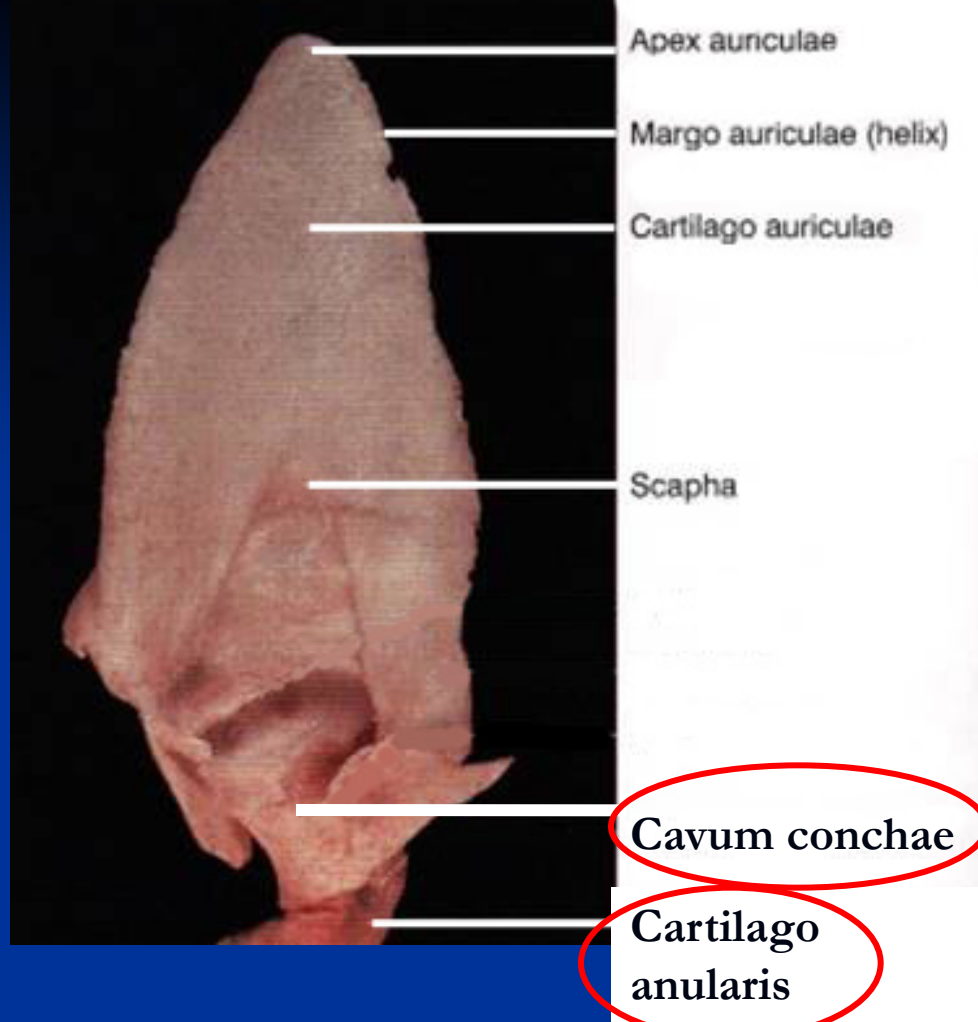
GOVEČE



SVINJA

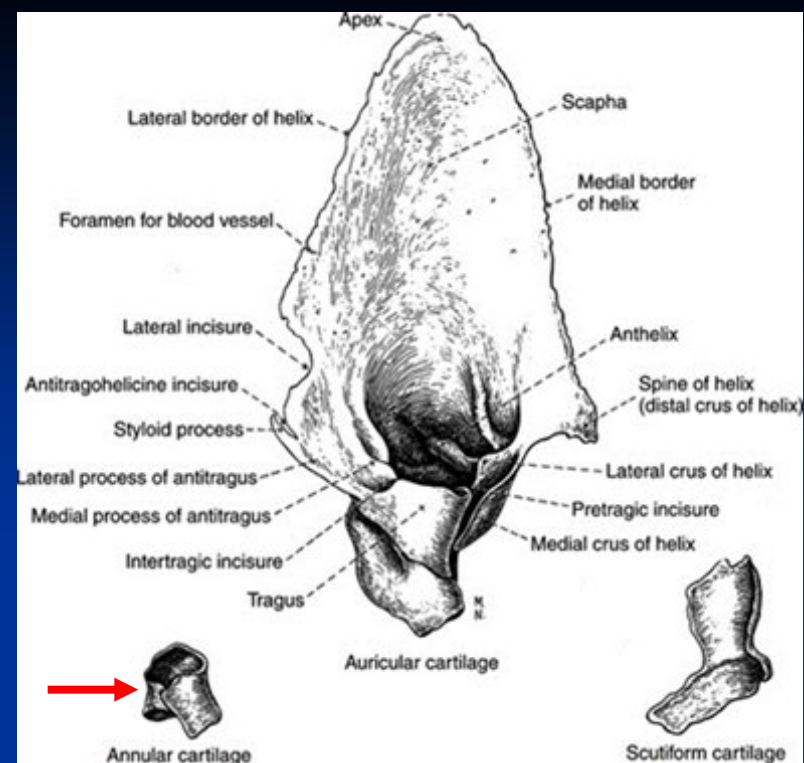


PAS



Cavum conchæ (konhalna šupljina)

- na bazi *Cartilago auriculæ*
- oblika levka



Cartilago anularis (prstenasta rskavica)

- obuhvata *Porus acusticus externus*
- daje dodatnu fleksibilnost aurikuli

Porus acusticus externus

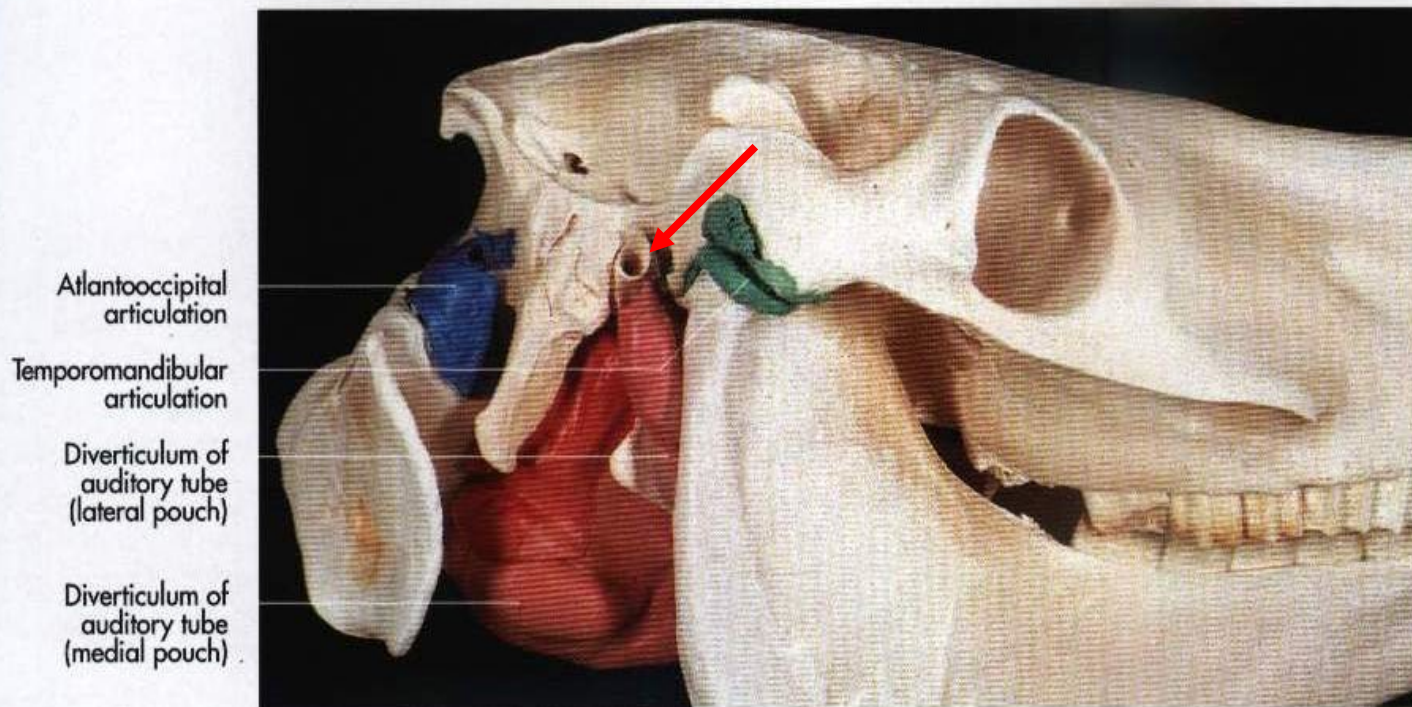
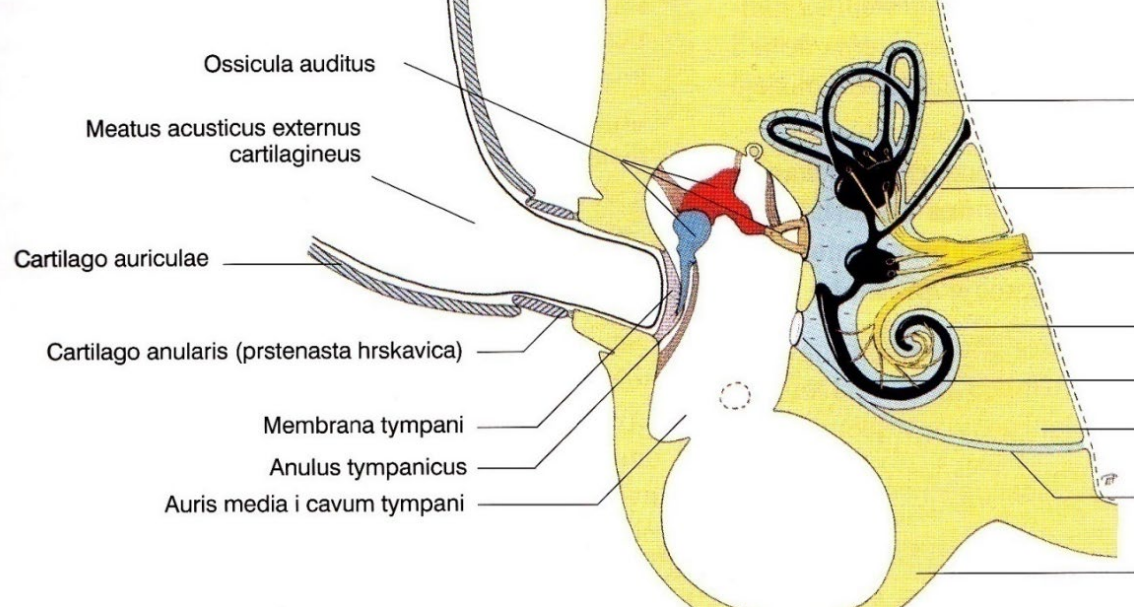


Abb. 17-21. Guttural pouch with atlantooccipital and temporomandibular articulation (acryl cast), lateral aspect (Wolf, 1999).

Meatus acusticus externus (spoljašnji slušni hodnik)



1. Rskavični deo:

Meatus acusticus externus cartilagineus

Cavum conchae

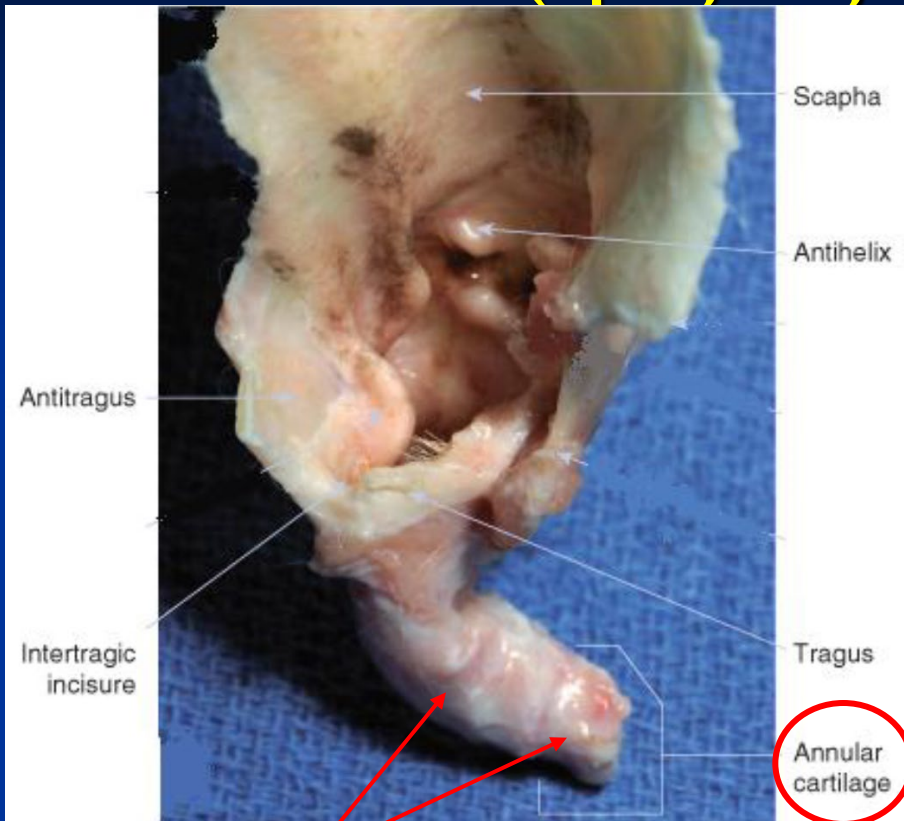
Cartilago anularis

2. Koštani deo:

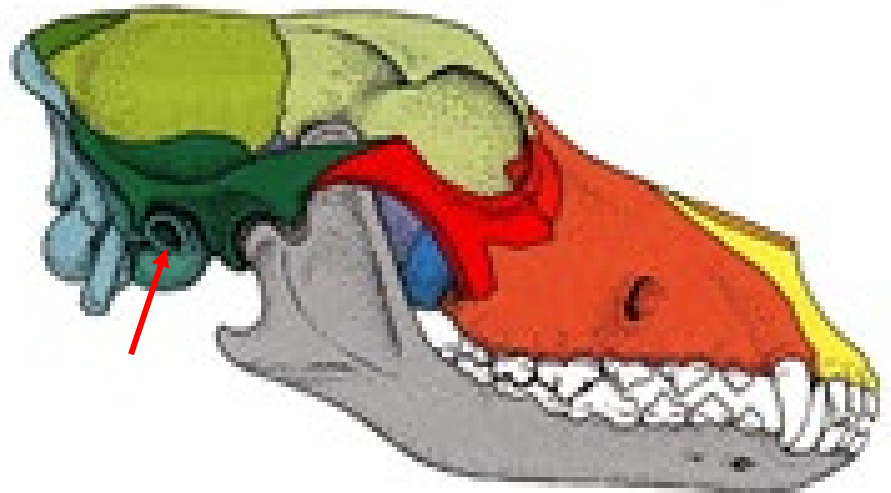
Meatus acusticus externus osseus

(u Pars tympanica slepoočne kosti)

Meatus acusticus externus (spoljašnji slušni hodnik)



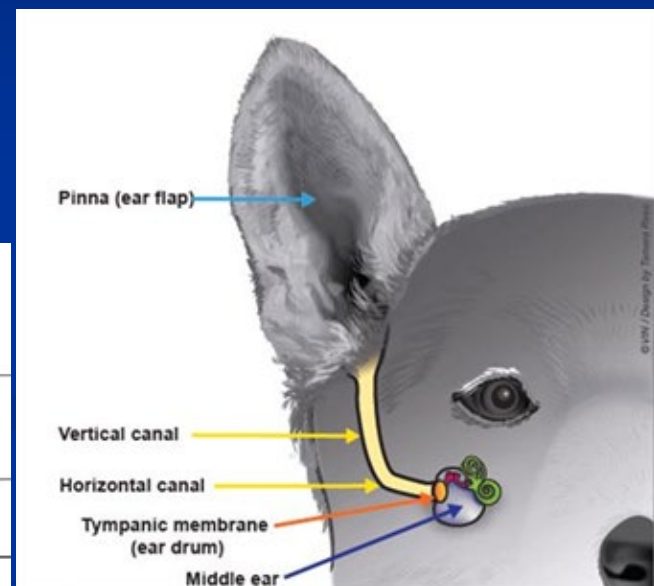
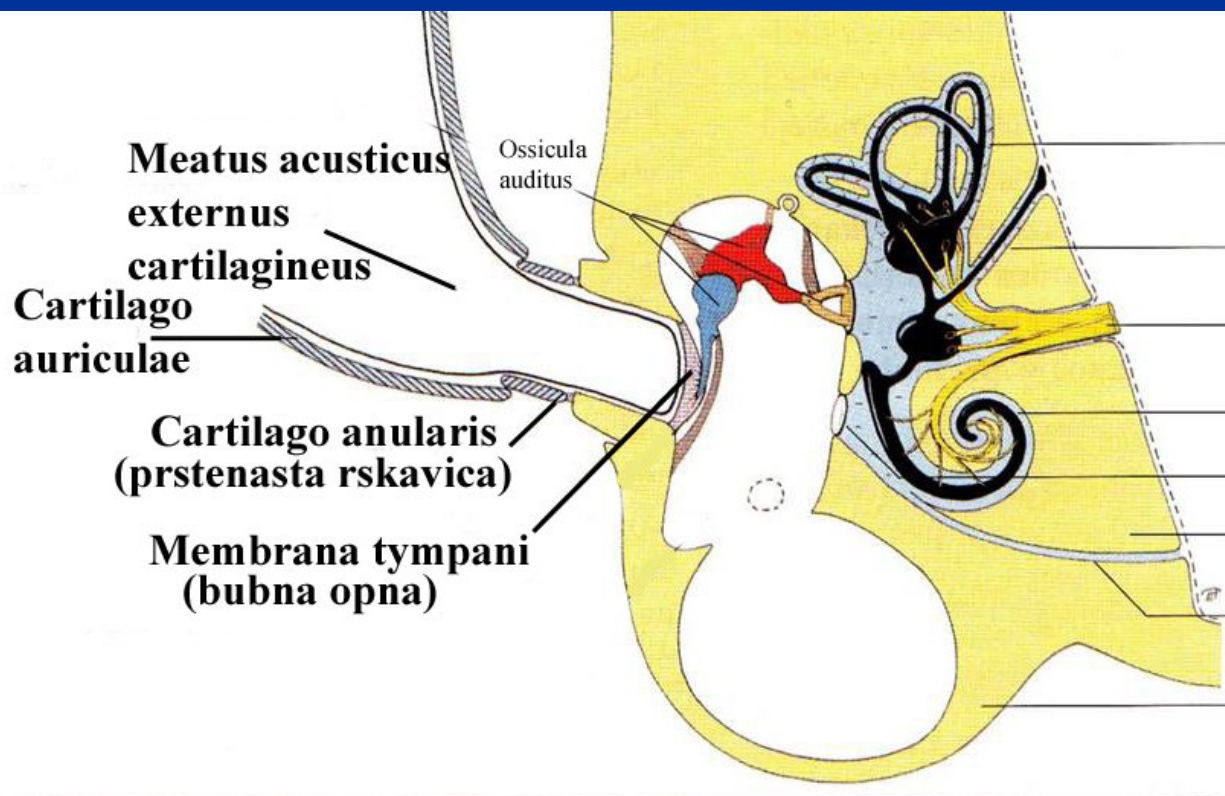
Meatus acusticus externus
slepoočne kosti
(*Pars tympanica*)



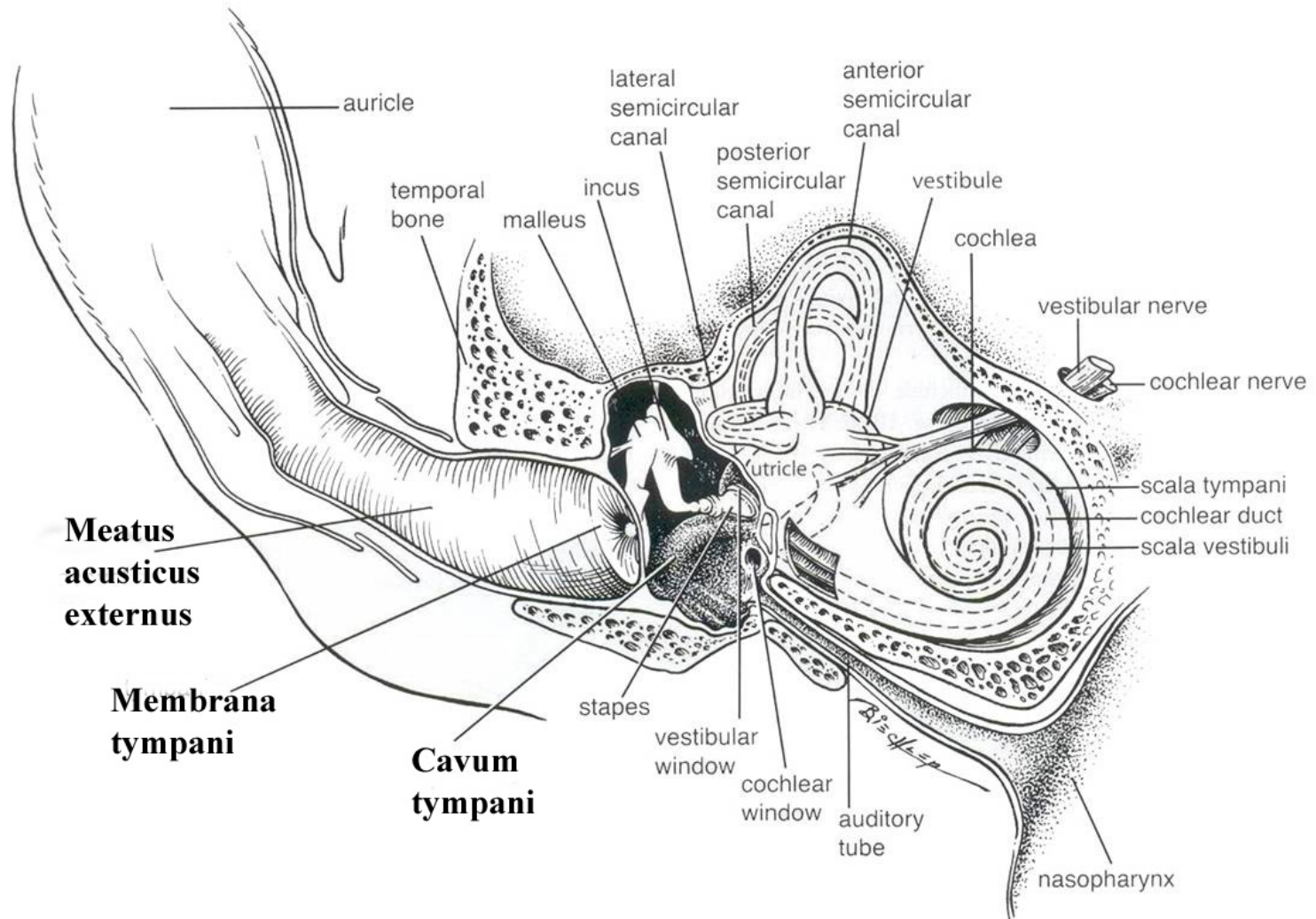
Meatus acusticus
externus cartilagineus

Meatus acusticus externus

- od konhalne šupljine (*Cavum conchae*) do bubne opne
- usmerava zvučne talase ka bubnoj opni
- iznutra presvučen kožom
- *Gll. ceruminosae*
- luče ušnu mast - *Cerumen*

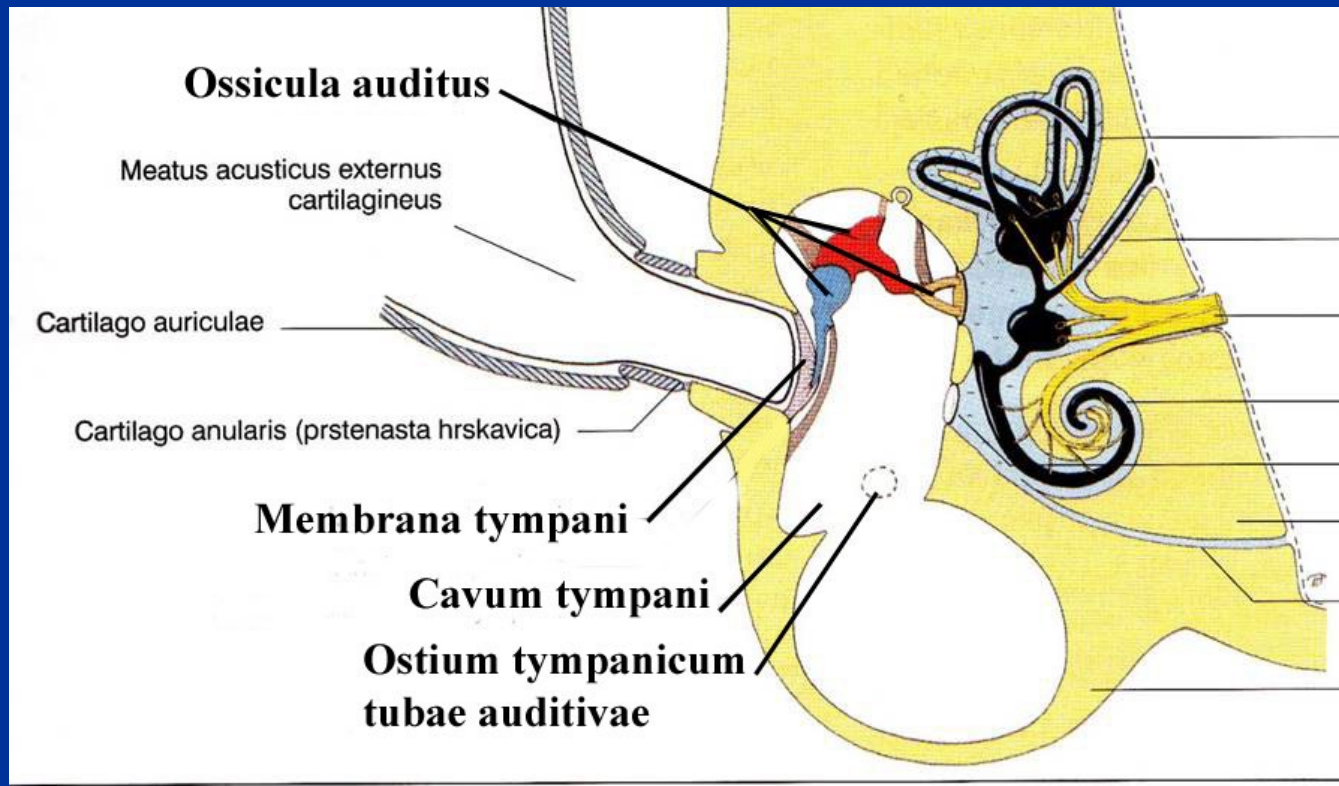


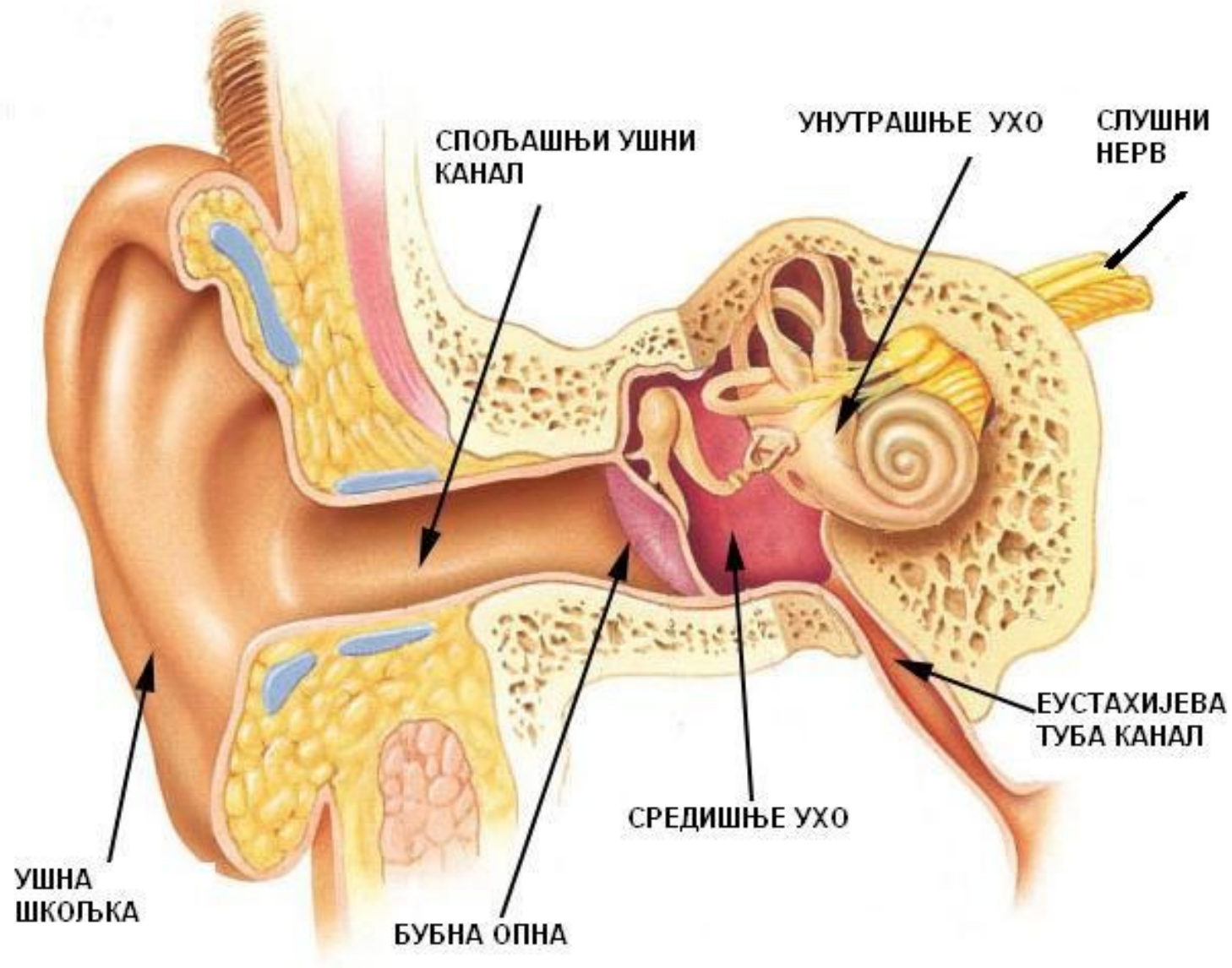
Uvo psa



SREDNJE UVO (Auris media)

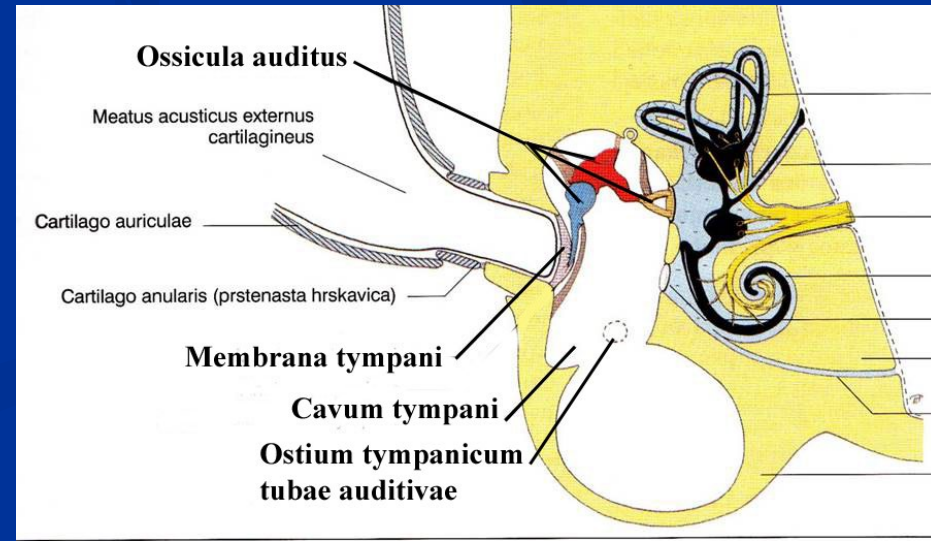
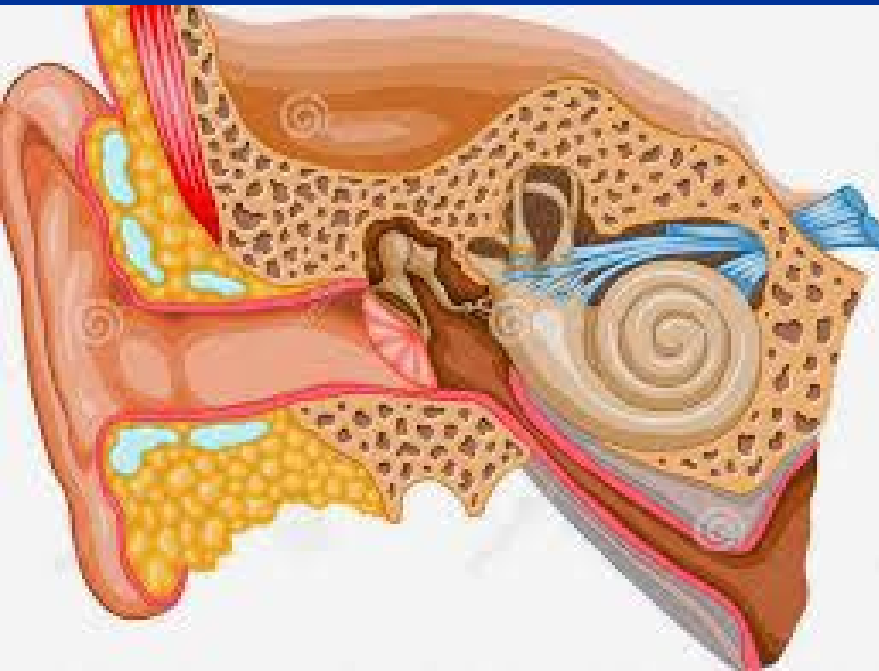
- Bubna opna (*Membrana tympani*)
- Bubna duplja (*Cavum tympani*)
- Slušne koščice (*Ossicula auditus*)
- Eustahijeva tuba (*Tuba auditiva s. Eustachii*)





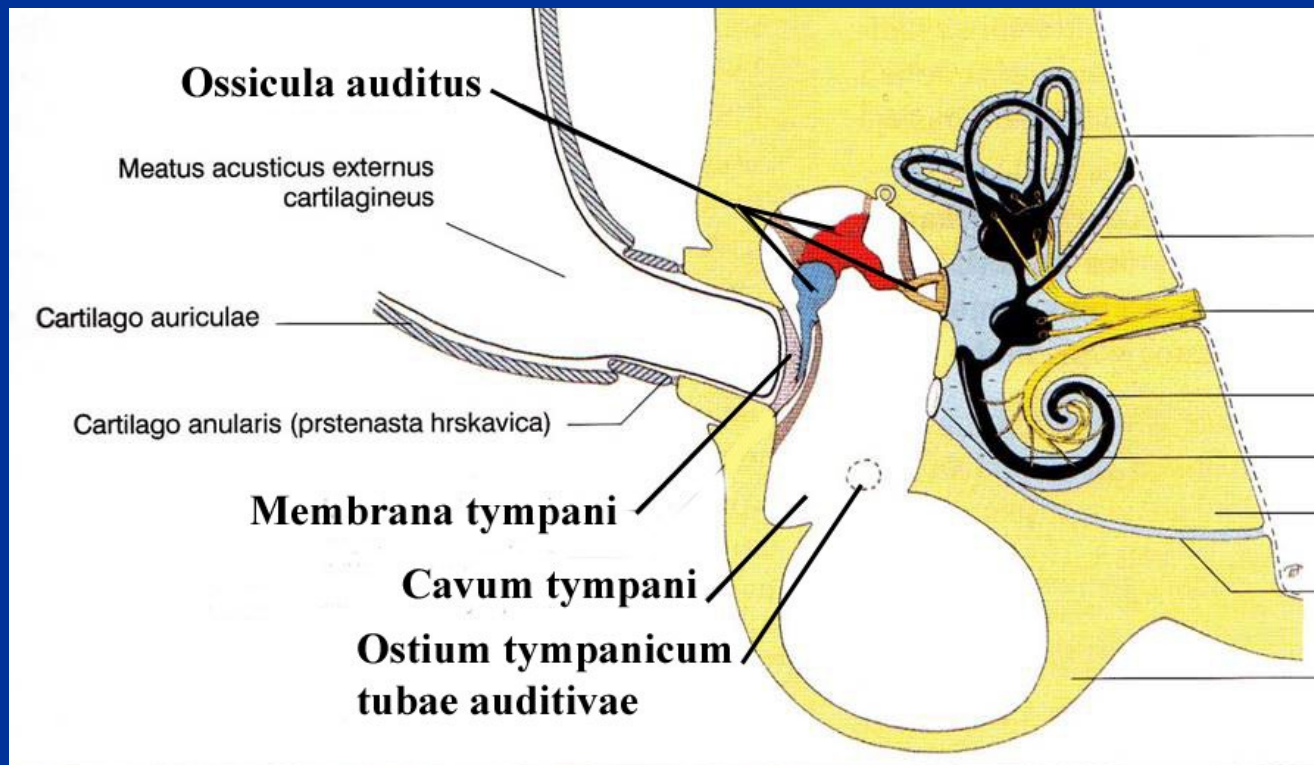
■ Bubna opna (Membrana tympani)

- Zategnuta, koso postavljena, kožno-sluzokožna membrana
- Odvaja srednje od spoljašnjeg uva
- Prenosi zvučne talase na slušne koščice
- 3 sloja: spoljašnji (koža), srednji (sa krvnim sudovima i vezivom) i unutrašnji (sluzokoža)
- predstavlja lateralni zid bubne duplje (Cavum tympani)
- *Umbo membranae tympani*



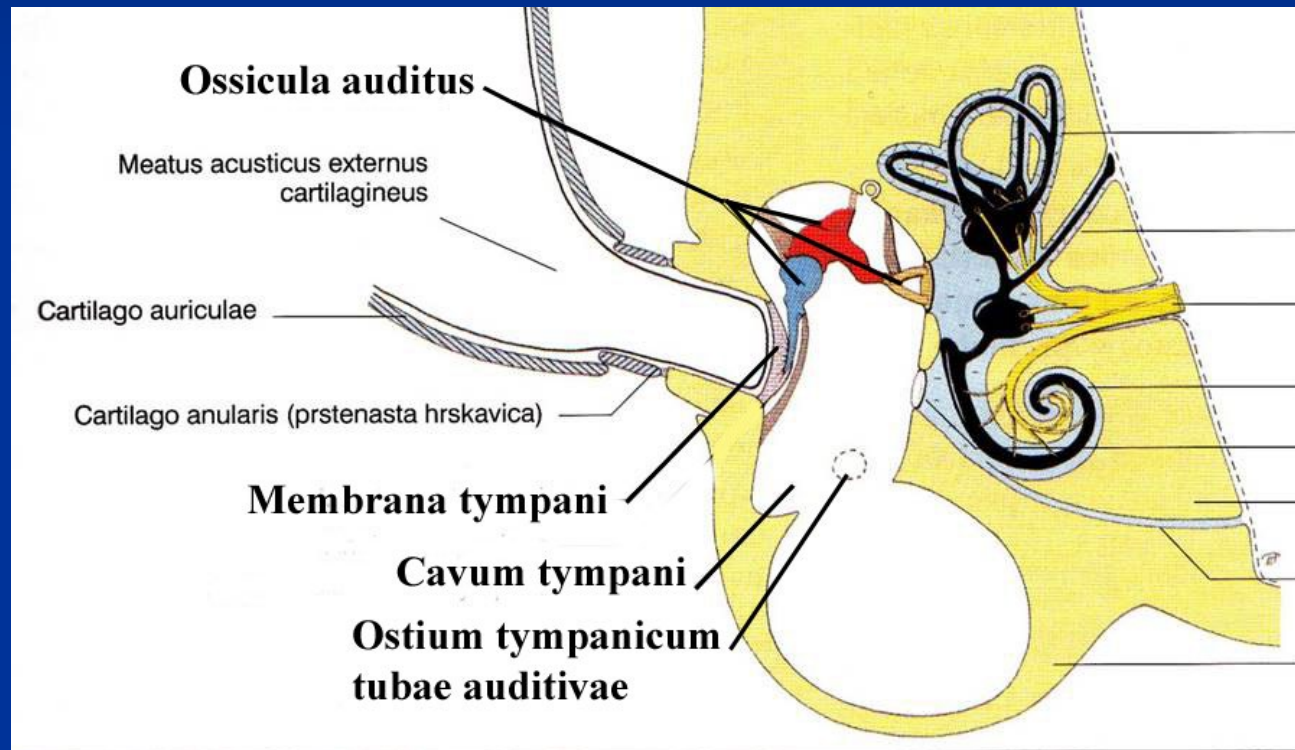
Bubna duplja (Cavum tympani)

- šupljina srednjeg uva
- koštana šupljina u Pars tympanica slepoočne kosti
- leži između bubne opne i unutrašnjeg uva
- u njoj se nalaze slušne koščice i unutrašnji otvor Eustahijeve tube

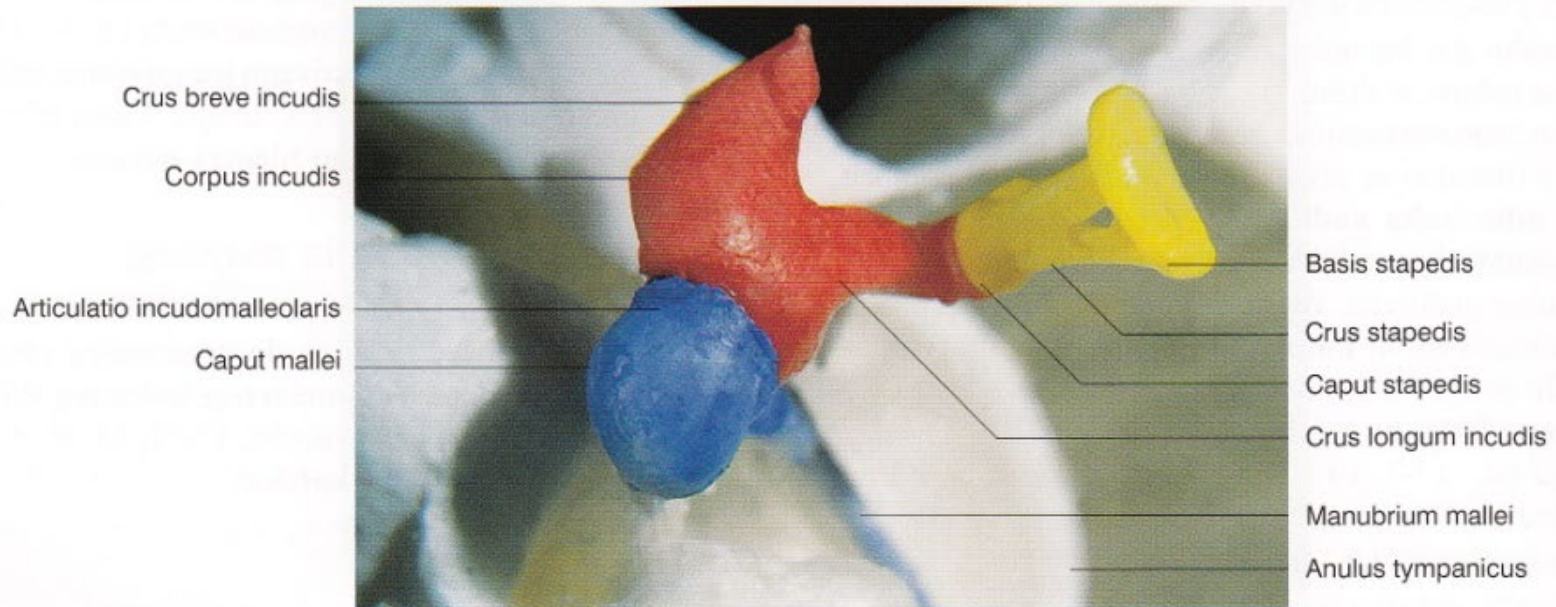


Slušne koščice (Ossicula auditus)

- Čekić (Malleus)
- Nakovanj (Incus)
- Uzengija (Stapes)
- Sočivasta koščica (Os lenticulare)

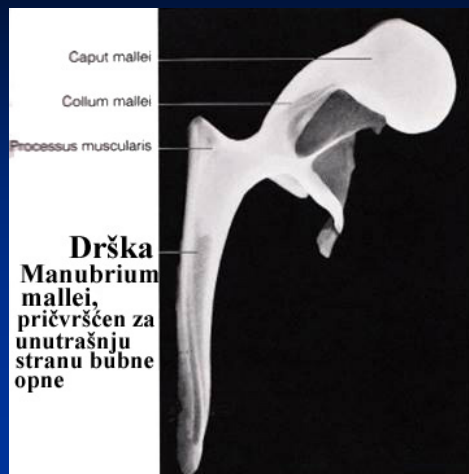


Slušne koščice kod konja

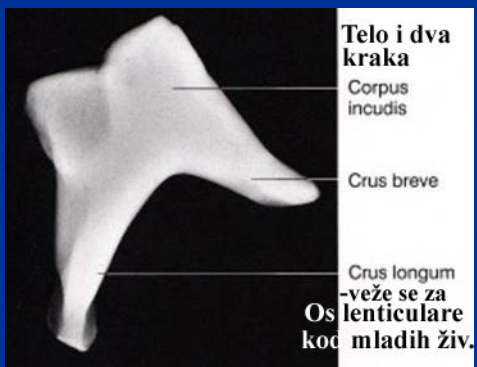


Slika 17-16. Slušne koščice konja, obojene, preparat H. Dier, Beč.

■ Slušne koščice (Ossicula auditus)



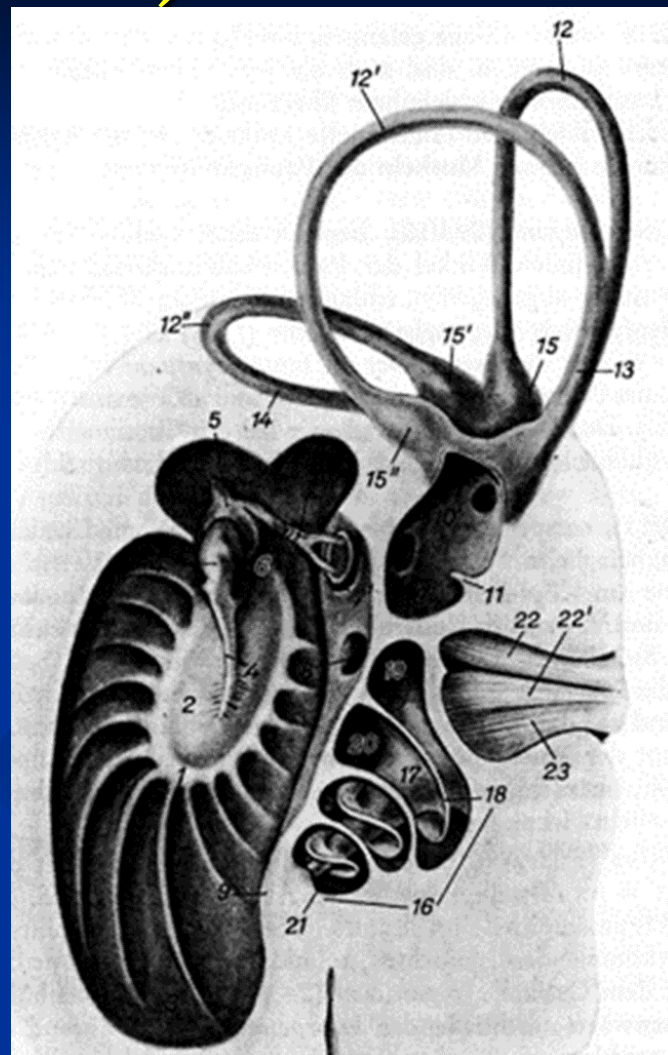
Čekić
(Malleus)



Nakovanj
(Incus)



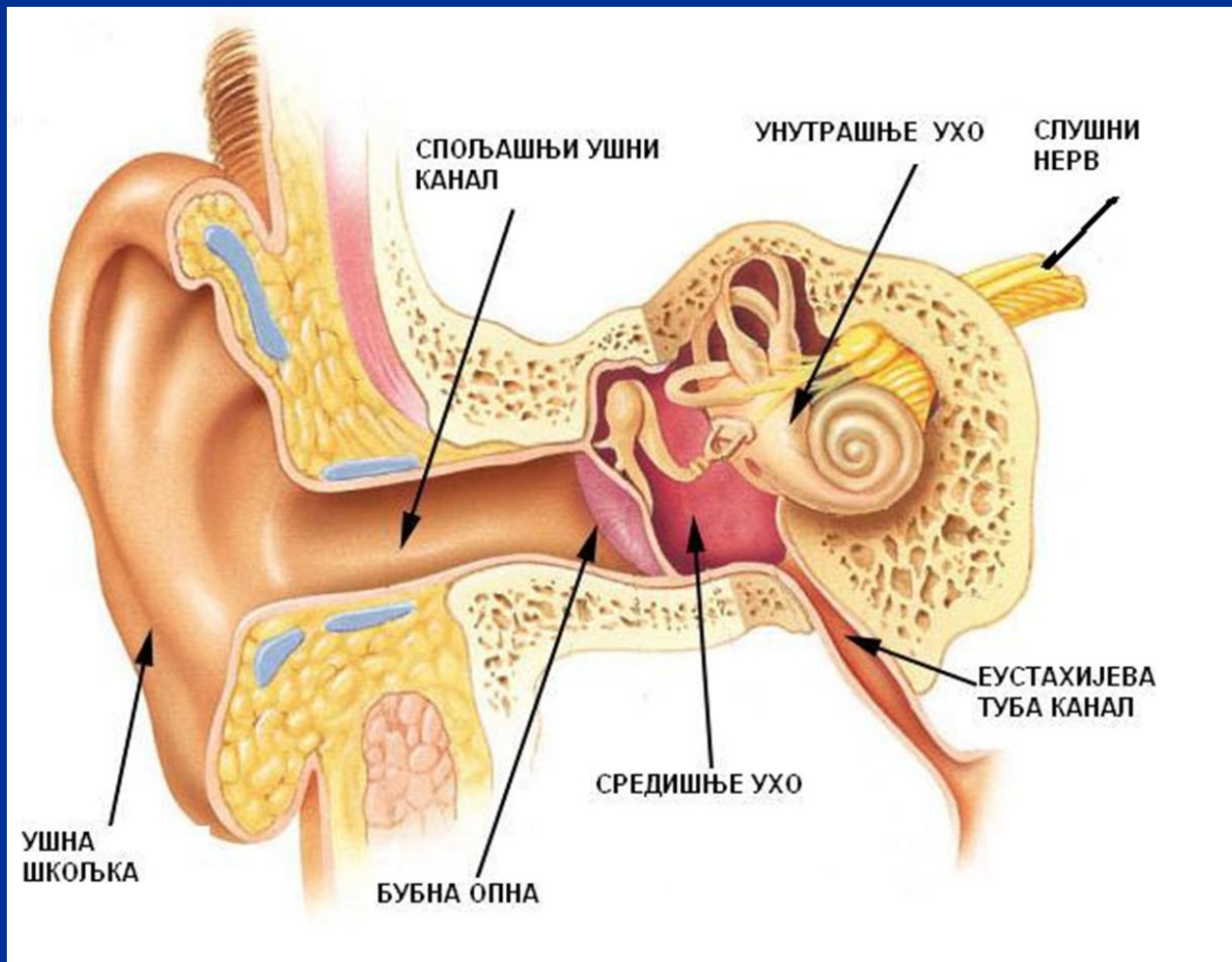
Uzengija
(Stapes)



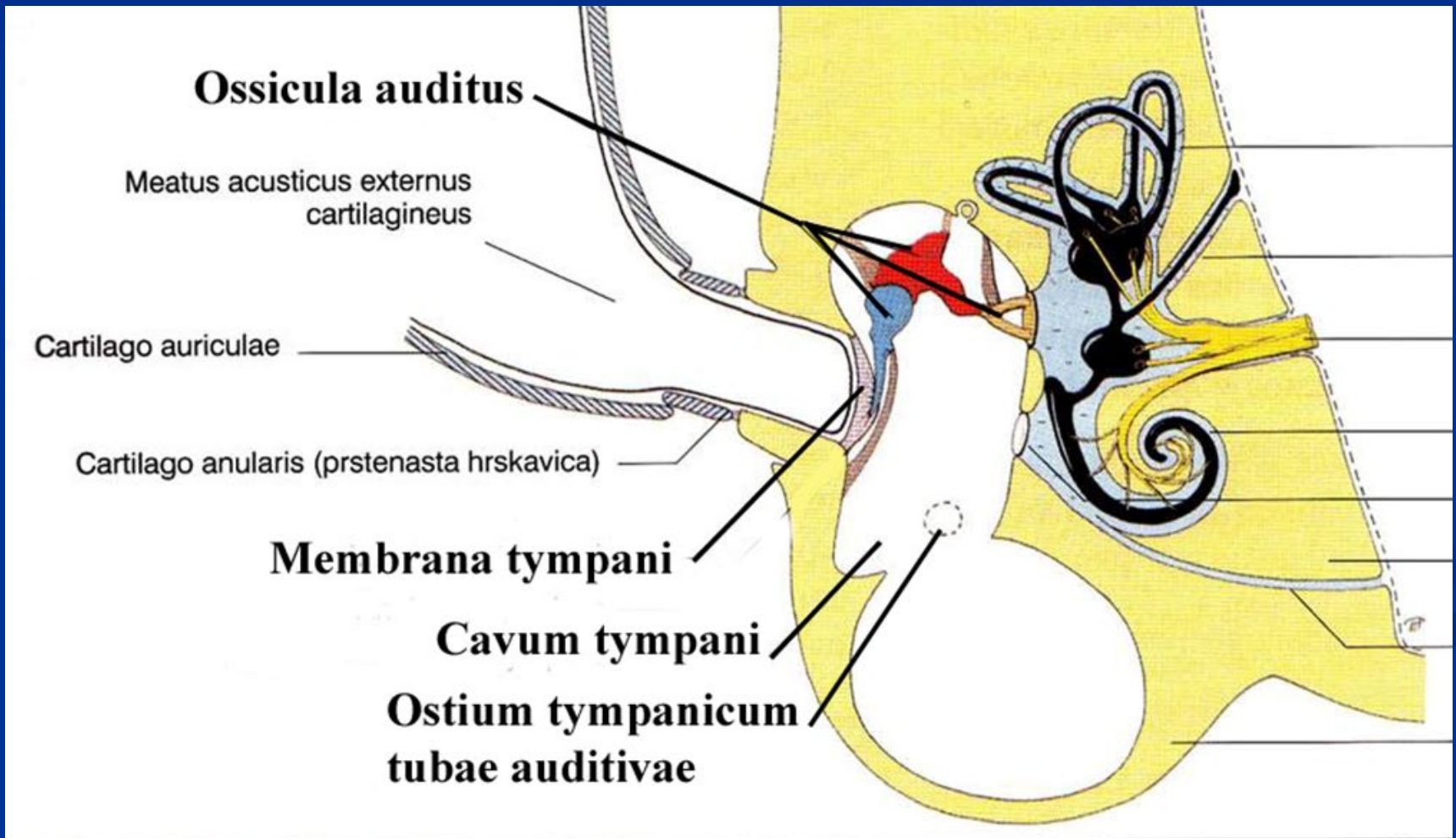
Otvori u zidu Cavum tympani:

- Fenestra vestibuli vodi u statični deo unutrašnjeg uva
- Fenestra cochleae vodi u puž
- Ostium tympanicum tubae auditivae

- Fenestra vestibuli
- Fenestra cochleae
- Ostium tympanicum tubae auditive

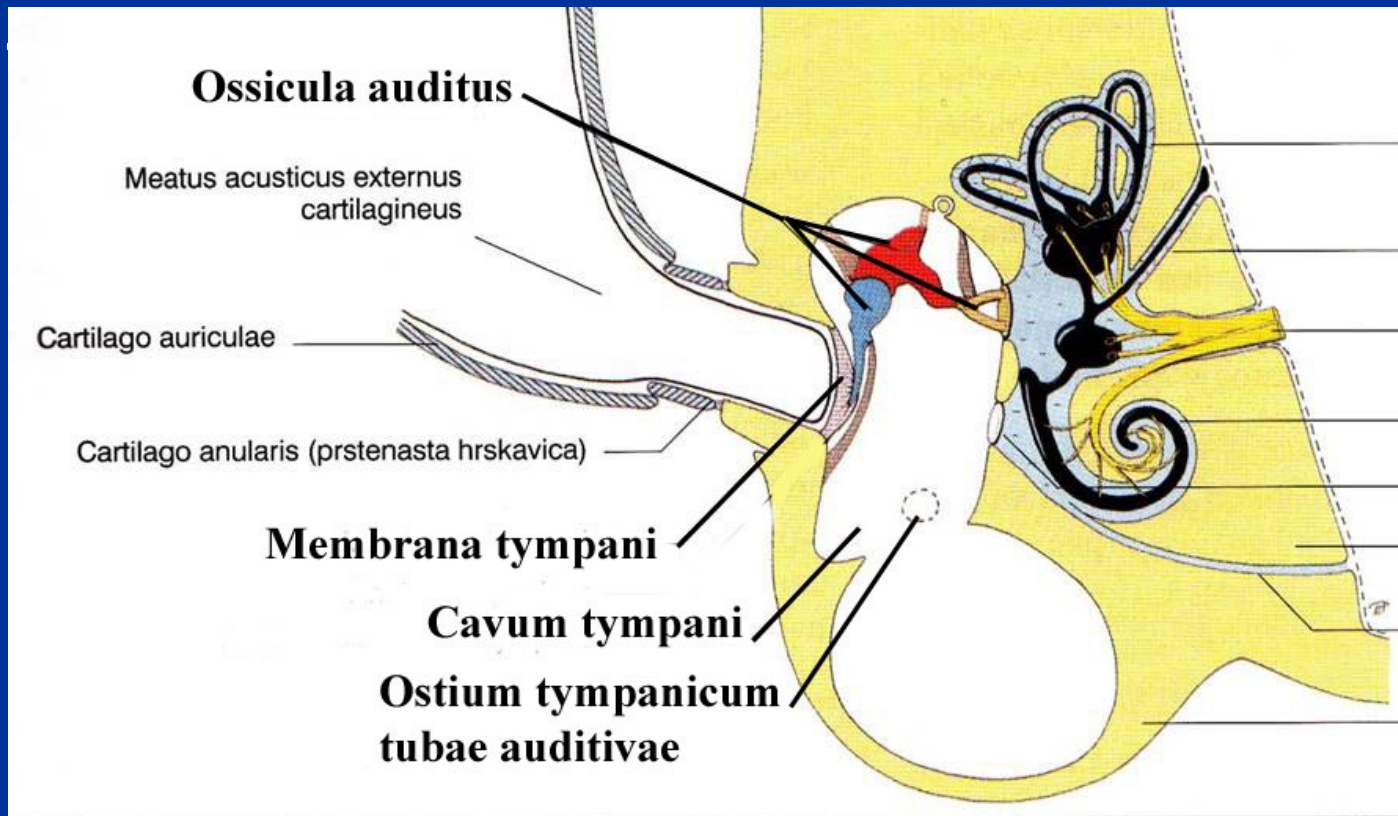


- Fenestra vestibuli
- Fenestra cochleae
- Ostium tympanicum tubae auditive



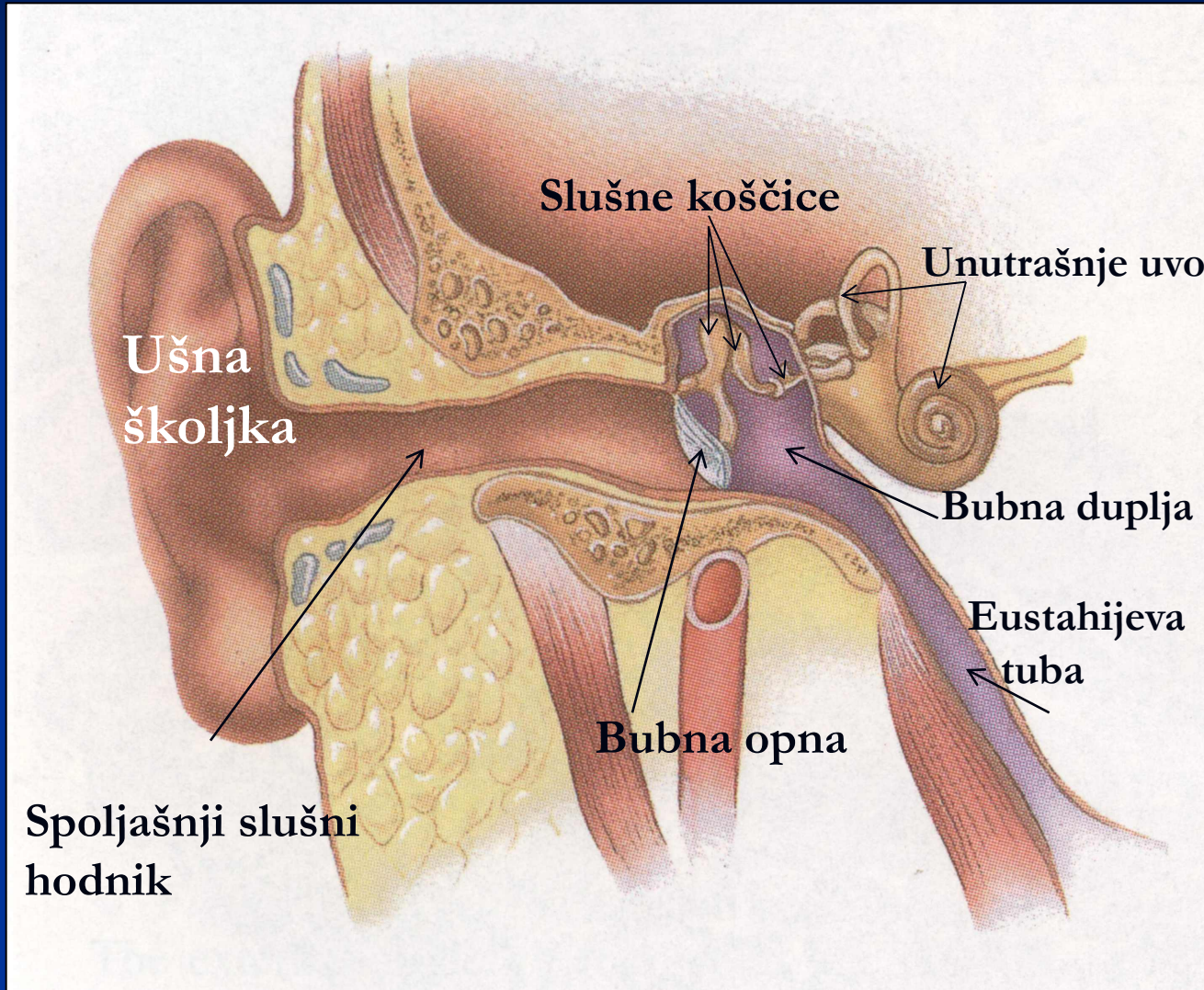
Eustahijeva tuba (Tuba auditiva)

- komunikacija šupljine srednjeg uha i ždrela
- reguliše pritisak vazduha u srednjem uvu
- **Ostium tympanicum tubae auditivae**
- **Ostium pharyngeum tubae auditivae**



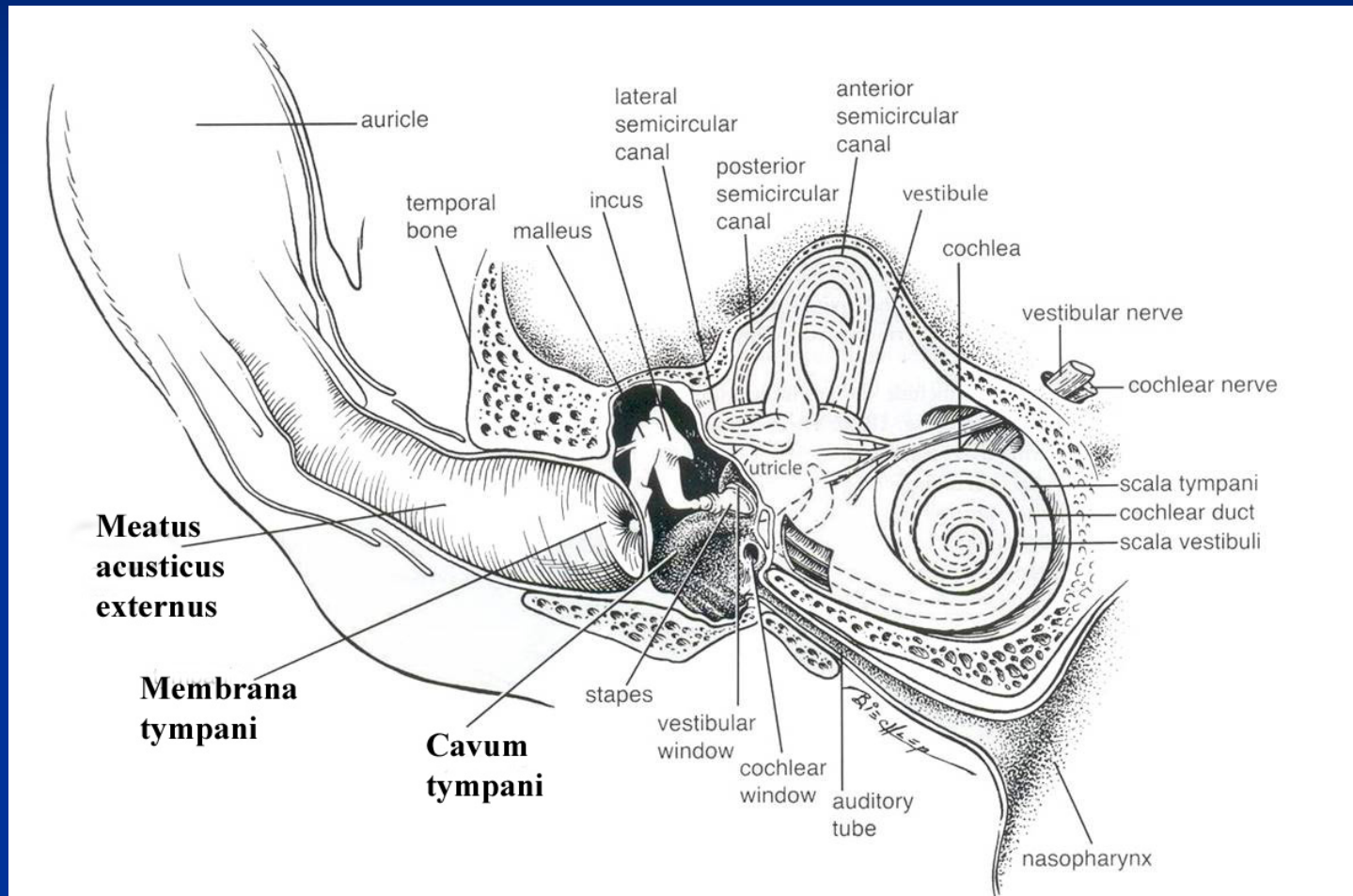
UVO ČOVEKA

Tuba auditiva

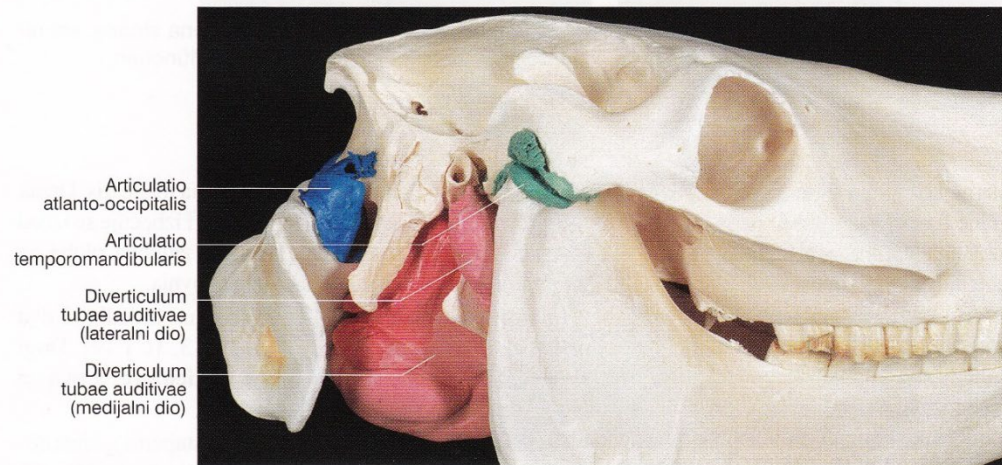


UVO PSA

Tuba auditiva



Diverticulum tubae auditivae (Eq)



Slika 17-21. Postrani pogled na zračni mjehur, atlantookcipitalni i čeljusni zglob (akrilni odljev), Wolf, 1999.



Slika 17-22. Postrani pogled na zračni mjehur (akrilni odljev)

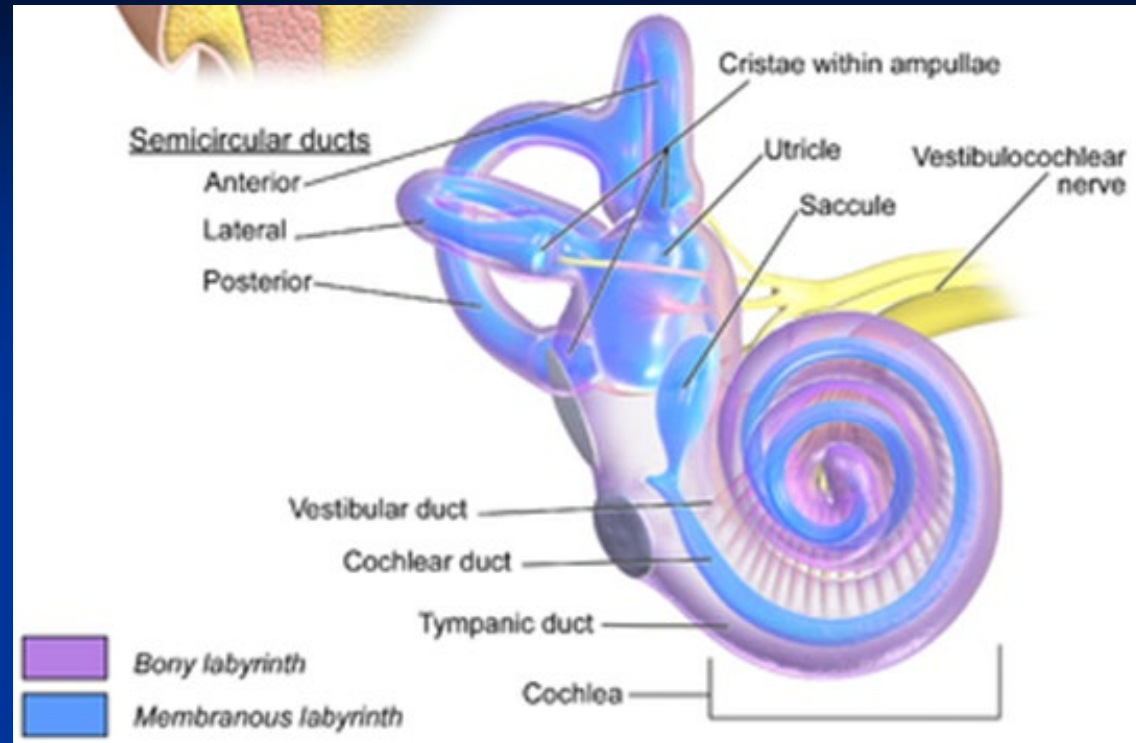
UNUTRAŠNJE UVO (Auris interna)

Leži u *Pars petrosa*
slepoočne kosti

Sastoji se od:

1/ Koštani labirint
(Labyrinthus osseus)

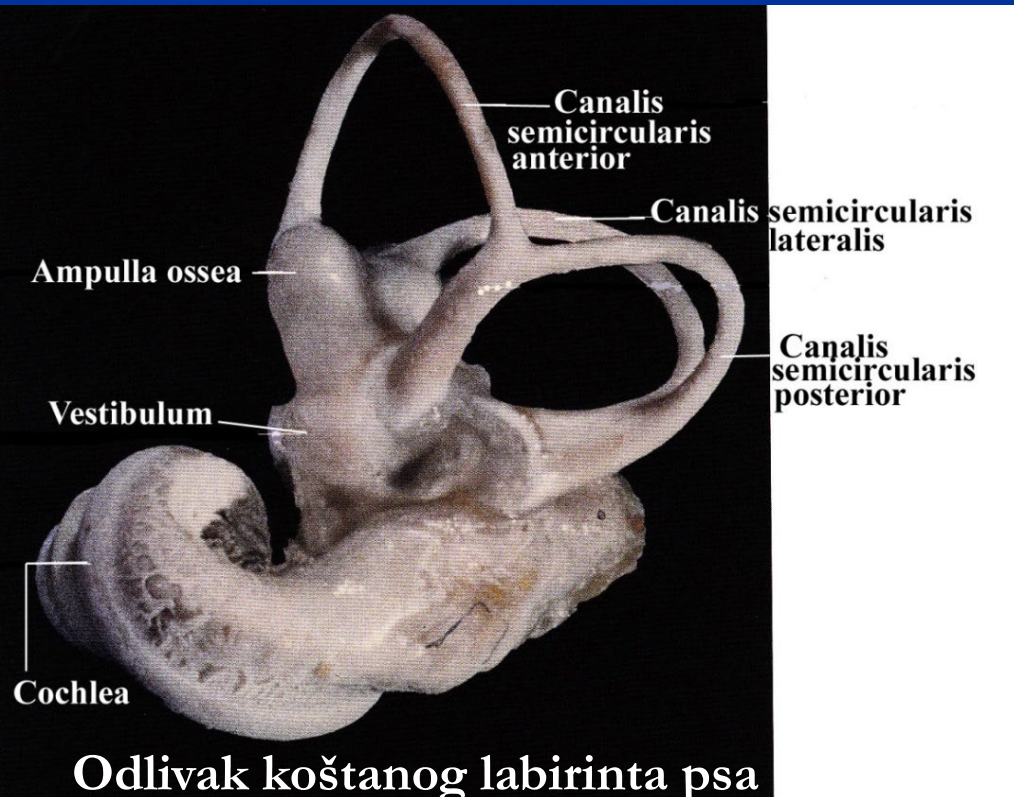
2/ Membranozni labirint
(Labyrinthus membranaceus)



Između koštanog i membranoznog labirinta je Perilympha, a unutar membranoznog labirinta je Endolimpha

Koštani labirint (Labyrinthus osseus)

- *Vestibulum* – predvorje
- *Canales semicirculares ossei* – koštani polukružni kanali
- *Cochlea* - koštani puž



Vestibulum:

- Fenestra vestibuli
- Fenestra cochleae
- Recessus elipticus
- Recessus sphaericus

KOŠTANI LABIRINT

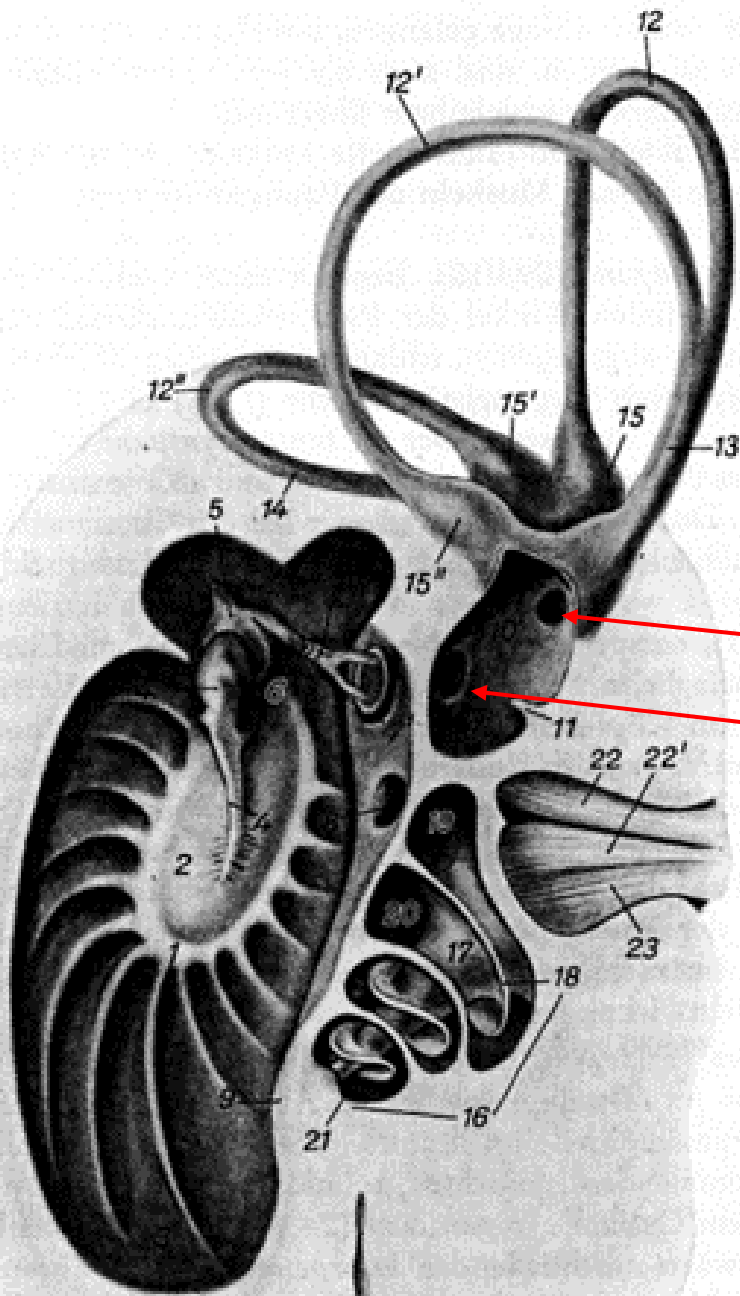
1/ Canales semicirculares ossei
(koštani polukružni kanali)

2/ Vestibulum (predvorje):

- Recessus elipticus
- Recessus sphericus

3/ Cochlea (koštani puž):

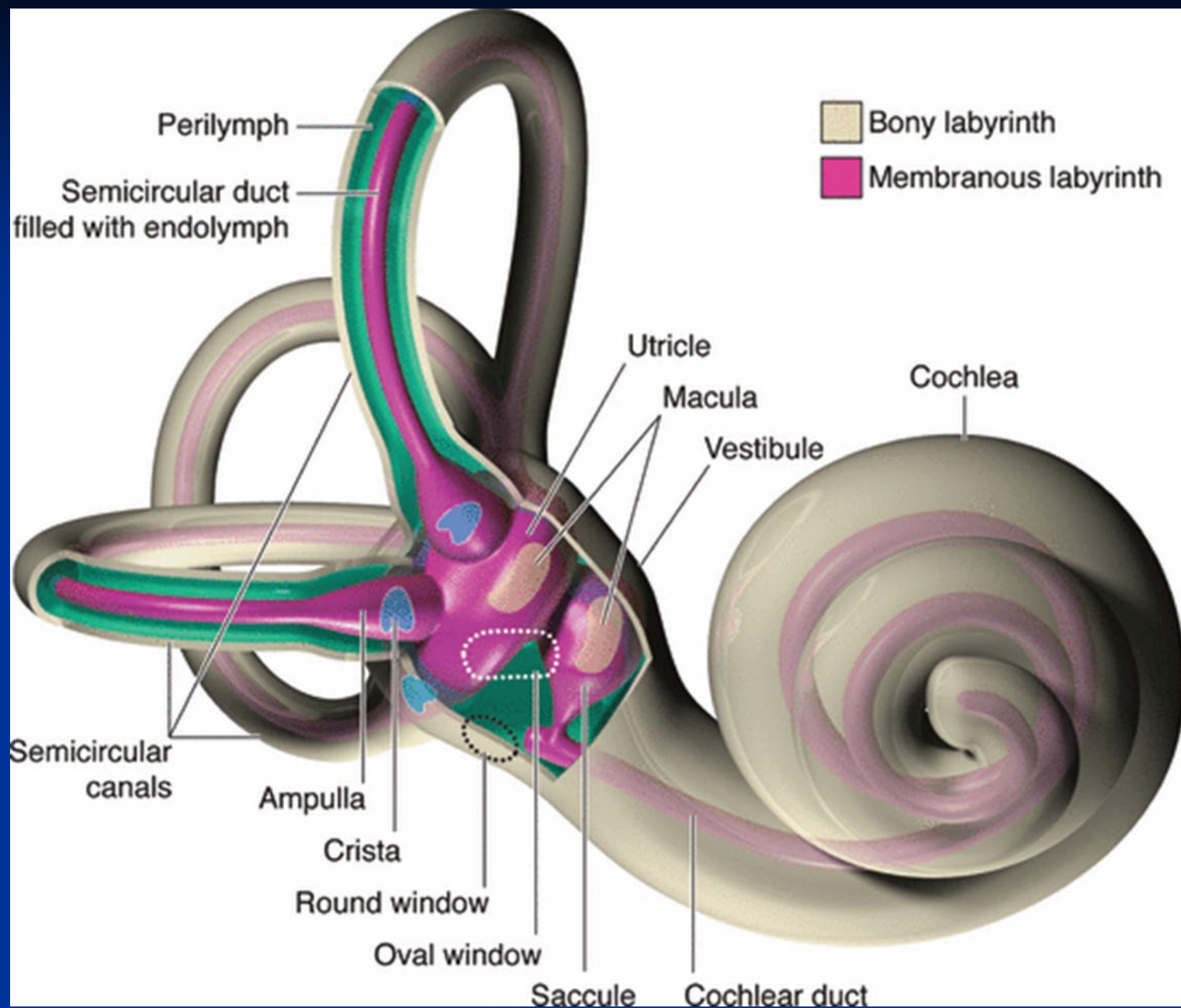
- Modiolus
- Lamina spiralis ossea
- Scala tympani
- Scala vestibuli

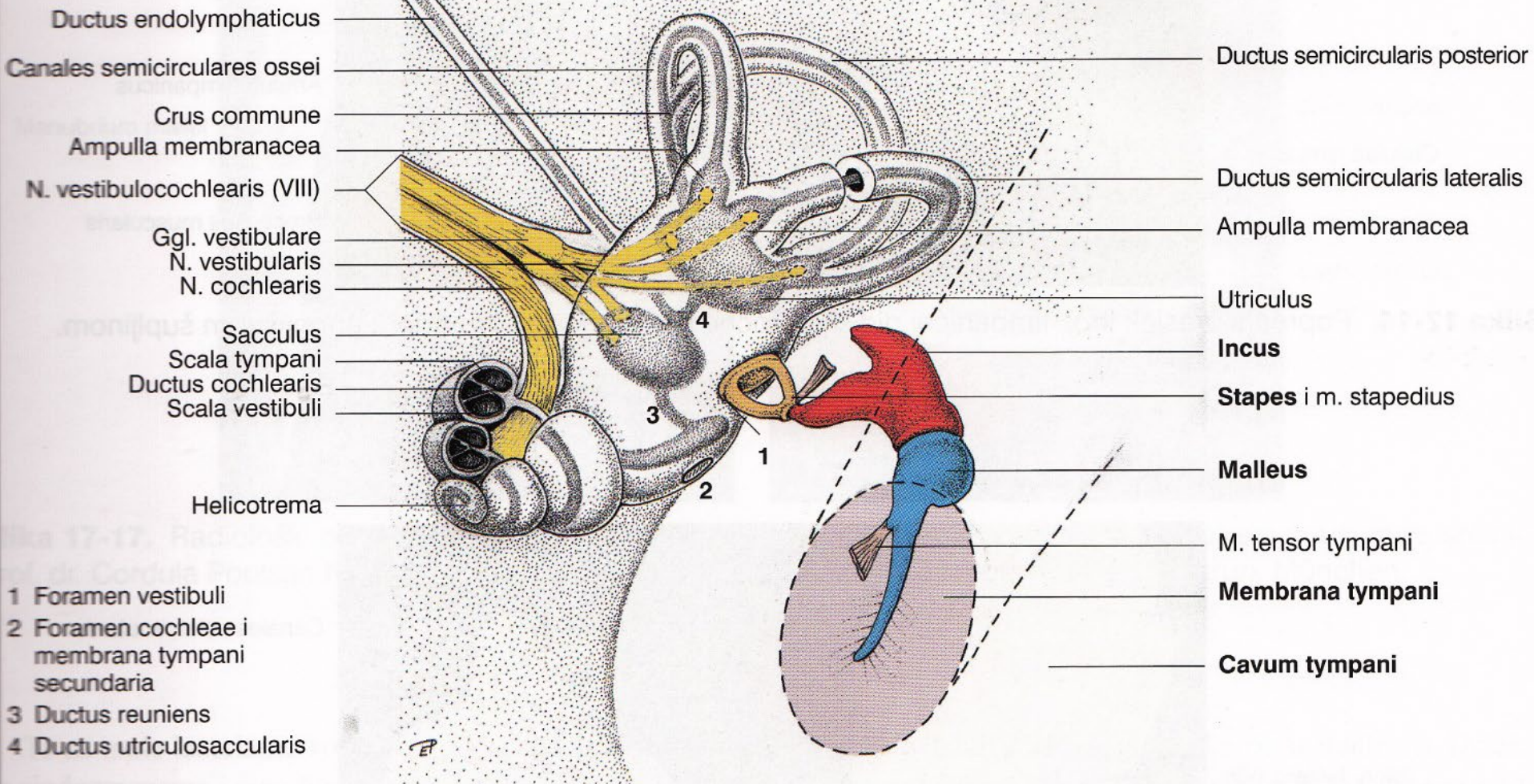


Membranozni labirint (Labyrinthus membranaceus)

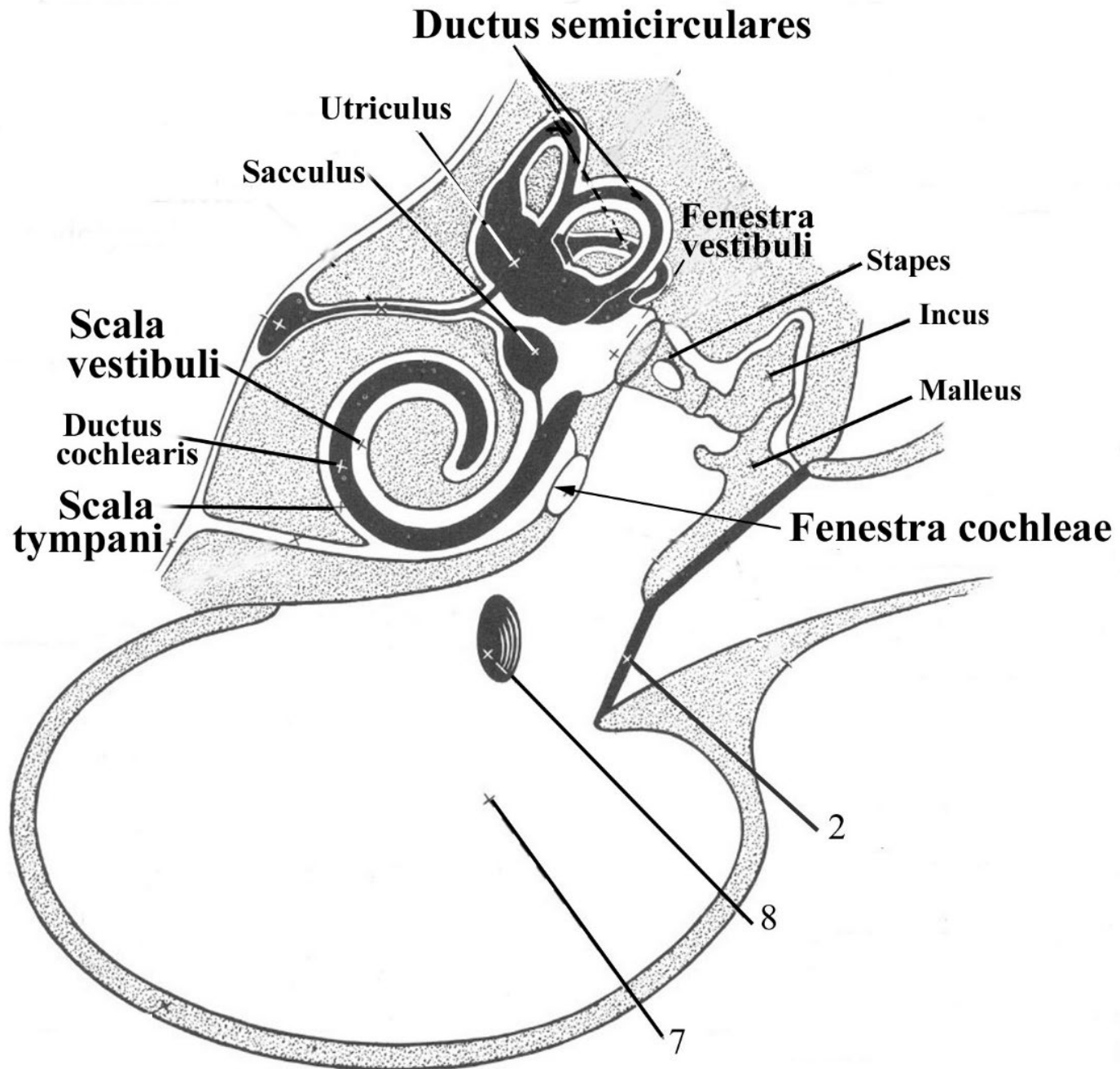
Smešten unutar koštanog labirinta.

- *Ductus semicirculares* (u Canales semicirculares)
- *Utriculus* (u Recessus elipticus)
- *Sacculus* (u Recessus sphaericus)
- *Ductus cochlearis* (u koštanom pužu)



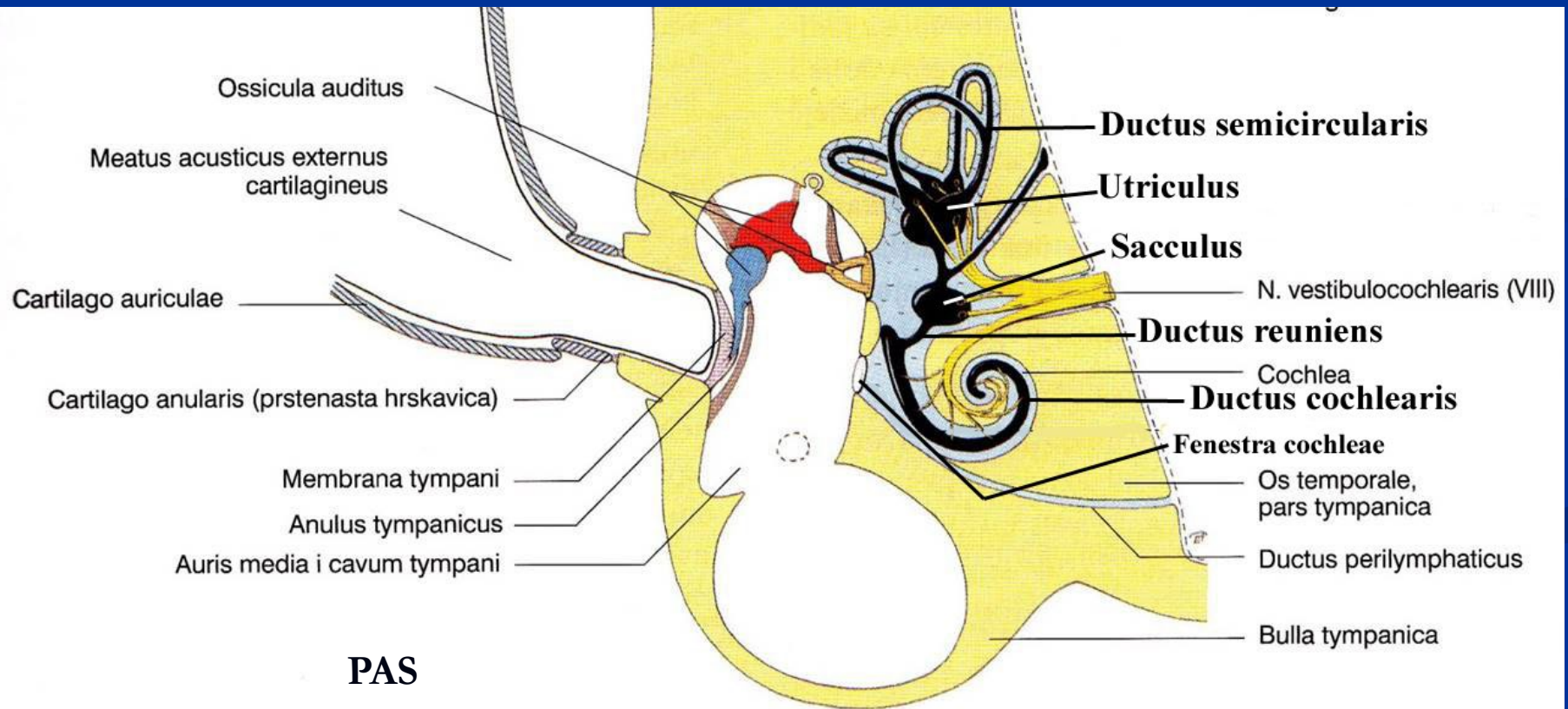


Slika 17-13. Shematski prikaz srednjeg i unutrašnjeg uha konja.



Membranozni labirint (Labyrinthus membranaceus)

- Utriculus
 - Sacculus
 - Ductus semicirculares
 - Ductus cochlearis**
- Statički deo unutrašnjeg uva (za ravnotežu)
- Slušni deo unutrašnjeg uva (za sluh)**



RECEPTORI ZA ČULO RAVNOTEŽE:

1/ *Maculae staticae* (Utriculus i Sacculus)

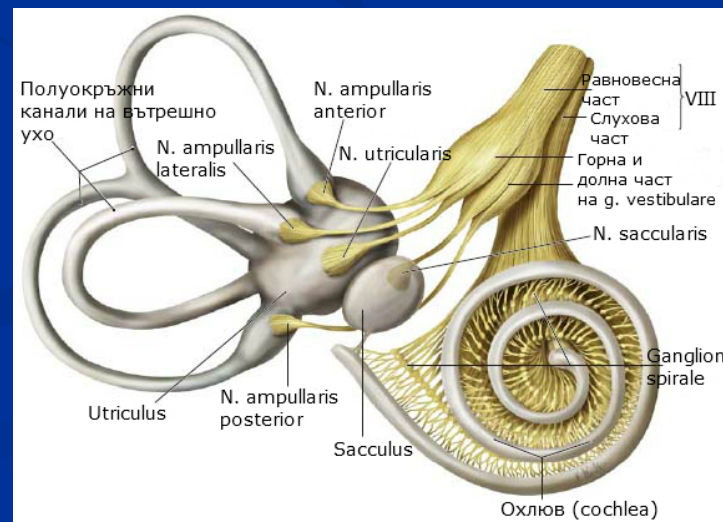
2/ *Cristae staticae* (u ampulama Ductus semicirculares)

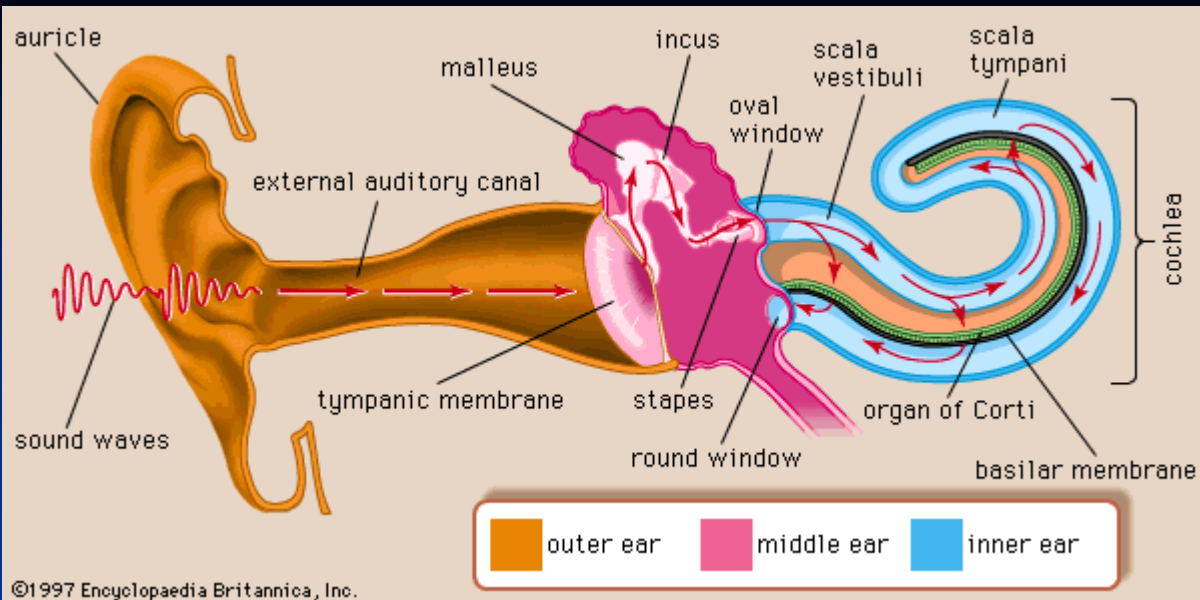
RECEPTORI ZA ČULO SLUHA:

1/ *Kortijev spiralni organ* (*Organum spirale s. Corti*)

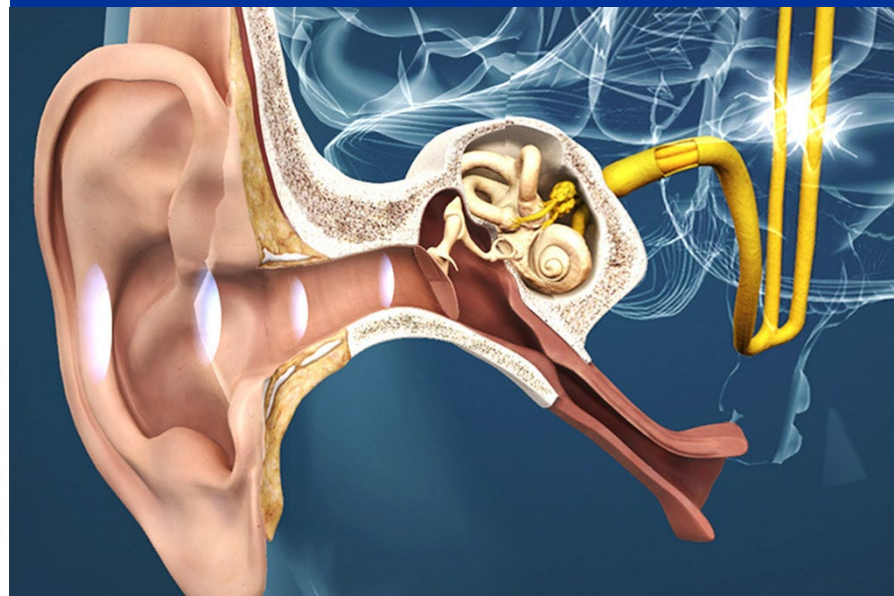
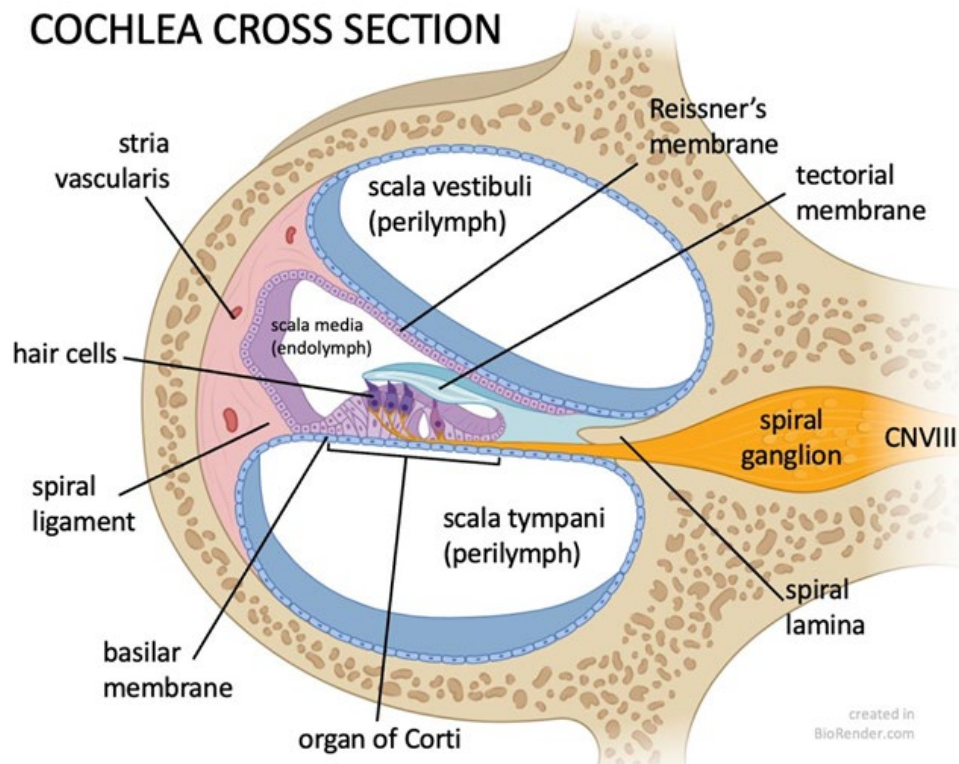
(u Ductus cochlearis)

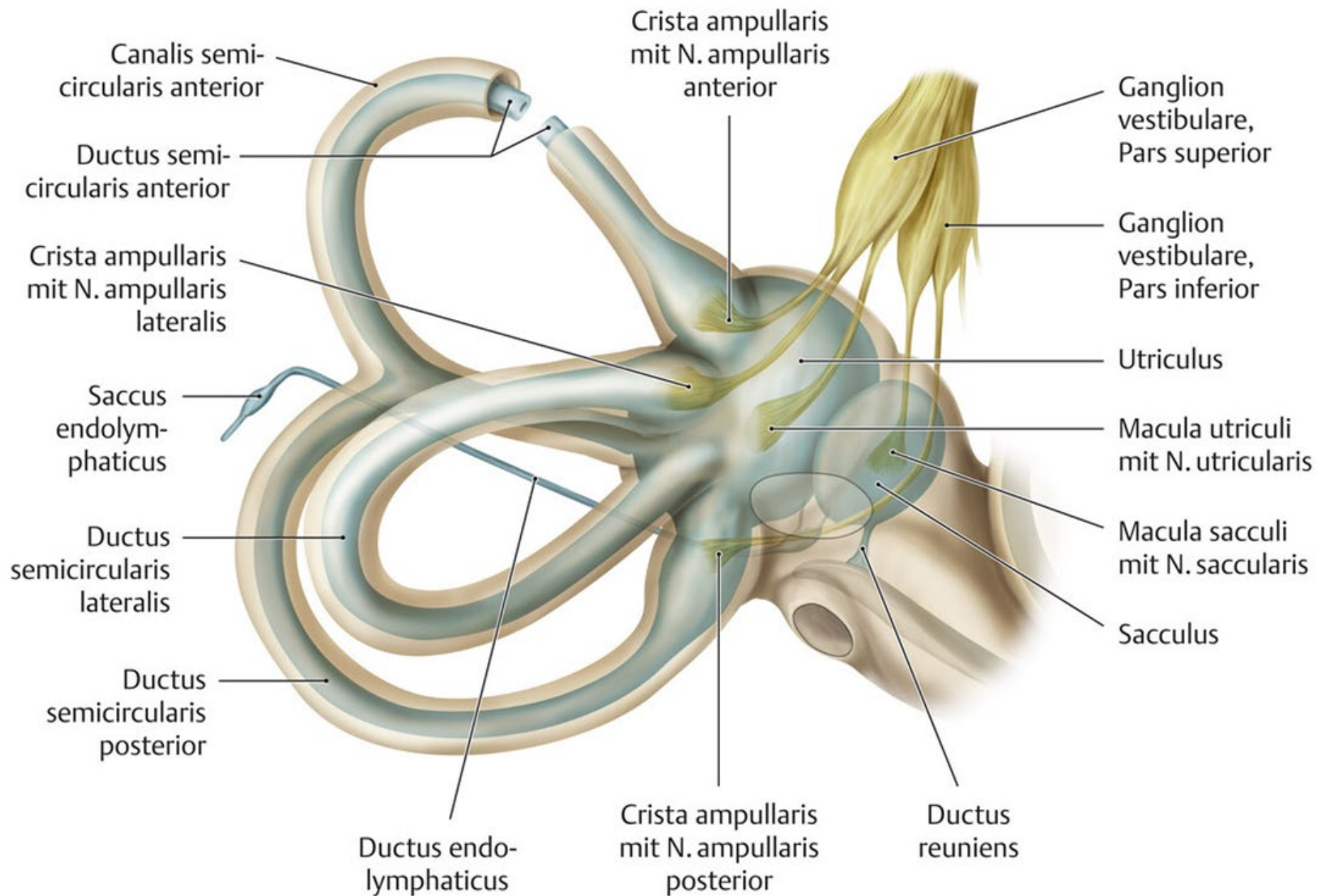
■ **N. vestibulocochlearis**
(VIII par moždanih nerava)





COCHLEA CROSS SECTION





ORGAN MIRISA

Organum olphactus

**Nervi olfactorii seu
Fila olphactoria**
(I par moždanih nerava)

GLAVNI OLFAKTIVNI SISTEM:

Regio olphactoria u

Fundus nasi:

Labirintus etmoidalis i

Concha nasalis media

POMOĆNI OLFAKTIVNI SISTEM:

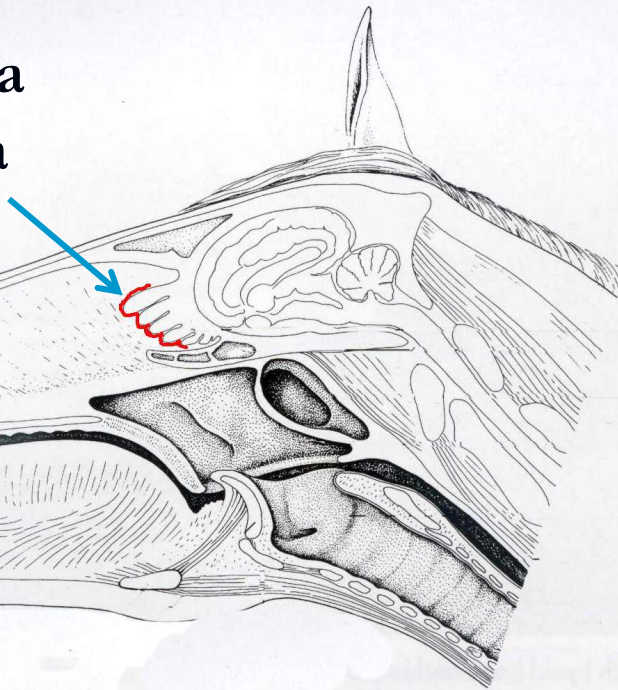
*Vomeronazalni Jacobsonov
organ*

Receptorske ćelije u
olfaktivnoj sluzokoži:

Olfaktivne, bipolarne nervne
ćelije

Lamina cribrosa sitaste kosti

Olfaktivna
sluzokoža



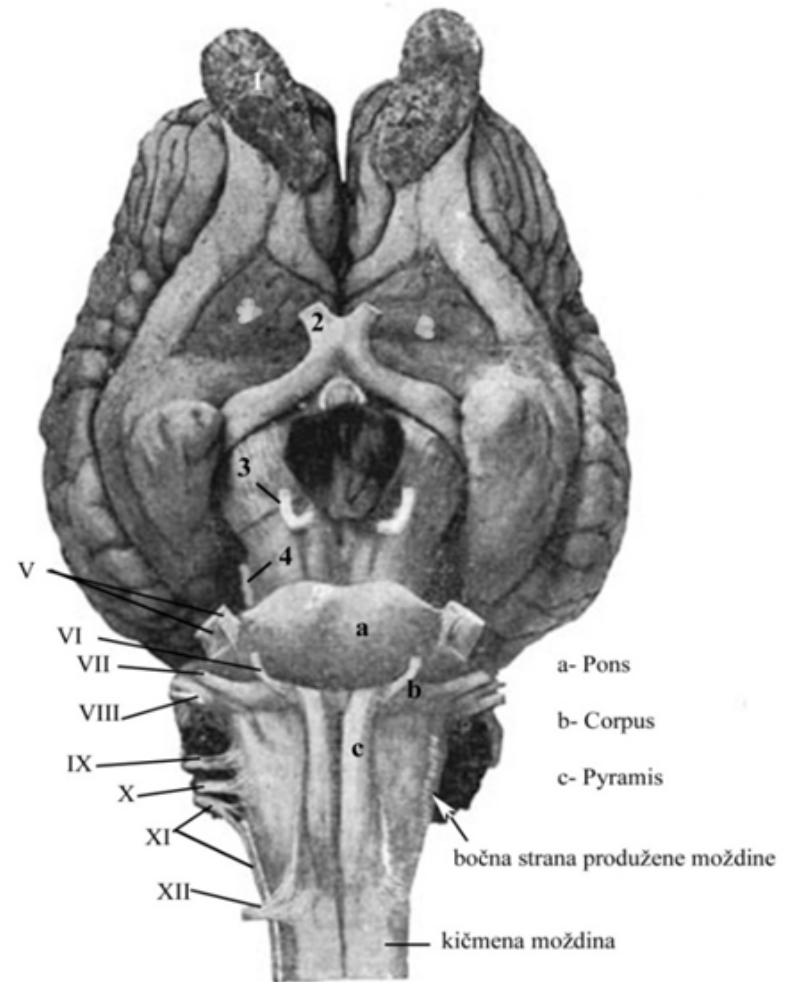
RHINENCEPHALON

(mirisni deo mozga):

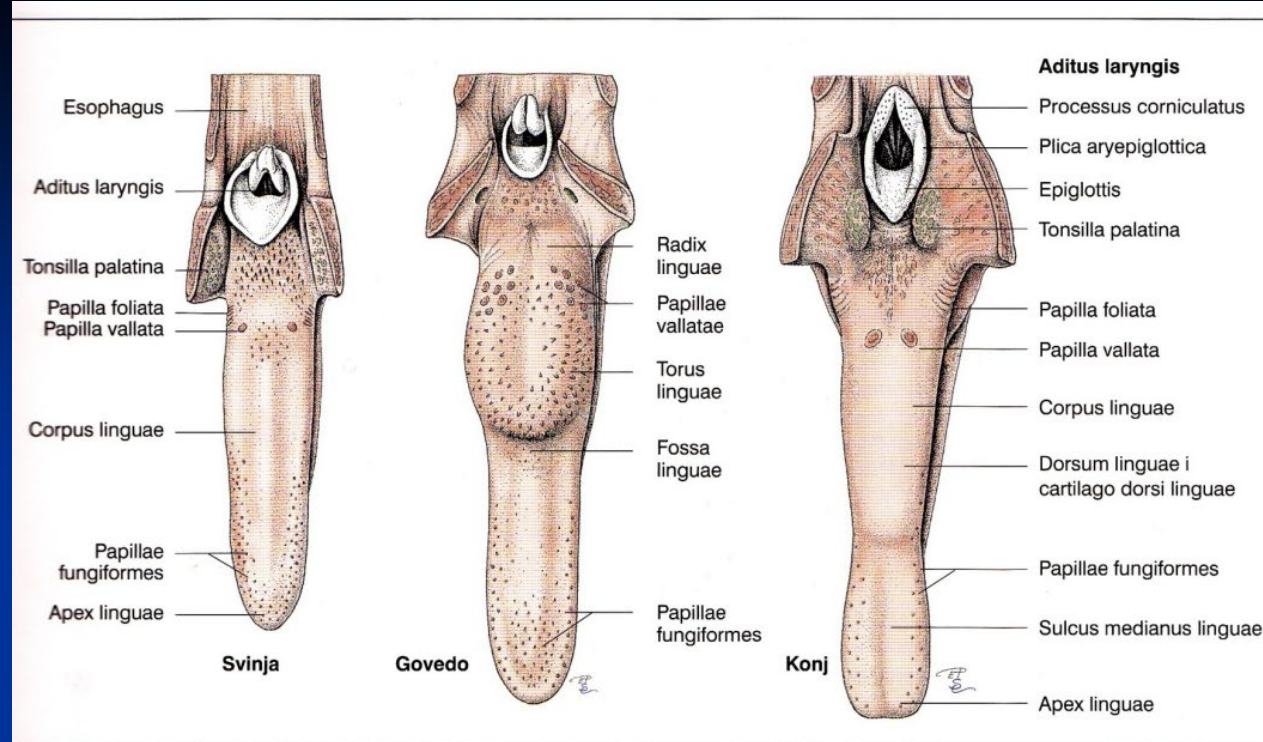
- Bulbus olfactorius
- Tractus olfactorius communis
- Tractus olfactorius lateralis et medialis
- Trigonum olfactorium
- Lobus piriformis
- Corpus amigdaloides
- Hippocampus

FRONTALNI CORTEX

BAZA MOZGA I MOŽDANI NERVI KOD KONJA



ORGAN UKUSA (*Organum gustus*)



Slika 7-7. Shematski prikaz jezika (dorzalna strana), ždrijela i jednjaka (dorzalno otvoreni) svinje, goveda i konja.

- Dorzalna površina jezika
- 3 vrsta papila u sluzokoži jezika:
 - Pečurkaste (*Papillae fungiformes*) – gustativne
 - Opšančane (*Papillae vallatae*) – gustativne
 - Listaste (*Papillae foliate*) – gustativne

-U gustativnim papilama se nalaze gustativni „pupoljci“ sa receptorskim ćelijama čula ukusa koje reaguju na hemijske materije u hrani.

-Receptorske ćelije čula ukusa na zadnjoj trećini jezika inervišu vlakna *N. glossopharyngeus-a* (IX par moždanih nerava) a na prednje dve trećine jezika inervišu vlakna *Chordae tympani*, grane *N. facialis-a* (VII par moždanih nerava).

- Osećaj određenog ukusa - kora velikog mozga (blizu Fissura longitudinalis).

HVALA NA PAŽNJI