

# THE EAR

pp. 942-960

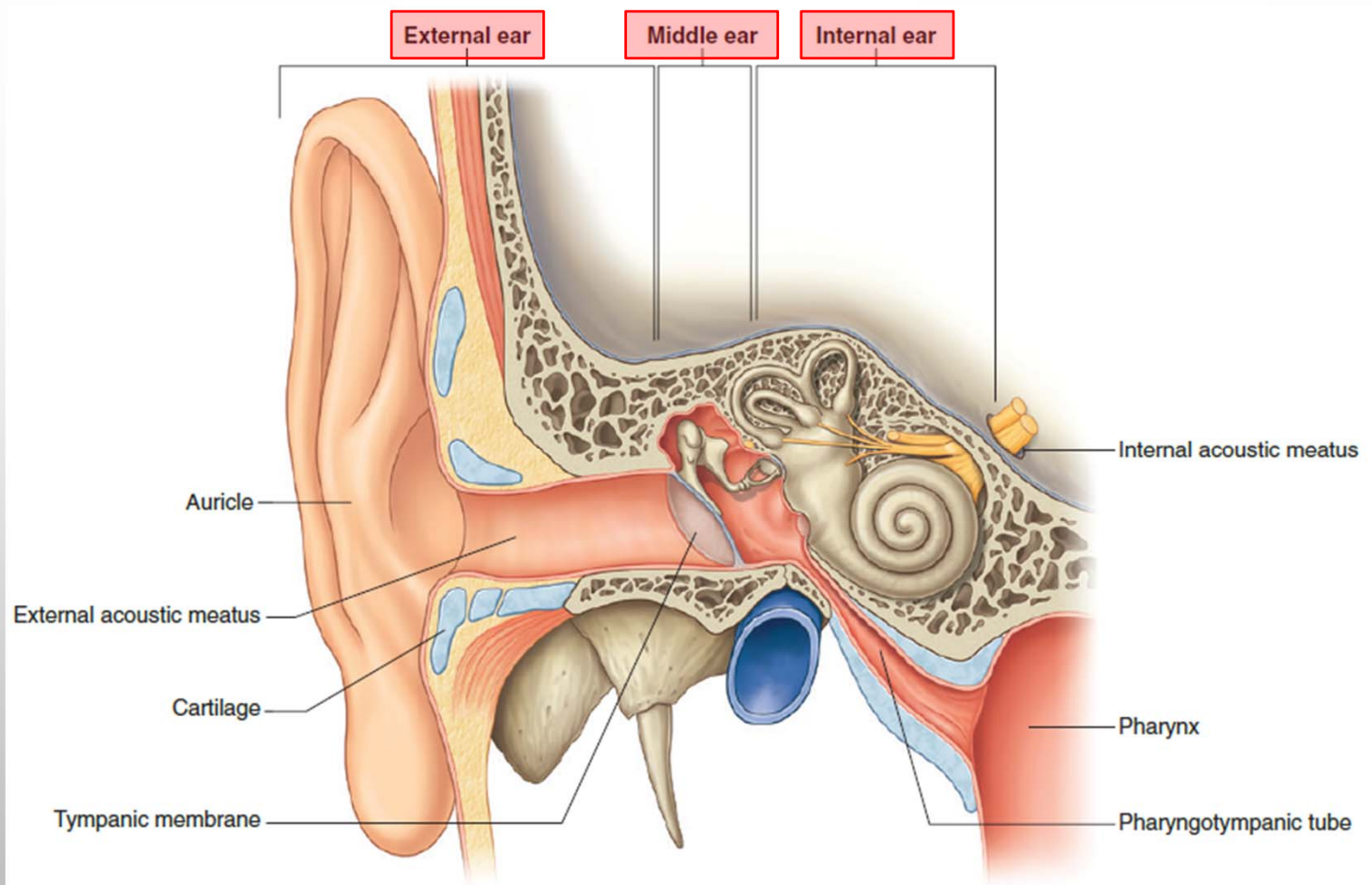


## Objectives:

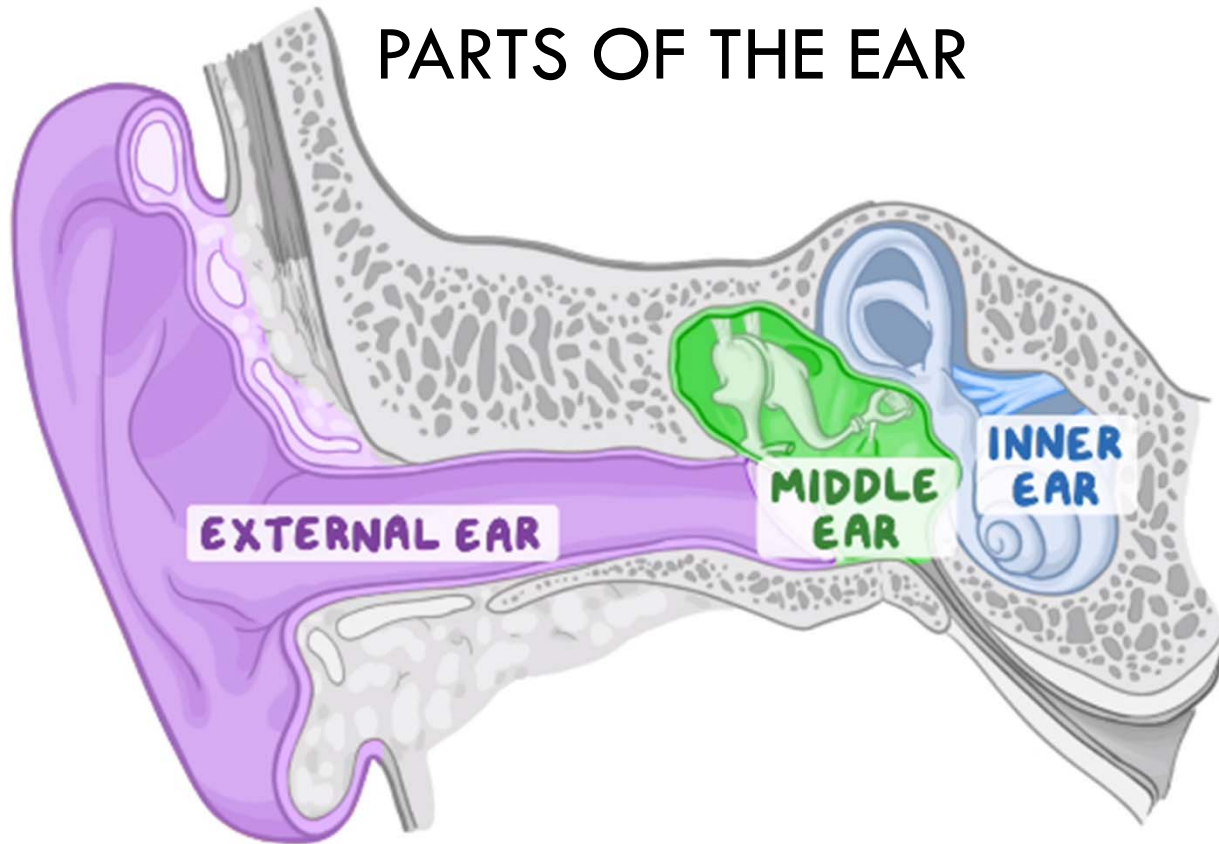
- Identify the location & parts of the human ear & the functions of each part
- Recognize the important features & neurovascular supply of each of the auricle, external auditory meatus & tympanic membrane
- Identify the walls of the middle ear



# PARTS OF THE EAR



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## External ear

- Auricle
- External Auditory Meatus (ear canal)
- Tympanic membrane (eardrum)

## Middle ear (tympanic cavity)

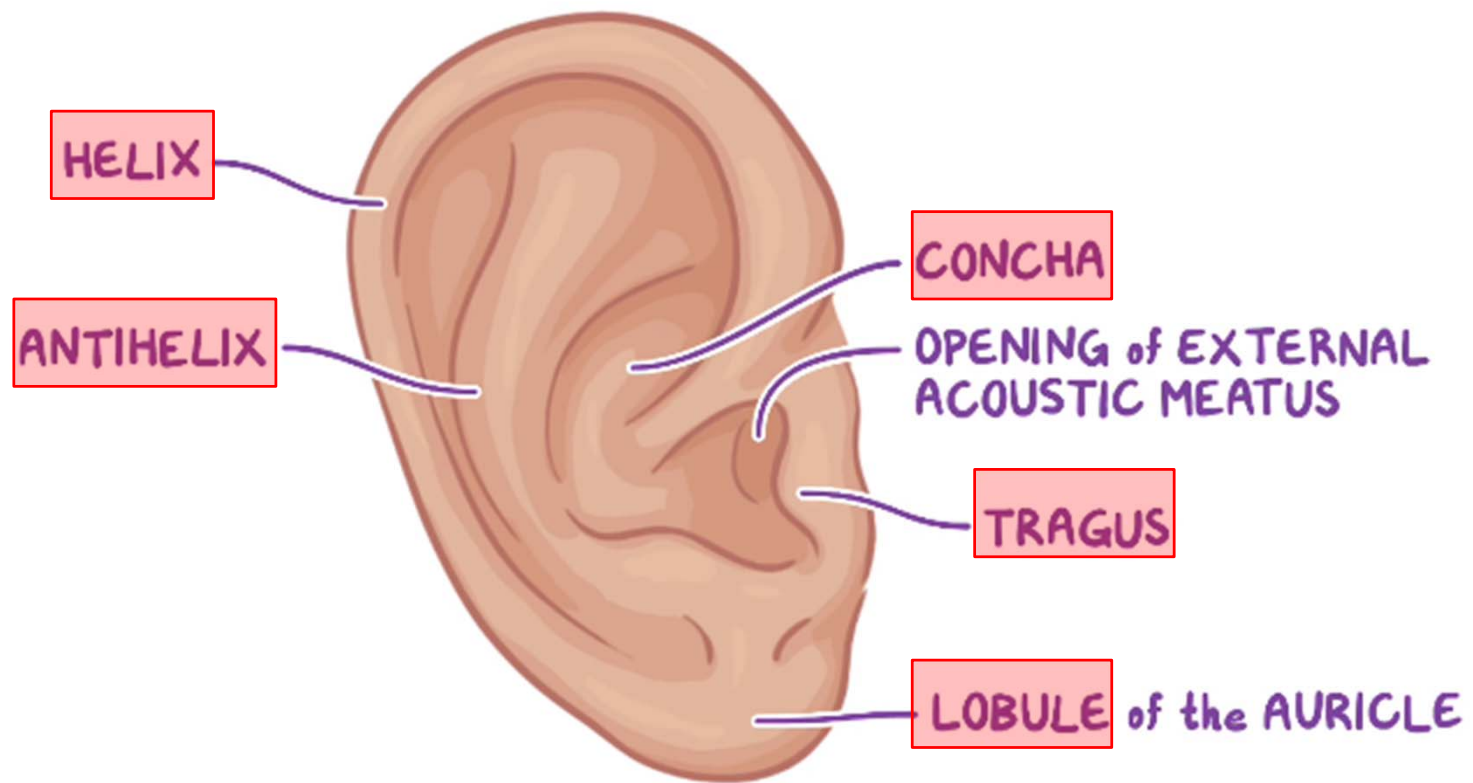
- Auditory ossicles & related muscles
- Tympanic plexus & related nerves
- Connecting tubes

## Inner ear (Labyrinth)

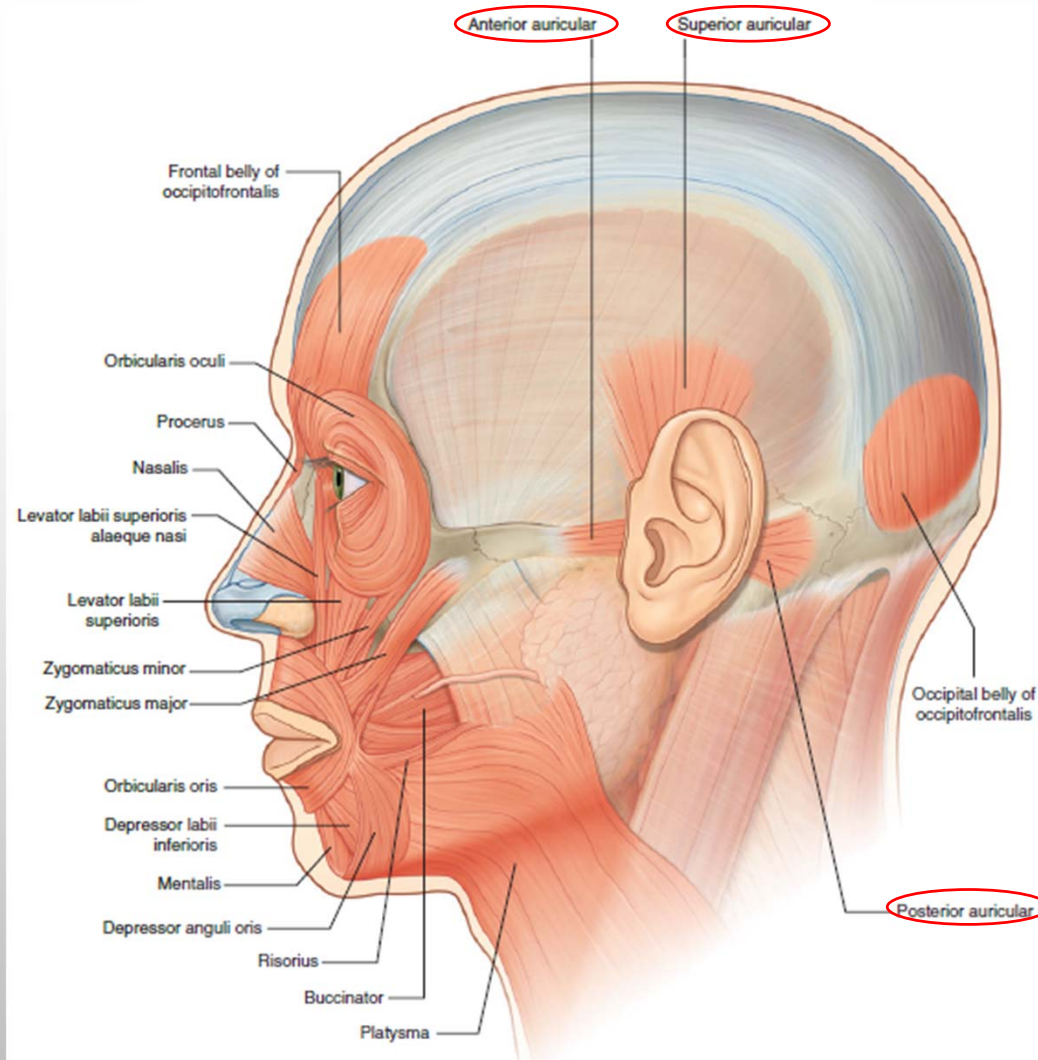
- Bony labyrinth
- Membranous labyrinth
- CN VIII

## AURICLE (PINNA) : FEATURES

- Elastic cartilage covered by skin
- Lobule just fat
- Directs sound towards ear canal

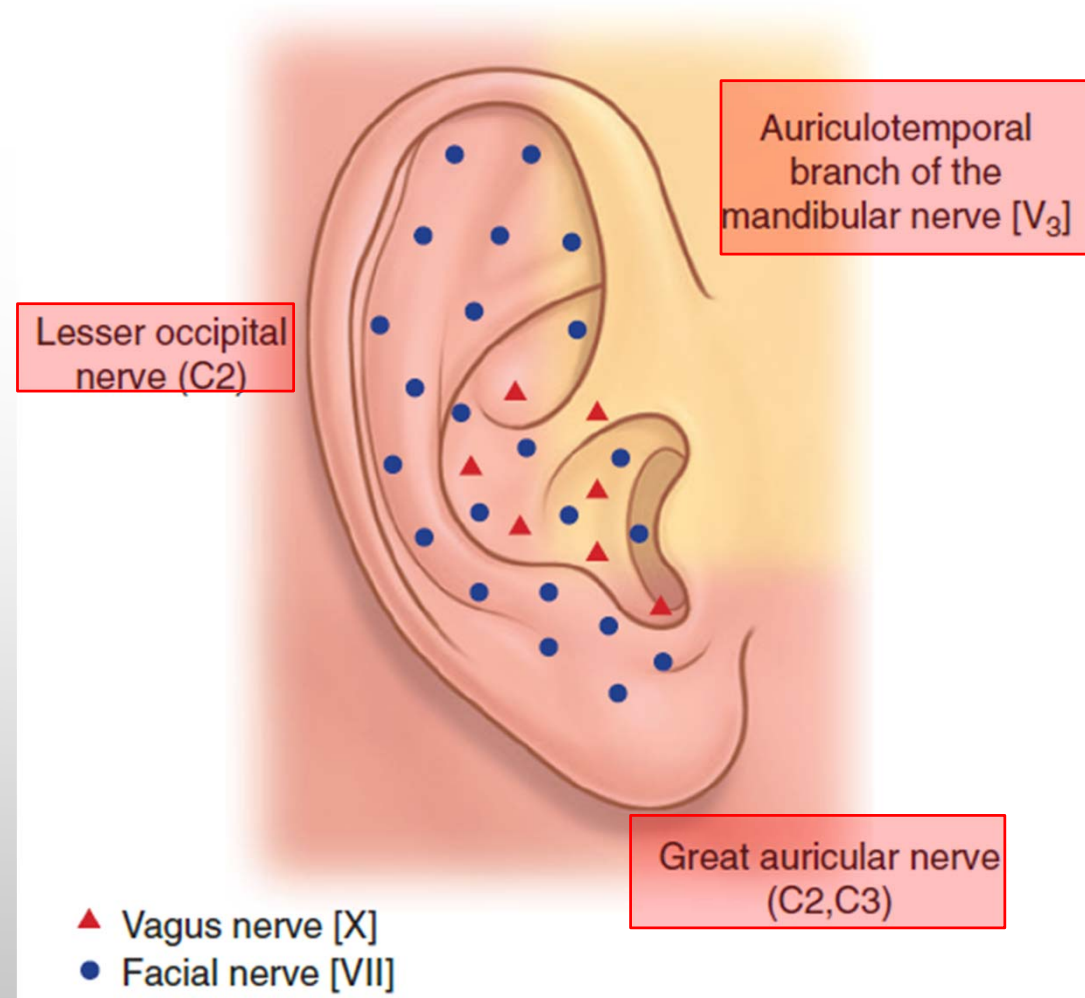


# AURICLE (PINNA) : EXTRINSIC MUSCLES



# AURICLE (PINNA) : NERVE SUPPLY

1. Margins & outer surface: 3 nerves.
2. Deeper rims: 2 nerves



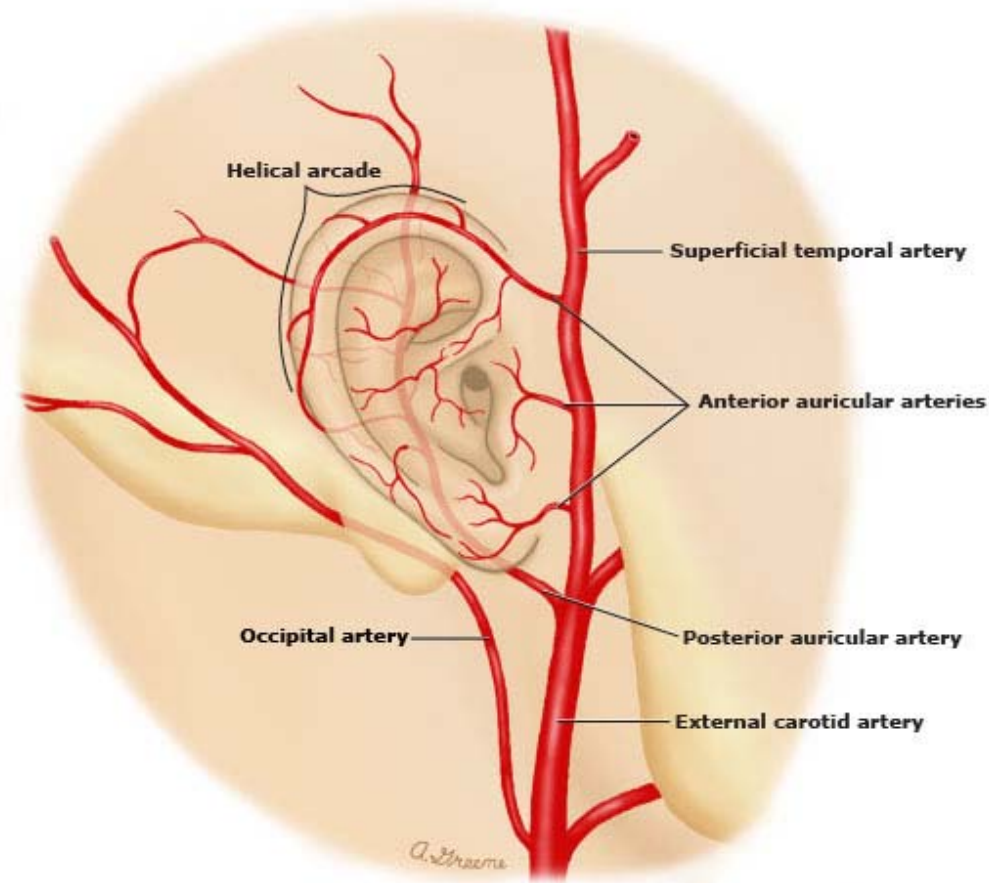
# AURICLE (PINNA) : BLOOD SUPPLY & LYMPHATIC DRAINAGE

1. Anterior auricular branches from superficial temporal a.
2. Posterior auricular branches from occipital & posterior auricular aa.

Lymph:

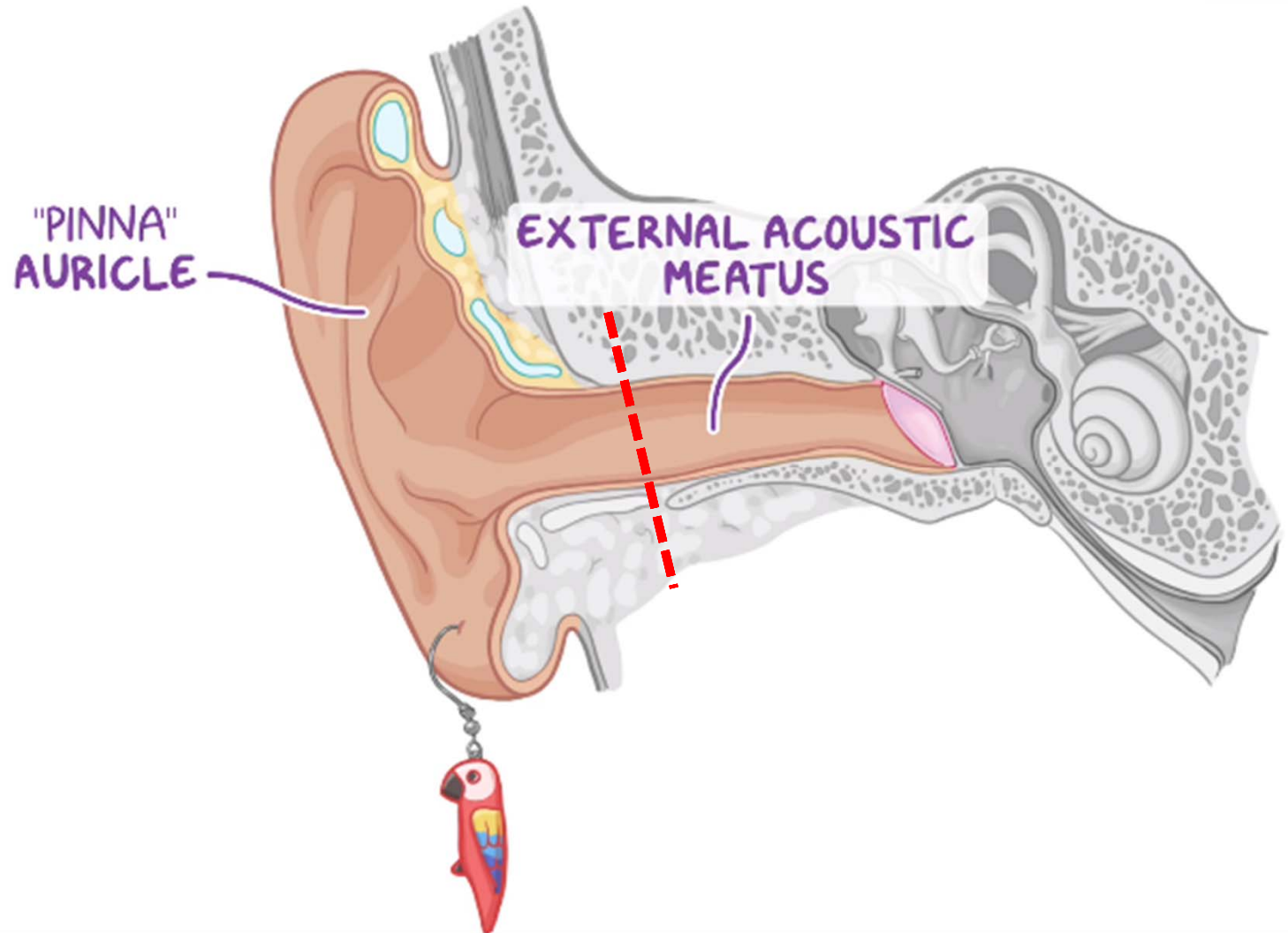
→ anterior to superficial parotid nodes.

← Posterior to mastoid nodes



## EAM: FEATURES

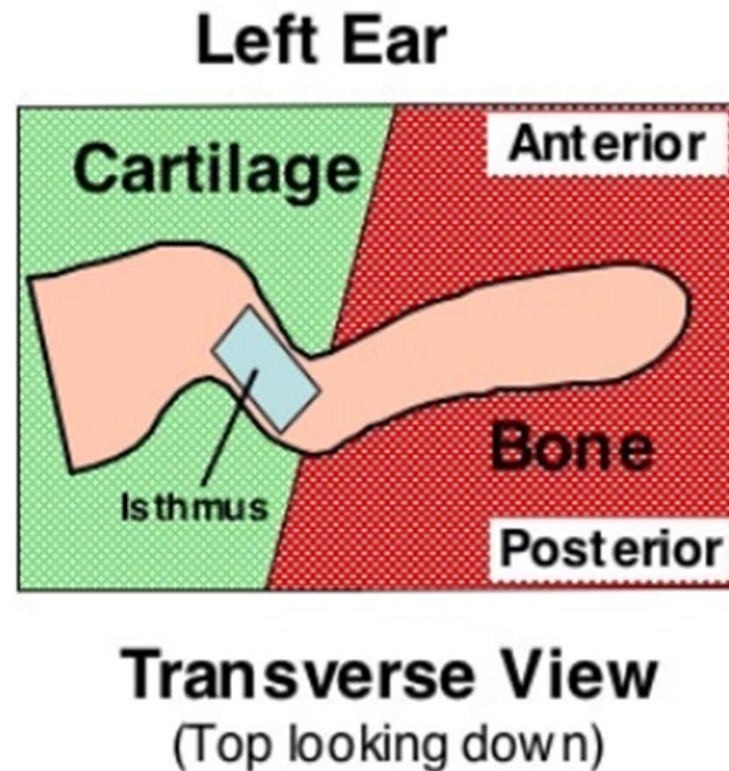
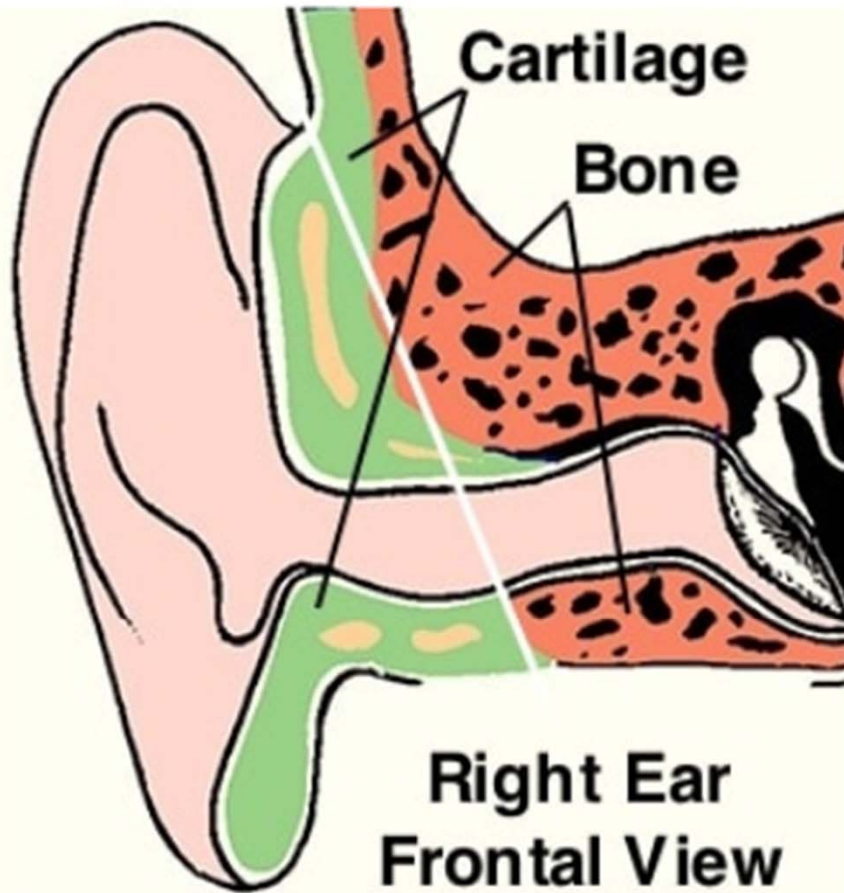
- S-shaped, 2.5 cm
- Lat. 1/3 cartilage
- Medial 2/3 bone
- Lined with thin skin
- + some hair
- + ceruminous glands



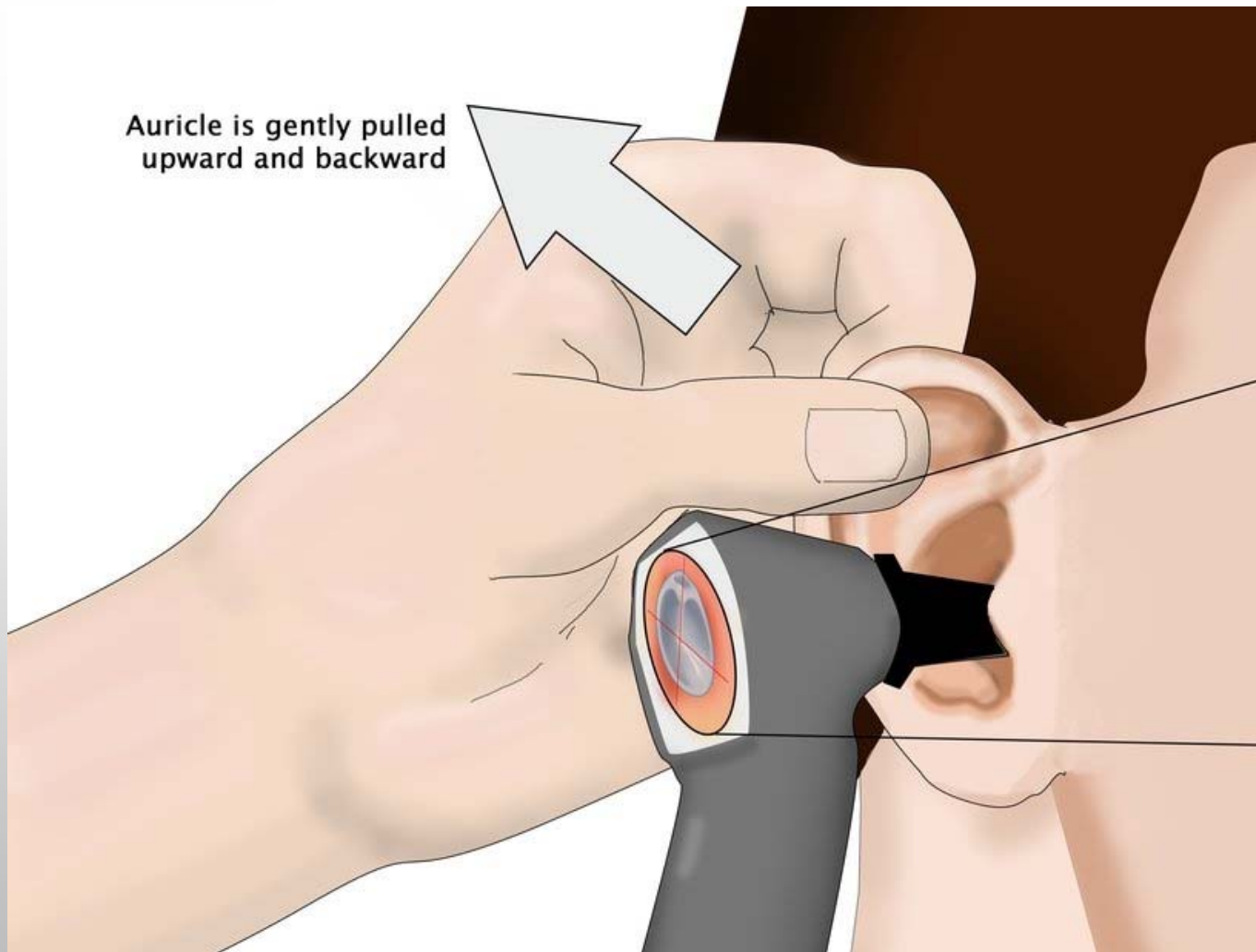


# EAM: INCLINATION

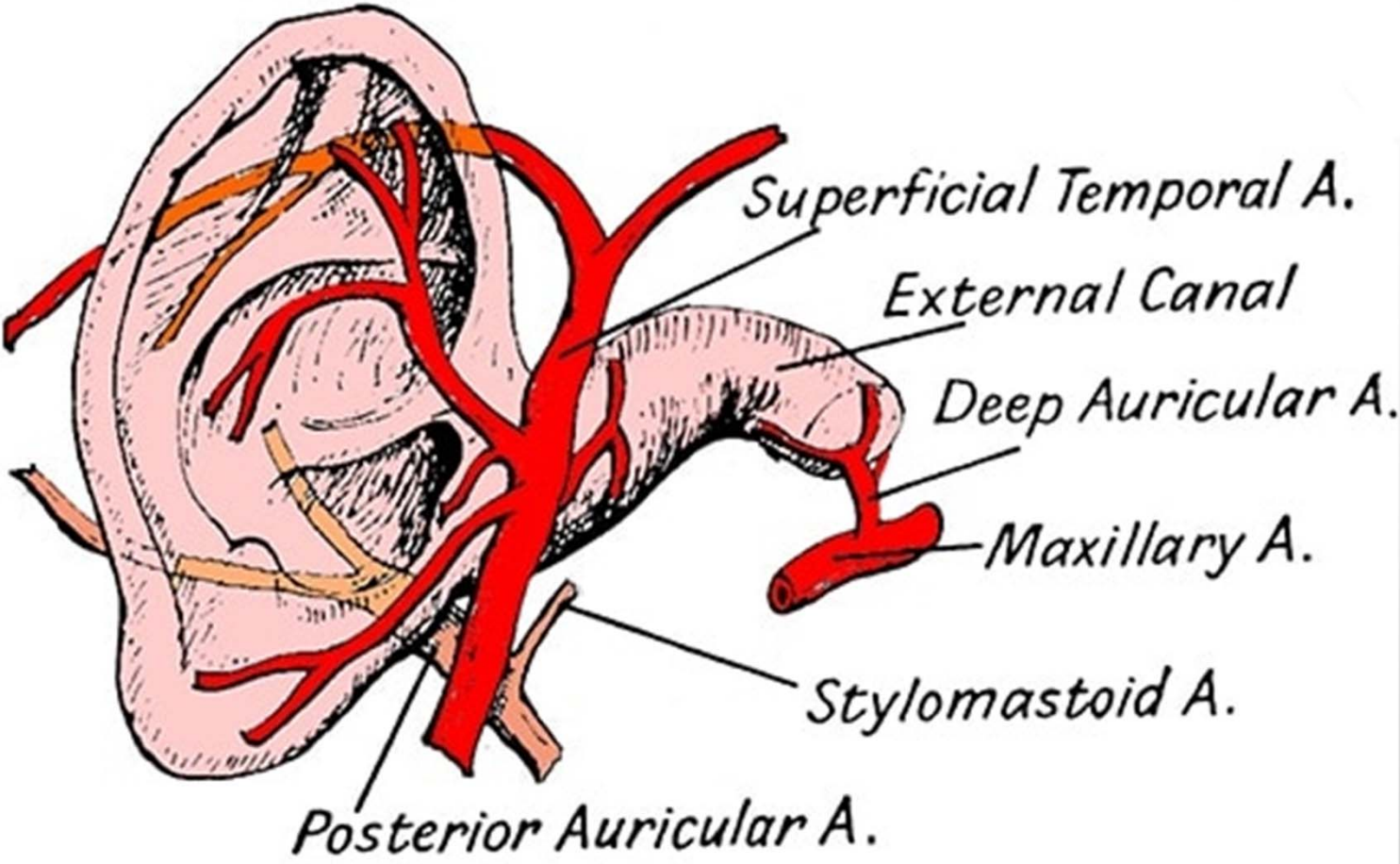
Cartilaginous part is more inferior & anterior than bony part.



## EAM: INCLINATION

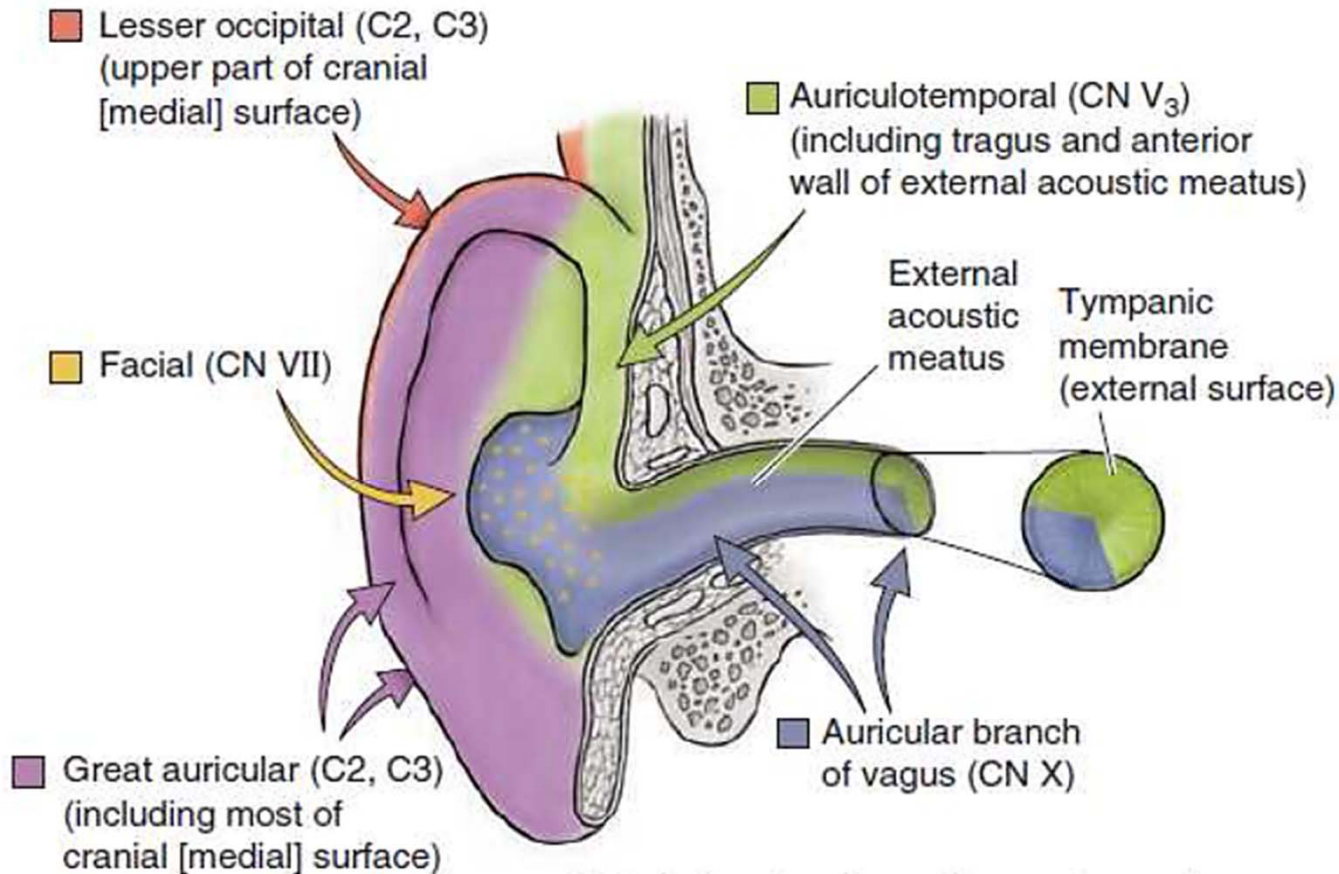


# EAM: ARTERIAL SUPPLY



# EAM: NERVE SUPPLY

Auriculotemporal → (ant.sup.), Vagus (+- facial) → (post.inf.)



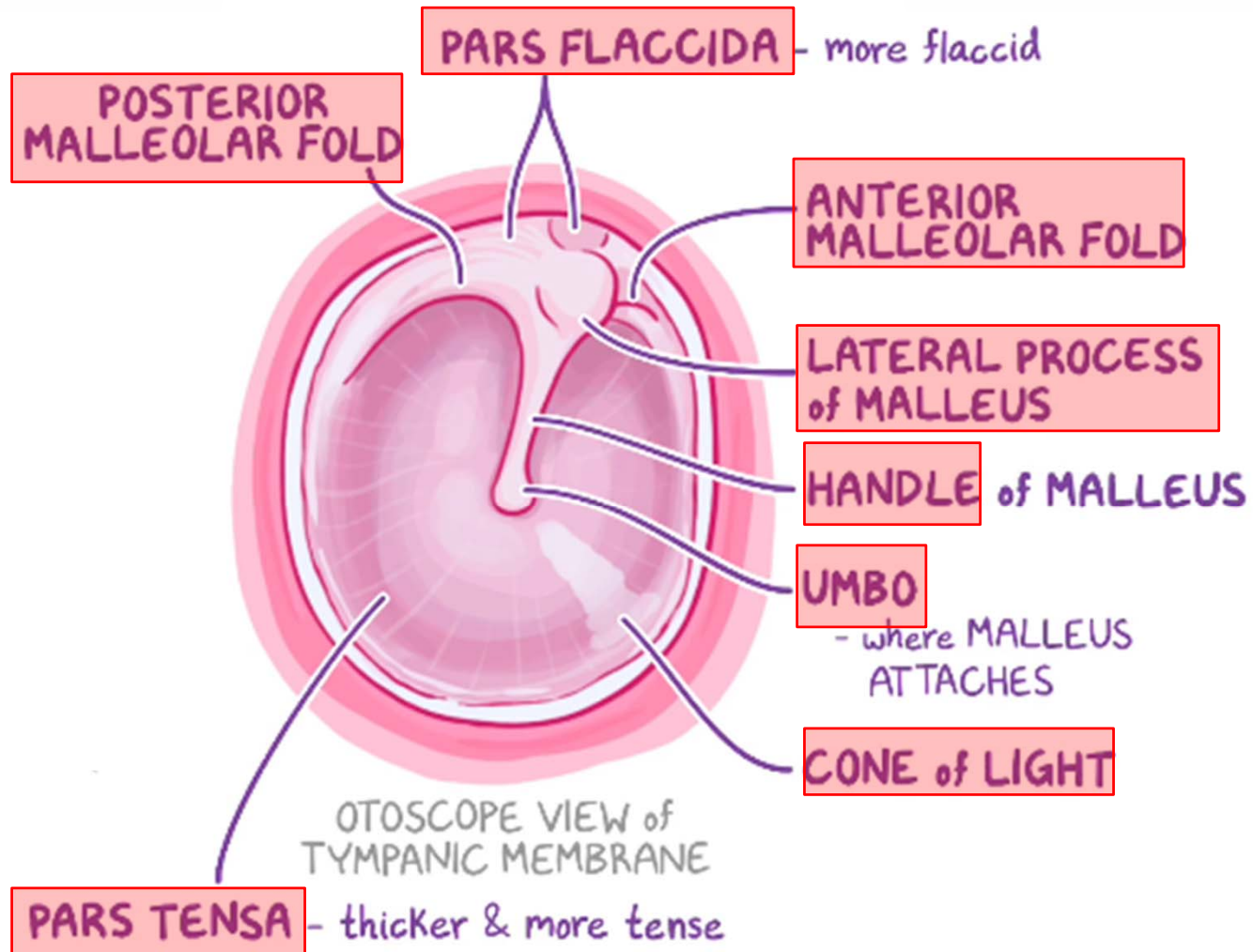
Note: Internal surface of tympanic membrane is innervated by glossopharyngeal nerve (CN IX)

## TYMPANIC MEMBRANE: FEATURES

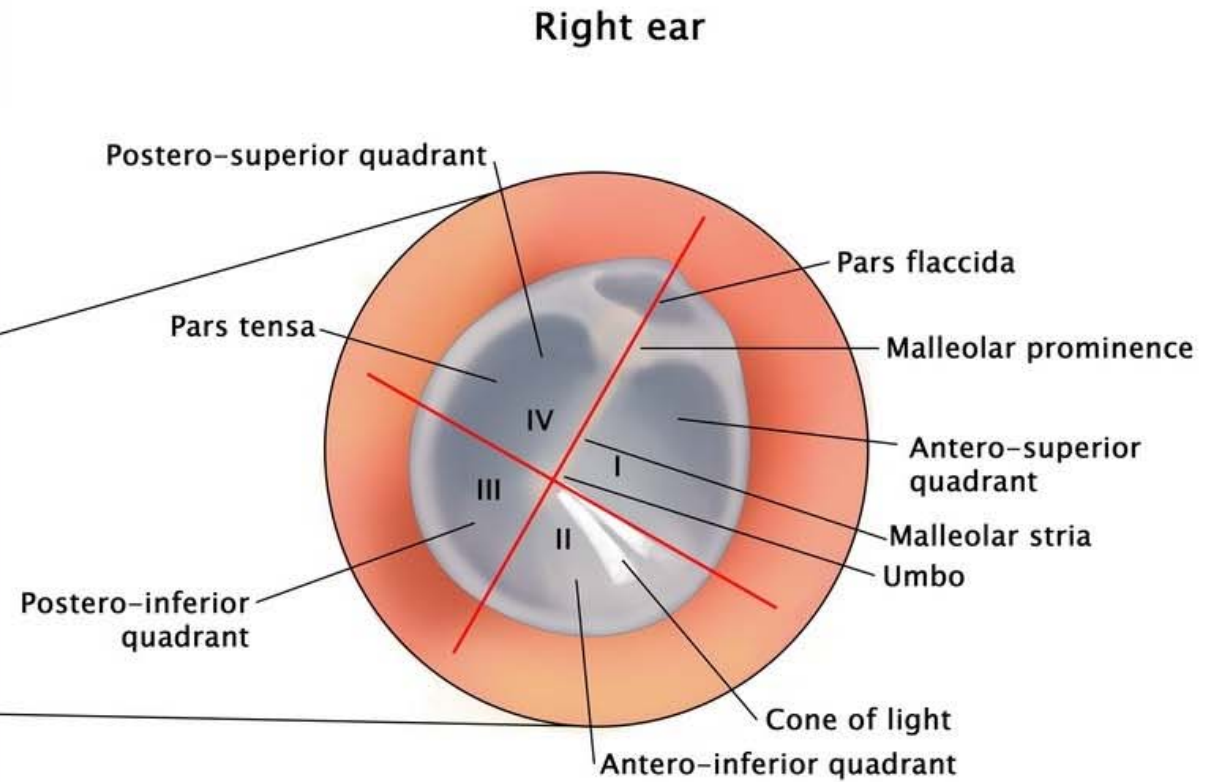
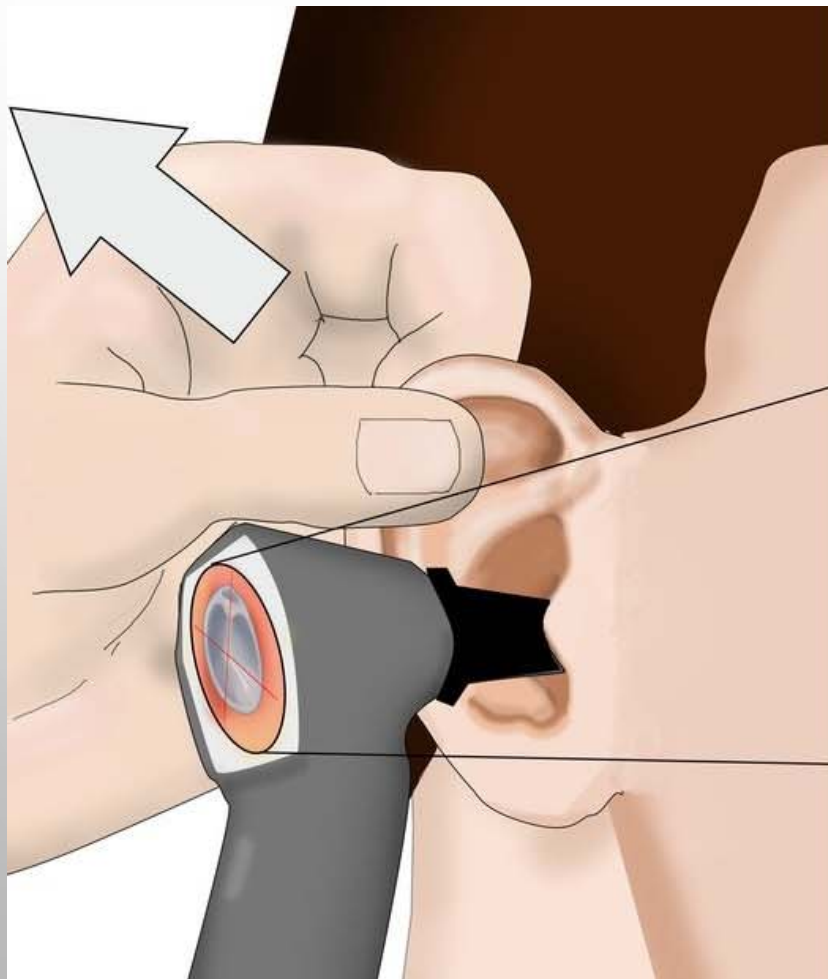
- CT membrane fixed in a fibrocartilaginous rim.
- Covered by skin (outside) & mucus membrane (inside)
- Directed anteromedially from above downwards
- Pulled inwards by the malleus



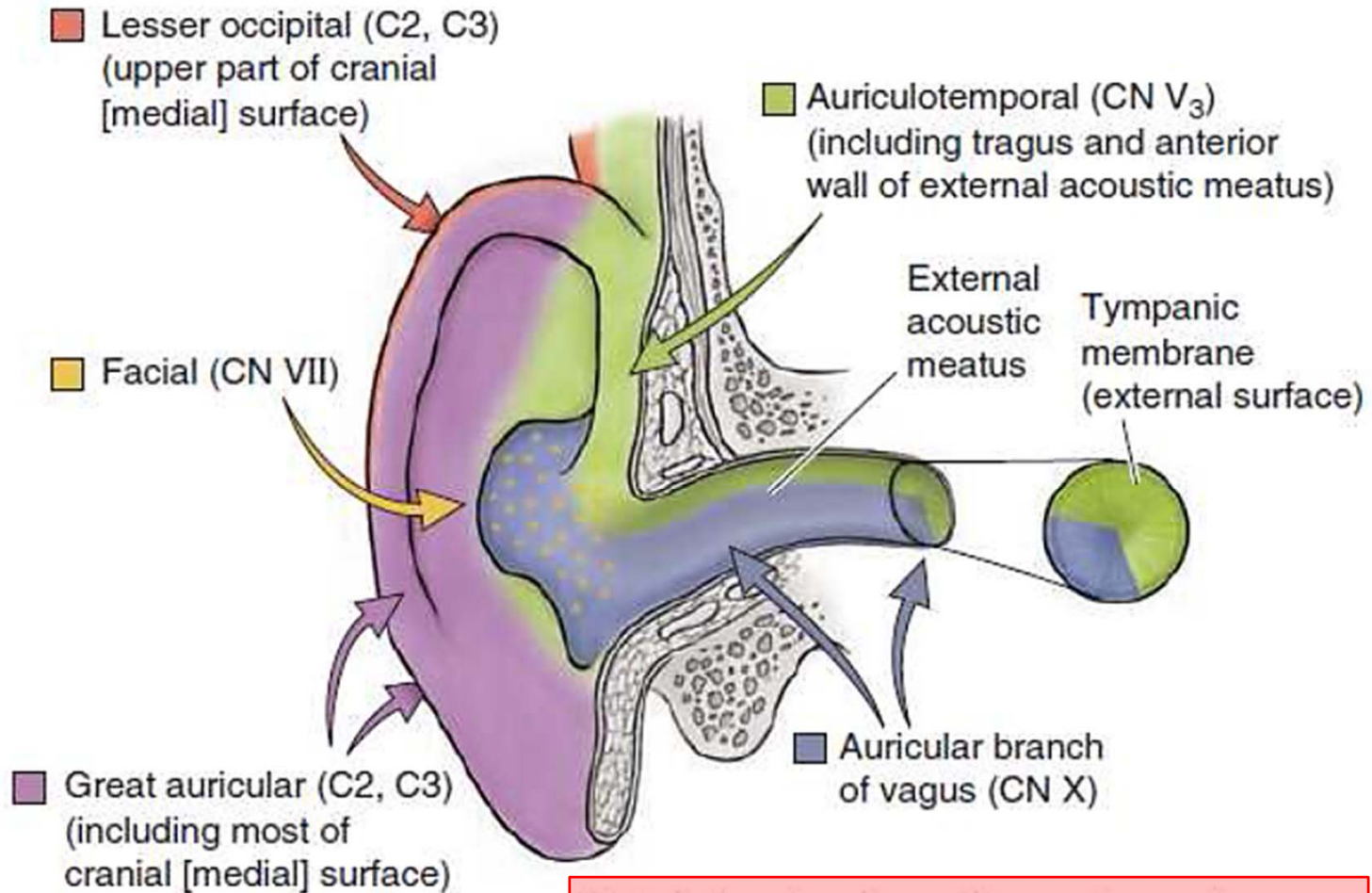
# TYMPANIC MEMBRANE: PARTS



# TYMPANIC MEMBRANE : OTOSCOPY



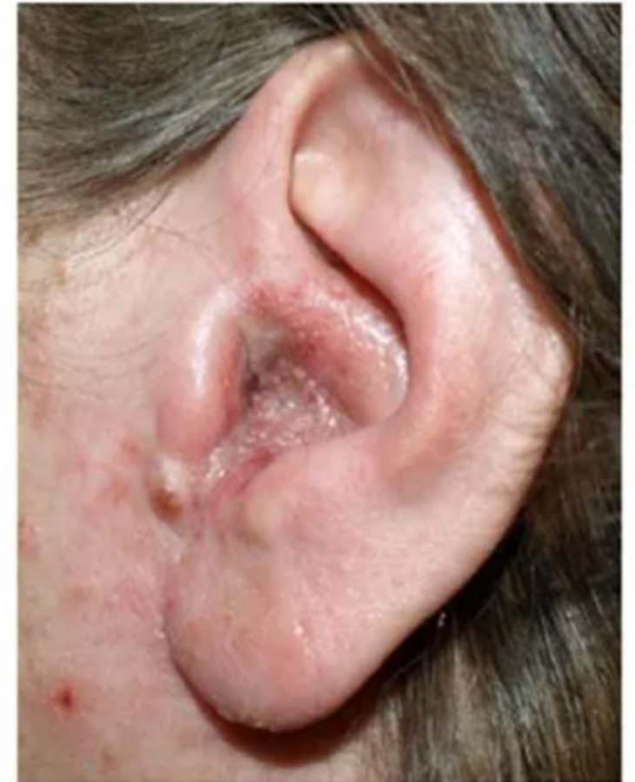
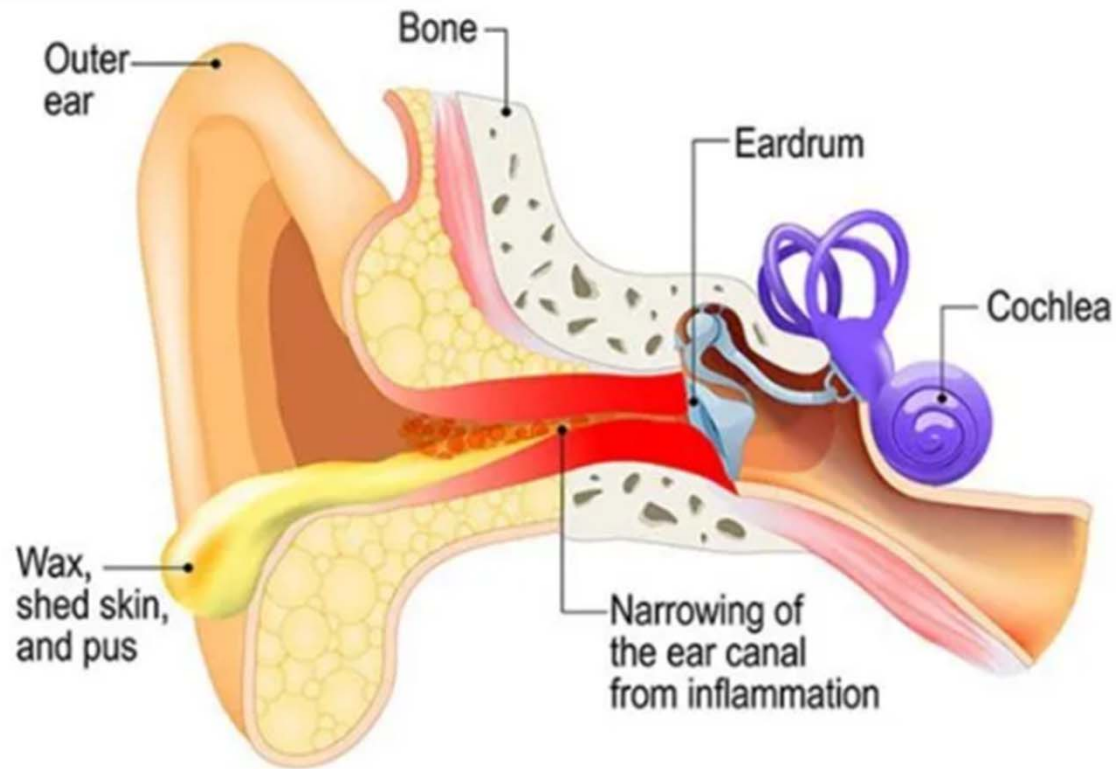
# TYMPANIC MEMBRANE: NERVE SUPPLY



Note: Internal surface of tympanic membrane is innervated by glossopharyngeal nerve (CN IX)



# SWIMMER'S EAR = OTITIS EXTERNA



# MIDDLE EAR: LOCATION & PARTS

## MIDDLE EAR "TYMPANIC CAVITY"

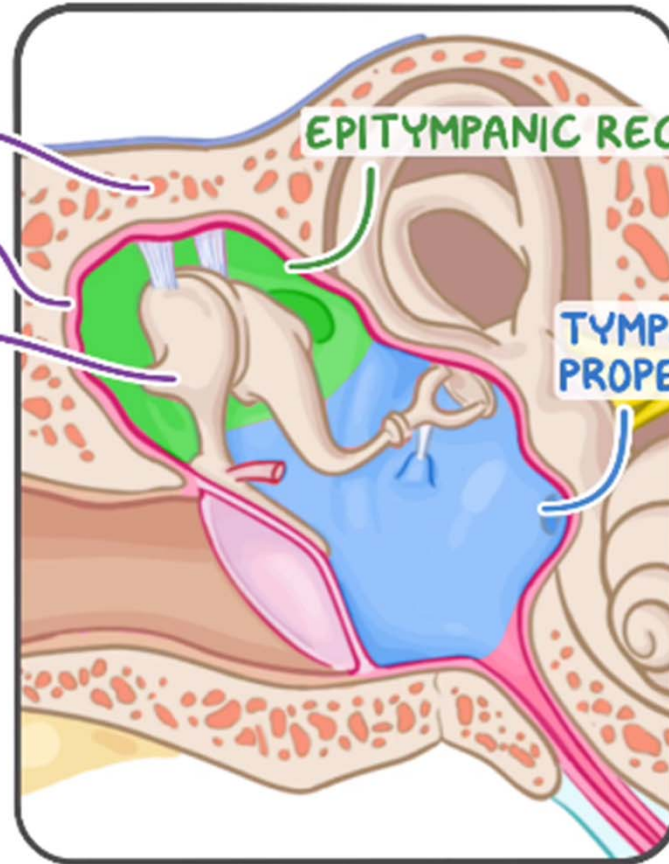
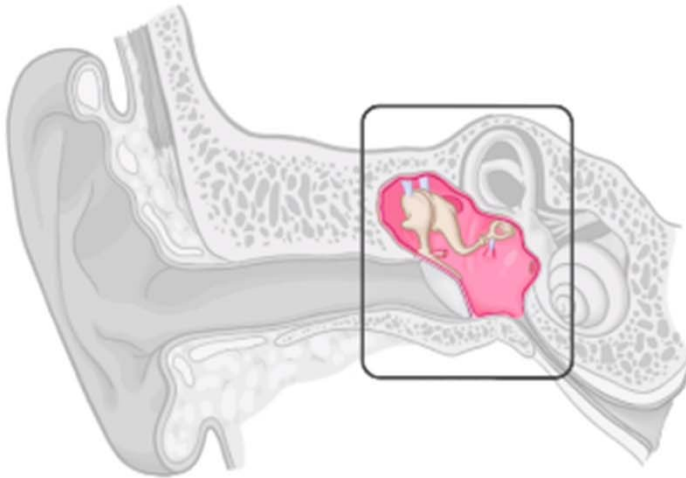
PETROUS PART of TEMPORAL BONE

LINED w/ MUCOUS MEMBRANE

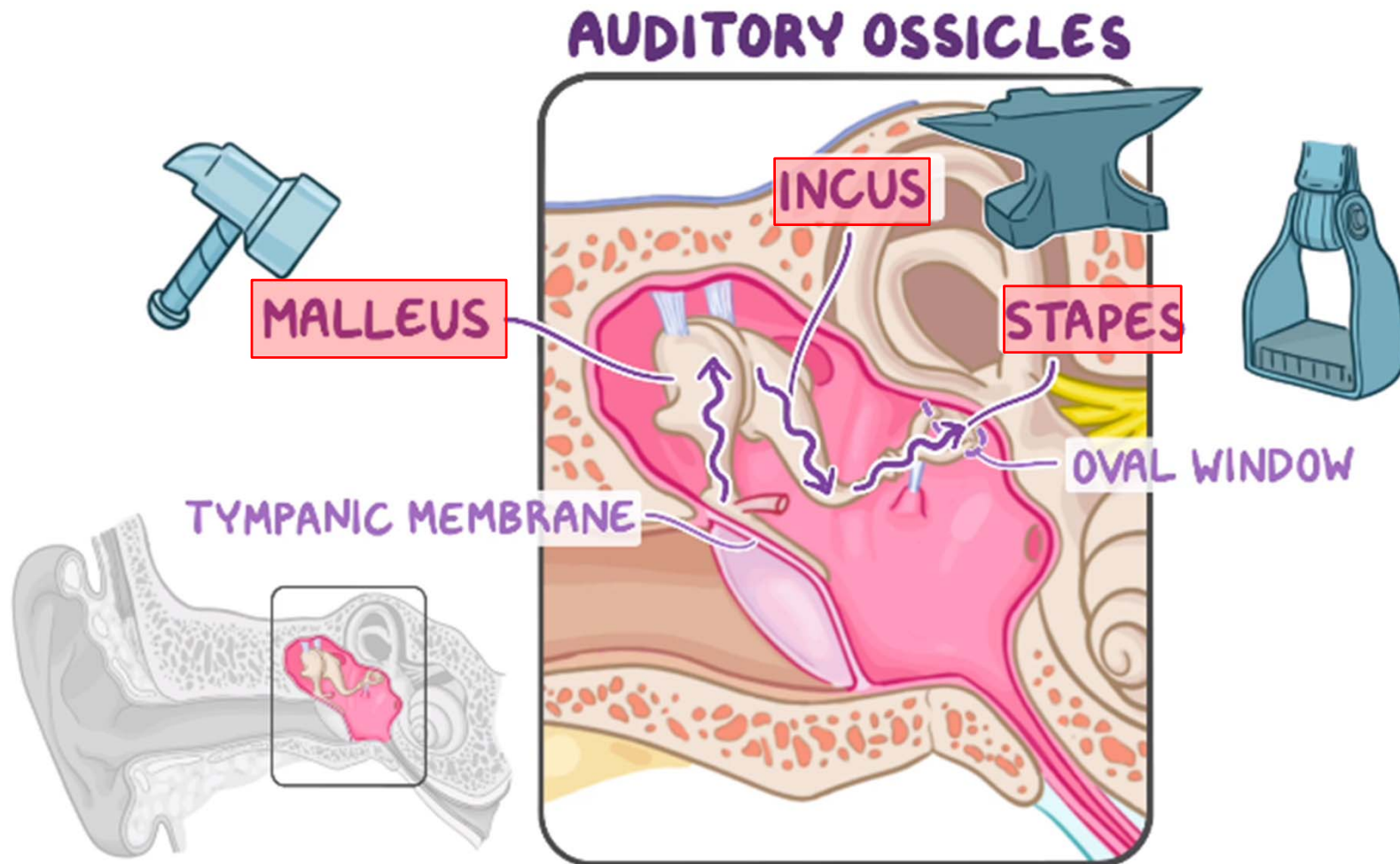
AUDITORY OSSICLES

EPITYMPANIC RECESS

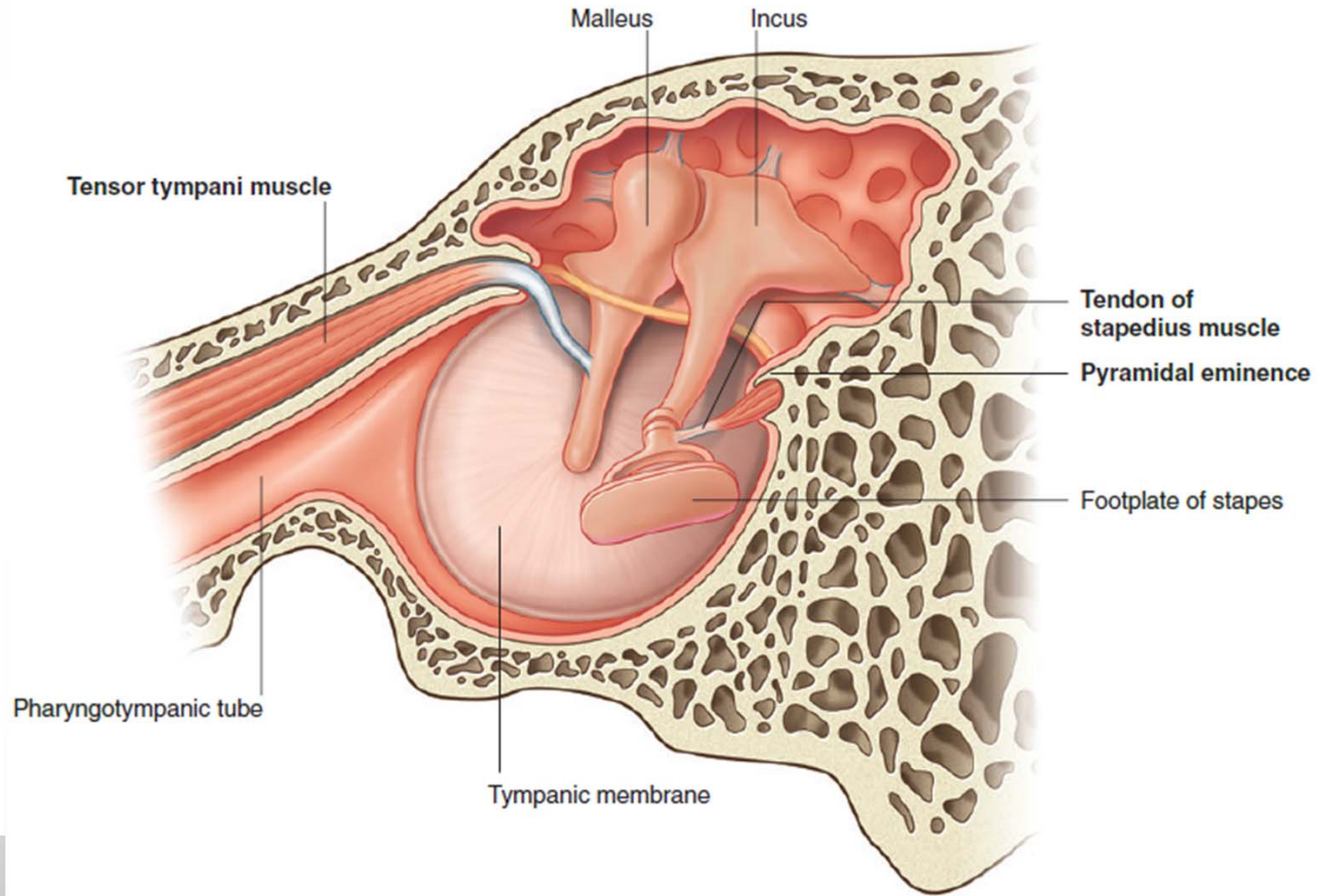
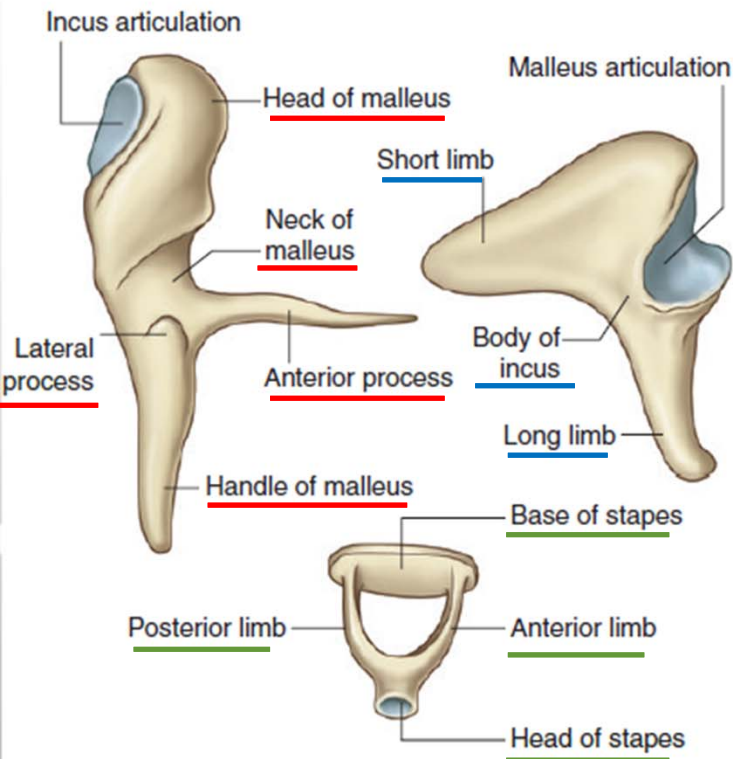
TYMPANIC CAVITY  
PROPER



# MIDDLE EAR: AUDITORY OSSICLES

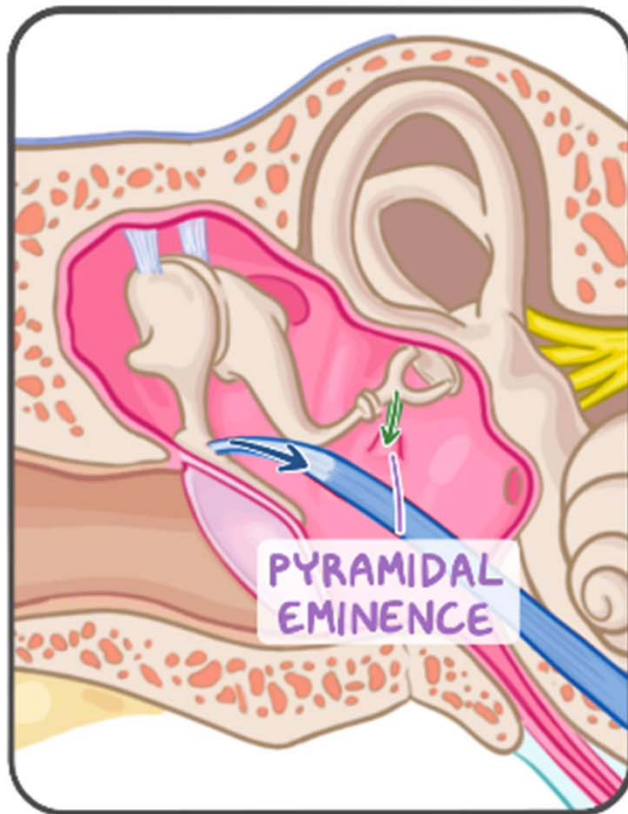


# MIDDLE EAR: AUDITORY OSSICLES



# MIDDLE EAR: OSSICULAR MUSCLES

## MUSCLES that DAMPEN AUDITORY OSSICLES



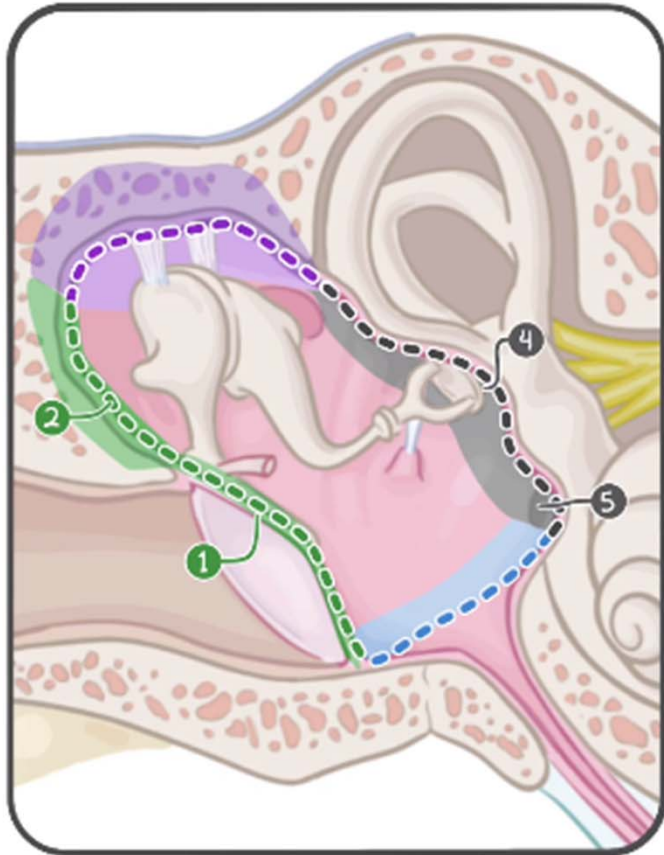
### TENSOR TYMPANI

- \* INNERVATED by MANDIBULAR NERVE
- \* PHARYNGOTYMPANIC TUBE → MALLEUS
- \* TENSES TYMPANIC MEMBRANE

### STAPEDIUS

- \* ↓ AMPLITUDE of OSCILLATIONS into OVAL WINDOW
- \* INNERVATED by a BRANCH of the FACIAL NERVE (CN VII)

# MIDDLE EAR: WALLS



## ROOF: TEGMENTAL WALL

- separates from MIDDLE CRANIAL FOSSA

## FLOOR: JUGULAR WALL

- separates from INTERNAL JUGULAR VEIN

## LATERAL: MEMBRANOUS WALL

① TYMPANIC MEMBRANE

② LATERAL BONY WALL of EPITYMPANIC RECESS

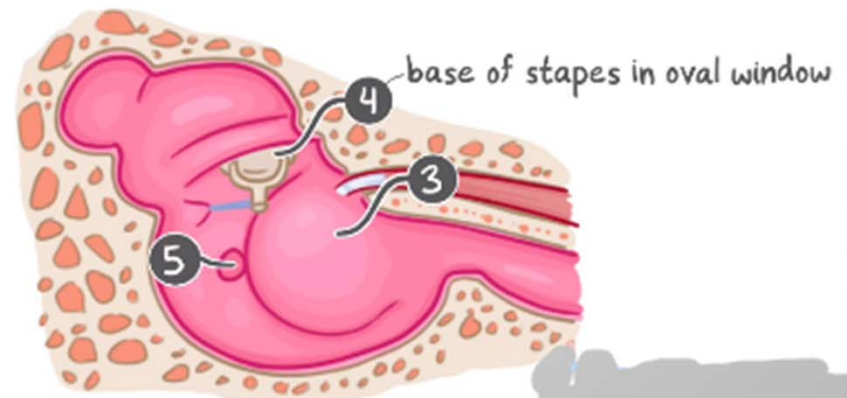
## MEDIAL: LABYRINTHINE WALL

- separates from INNER EAR

③ PROMONTORY

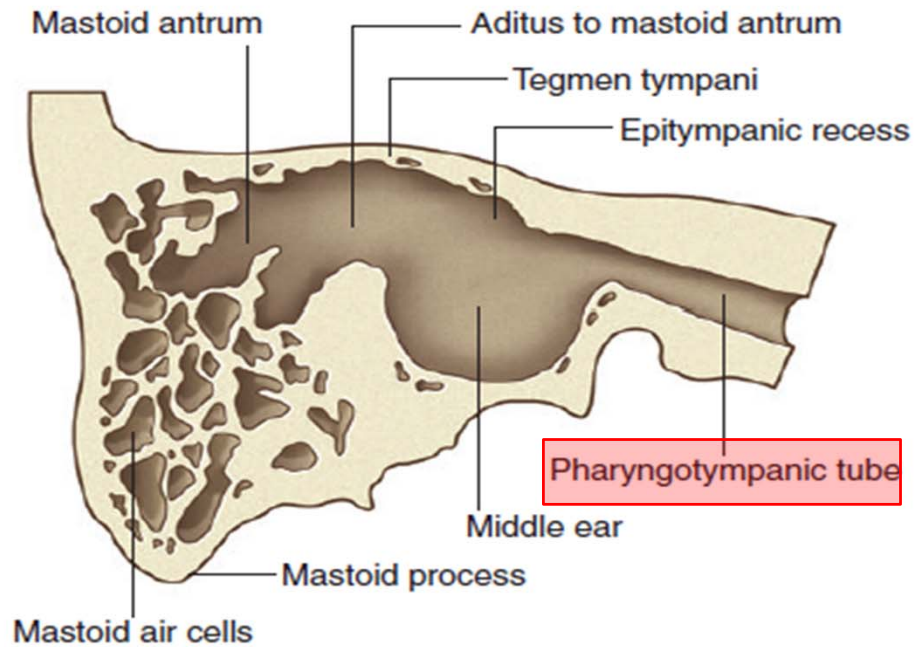
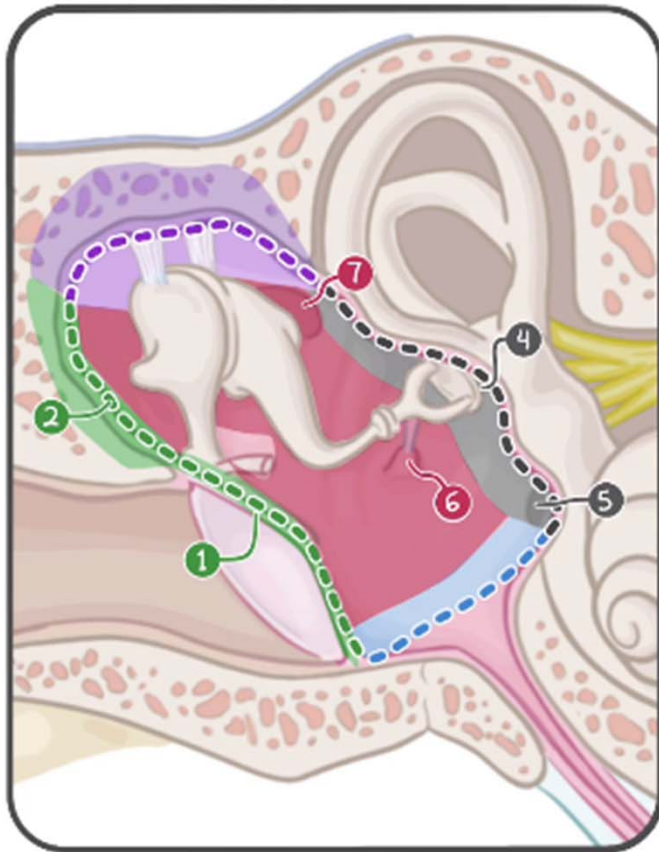
④ OVAL WINDOW

⑤ ROUND WINDOW



LATERAL VIEW

# MIDDLE EAR: WALLS



## POSTERIOR: MASTOID WALL

⑥ PYRAMIDAL EMINENCE

⑦ ADITUS to MASTOID ANTRUM

↳ connects tympanic cavity to mastoid air cells

## ANTERIOR: CAROTID WALL

- separates from CAROTID CANAL

- Connects to the nasopharynx by the auditory tube