

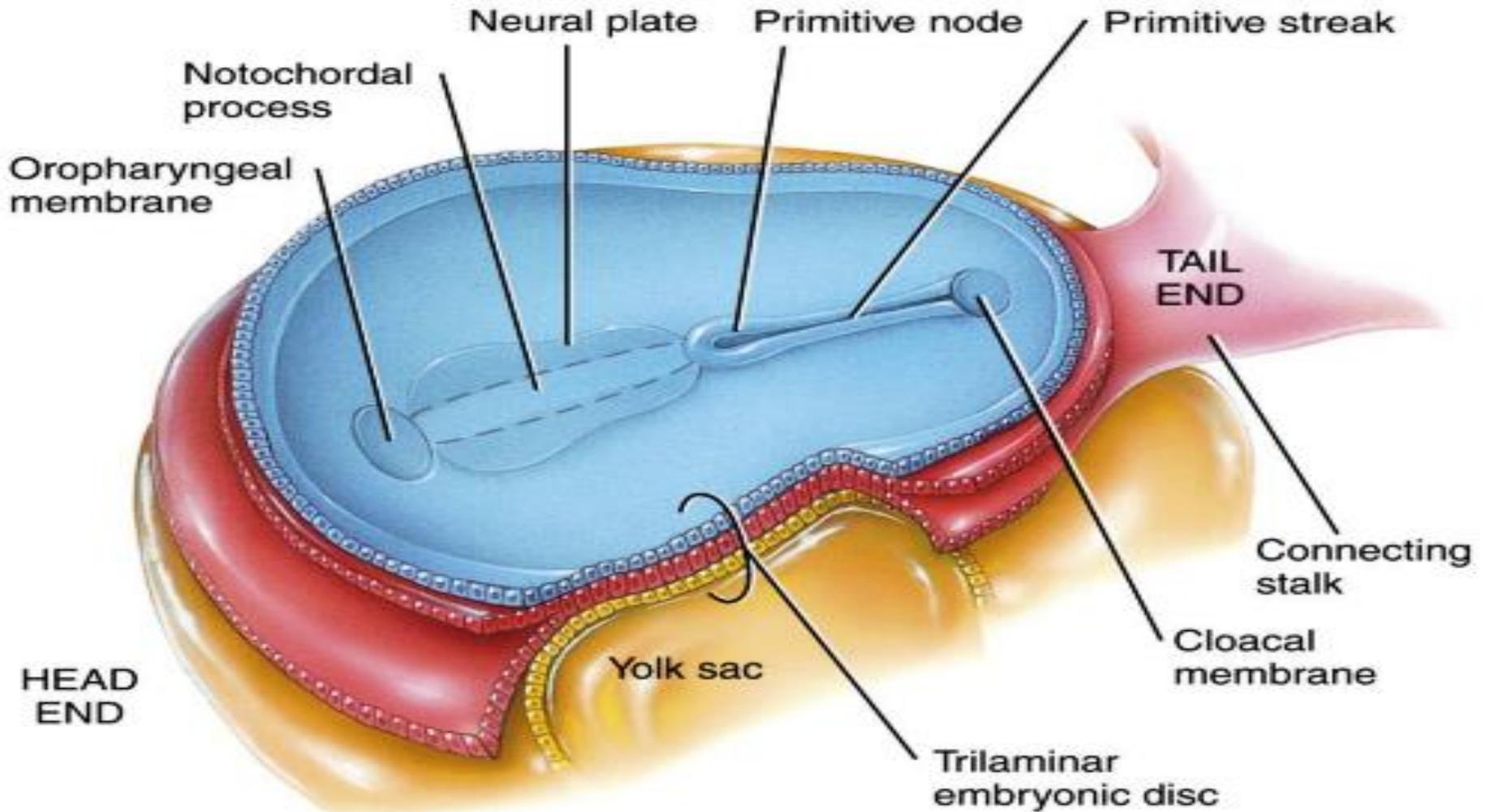
PHARYNGEAL APPARATUS



BY

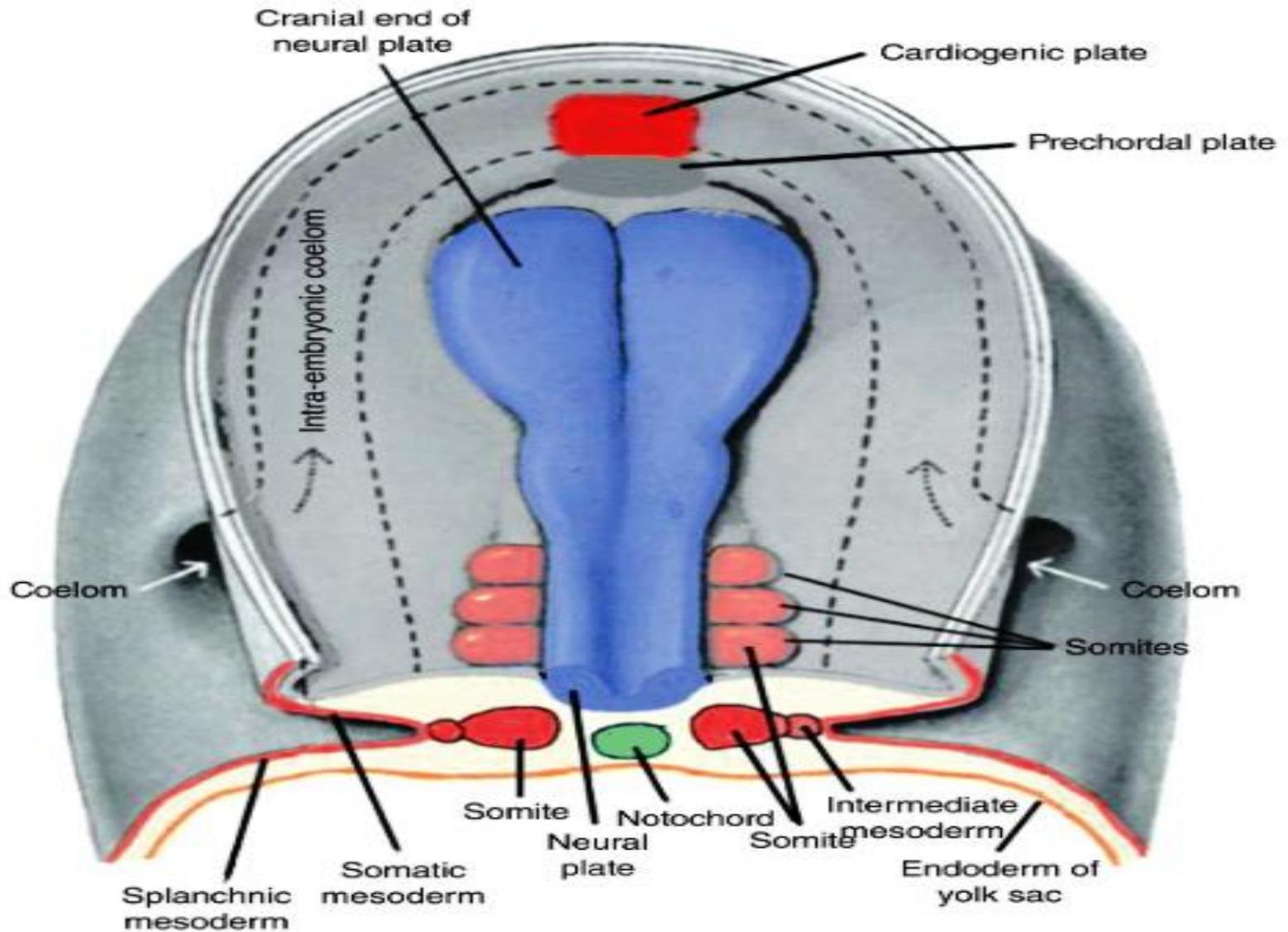
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REV.

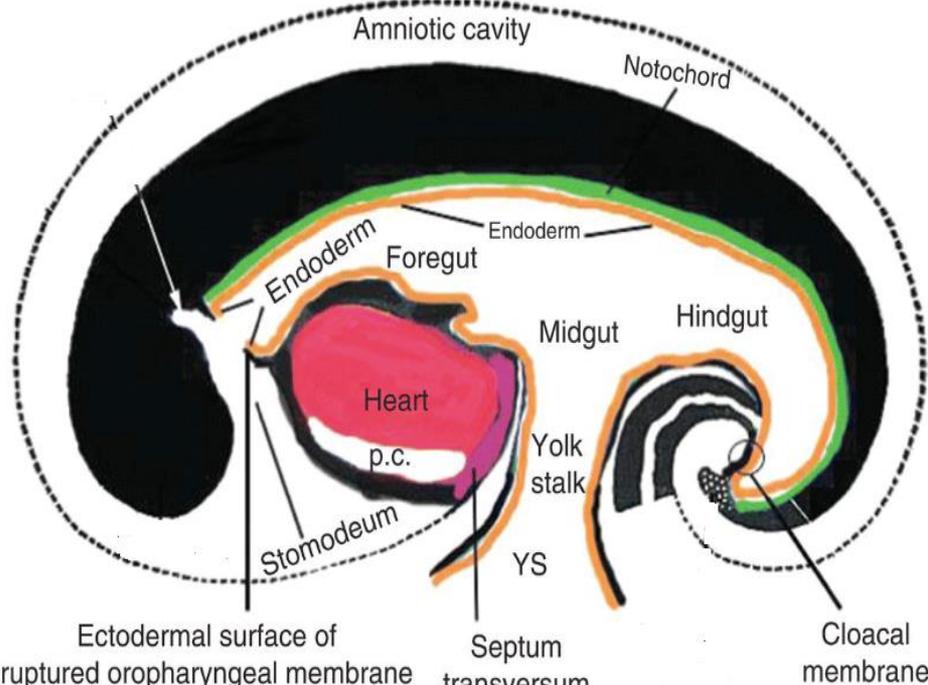
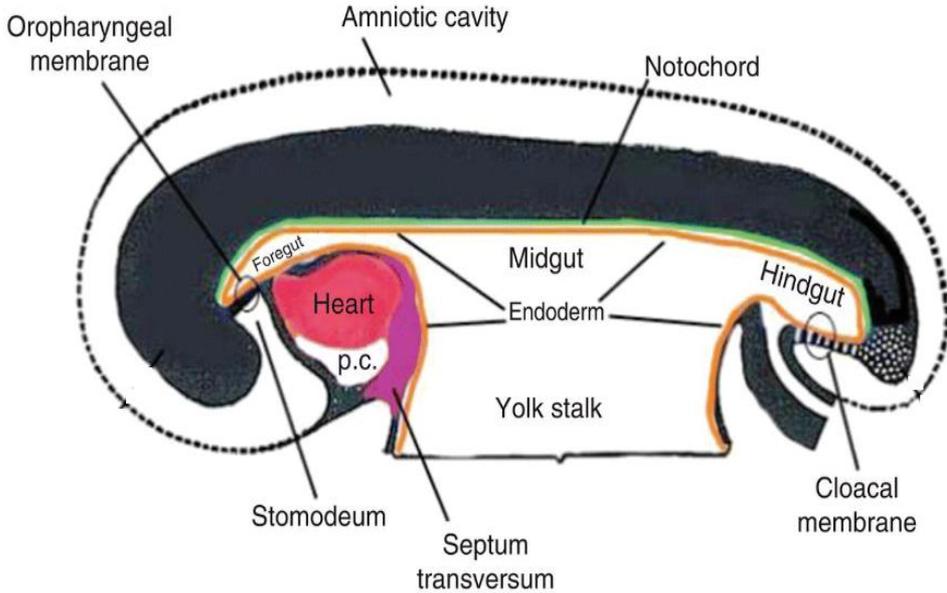
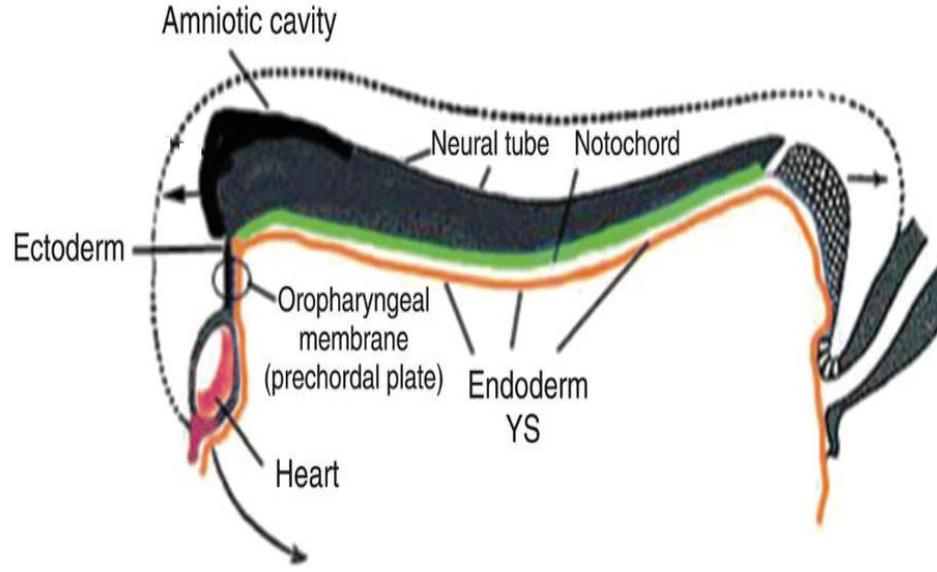
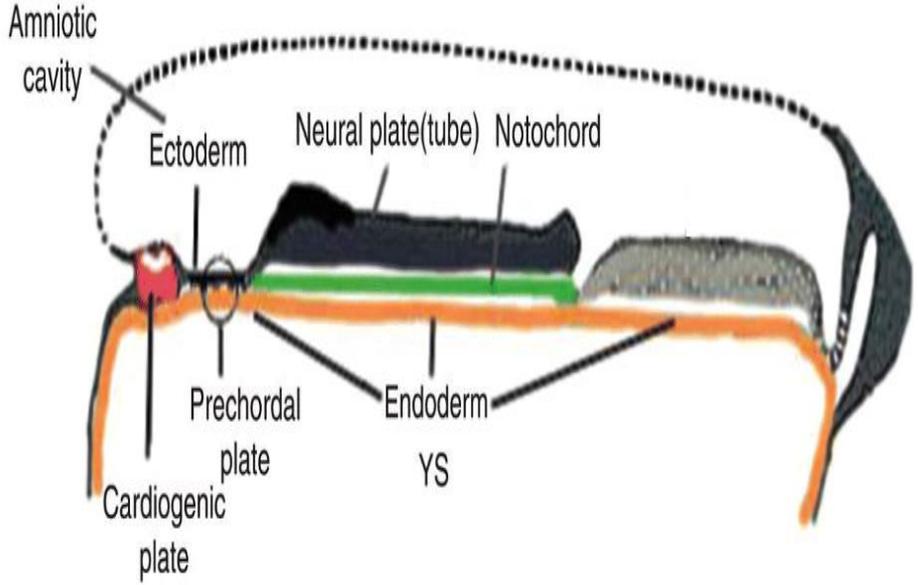


(a) Dorsal and partial sectional views of trilaminar embryonic disc, about 16 days after fertilization

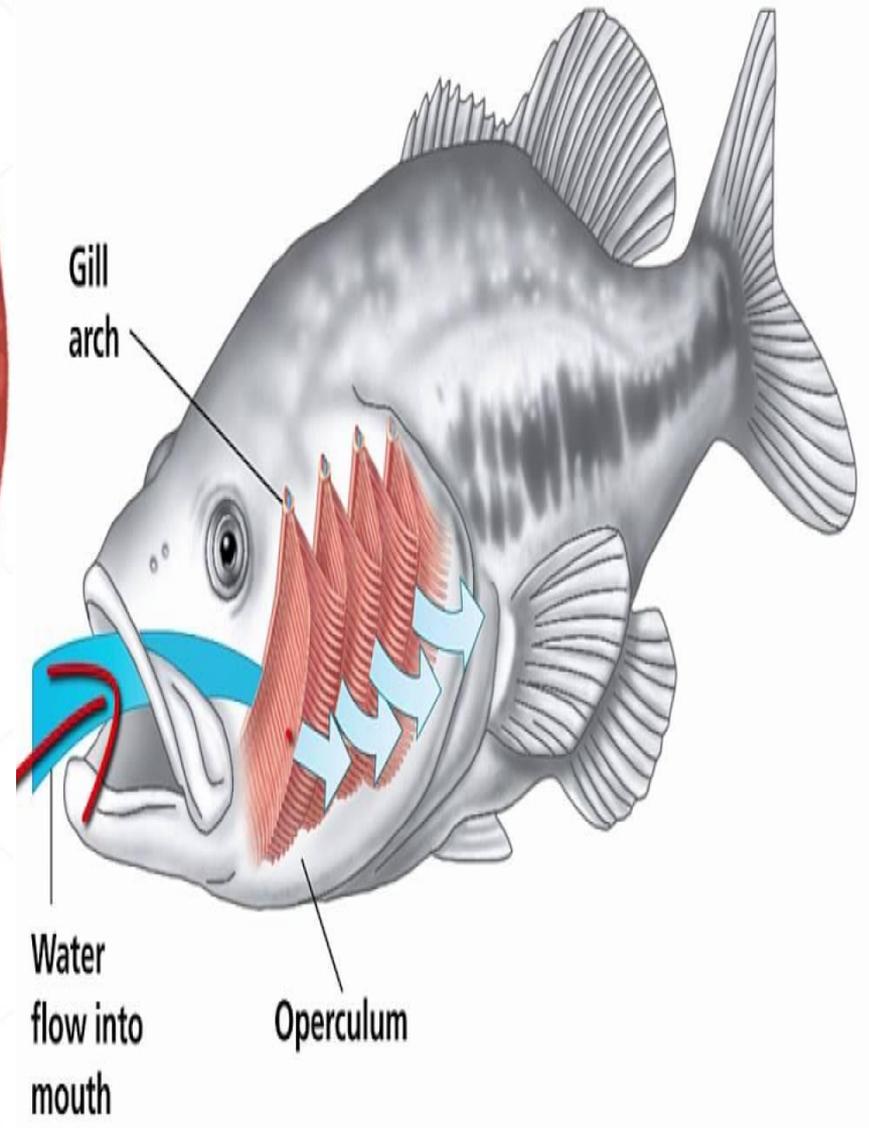
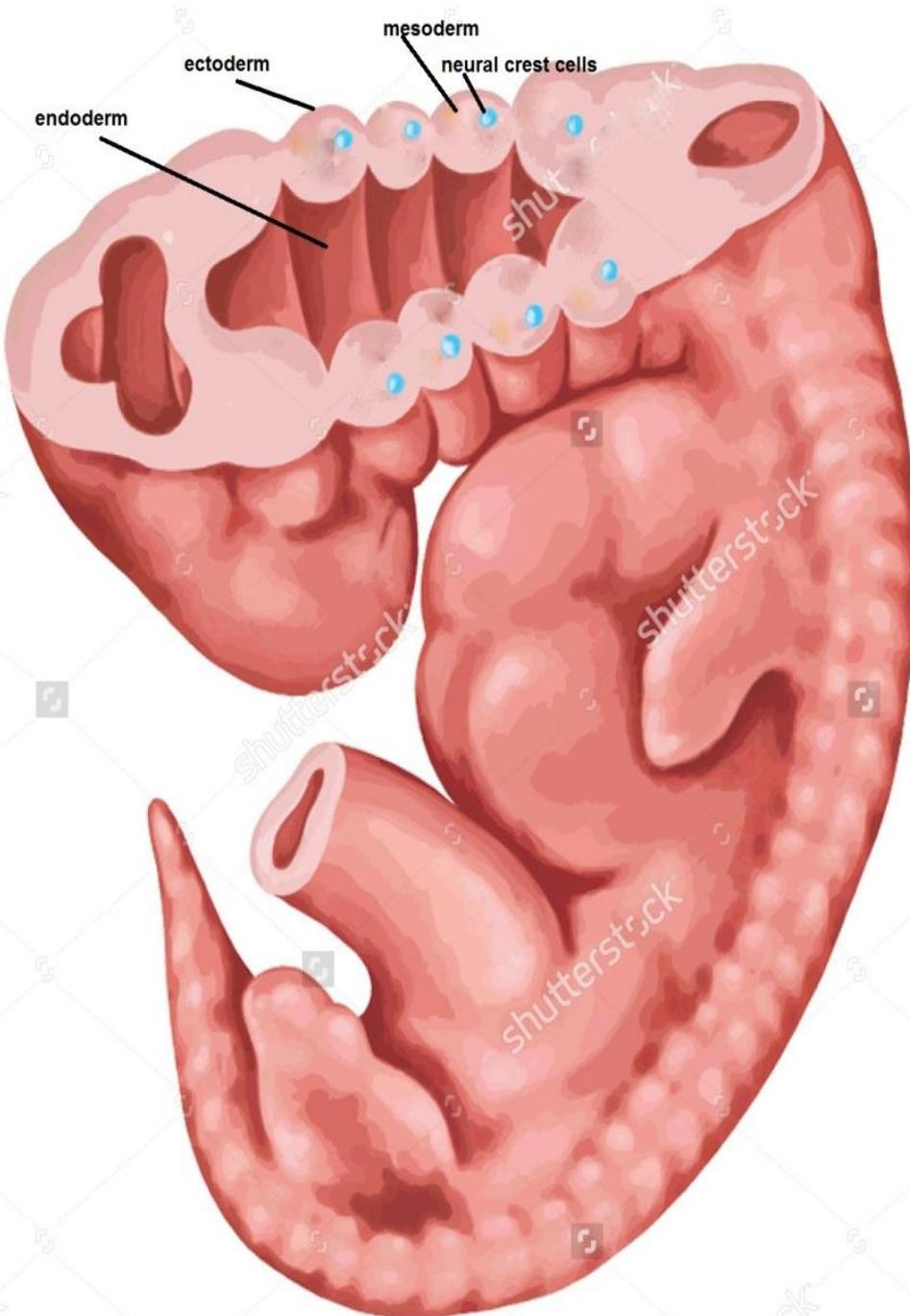
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PHARYNGEAL ARCHES

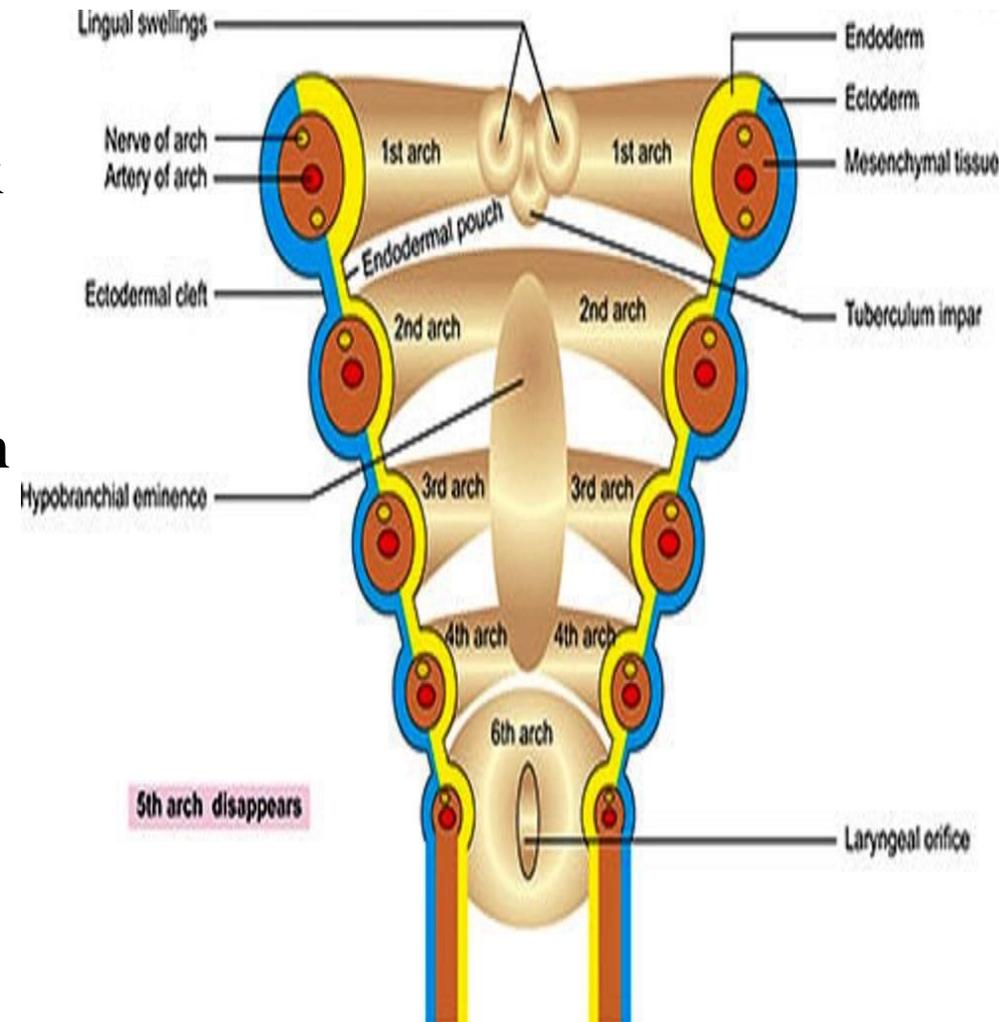
Def.: 6 pairs of cylindrical thickenings in side wall of primitive pharynx

Formation:

- thickening of the mesoderm in side wall of primitive pharynx at 6 sites
- neural crest cells migrate to the core of mesoderm of the arch

Structure: from inside to outside

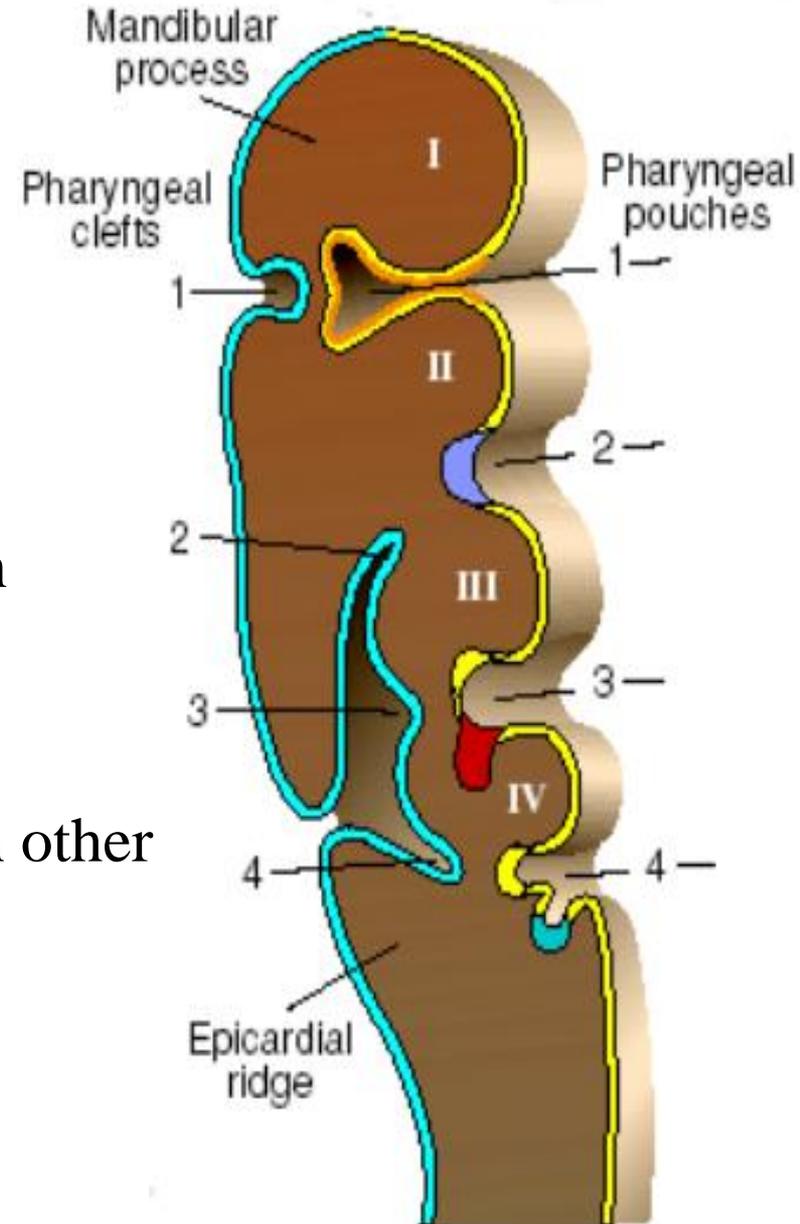
- endoderm of primitive pharynx
- mesoderm
- core of neural crest cells
- ectoderm of side of neck



PHARYNGEAL ARCHES

Features:

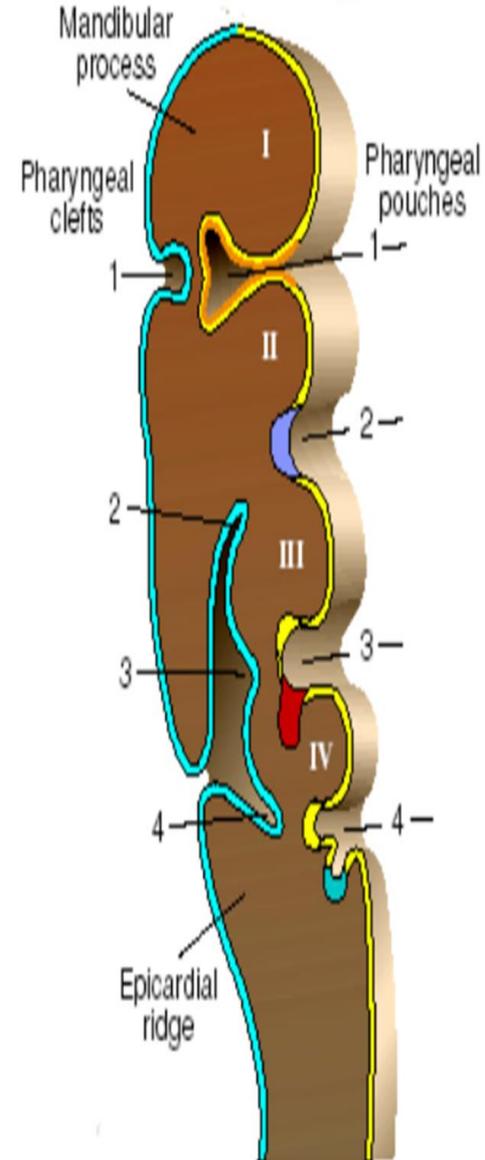
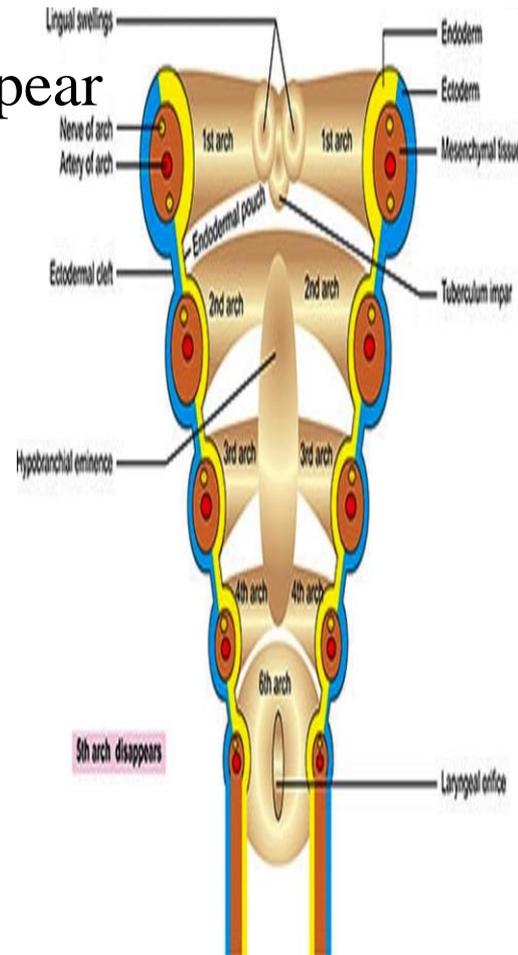
- They appear in craniocaudal order as the 1st arch is the most cranial and the 6th arch is the most caudal
N.B. 1st arch is called mandibular arch
2nd arch is called hyoid arch
- Internally they are separated from each other by grooves called pharyngeal pouches that are lined by endoderm
- Externally they are separated from each other by grooves called pharyngeal clefts that are lined by ectoderm



PHARYNGEAL ARCHES

Features:

- 5th arch is rudimentary & disappear
- 6th arch is not prominent
- 1st arch is the most prominent
- The 2nd arch grow caudally over the other arches forming cervical sinus on side of neck



PHARYNGEAL ARCHES

Fate:

- The neural crest cells:-

forms the skeletal component of neck & face

- The mesoderm:-

form the muscular component of neck & face

- The Ectoderm:-

forms the skin of side of neck & face

N.B: muscular component of each arch has its own

- blood supply: one of aortic arches

- nerve // : cranial nerves

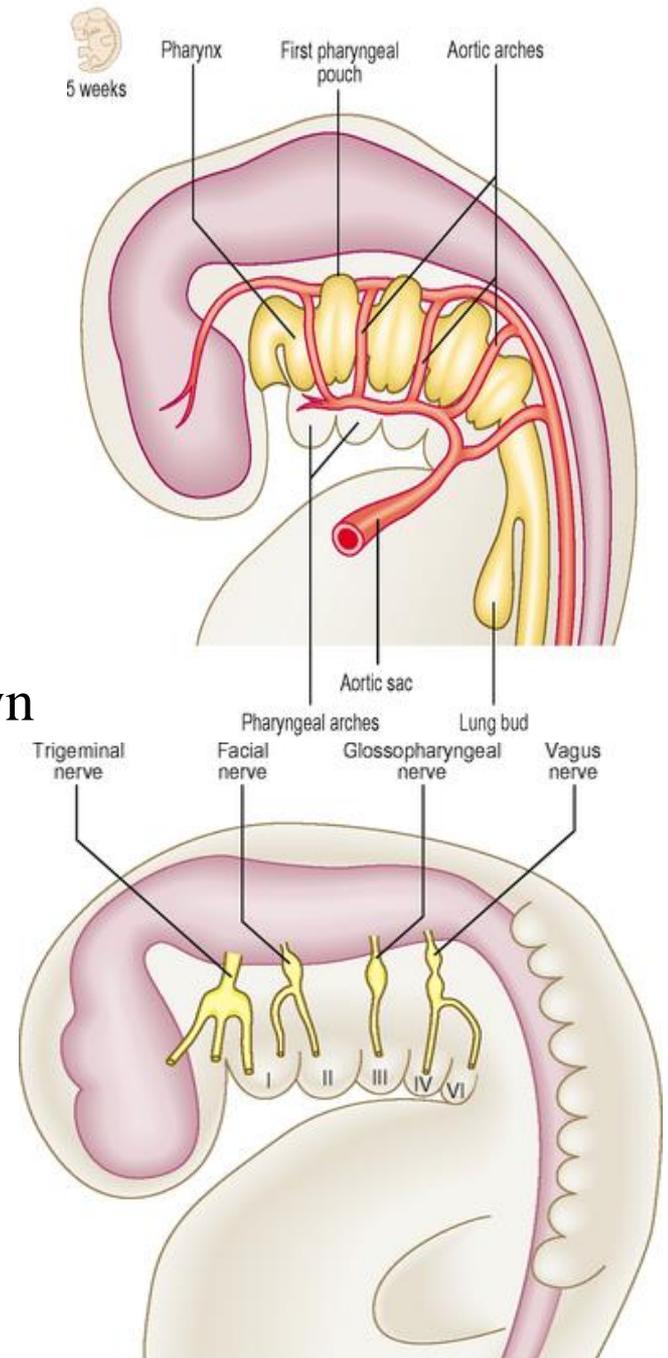
1st supplied by mandibular of trigeminal n.

2nd // // facial n.

3rd // // glossopharyngeal n.

4th // // superior laryngeal of vagus n.

6th // // recurrent laryngeal of vagus n.



PHARYNGEAL ARCHES

Derivatives

1st pharyngeal arch:

skeletal component:

arise from (Meckel's cartilage)

incus, malleus

ant. lig. of malleus

sphenomandibular lig.

Mandible, maxilla, zygomatic bone, temporal bone

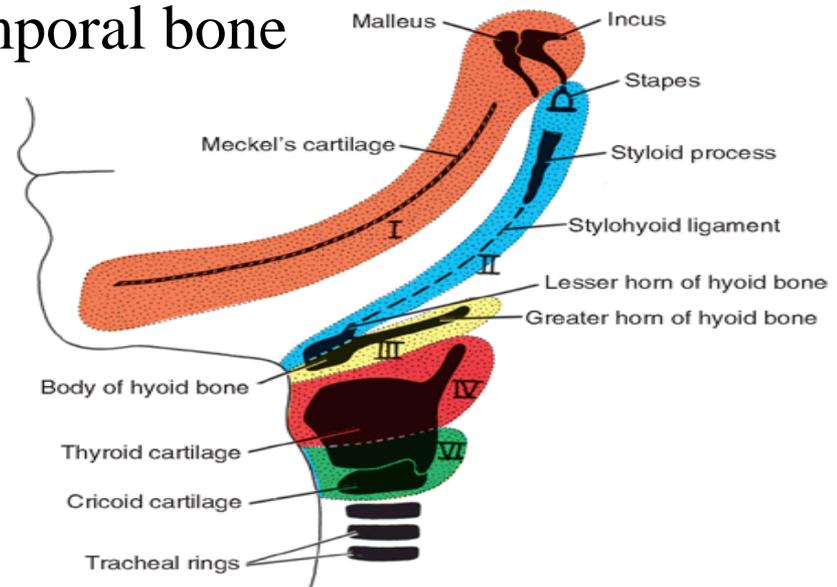
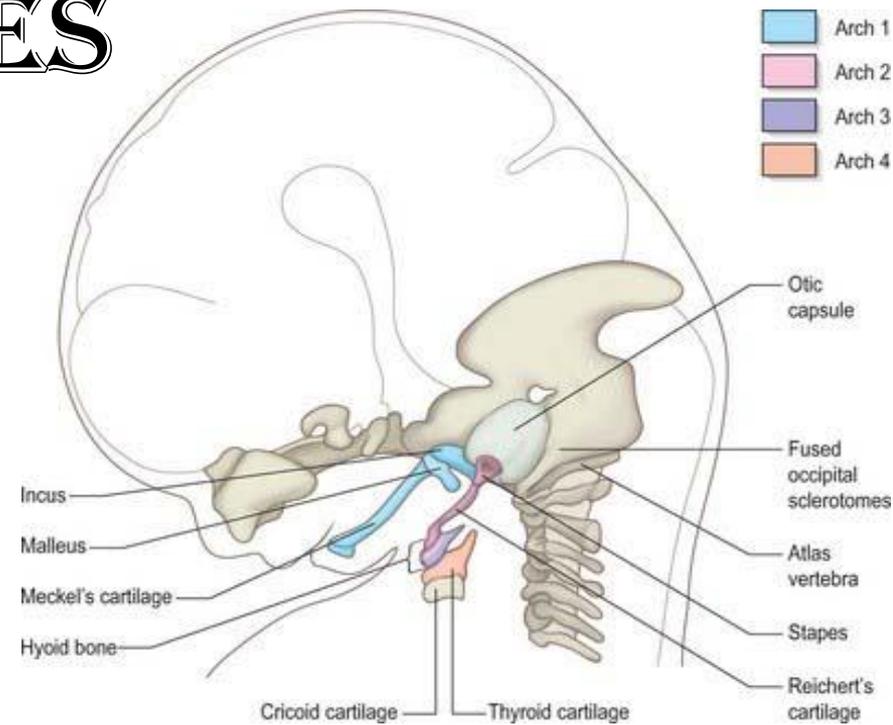
muscular component

medial pterygoid, lateral pterygoid

masseter, temporalis

tensor palate & tympani

mylohyoid & ant. belly of digastric



PHARYNGEAL ARCHES

Derivatives

2nd pharyngeal arch

skeletal component: Reichert's cartilage

stapes

styloid process

stylohyoid lig

lesser horn & upper part of body of hyoid

muscular component

occipito frontalis

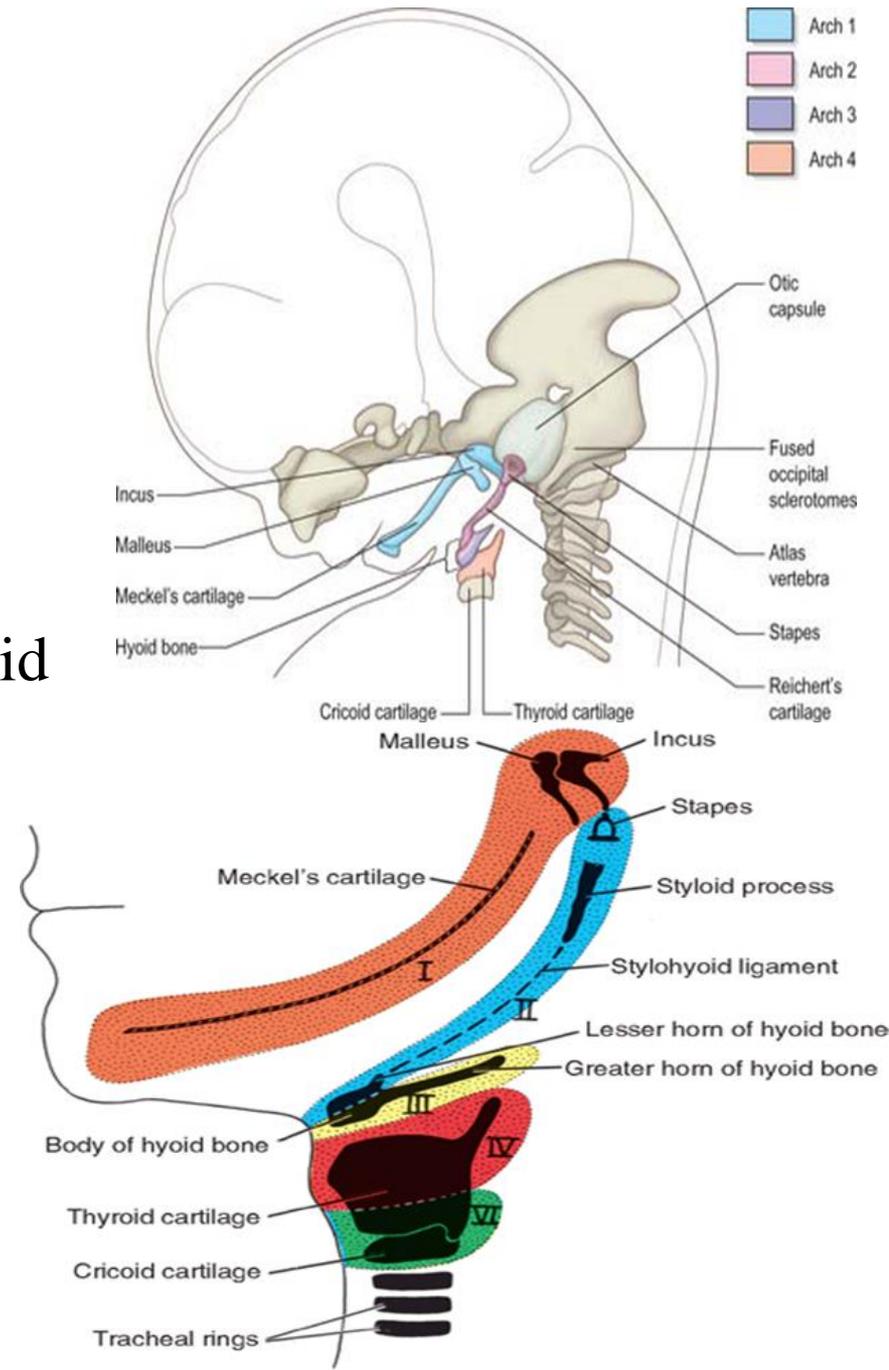
muscle of face

stapedius

stylohyoid

post. belly of digastric

platysma



PHARYNGEAL ARCHES

Derivatives

3rd pharyngeal arch

skeletal component:

greater horn & lower part of body of hyoid bone

muscular component :- stylopharyngeus

4th & 6th pharyngeal arch

skeletal component :- cartilage of larynx except epiglottis

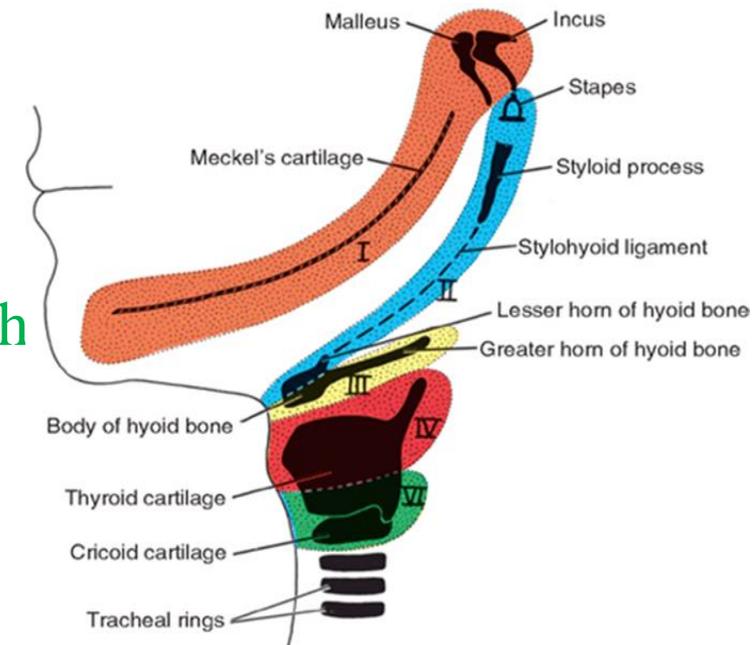
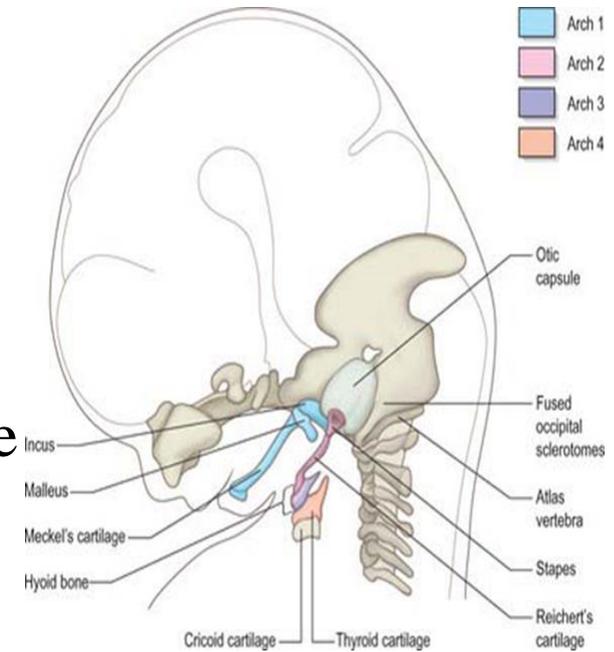
muscular component of the 4th arch

cricothyroid muscle of larynx

constrictor muscles of pharynx

muscular components of 6th pharyngeal arch

All muscles of larynx except cricothyroid



PHARYNGEAL CLEFTS

Derivatives

1st pharyngeal cleft

form external auditory canal

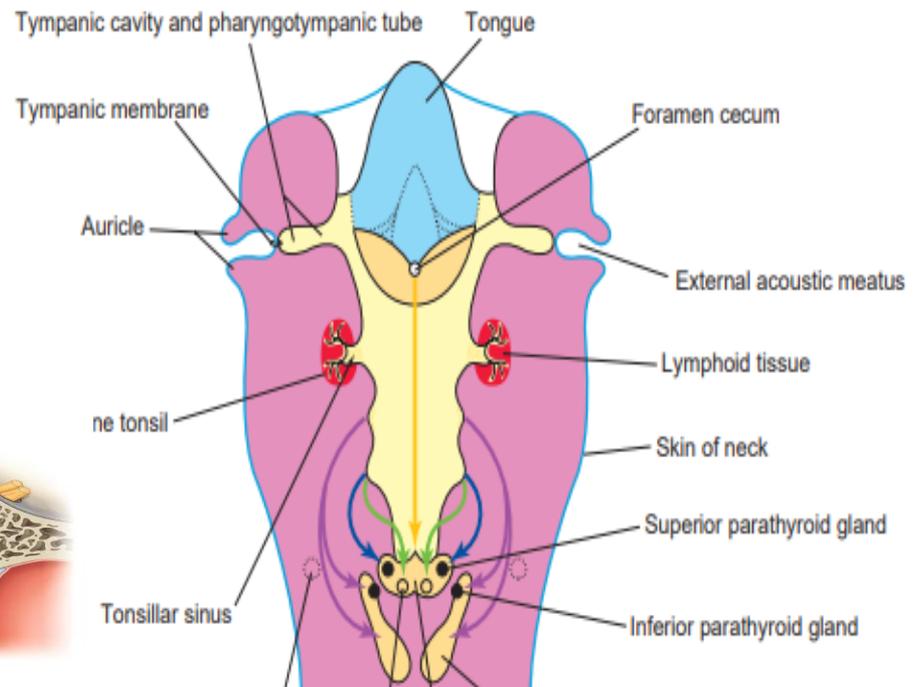
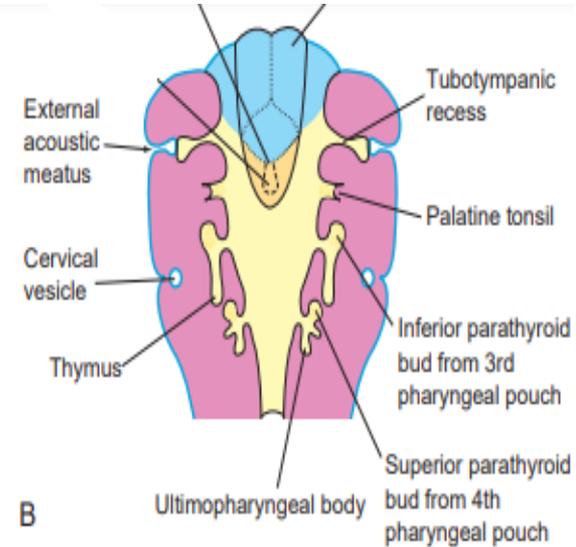
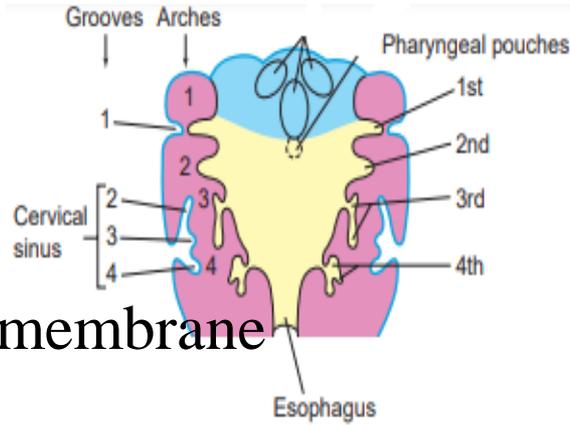
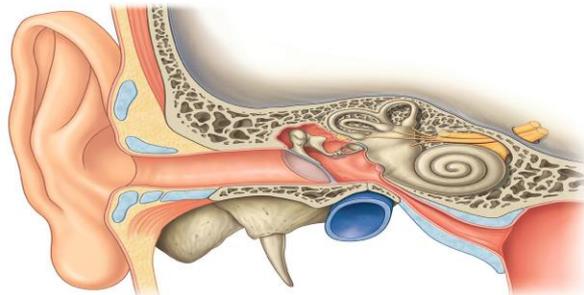
Outer layer of the tympanic membrane

remaining clefts:

lie in floor of cervical sinus &

are roofed by caudal extension
of 2nd pharyngeal arch

the sinus is obliterated by
opposition of roof & floor



PHARYNGEAL POUCHES

Derivatives

1st pharyngeal pouch:

form tubotympanic recess

that gives

auditory tube

tympanic cavity &

Inner layer of the Tympanic membrane

2nd pharyngeal pouch:

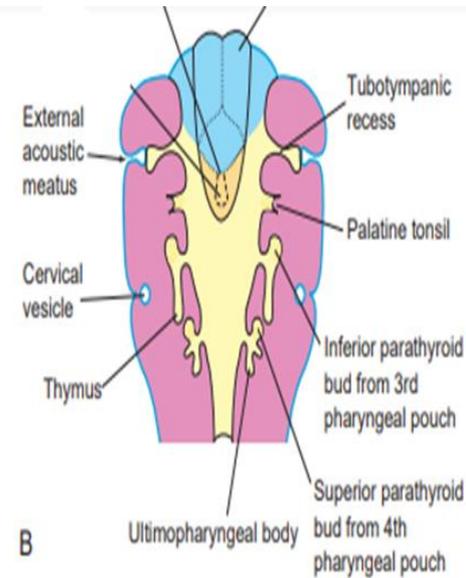
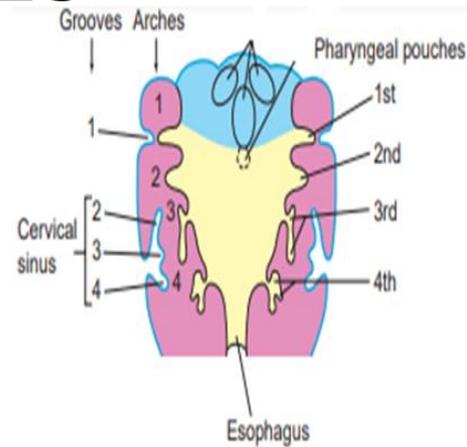
palatine tonsil:

endoderm proliferate

Forming buds that canalize

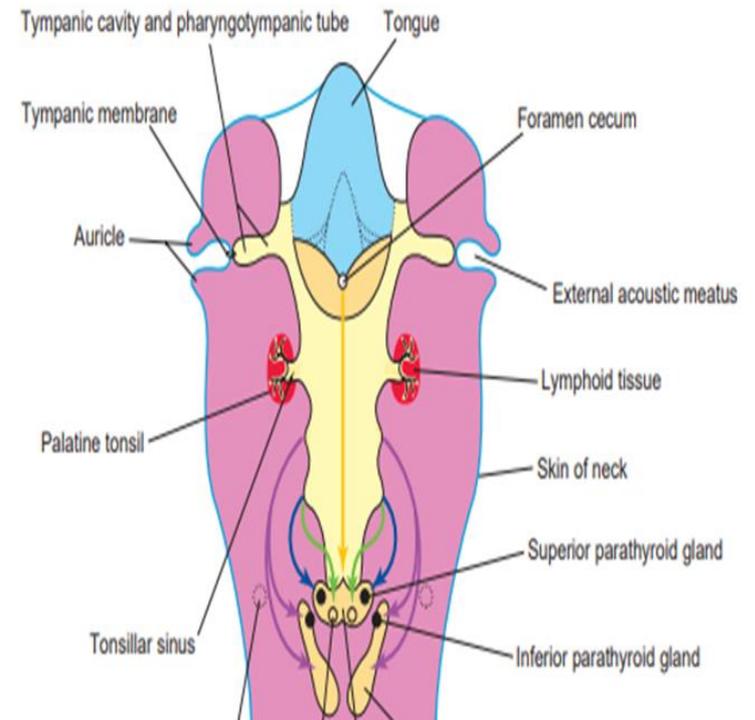
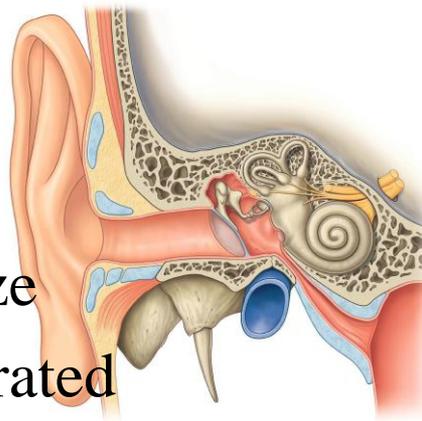
Forming crypts that infiltrated

by lymphatic cells



A

B



PHARYNGEAL POUCHES

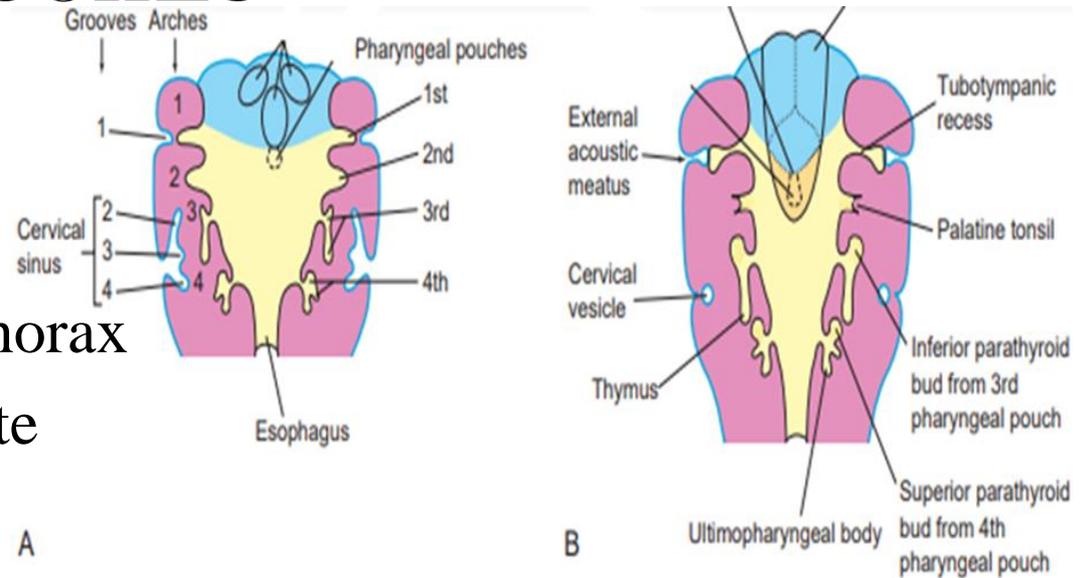
Derivatives

3rd pharyngeal pouch:

Endoderm proliferate to form thymus gland that migrate to thorax
inferior parathyroid that migrate behind the thyroid gland

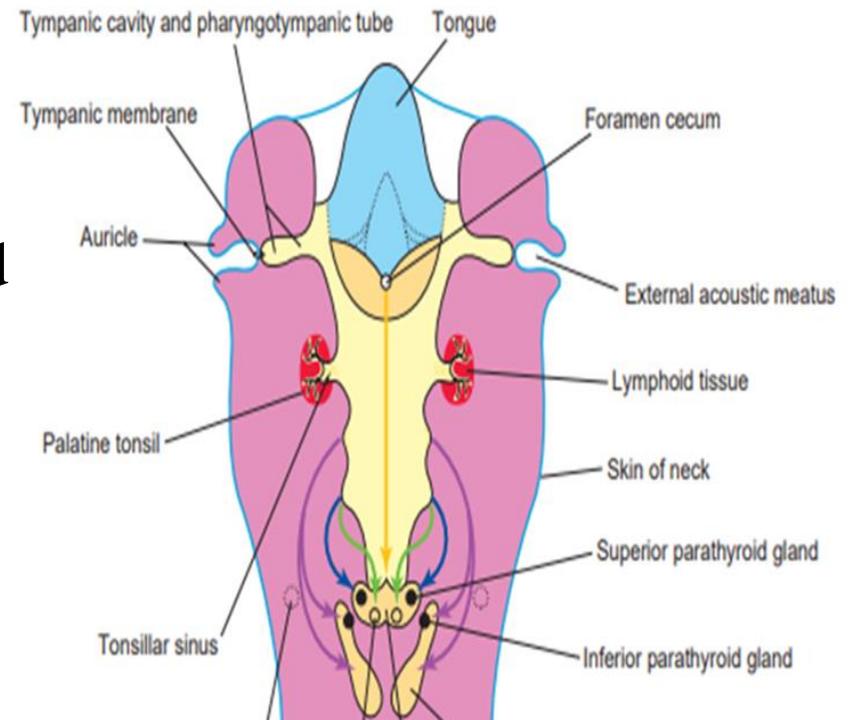
4th pharyngeal pouch:

Endoderm proliferate to form **superior parathyroid** that migrate behind the thyroid gland
caudal part of 4th pouch
ultimo branchial body that migrate to thyroid gland forming its parafollicular cells



A

B



CONGENITAL ANOMALIES

1-ectopic thymus or parathyroid:

due to arrest during migration

As thymus in the neck

Inferior parathyroid at bifurcation of CCA

CONGENITAL ANOMALIES

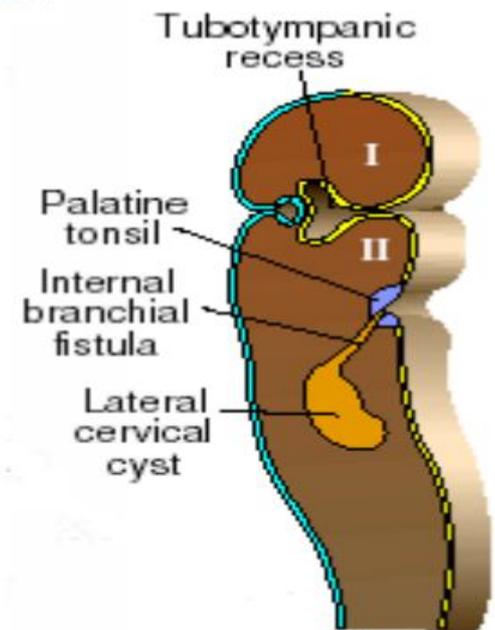
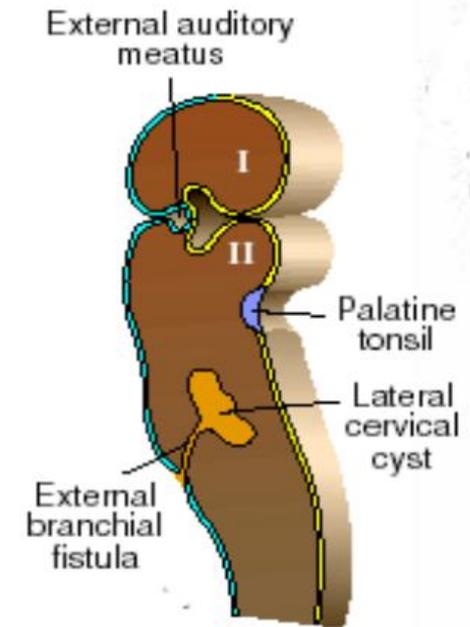
2-branchial fistulae:

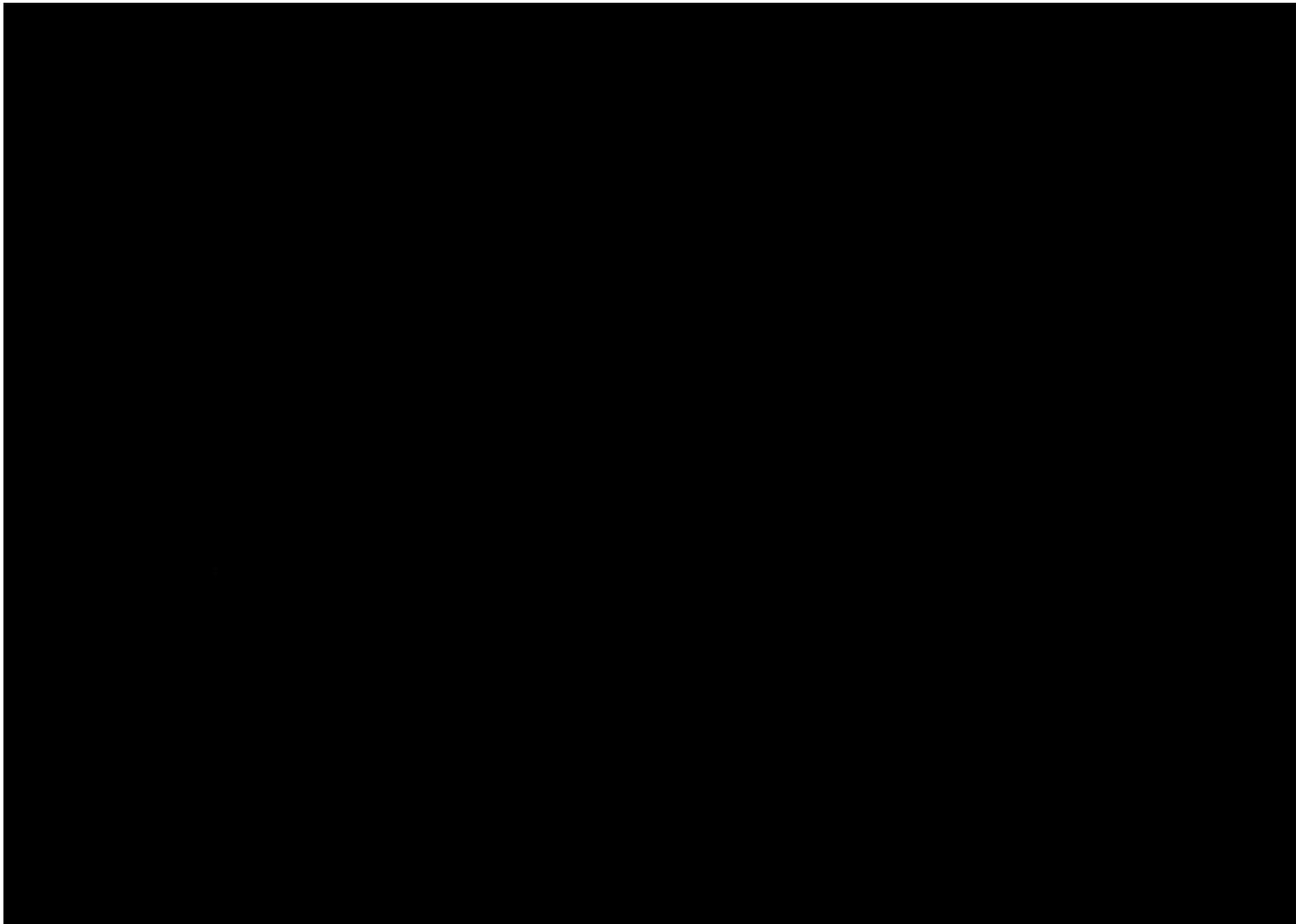
external:

- failure of caudal growth of 2nd arch
- the remnants of cleft open on surface
- by narrow duct
- along ant. border of sternomastoid

internal:

- persistence of cervical sinus forming branchial cyst
- membrane () 2nd cleft & pouch degenerate
- branchial cyst open on pharynx by fistula
- above tonsil





THANQ