PHARYNGEAL APPARATUS 1

BY

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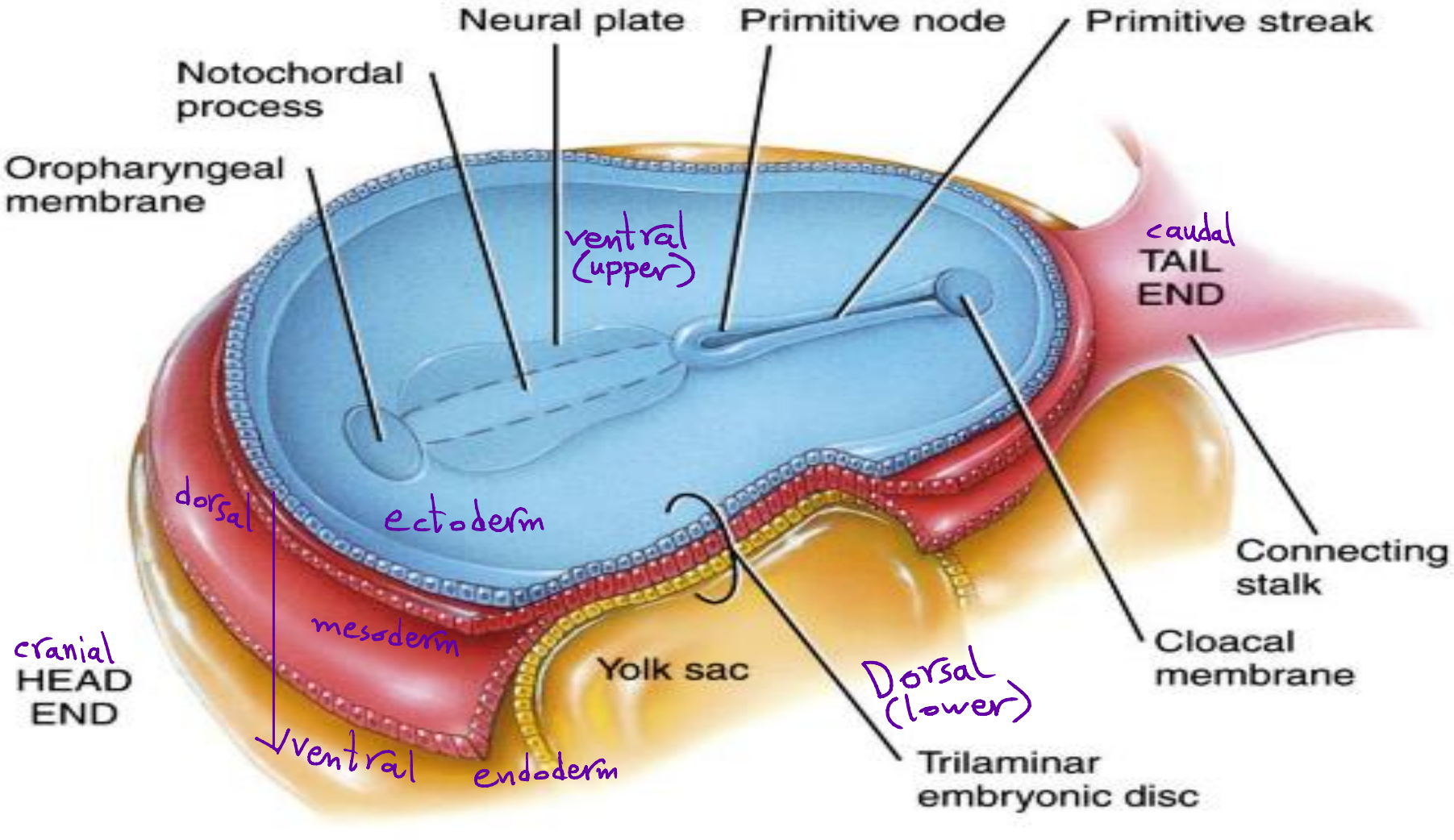
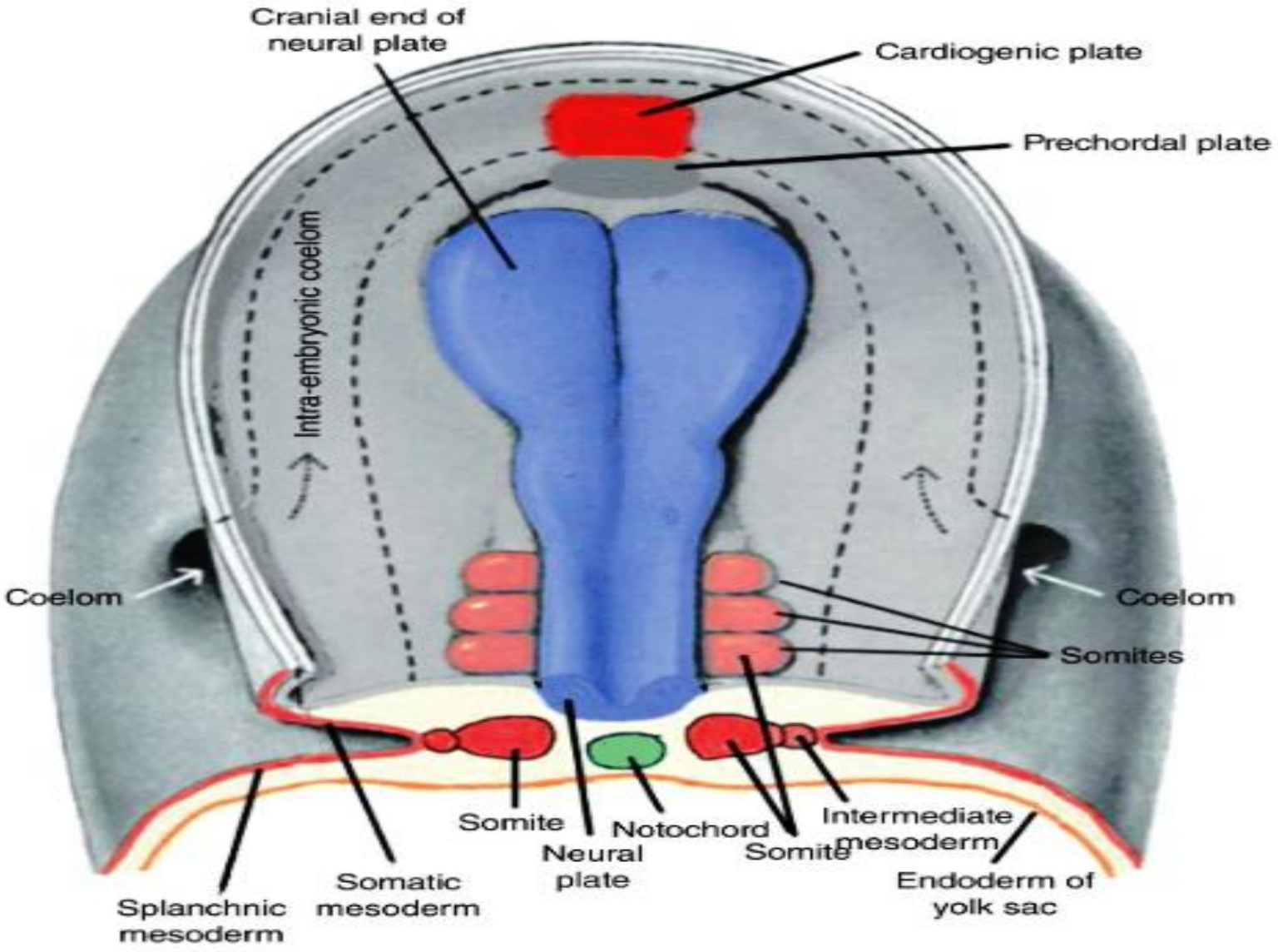
REV.



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

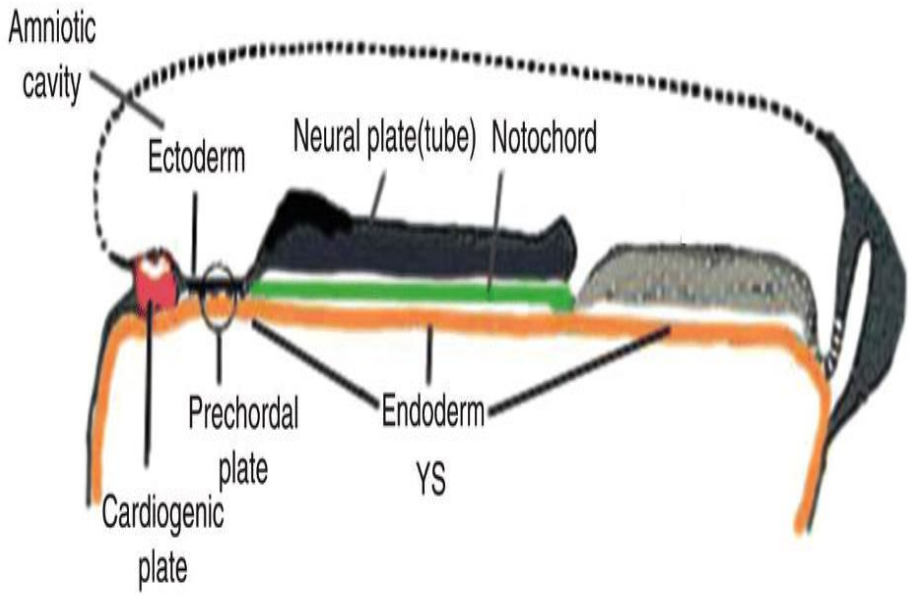
REV.

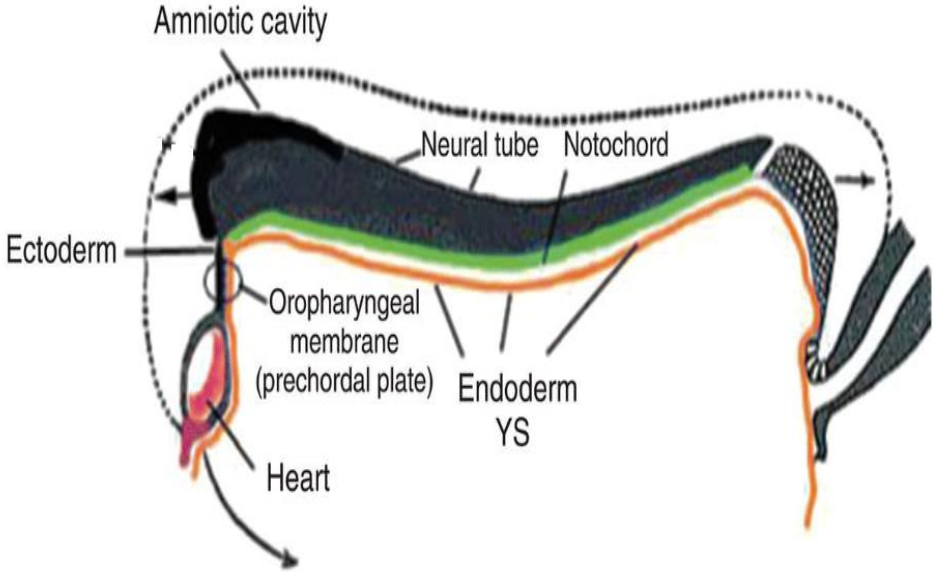
Mesoderm

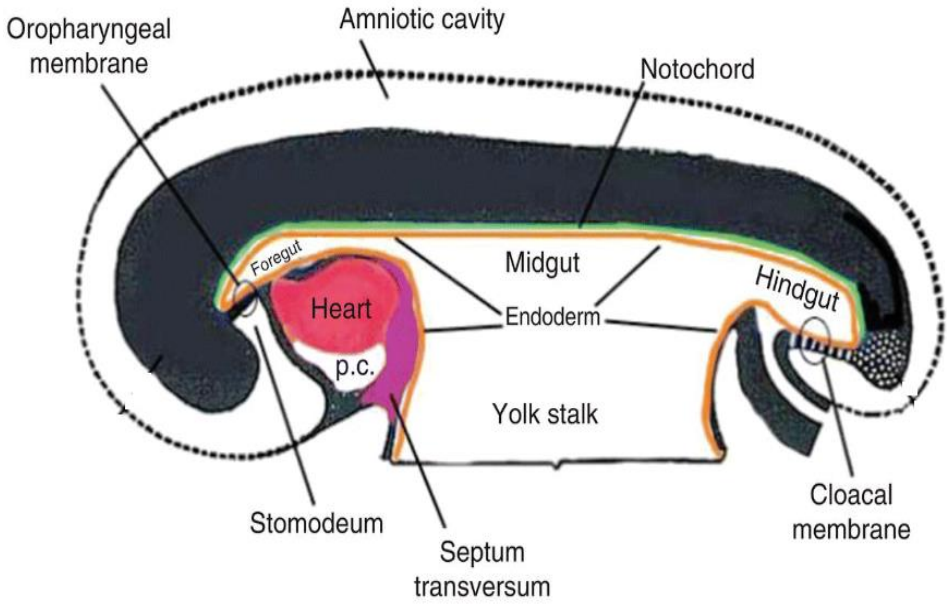


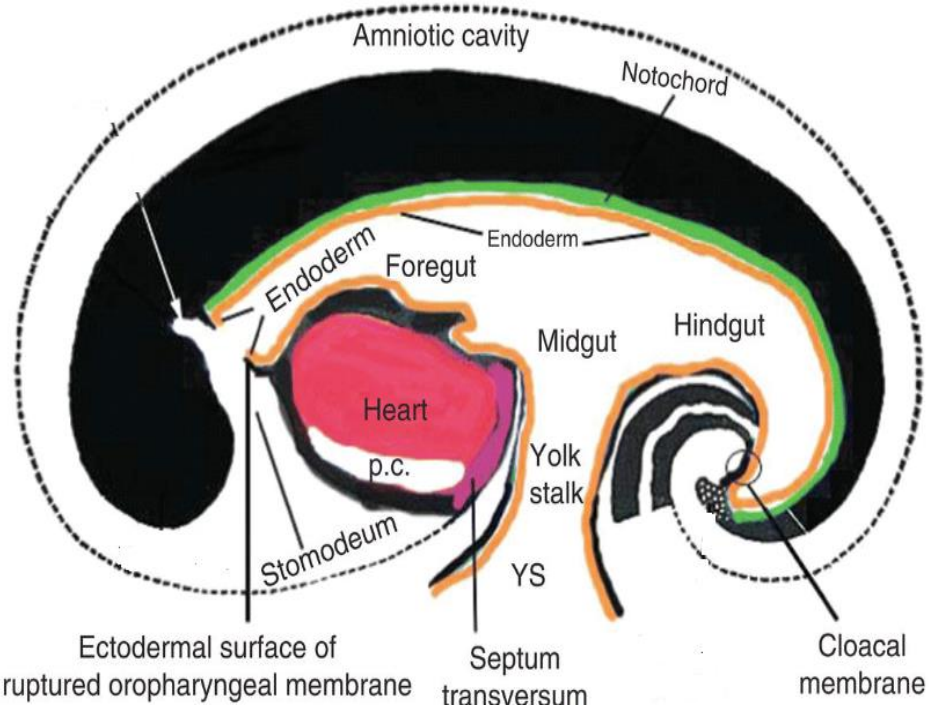
REV.

Folding

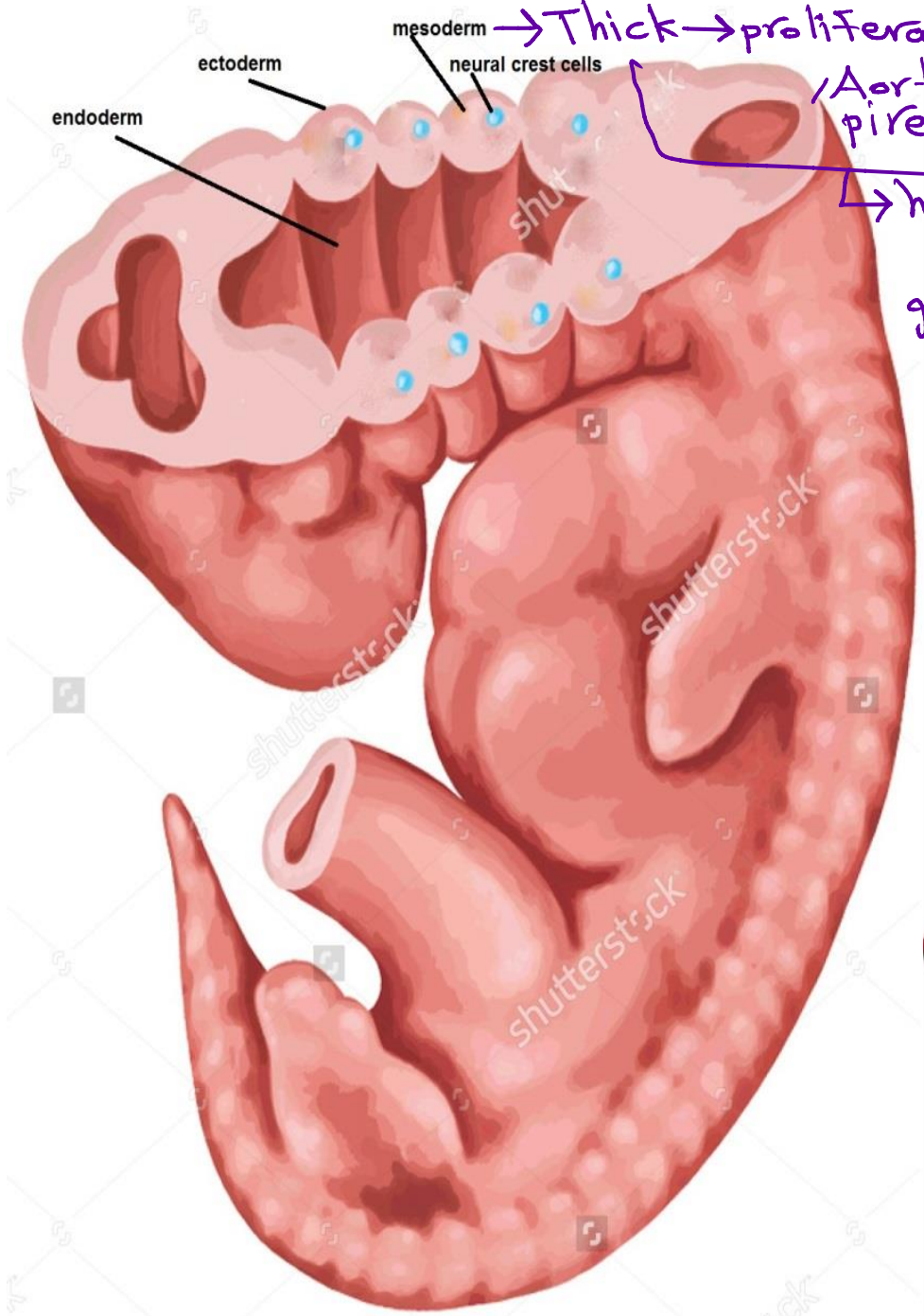

Amniotic cavity
Ectoderm
Neural plate(tube)
Notochord
Prechordal plate
Endoderm
YS
Cardiogenic plate


Amniotic cavity
Neural tube
Notochord
Ectoderm
Oropharyngeal membrane (prechordal plate)
Endoderm
YS
Heart


Oropharyngeal membrane
Amniotic cavity
Notochord
Foregut
Midgut
Hindgut
Heart
Endoderm
p.c.
Yolk stalk
Stomodeum
Septum transversum
Cloacal membrane


Amniotic cavity
Notochord
Endoderm
Endoderm
Foregut
Midgut
Hindgut
Heart
p.c.
Yolk stalk
Stomodeum
YS
Ectodermal surface of ruptured oropharyngeal membrane
Septum transversum
Cloacal membrane


pharynx
brain
4
3
2
1
heart
shutterstock

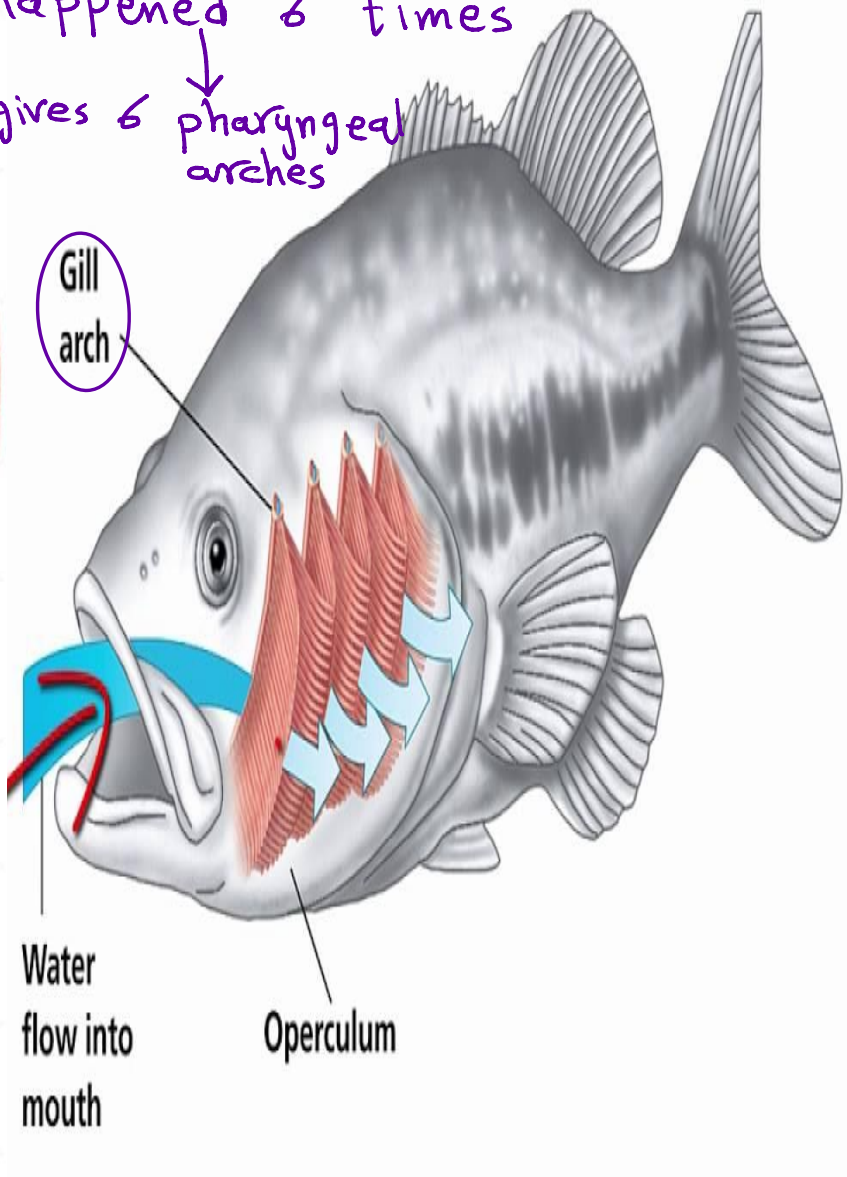


→ Thick → proliferation more than normal, neural crest cells embedded on it

Aortic arches pierce it

→ happened 6 times

gives 6 pharyngeal arches



PHARYNGEAL ARCHES

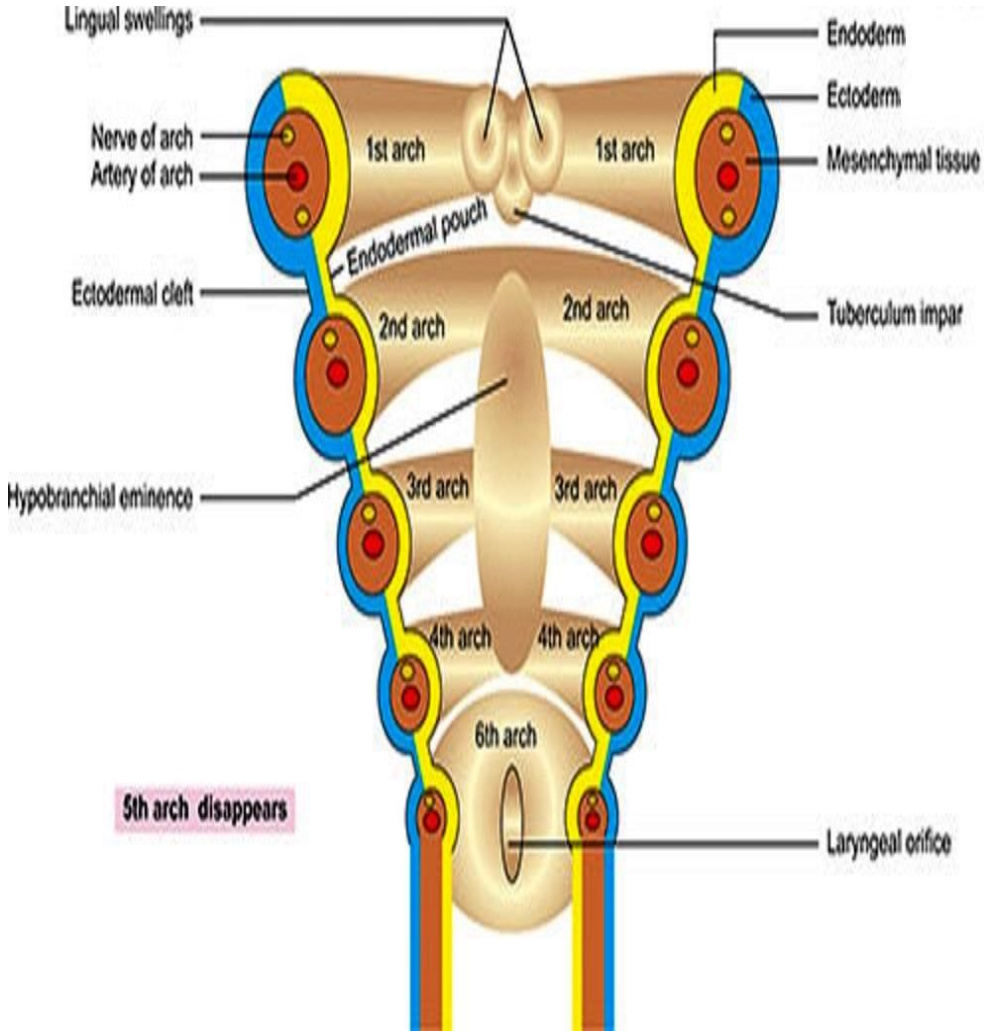
Def.: 6 pairs of cylindrical thickenings in side wall of primitive pharynx

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

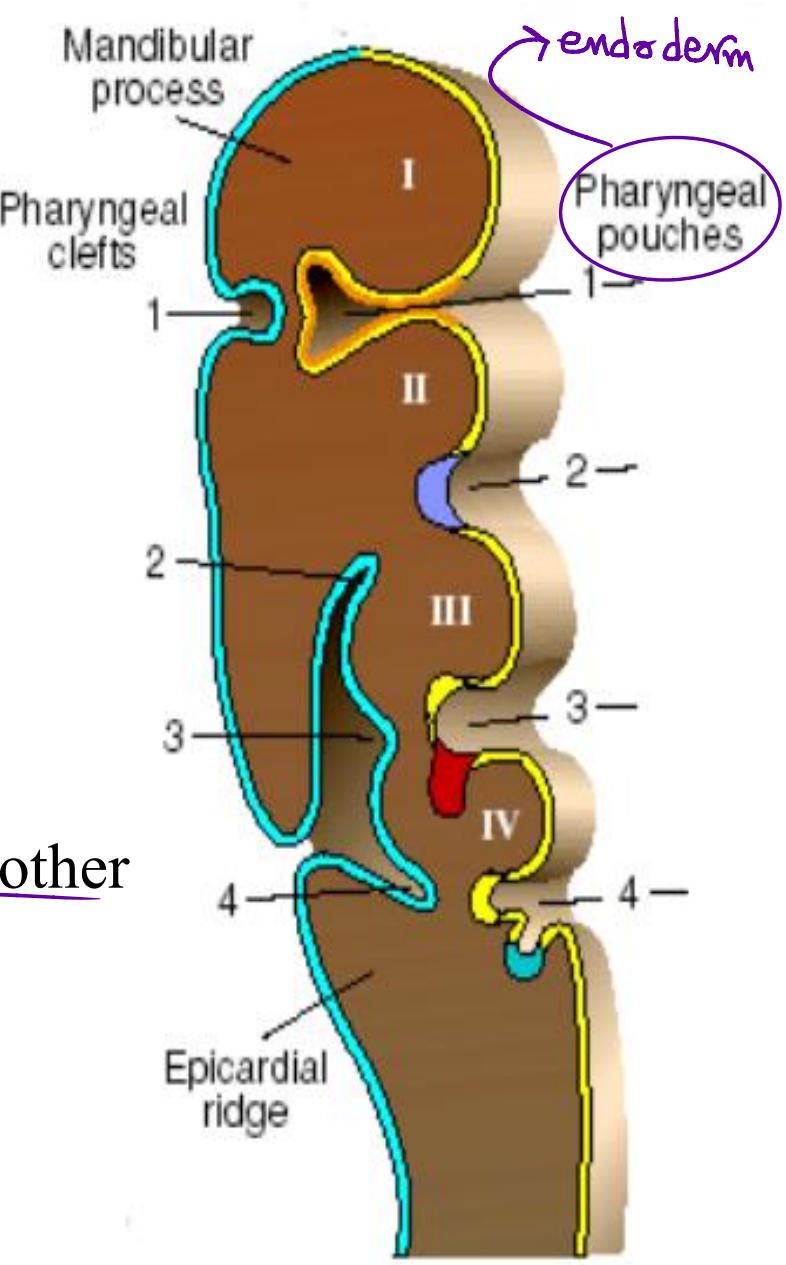
1st to appear → 6th → last to appear

N.B. 1st arch is called mandibular arch

2nd arch is called hyoid arch

- Internally They are separated from each 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

→ ectoderm



PHARYNGEAL ARCHES

Features:

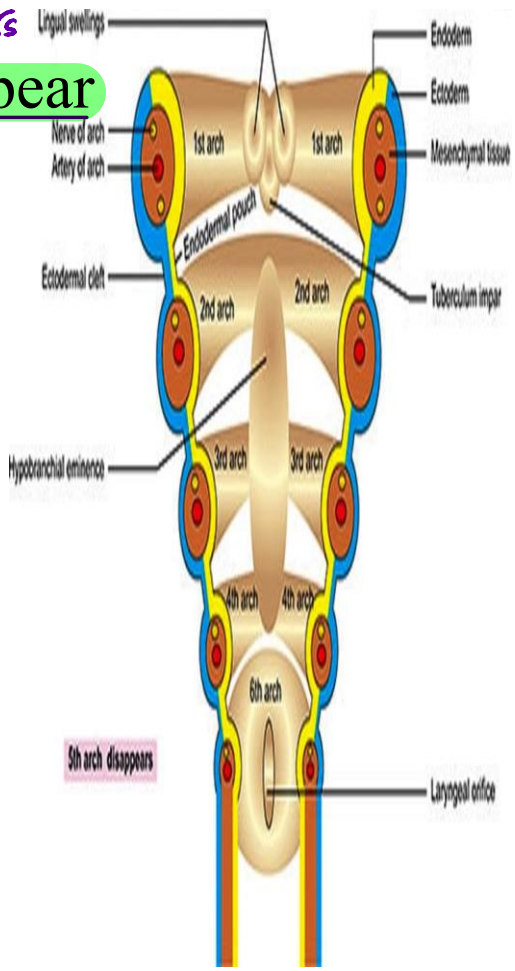
- 5th arch is rudimentary & disappear (appears only to make 6th appears)

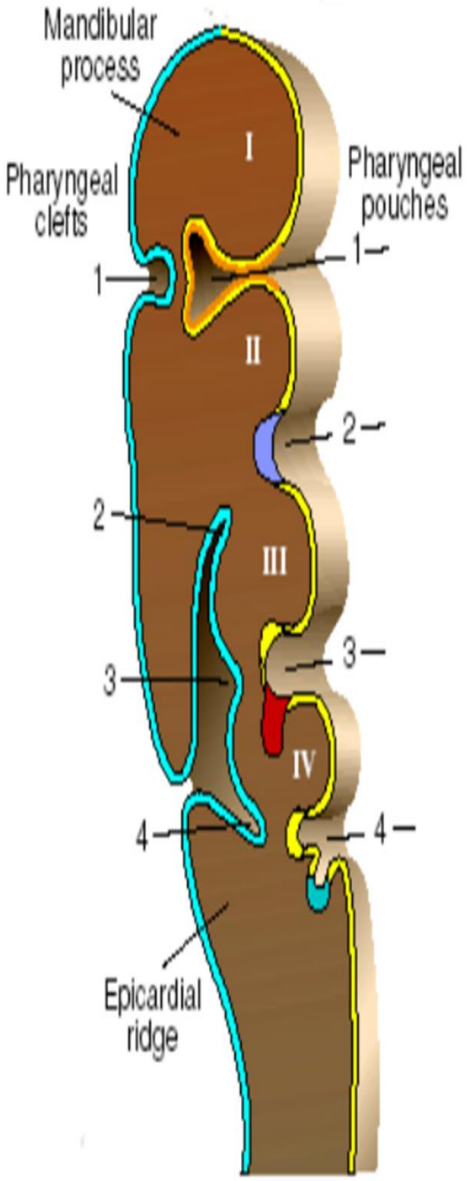
  6th arch is not prominent

  1st arch is the most prominent

- The 2nd arch grow caudally over the other arches forming cervical sinus on side of neck

1st → 6th
Large → small





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

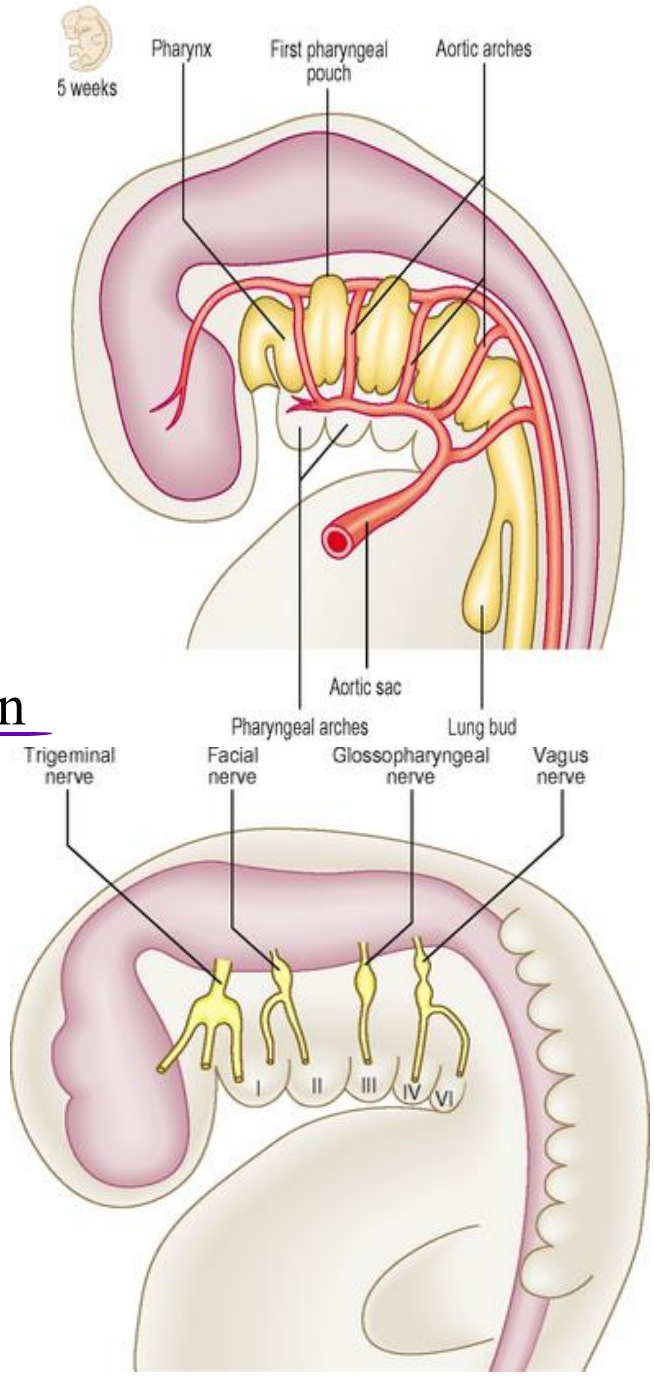
1st supplied by mandibular of trigeminal n.

2nd // // facial n.

3rd // // glossopharyngeal n.

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

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



PHARYNGEAL ARCHES

Derivatives

1st pharyngeal arch: → mandibular arch

skeletal component:

arise from (Meckel's cartilage)

incus, malleus

ant. lig. of malleus

sphenomandibular lig.

Mandible, maxilla,

zygomatic bone , temporal bone

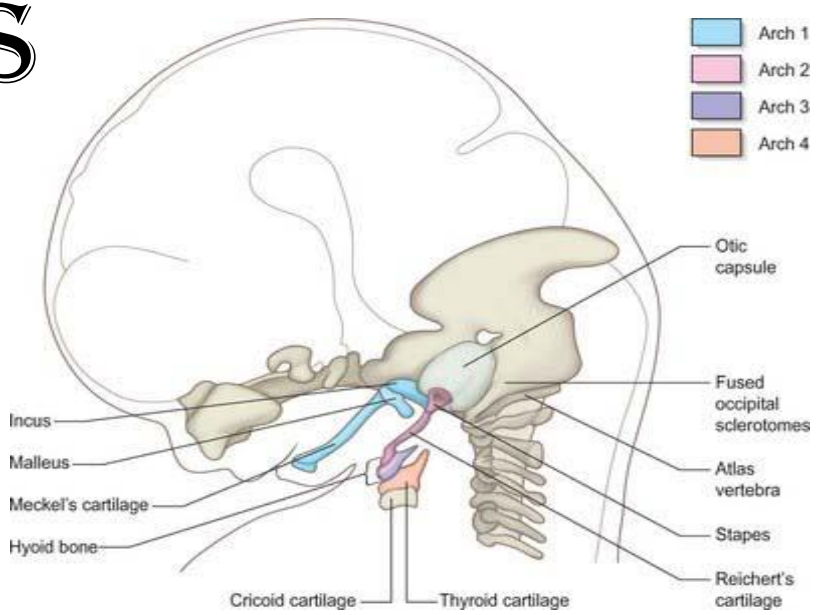
muscular component

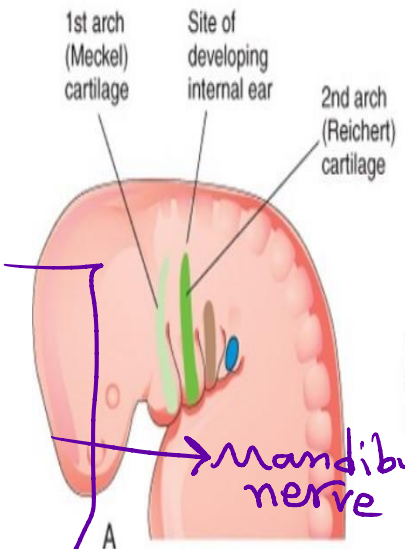
medial pterygoid, lateral pterygoid

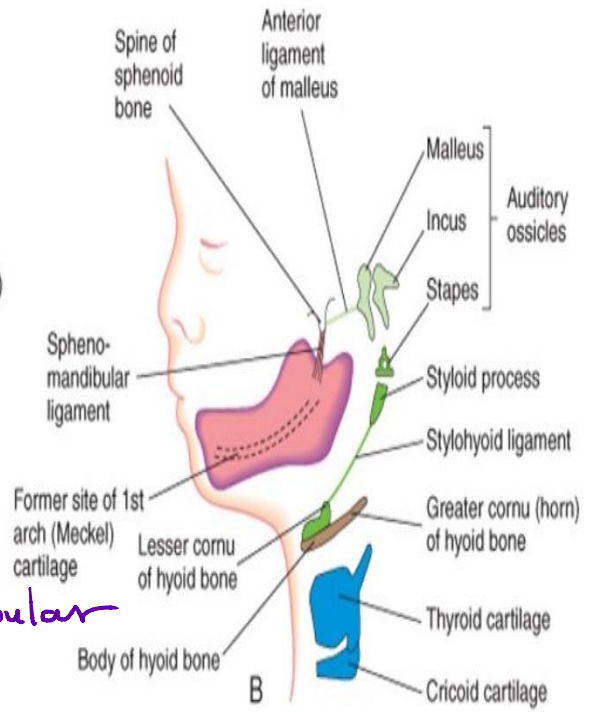
masseter, temporalis

tensor palate & tympani

mylohyoid & ant. belly of digastric







PHARYNGEAL ARCHES

Derivatives

2nd pharyngeal arch → hyoid arch

skeletal component: Richert's cartilage

stapes

styloid process

stylohyoid lig

lesser horn & upper part of body of hyoid

muscular component

occipito frontalis

muscle of face

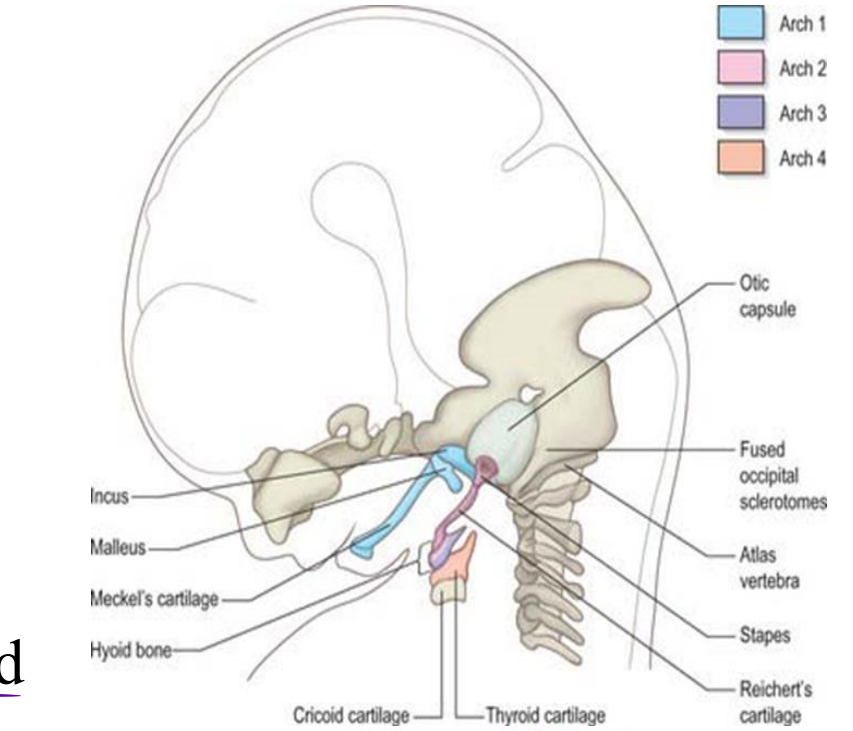
stapedius

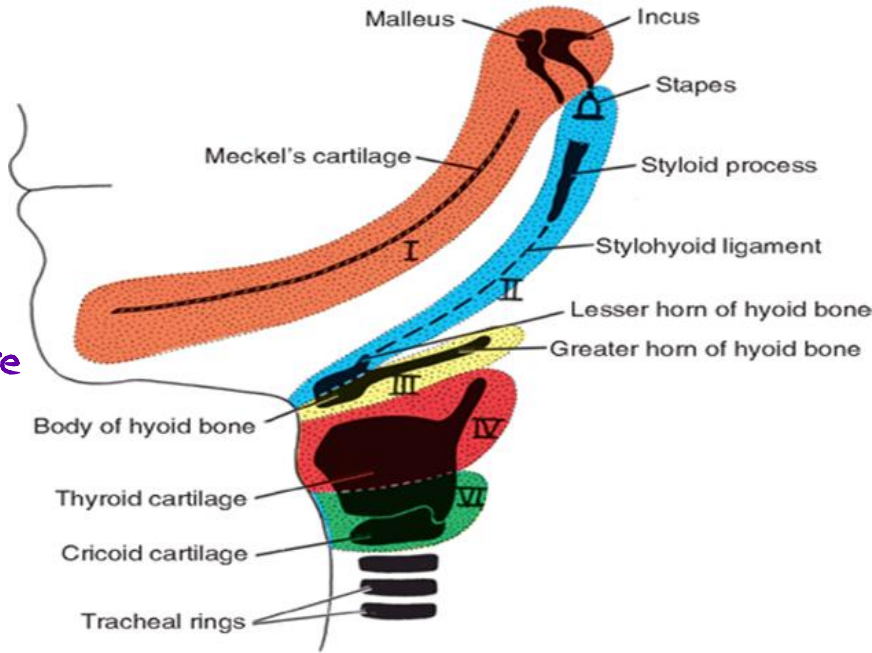
stylohyoid

post. belly of digastric

platysma

→ Facial nerve





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

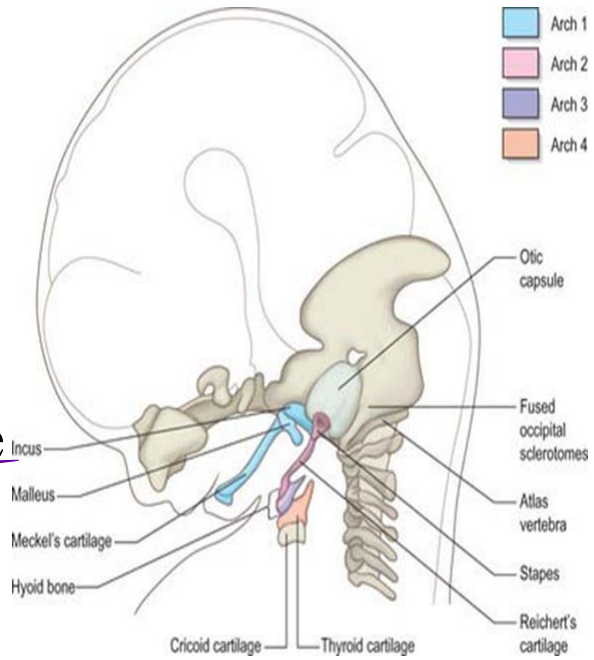
muscular component of the 4th arch

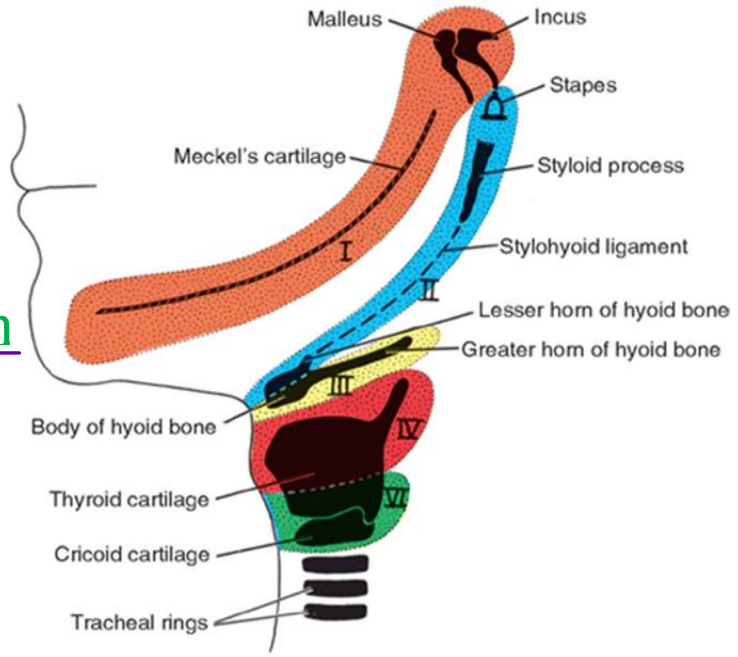
cricothyroid muscle of larynx

constrictor muscles of pharynx → superior laryngeal nerve

muscular components of 6th pharyngeal arch

All muscles of larynx except cricothyroid → recurrent laryngeal nerve





PHARYNGEAL ARCHES

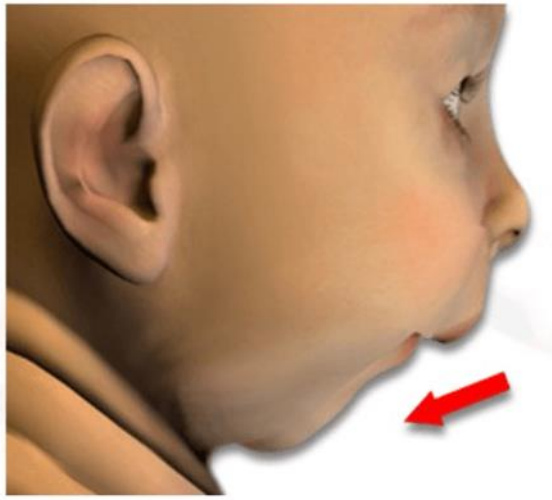
Congenital anomalies of 1st pharyngeal arch

Treacher-Collins syndrome

- Deformed ear.
- Hypoplasia of the zygomatic bone.
- Defect of the lower eye lid.

Pierre Robin syndrome

- Abnormalities of the ear and eye.
- Hypoplasia of the mandible.
- Cleft palate.
- a tongue that falls back in the throat, and difficulty breathing



THANQ