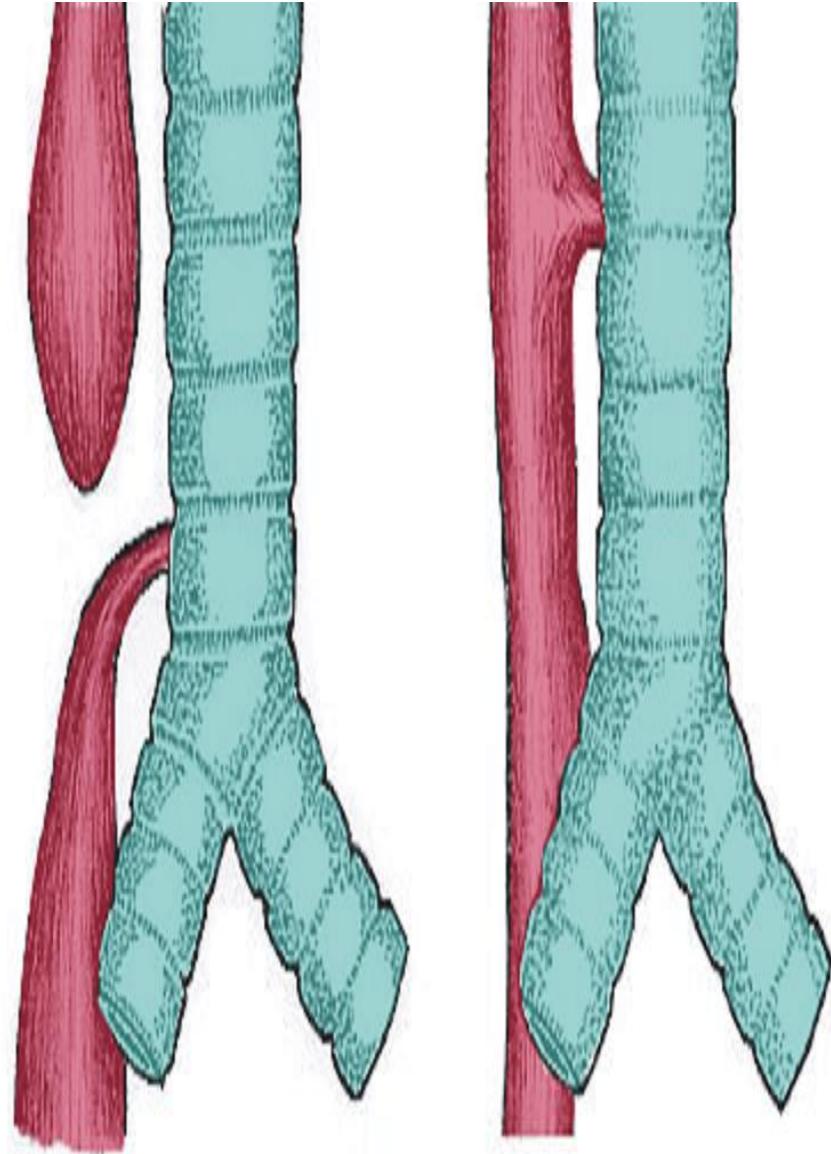
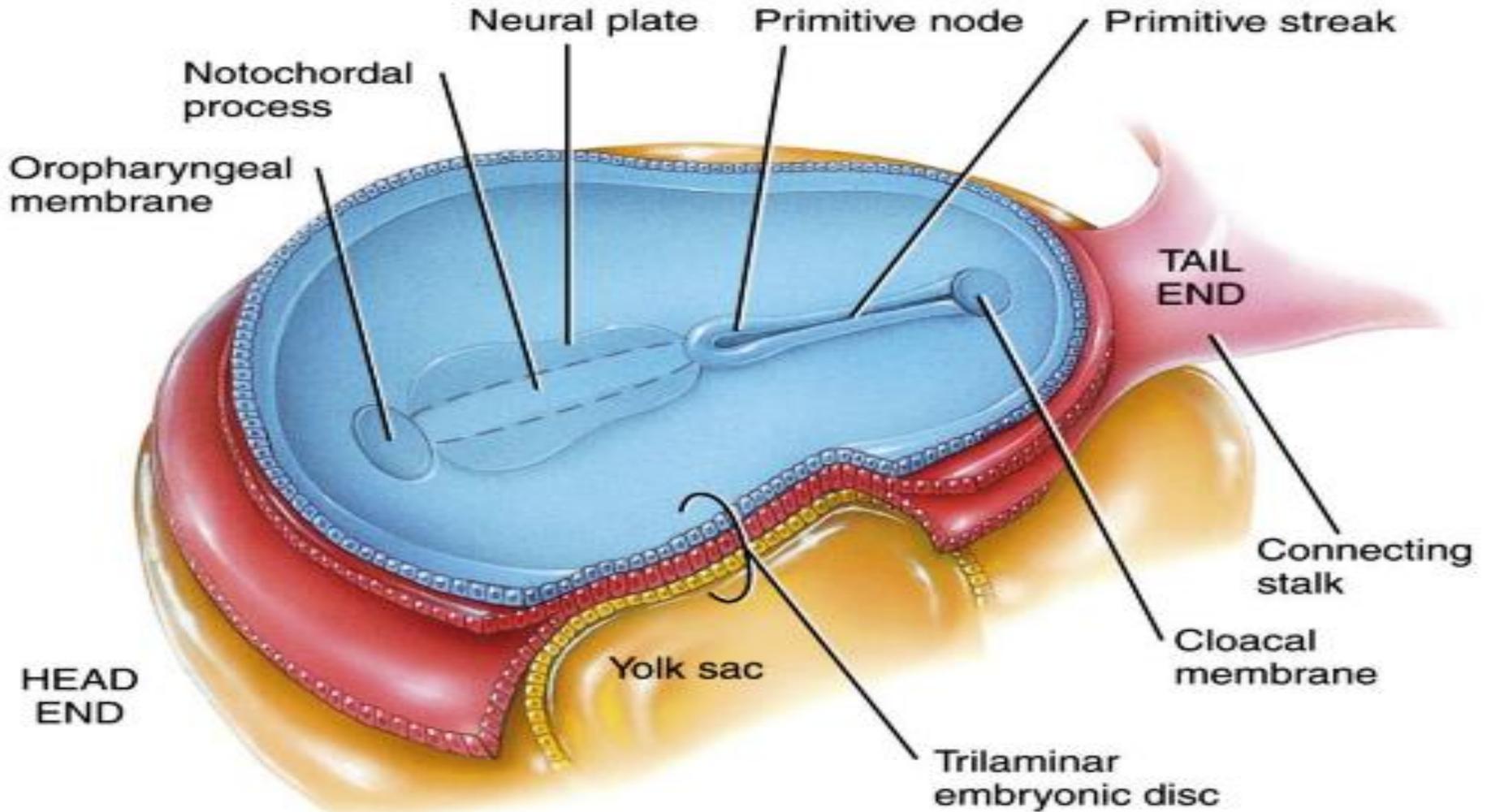


DEVELOPMENT OF THE RESP. SYSTEM

BY
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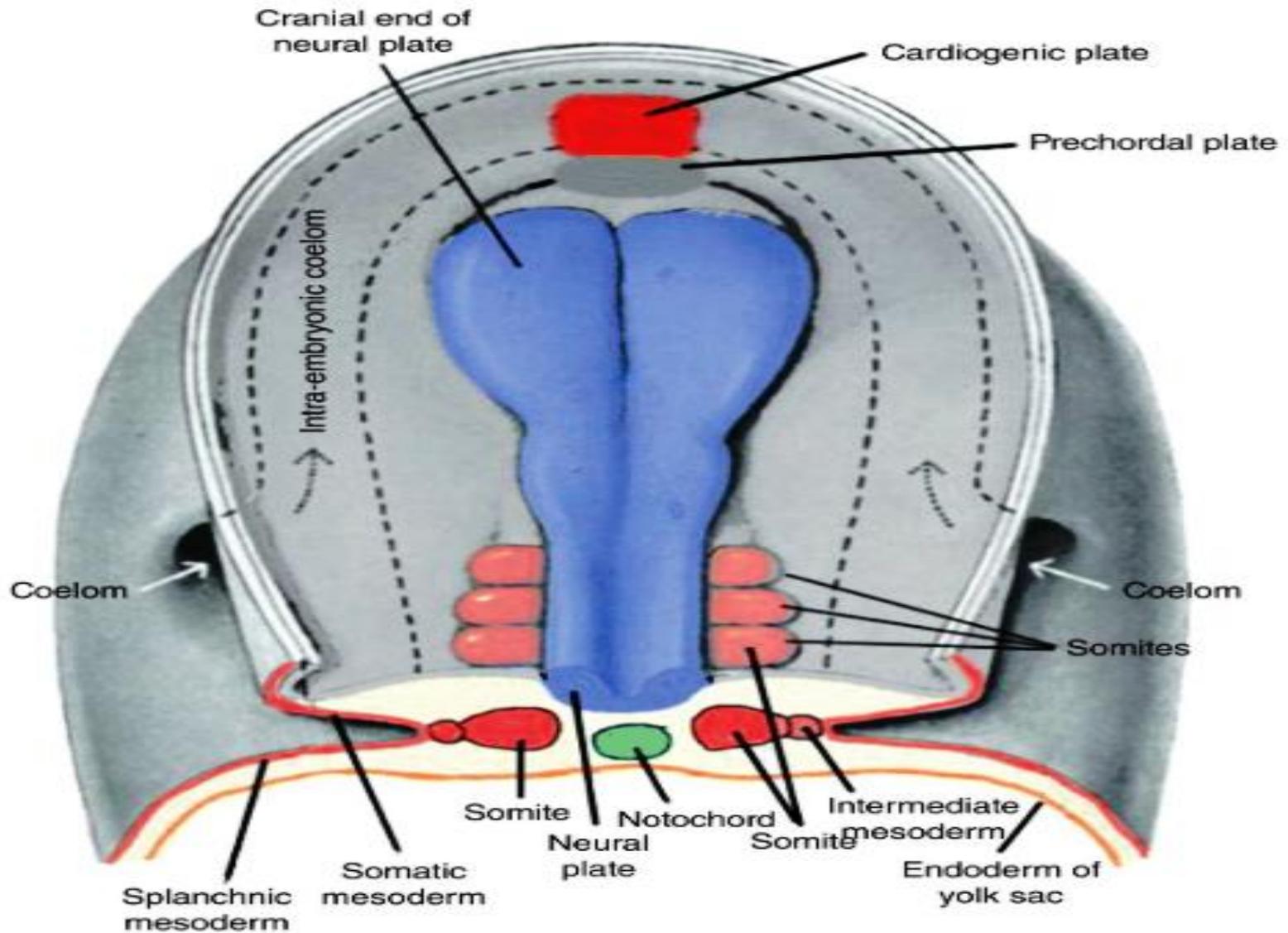


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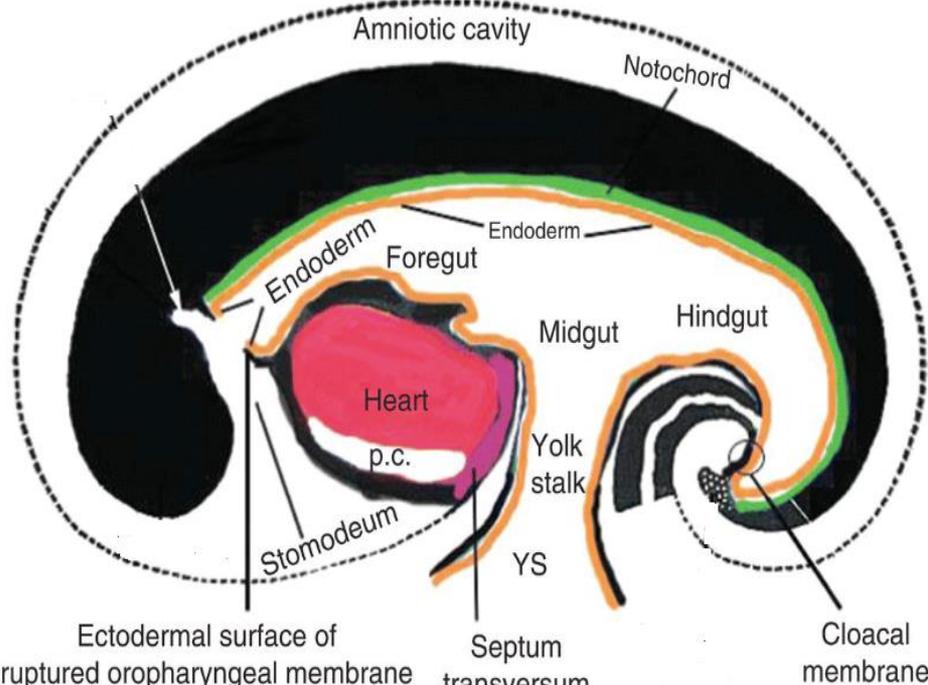
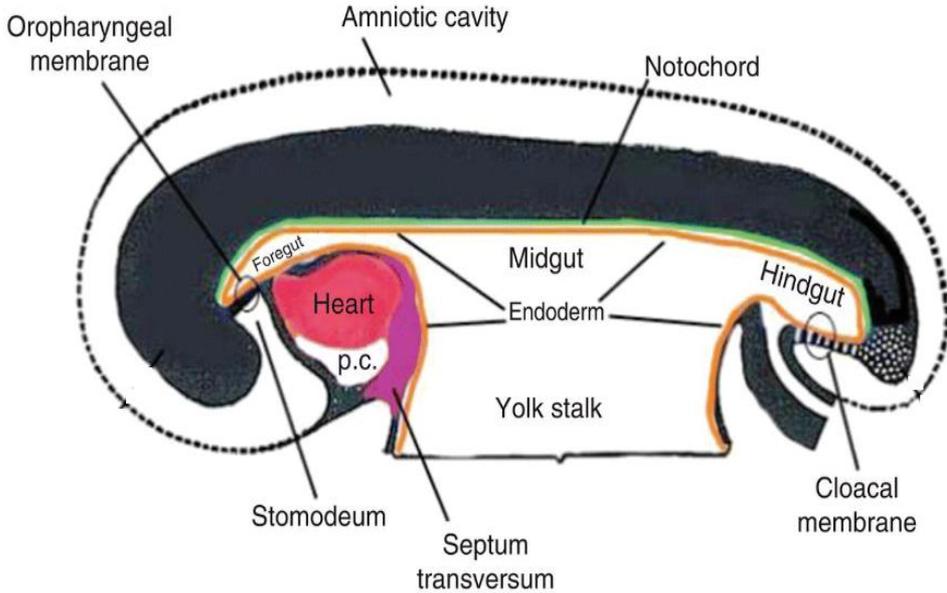
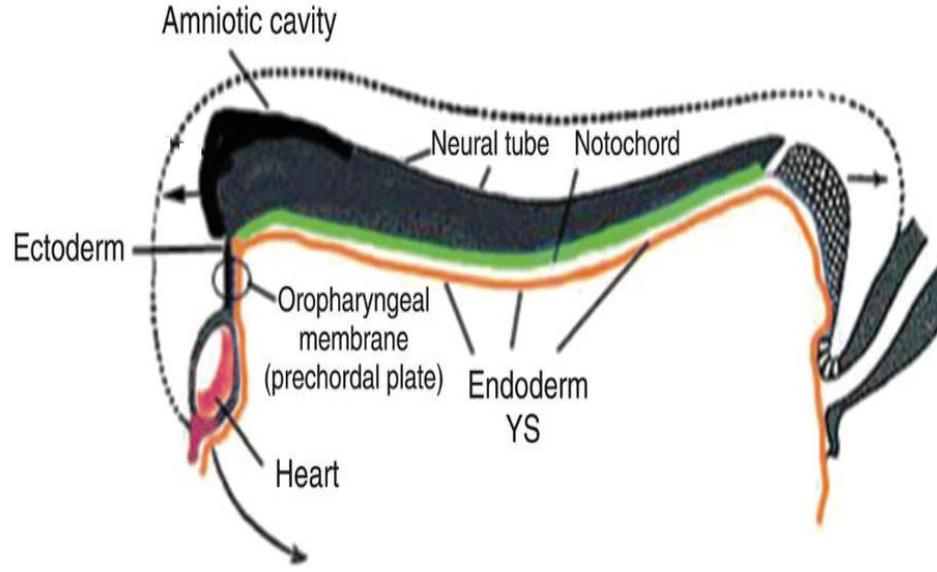
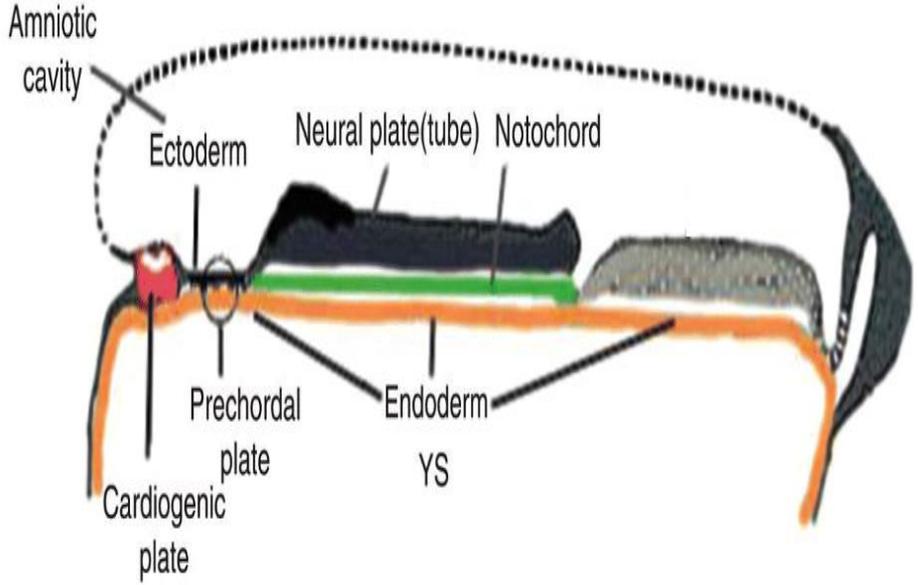


(a) Dorsal and partial sectional views of trilaminar embryonic disc, about 16 days after fertilization

REV.



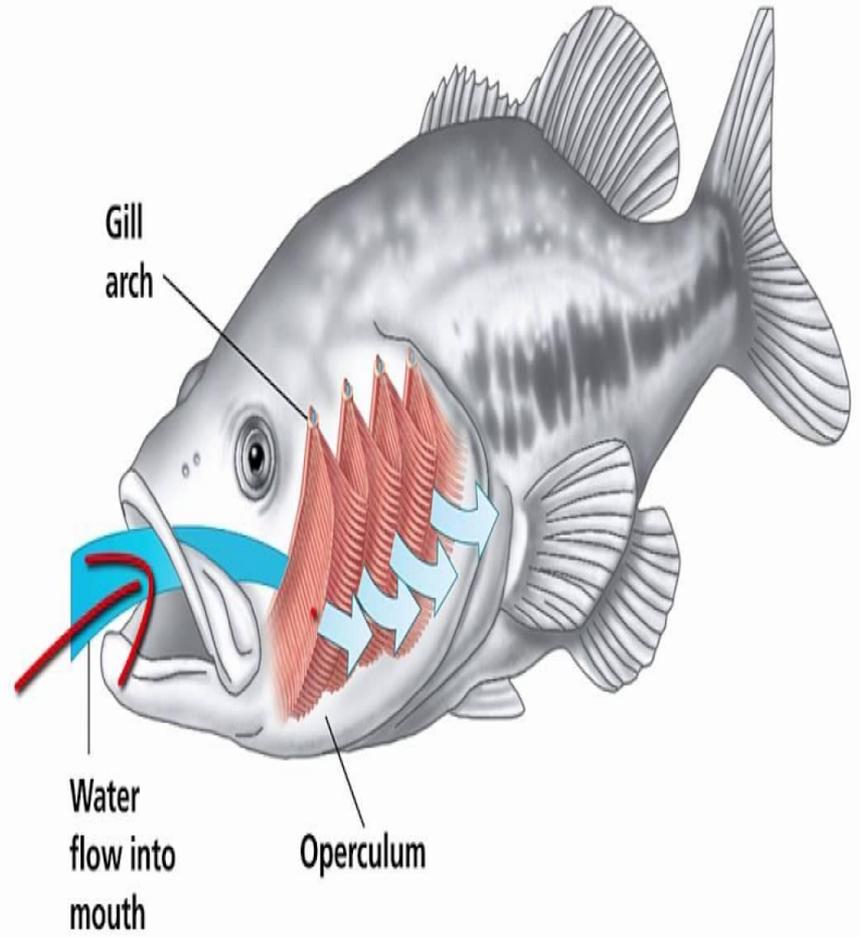
REV.

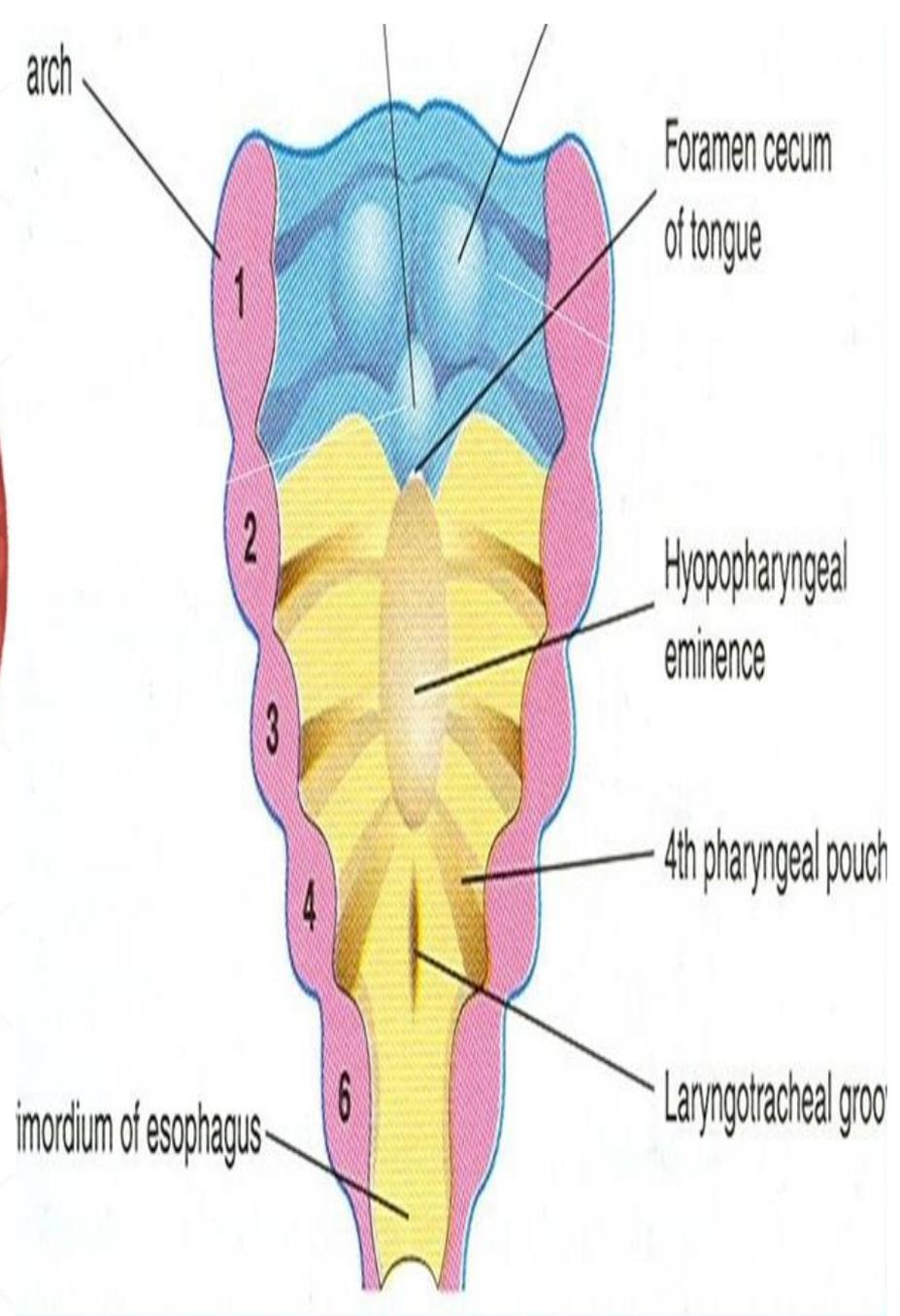
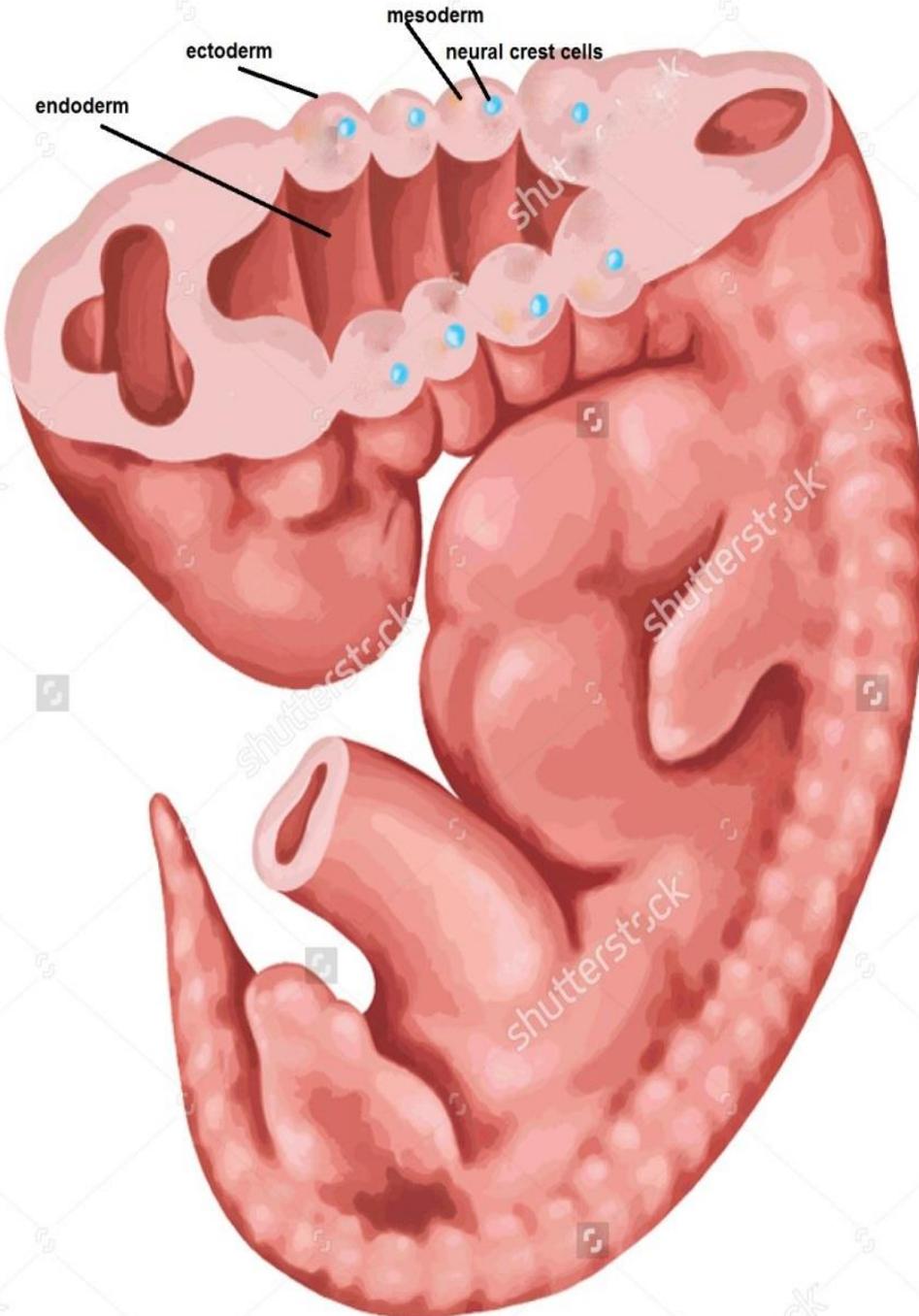


REV.



complete embryo after folding







DEVELOPMENT

DEVELOPMENT

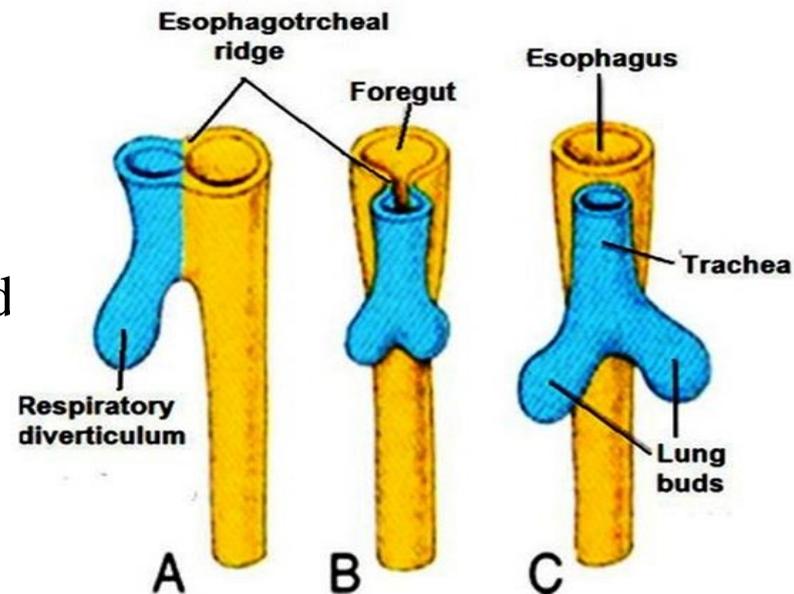
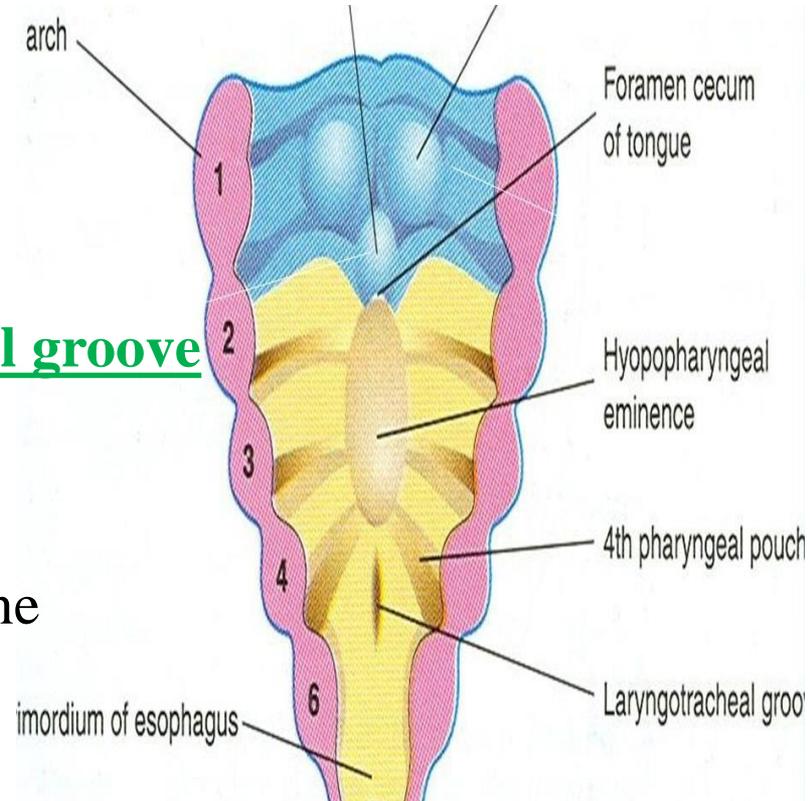
Timing:-4th week of development

Steps:-

- Appearance of laryngotracheal groove (respiratory diverticulum) (respiratory primordium):-

This is a groove appear in the midline of caudal part of floor of the pharynx and beginning of the esophagus starting behind hypobranchial eminence

- The edges of the groove are called (oesophageotracheal ridges)

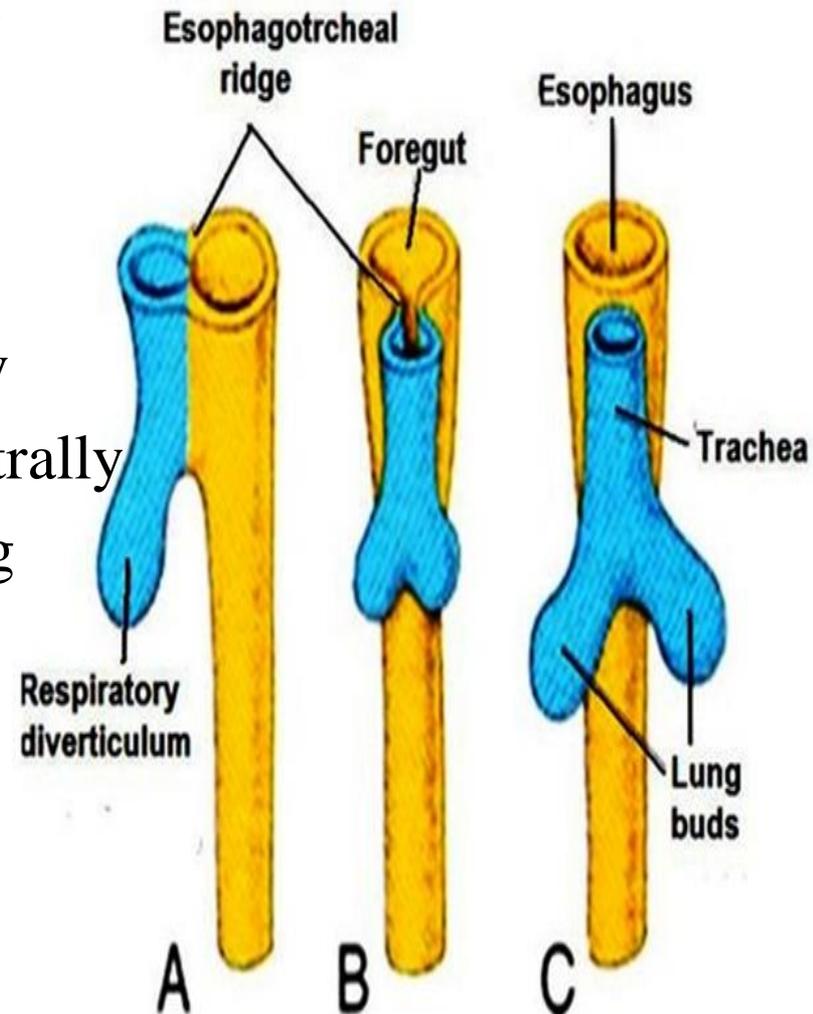


DEVELOPMENT

Steps:-

▪ Formation of the oesophageotracheal septum :-

This septum is formed by fusion of edges of the groove (oesophageotracheal ridges) caudocranially leads to separation of esophagus dorsally from laryngeotracheal tube ventrally except at small slit like opening called laryngeal aditus (orifice) that open in the pharynx



DEVELOPMENT

Steps:-

- Elongation of the laryngotracheal tube

gives larynx, trachea , its caudal end divides into 2 main bronchi , each gives lung buds

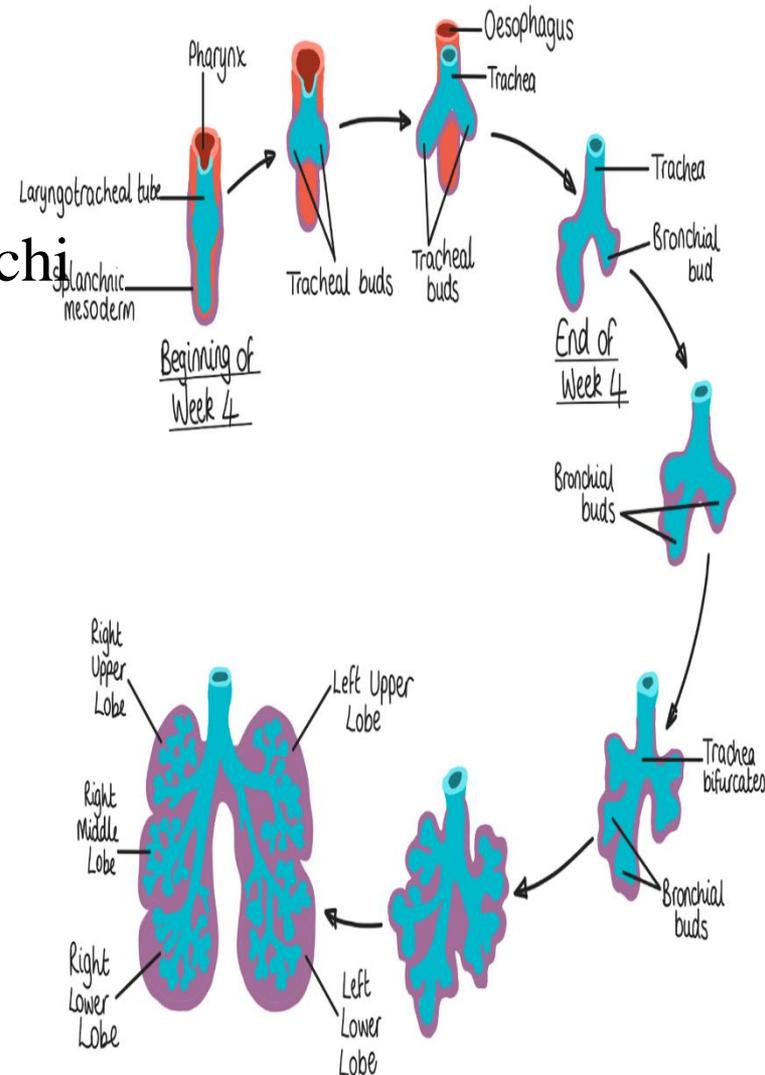
- Rt lung bud divides into 3 bronchi

& Lt bud divides into 2 bronchi

& by successive divisions (17)

gives the bronchial tree

- N.B.:- the divisions begin at 4th week ends at 6th month and seven orders of airways developed after birth

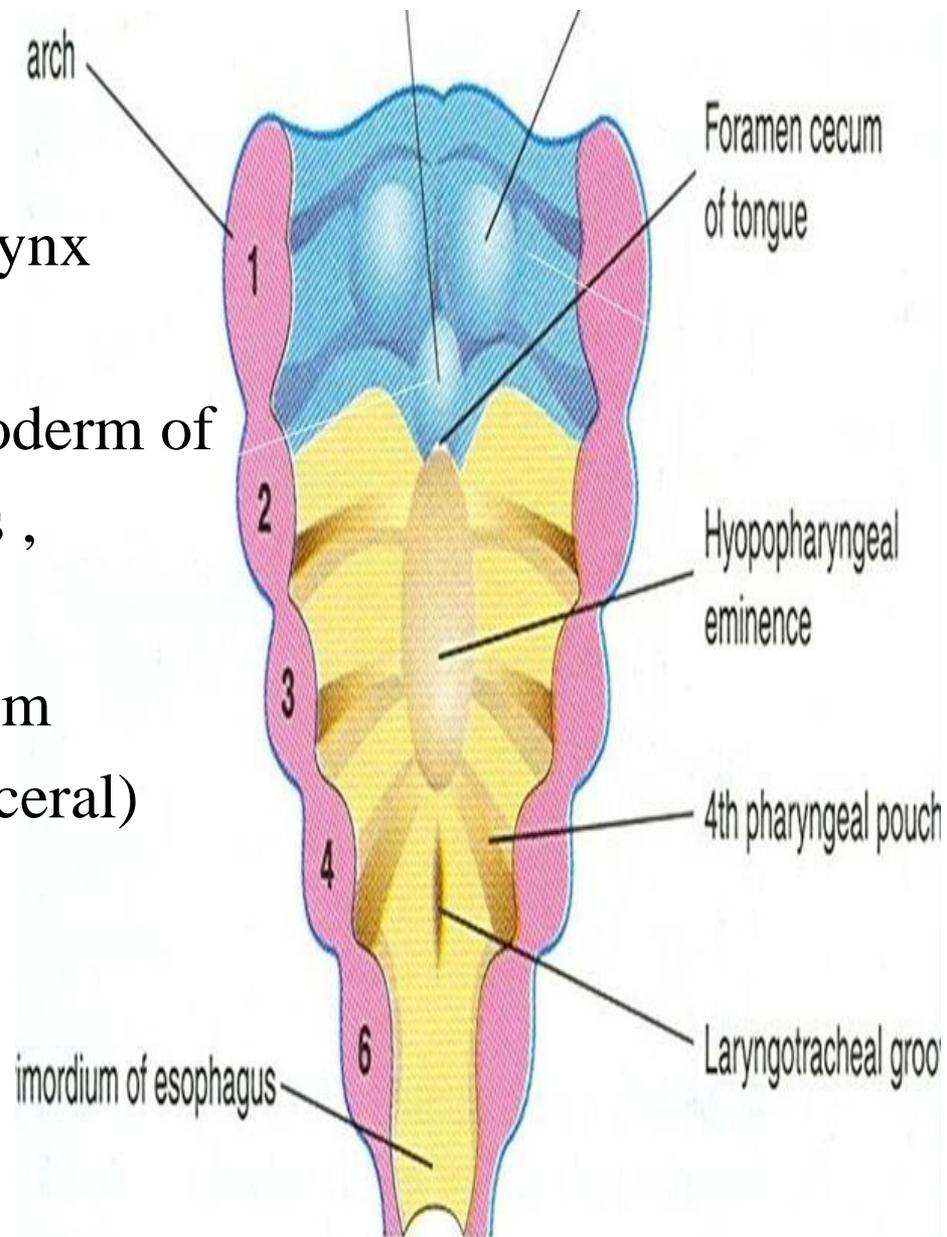


DEVELOPMENT

Steps:-

- N.B.:-

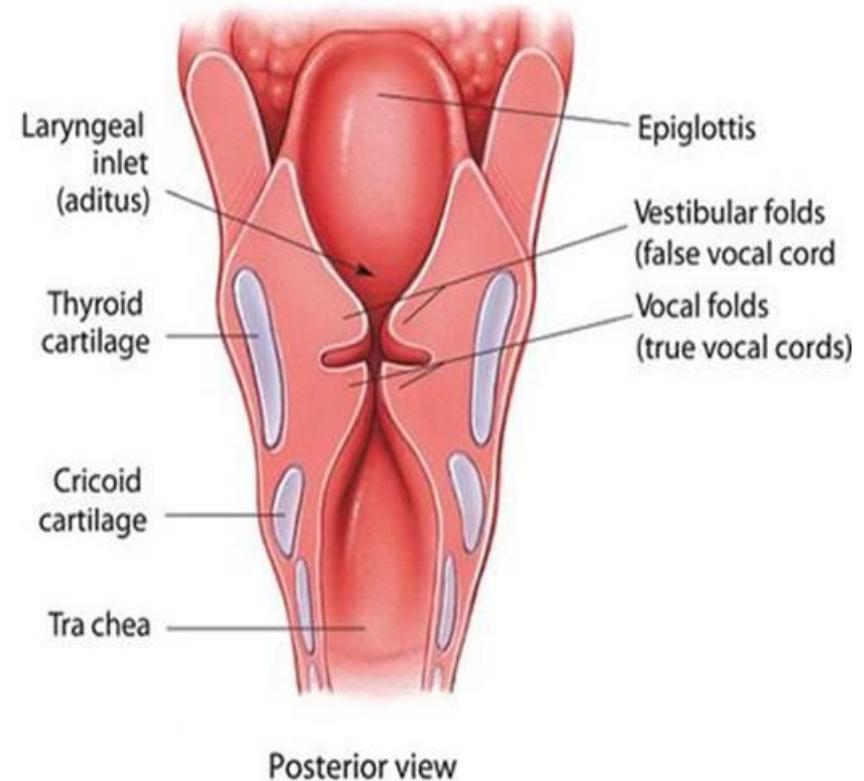
- Muscles & cartilages of larynx develop from surrounding branchial (pharyngeal) mesoderm of 4th & 6th pharyngeal arches ,
- muscles & cartilages of trachea, bronchi develop from surrounding splanchnic (visceral) mesoderm



DEVELOPMENT

Steps:-

- N.B.: -epithelium of larynx rapidly proliferate occluding the lumen then recanalization occur (at 10th week) with formation of a pair of laryngeal recesses called the laryngeal ventricles, each is bounded by 2 folds of tissues that differentiate into vocal cords & vestibular folds



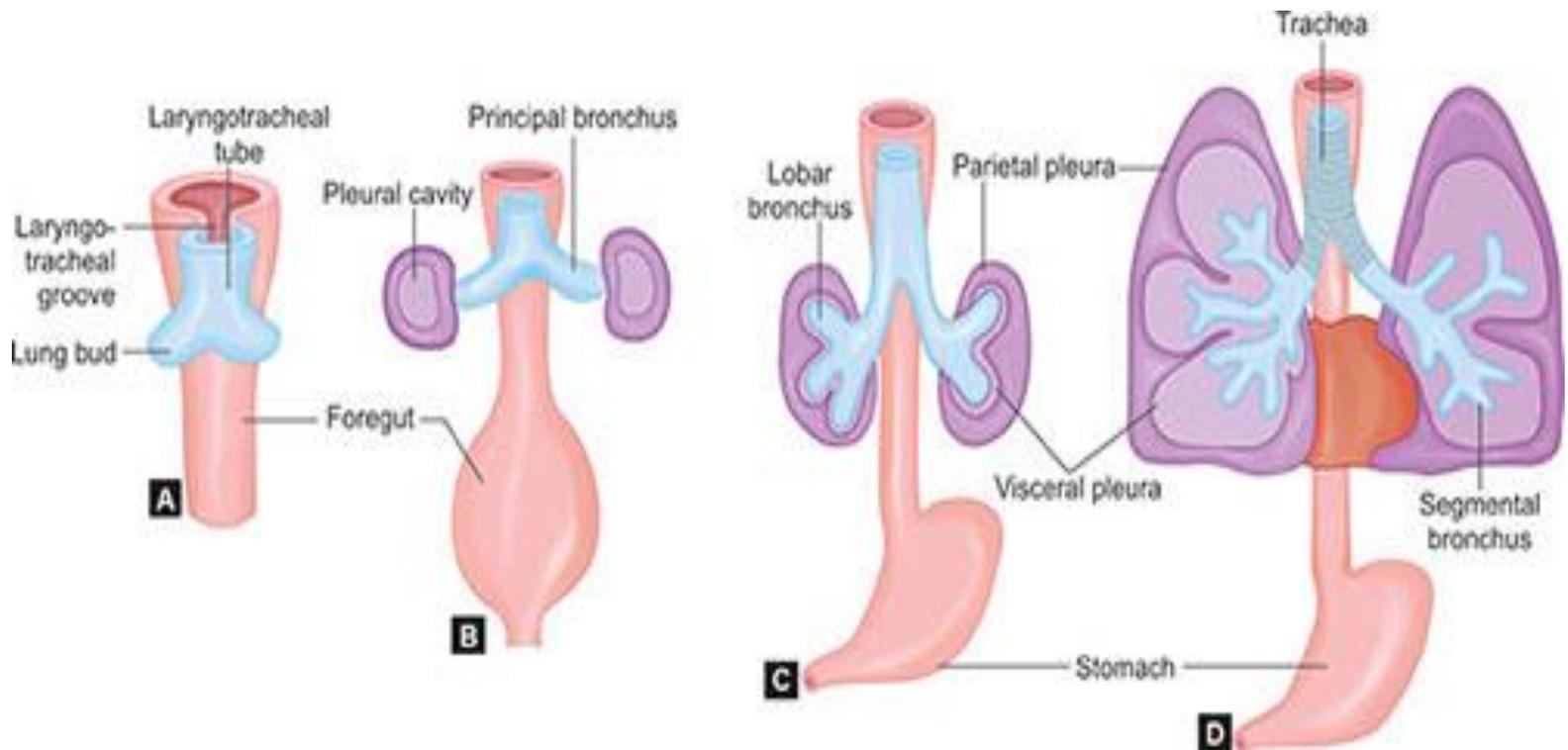
DEVELOPMENT

Steps:-

- with lateral & caudal growth of lung buds they invaginate the pericardioperitoneal canals of the intraembryonic coelom (pleural cavities) with

Visceral pleura arise from splanchnic mesoderm

Parietal pleura from somatic mesoderm



DEVELOPMENT

Developmental sources:-

- mucosa of larynx, trachea, bronchi & lung buds arise from endoderm of foregut through laryngeotracheal groove
- muscles & cartilages, blood vessels, elastic tissues & lymphatics of larynx arise from mesoderm of 4th & 6th pharyngeal arches
- muscles & cartilages, blood vessels, elastic tissues & lymphatics of trachea & bronchi arise from splanchnic mesoderm

DEVELOPMENT

Factors important to lung development

- 1-adequate thoracic cavity
- 2-fetal breathing movements
- 3-adequate amniotic fluid volume

N.B.:- during 3rd trimester the fetus makes motions of breathing with inhalation & exhalation of amniotic fluid which is important for lung development

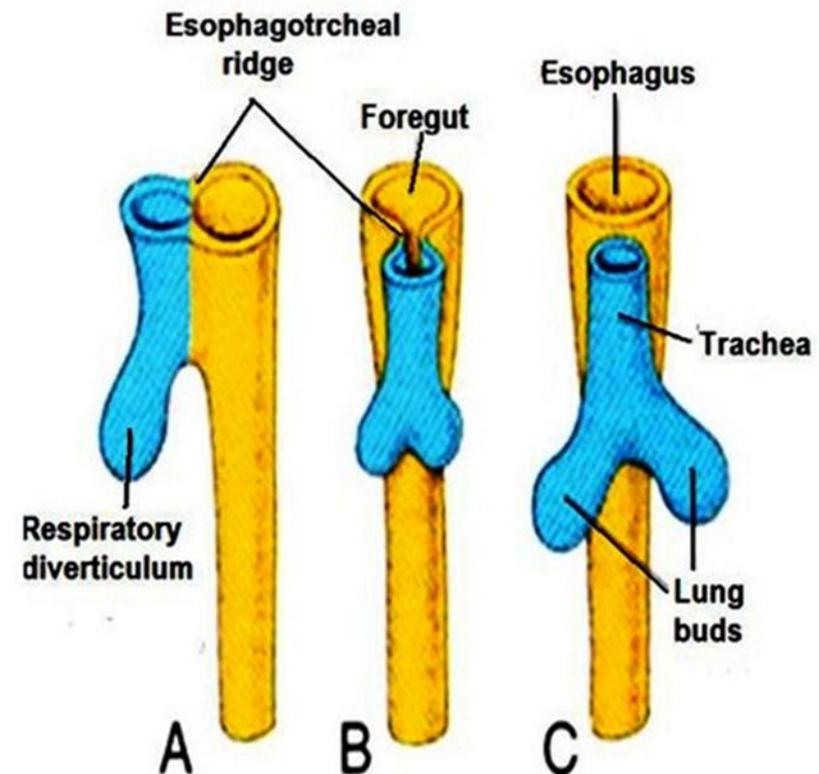


CONGENITAL ANOALIES

CONGENITAL ANOMALIES

Oesophageo tracheal fistula with Esophageal atresia:-

- 1: 3000 (common in male)
- Associated with other anomalies in 33% of cases
- due to incomplete fusion of laryngotracheal ridges & extension of fibrosis to esophagus



CONGENITAL ANOMALIES

Oesophageo tracheal fistula with Esophageal atresia :-

-Forms: -

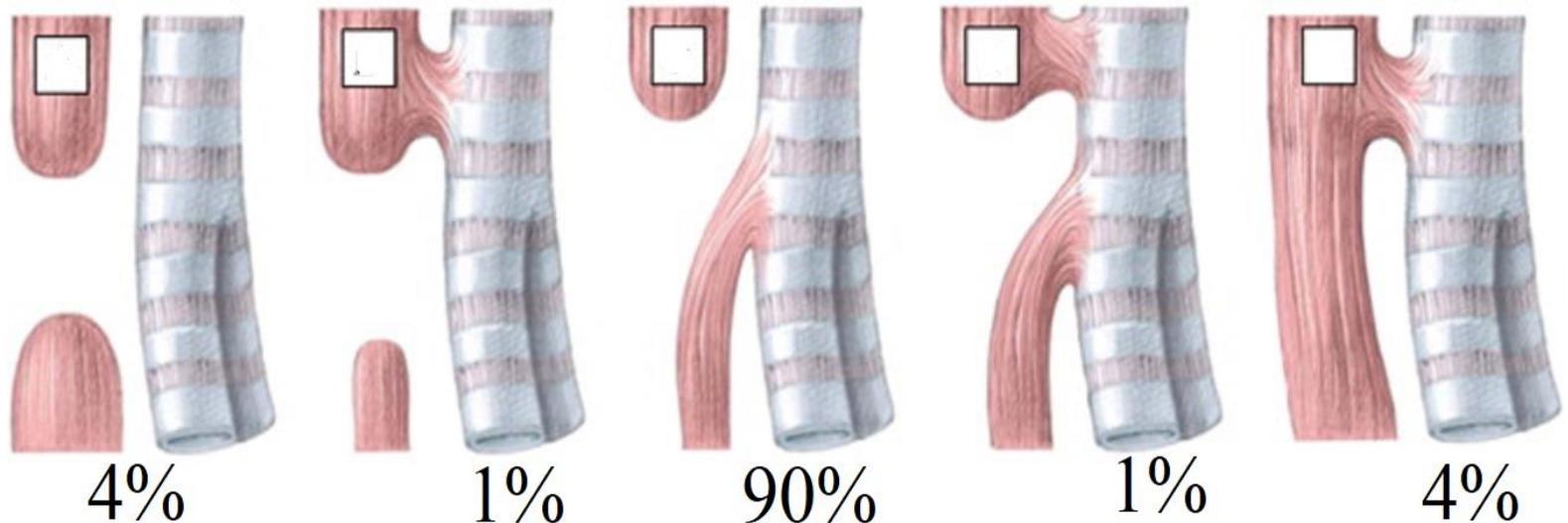
90% fistula below the atresia

1% fistula above the atresia

1% fistula above & below the atresia

4% H shaped fistula (fistula without atresia)

4% esophageal atresia without fistula



CONGENITAL ANOMALIES

lung agenesis due to absent lung buds

lung hypoplasia due to compression of lung during development

ectopic lung lobes due to abnormal diverticulum from trachea or esophagus

cystic lung due to over dilatation of bronchi due to weakness in bronchial wall

supernumerary lung lobules due to abnormal divisions of bronchi

CONGENITAL ANOMALIES

respiratory distress syndrome:-

Failure of inflation of alveoli at 1st respiration due to absent surfactant especially in preterm babies it leads to collapse of lung



THANQ