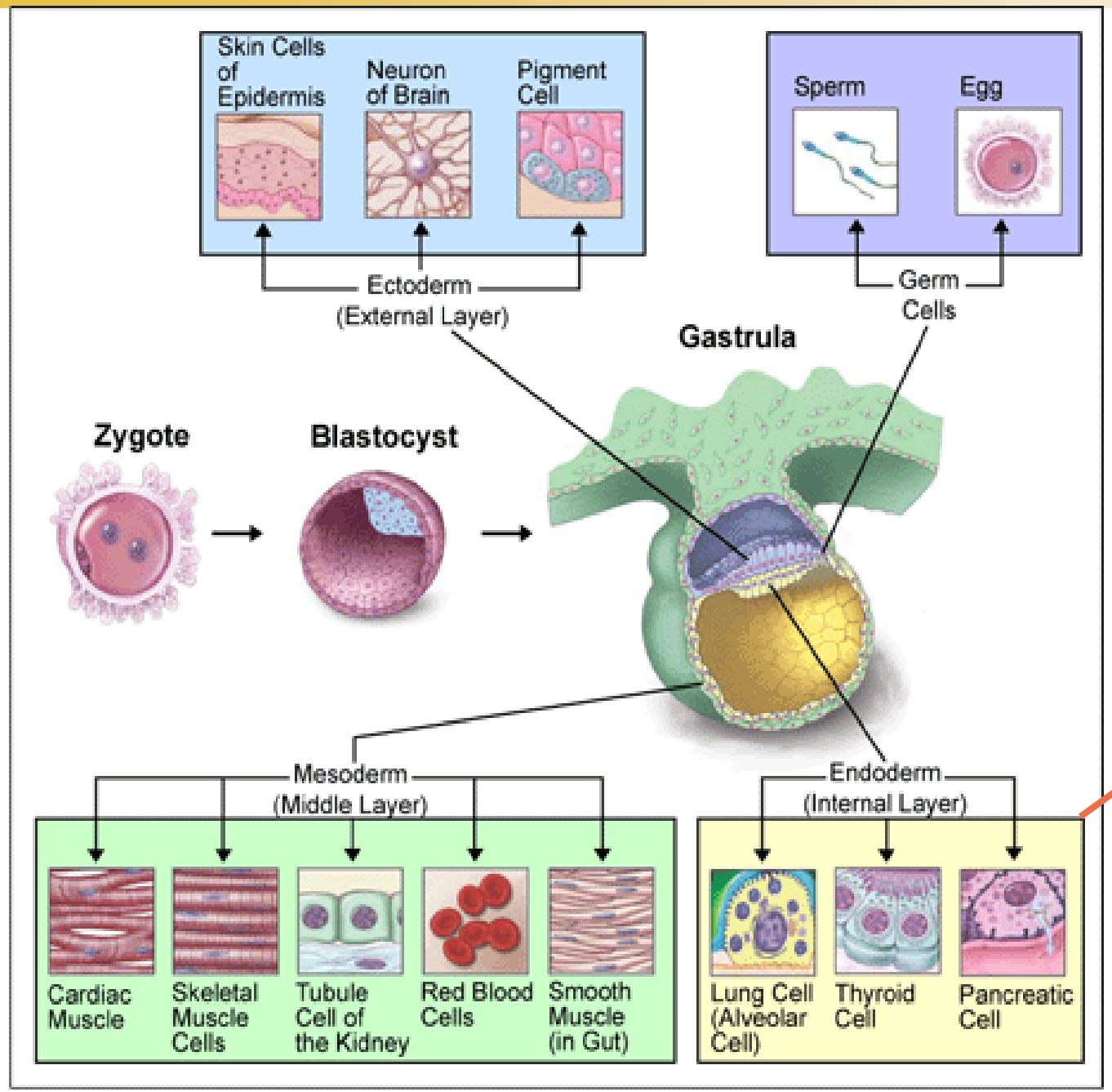
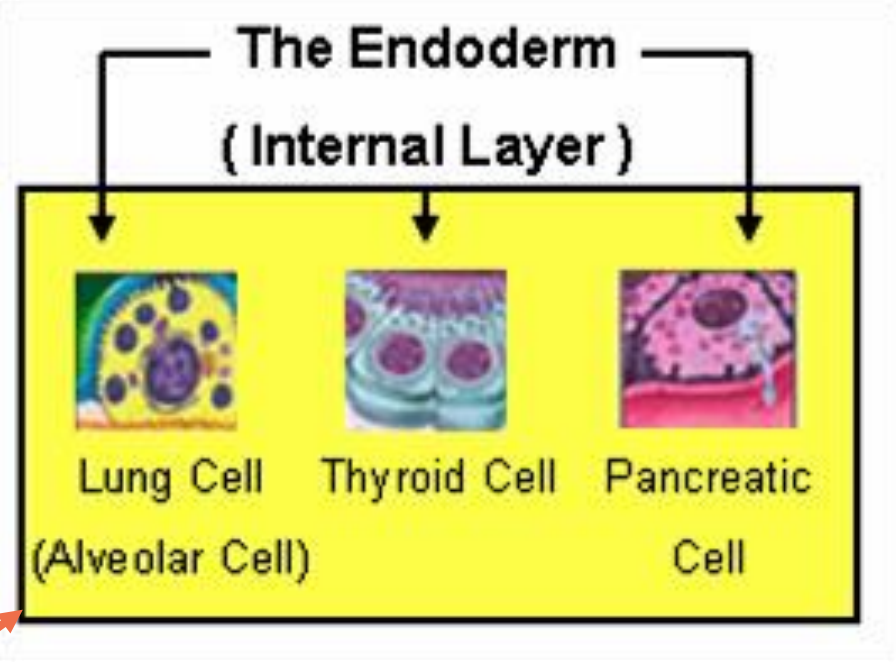
Neurulación



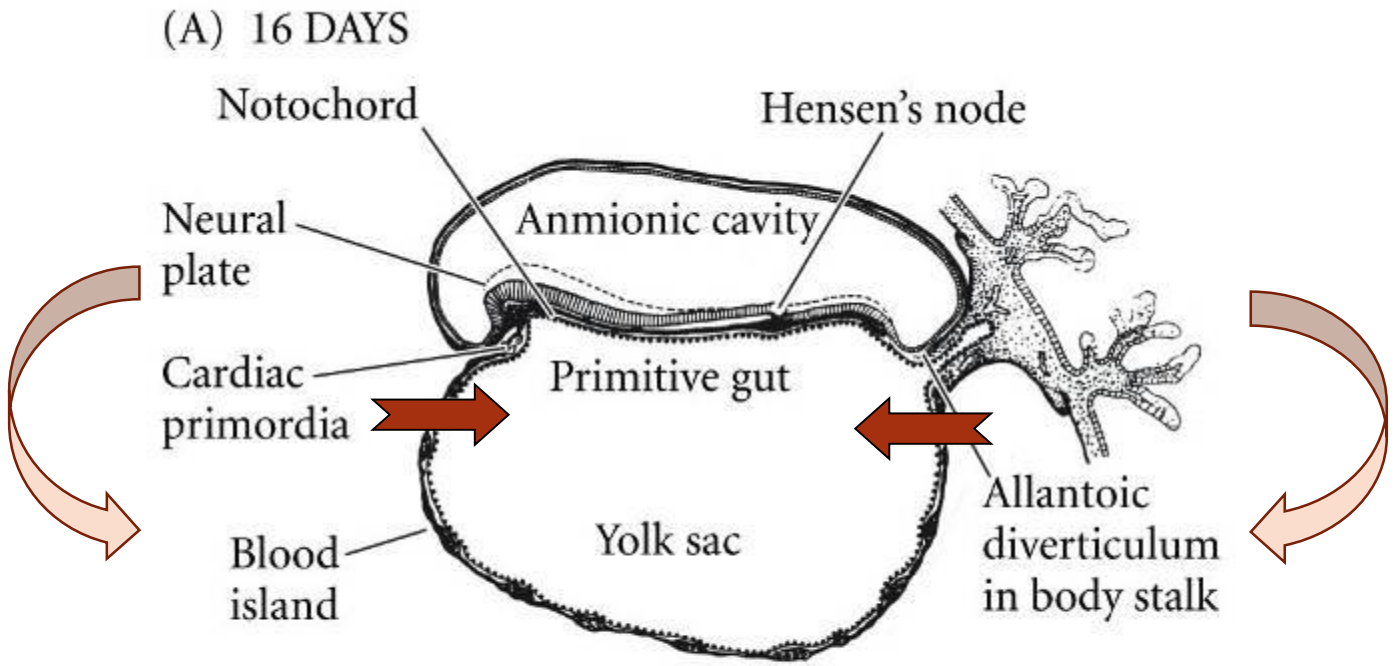


Epitelio del tubo digestivo, sistema respiratorio y glándulas asociadas

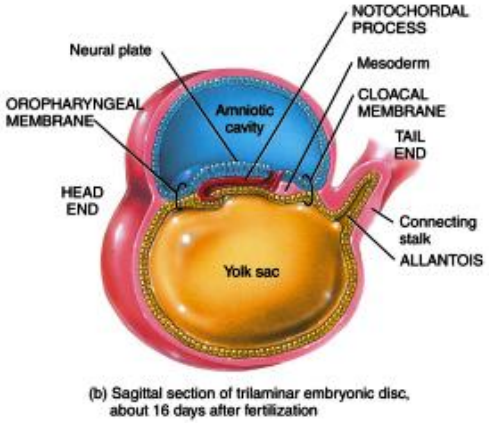
Epitelio

- Glándulas salivales y de la mucosa esofágica
- Glándulas gástricas e intestinales
- Hígado y vesícula biliar
- Páncreas
- Vejiga urinaria (algunos amniotas y algunos peces)
- Glándulas de la región faríngea: tiroides, paratiroide, timo

Flexión cefálica

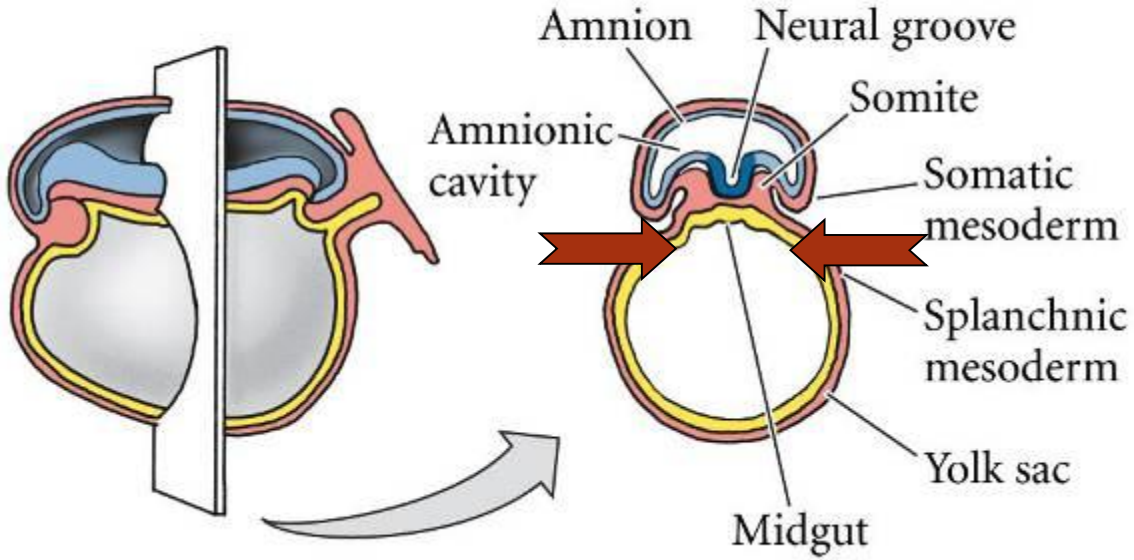


Flexión caudal

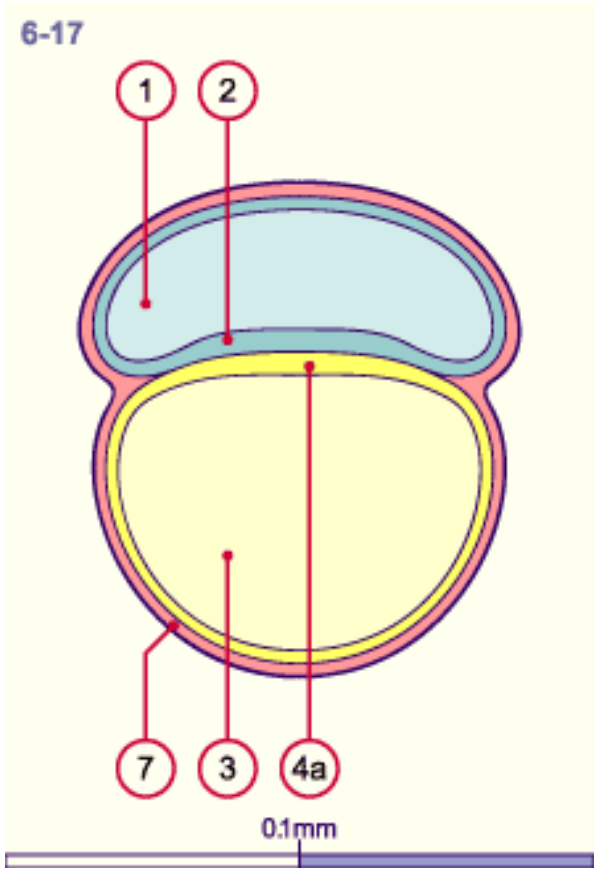


(b) Sagittal section of trilaminar embryonic disc, about 16 days after fertilization

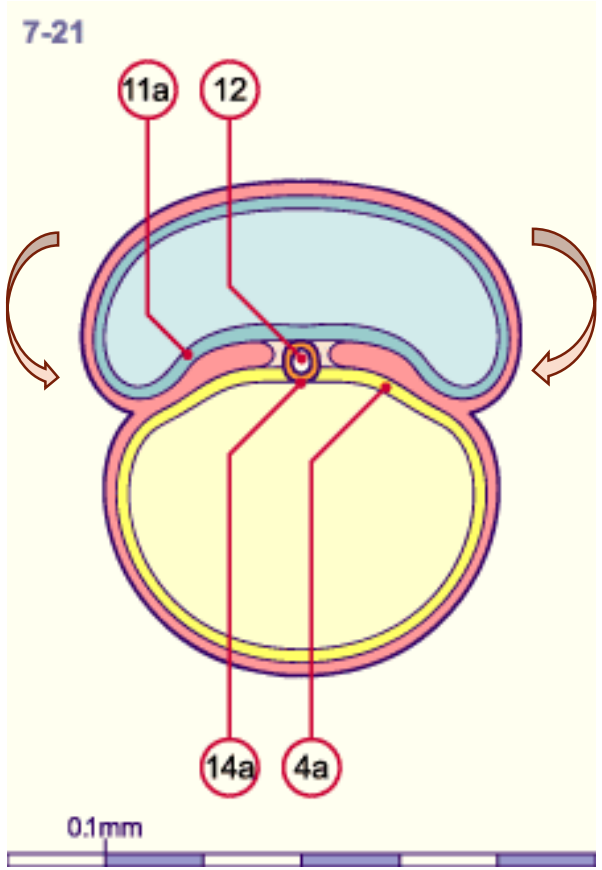
Cerramiento lateral



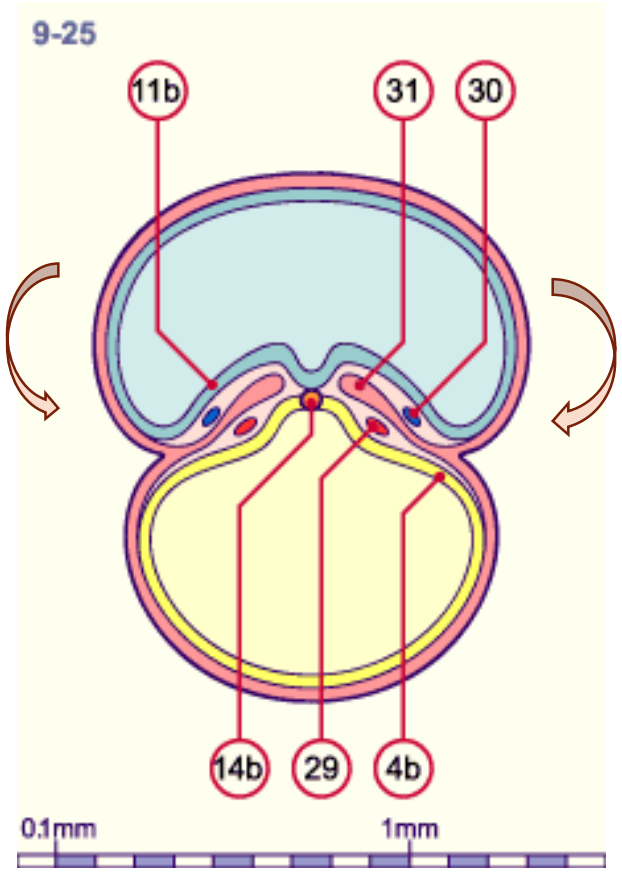
DEVELOPMENTAL BIOLOGY, Eighth Edition, Figure 15.24 (Part 1) © 2006 Sinauer Associates, Inc.



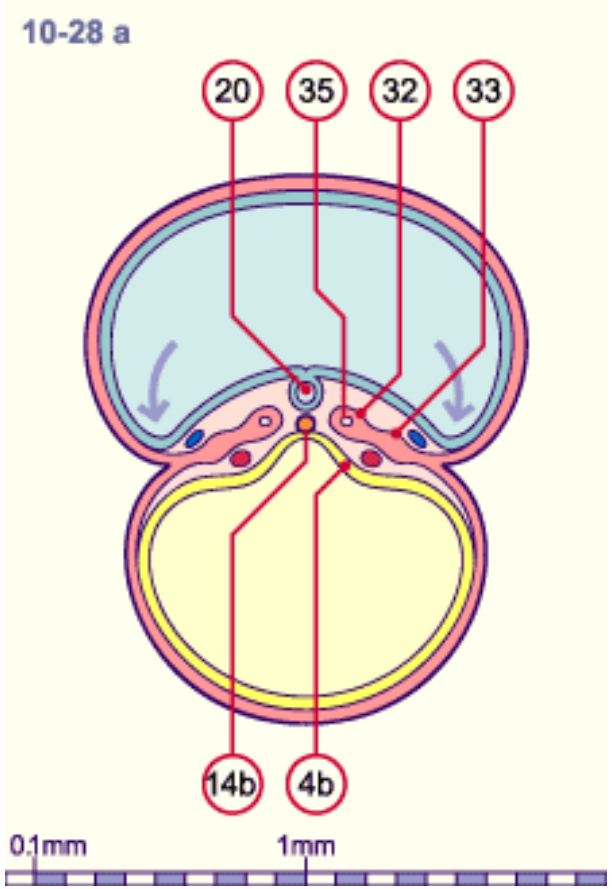
1. Cavidad amniótica
2. Epiblasto
4a. Hipoblasto
3. Saco de la yema
7. Esplacnopleura



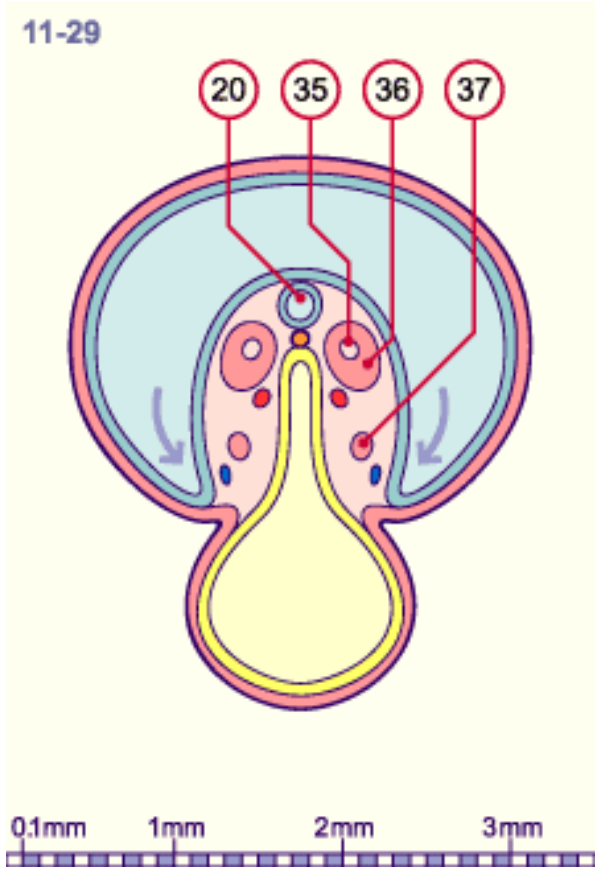
12. Notocorda
11 a. Ectodermo
4a. Hipoblasto
14 a. Endodermo



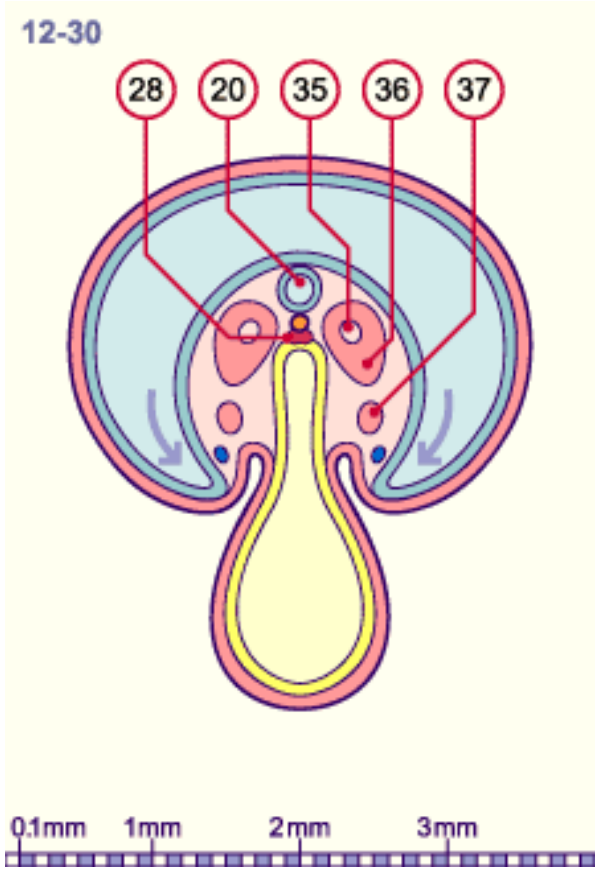
11b. Ectodermo
31. Mesénquima primario
30. Vena umbilical
4b. Hipoblasto
29. Aorta
14b. Notocorda



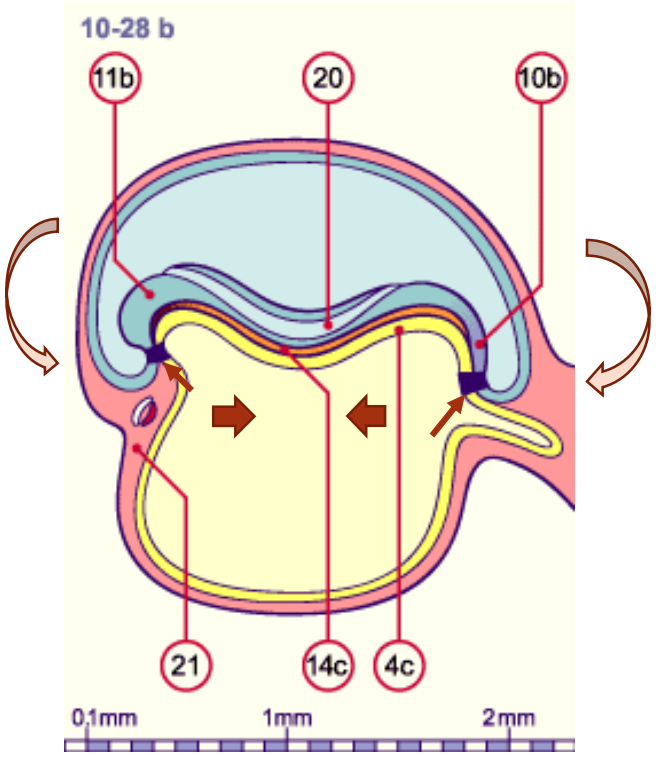
20. Tubo neural
35. Lumen del somita
32. Somita
33. Mesodermo intermedio
4b. Notocorda



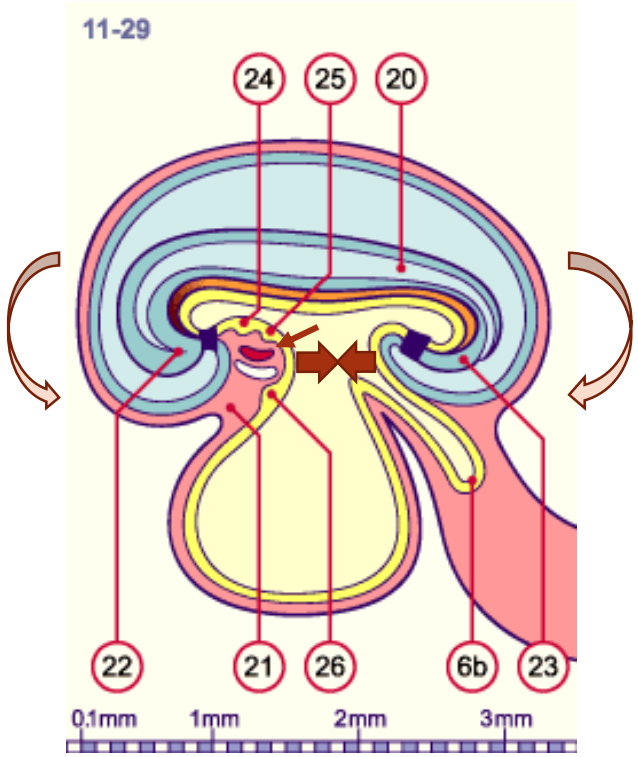
20. Tubo neural
35. Lumen del somita
36. Somita
37. Mesodermo intermedio



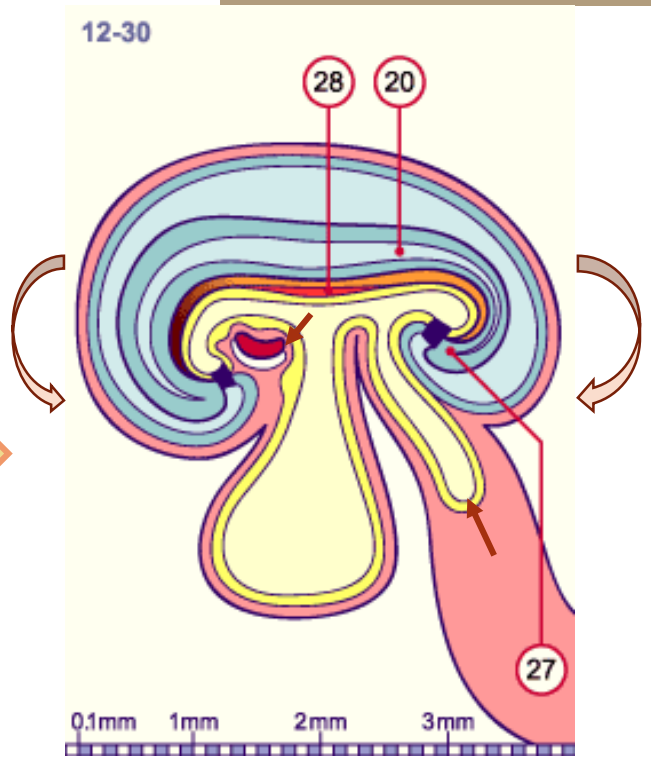
28. Aorta dorsal
20. Tubo neural
35. Lumen del somita
36. Somita
37. Mesodermo intermedio



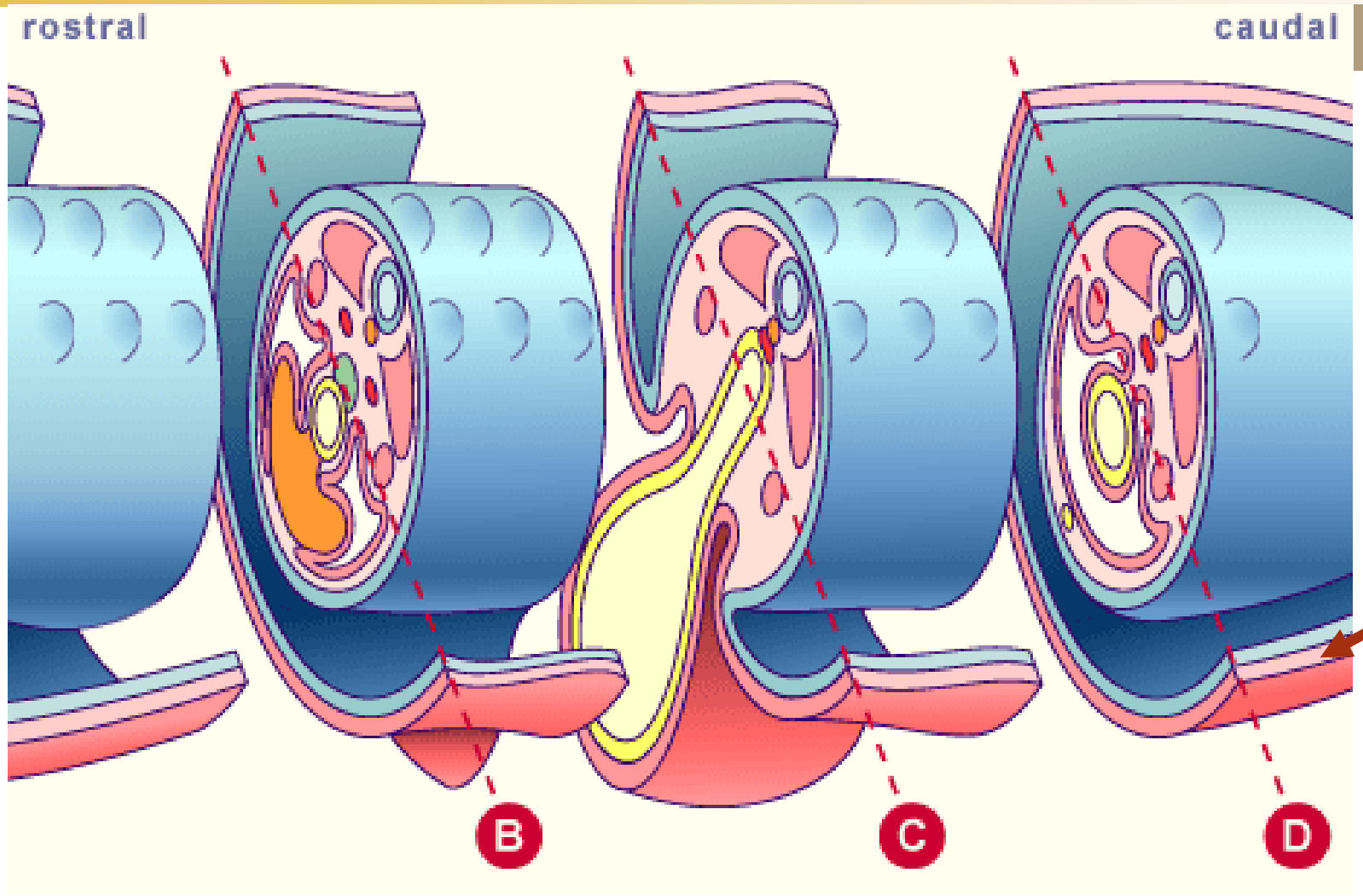
11b. Pliegue neural cefálico
20. Tubo neural
10b. Línea primitiva
14c. Notocorda
4c. Hipoblasto
21. Mesodermo lateral esplácnico



24. Primordio de la tiroides
25. Primordio del pulmón
20. Tubo neural
22. Cierre del neuroporo anterior
21. Septum transversum
26. Primordio hepático
6b. Alantoides
23. Región caudal

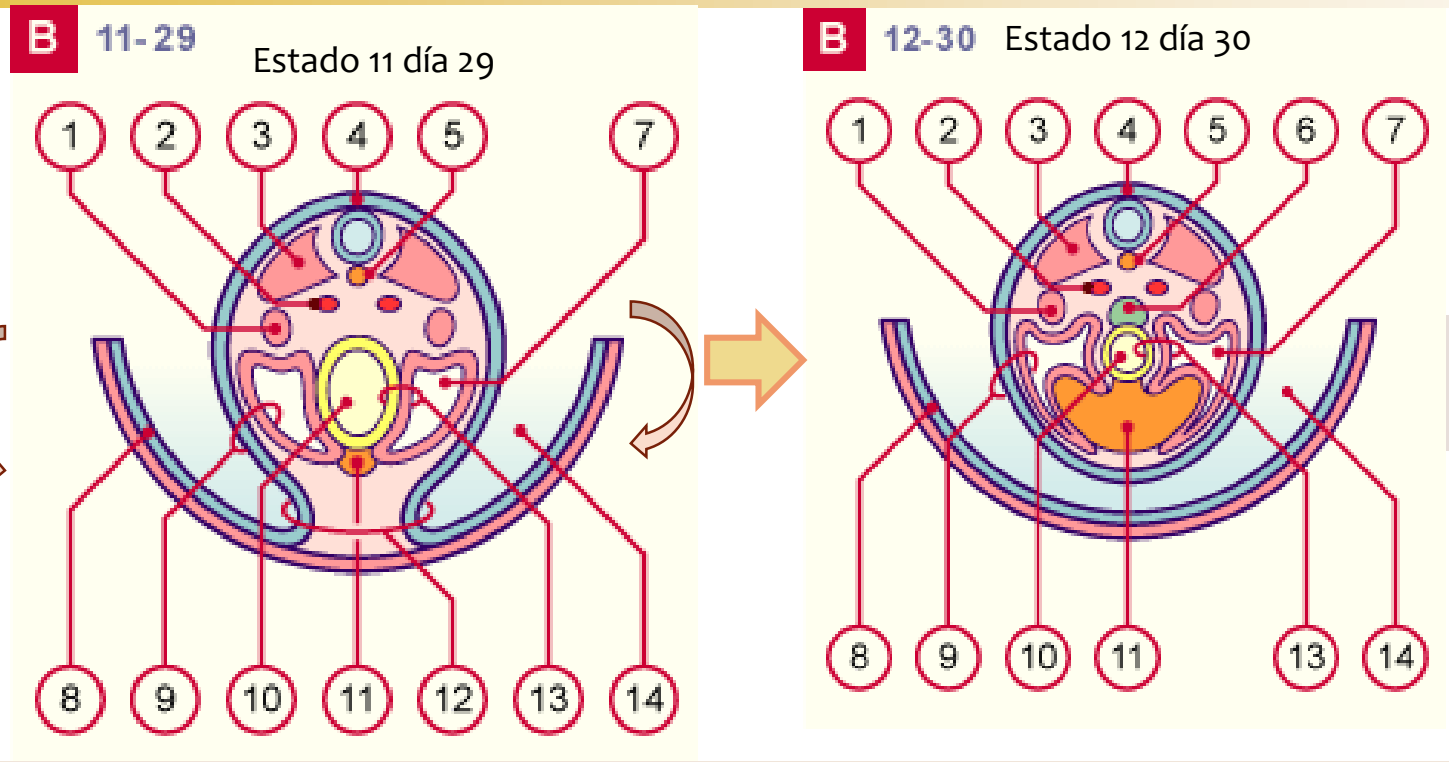


28. Aorta dorsal
20. Tubo neural
27. Cierre del neuroporo posterior



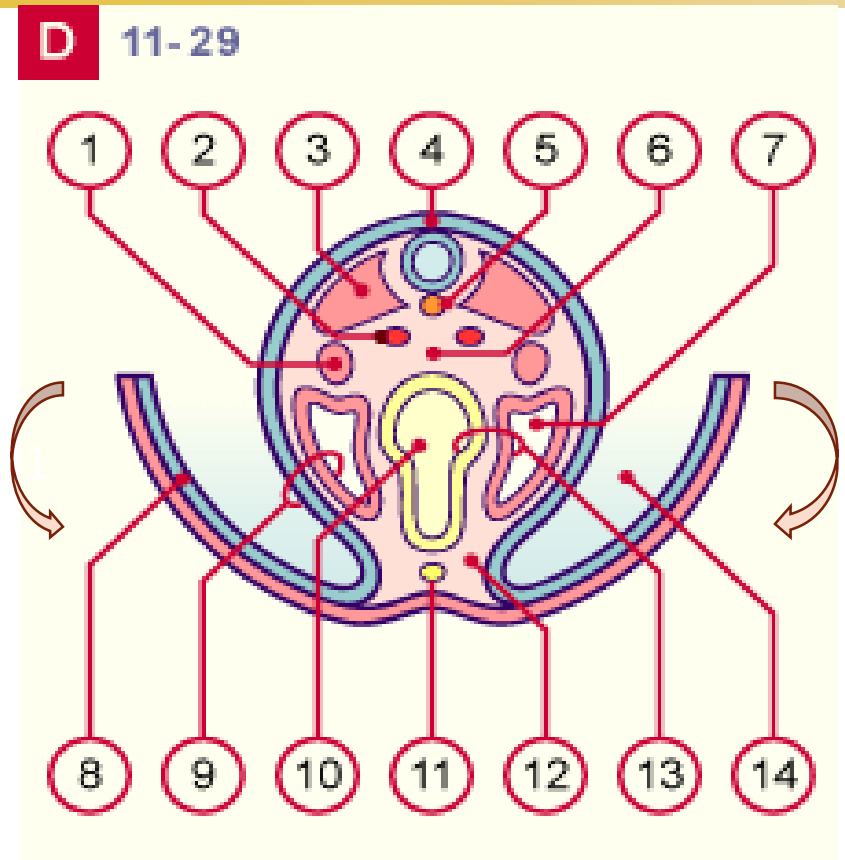
Cortes transversales del embrión amniota en la región B. anterior, C. media y D. posterior

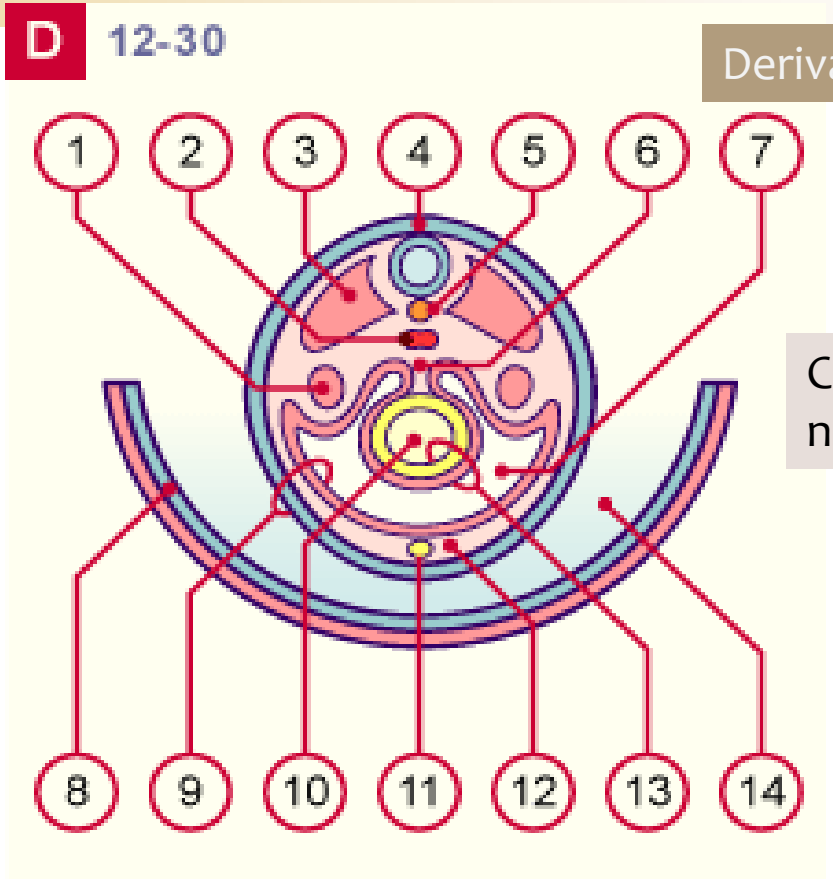
Derivados endodérmicos



Corte transversal a nivel anterior

1. Mesodermo intemedio
2. Aorta
3. Mesodermo paraxial
4. Tubo neural
5. Notocorda
7. Celoma
8. Amnios
9. Somatopleura (mesodermo lateral somático y ectodermo)
10. Tubo digestivo anterior
11. Septum transversum (futuro diafragma)
12. Convergencia ventral del amnios
13. Esplacnopleura (mesodermo lateral esplácnico y endodermo)
14. Cavidad amniótica



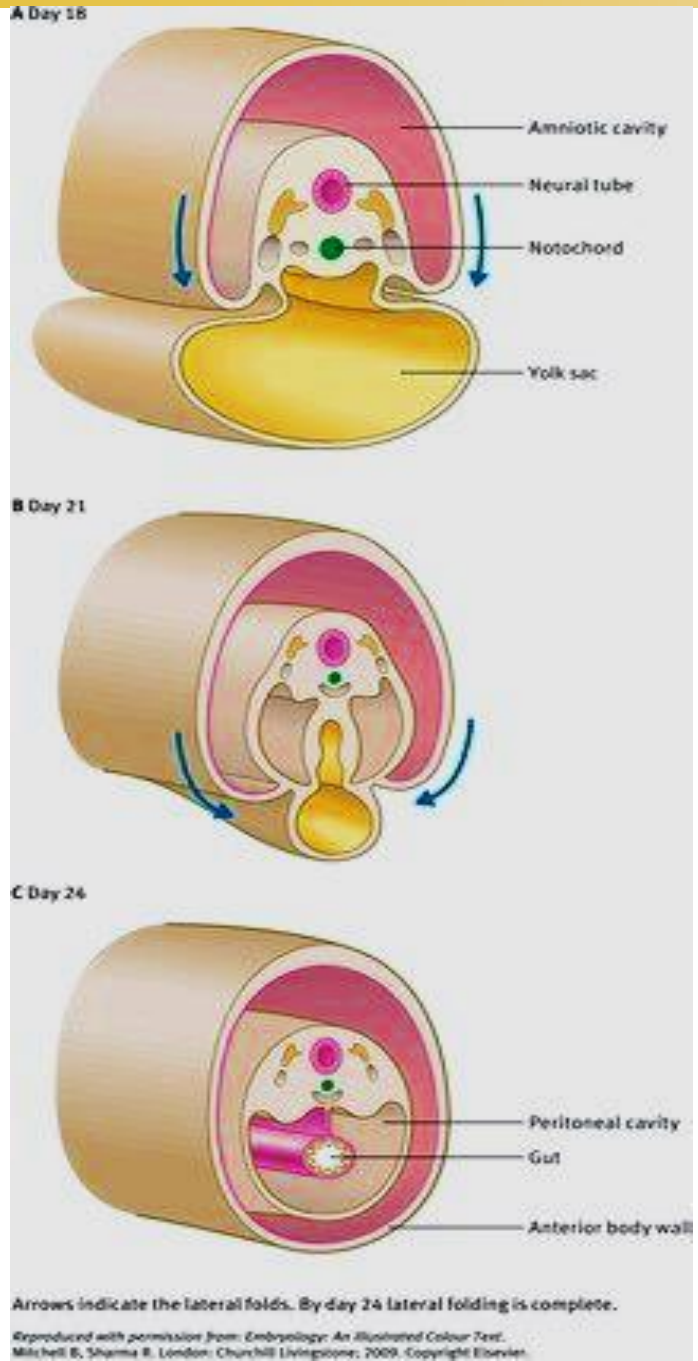


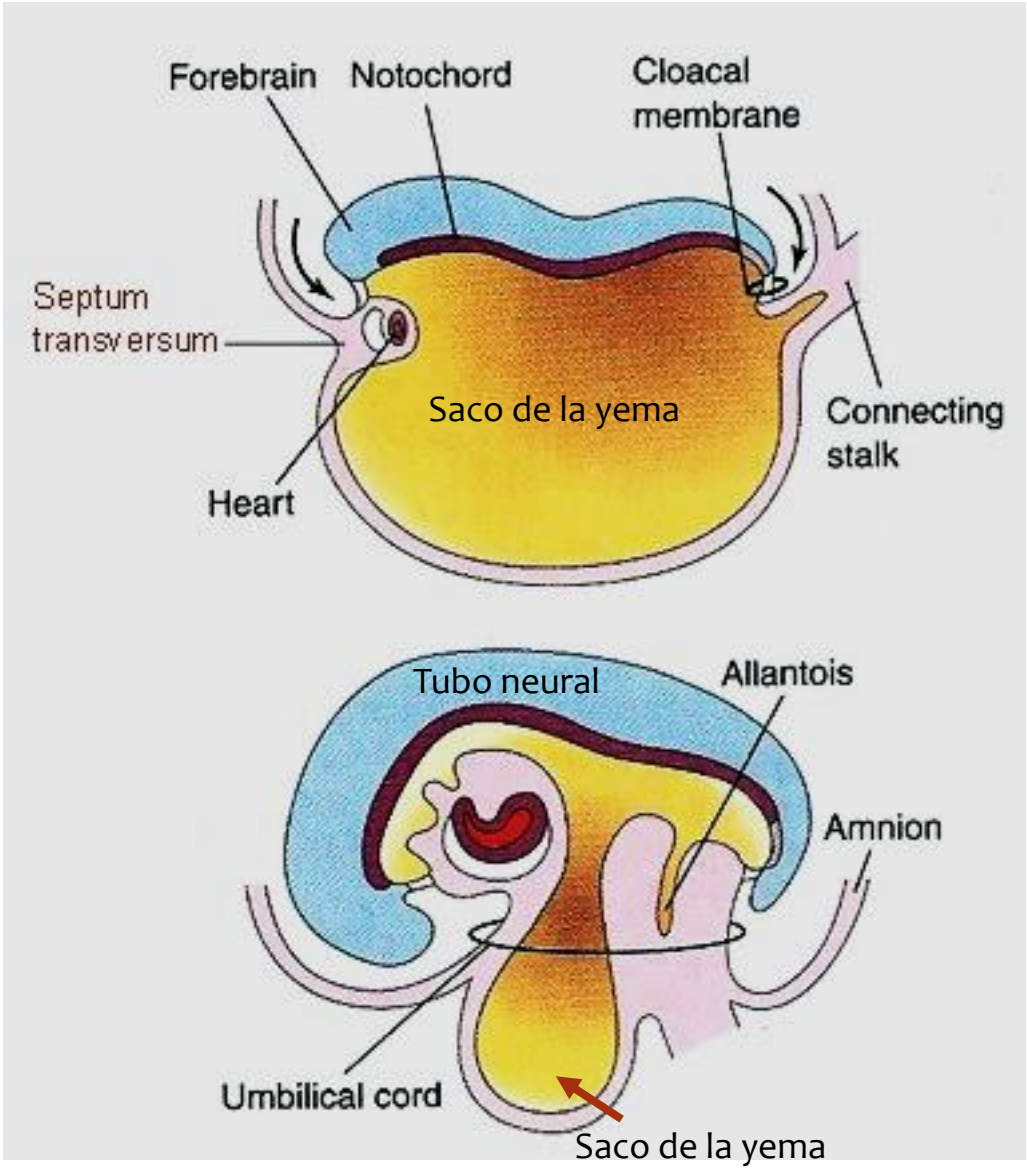
Derivados endodérmicos

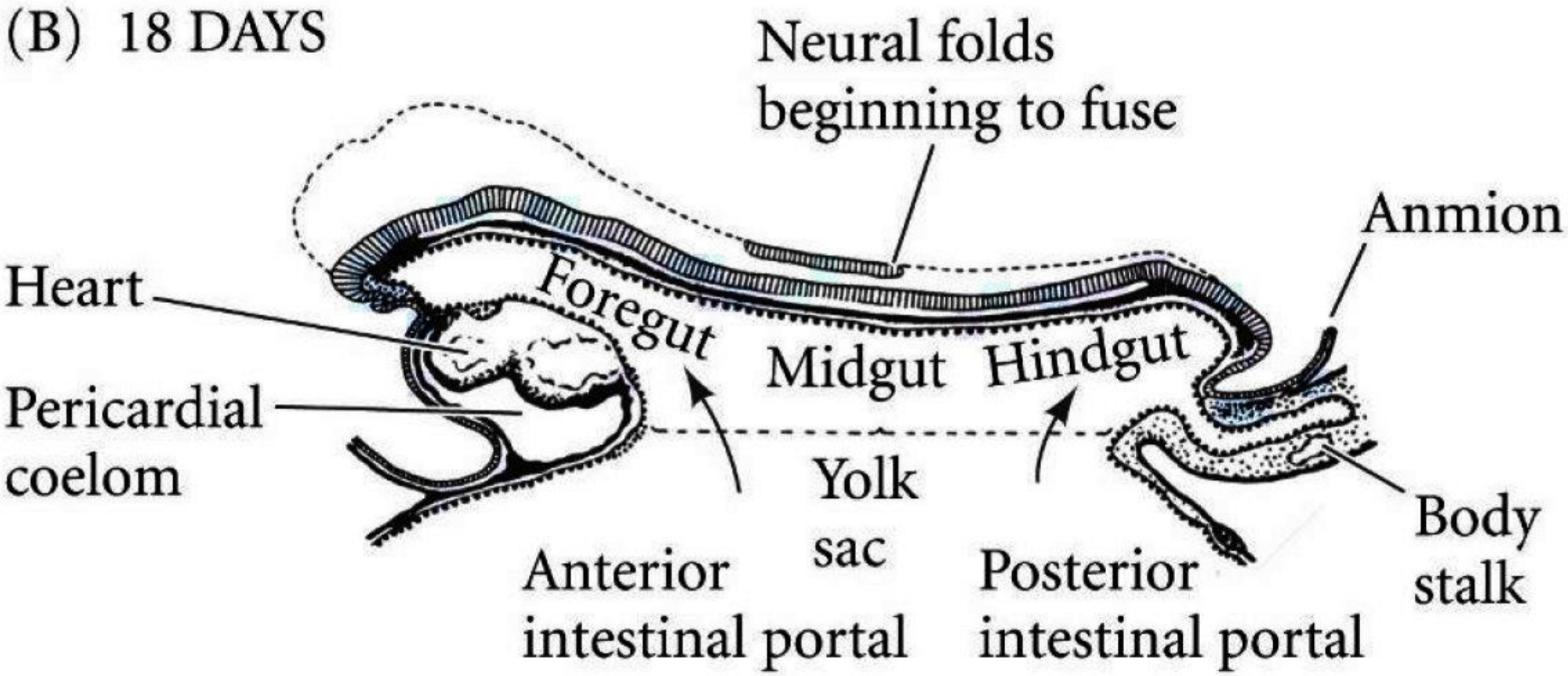
Corte transversal a nivel posterior

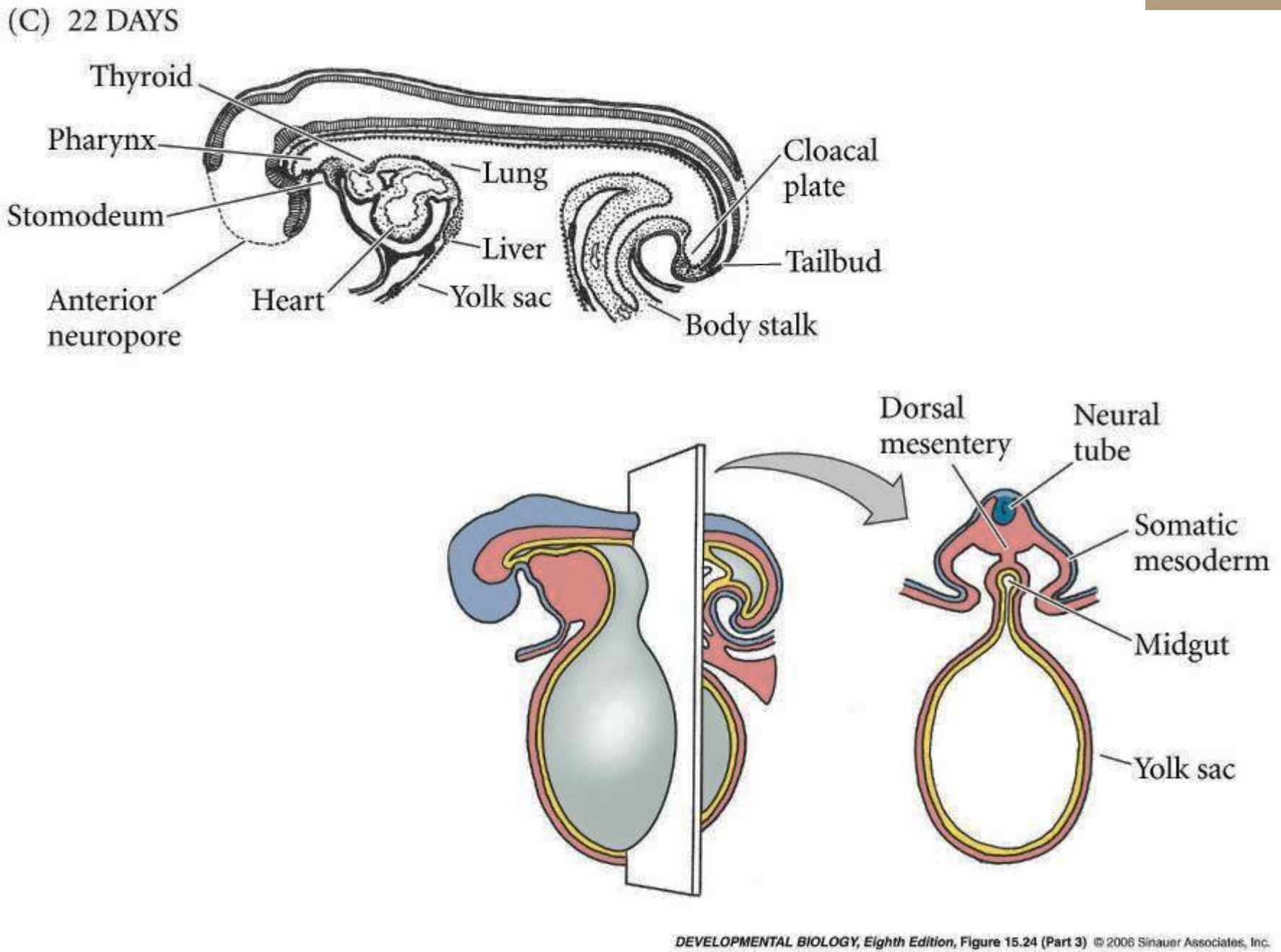
1. Mesodermo intemedio
2. Aorta
3. Mesodermo paraxial
4. Tubo neural
5. Notocorda
6. M
7. Celoma
7. Amnios
8. Somatopleura (mesodermo lateral somático y ectodermo)
10. Tubo digestivo posterior
11. Alantoides
12. Pared ventral del cuerpo
13. Esplacnopleura (mesodermo lateral esplácnico y endodermo)
14. Cavidad amniótica en su porción ventral envolviendo completamente el embrión

Derivados endodérmicos






(B) 18 DAYS
Neural folds beginning to fuse
Anmion
Heart
Foregut
Midgut
Hindgut
Pericardial coelom
Yolk sac
Body stalk
Anterior intestinal portal
Posterior intestinal portal



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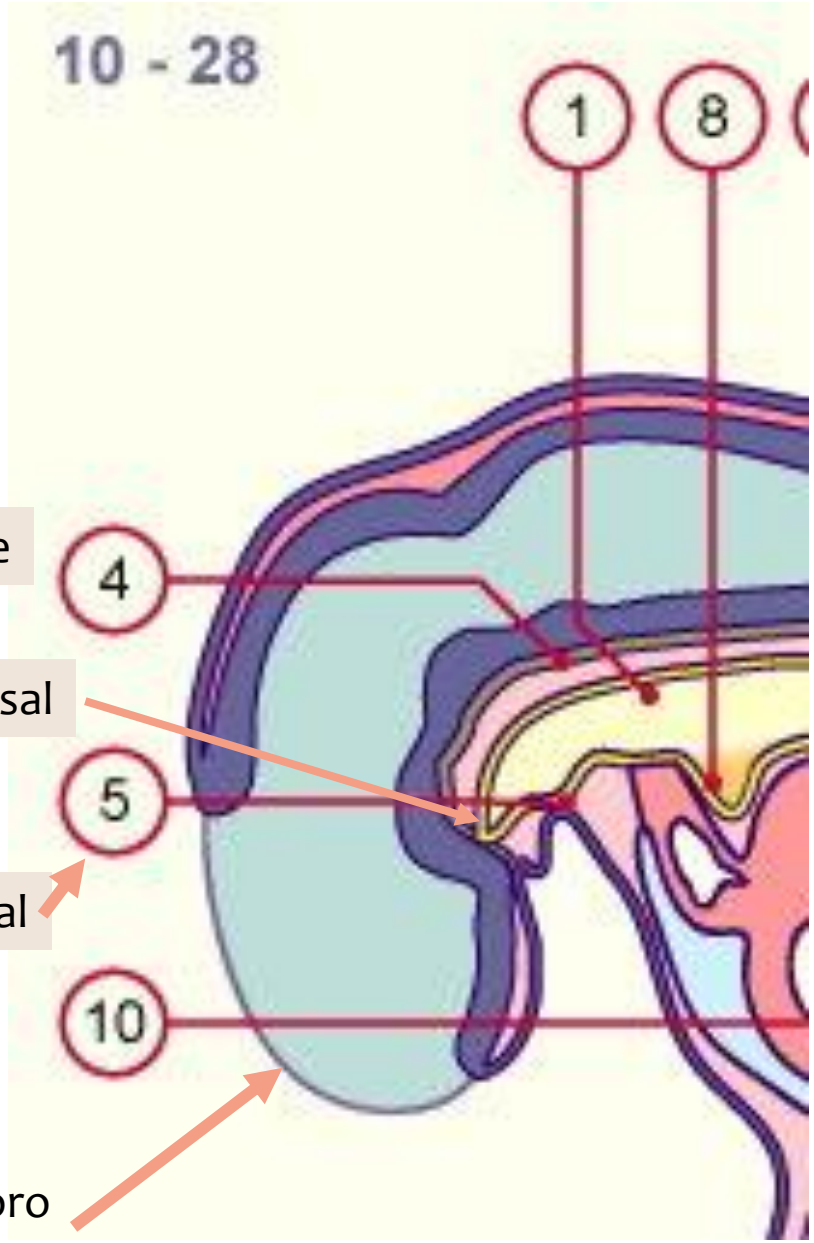


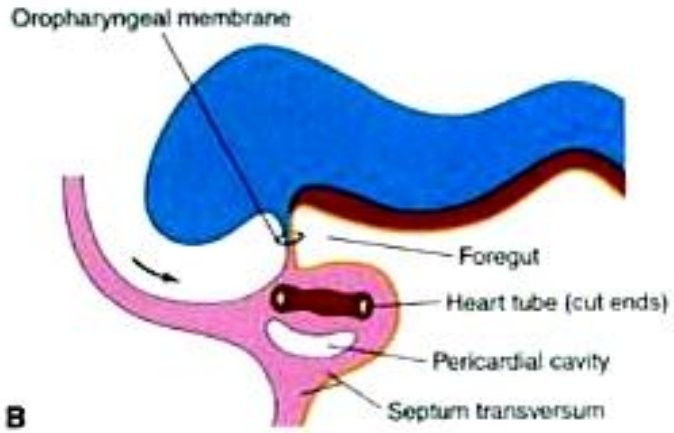
Bolsa de Rathke

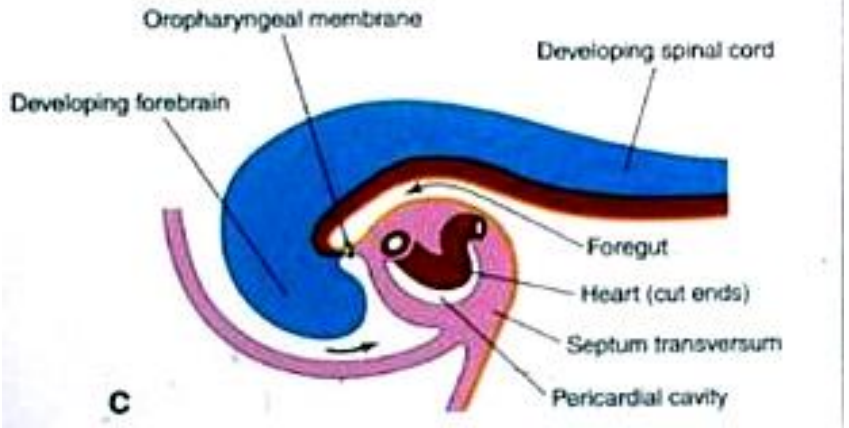
Divertículo dorsal

Divertículo ventral

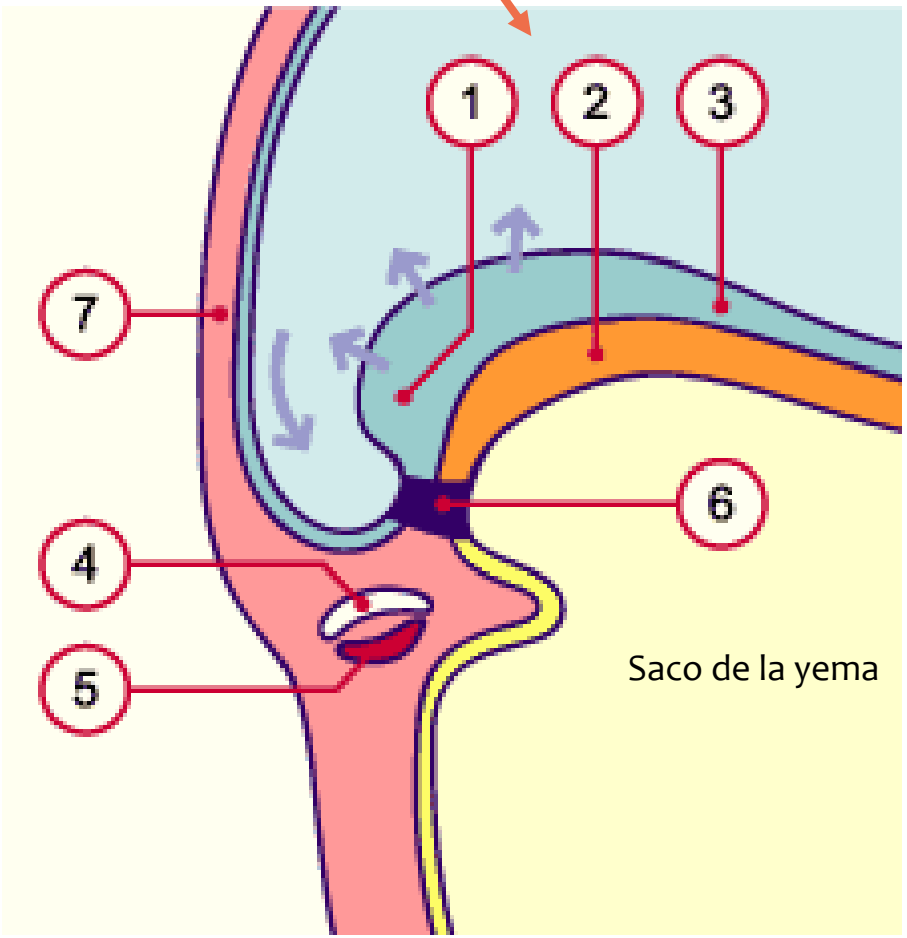
boca

Neuroporo anterior

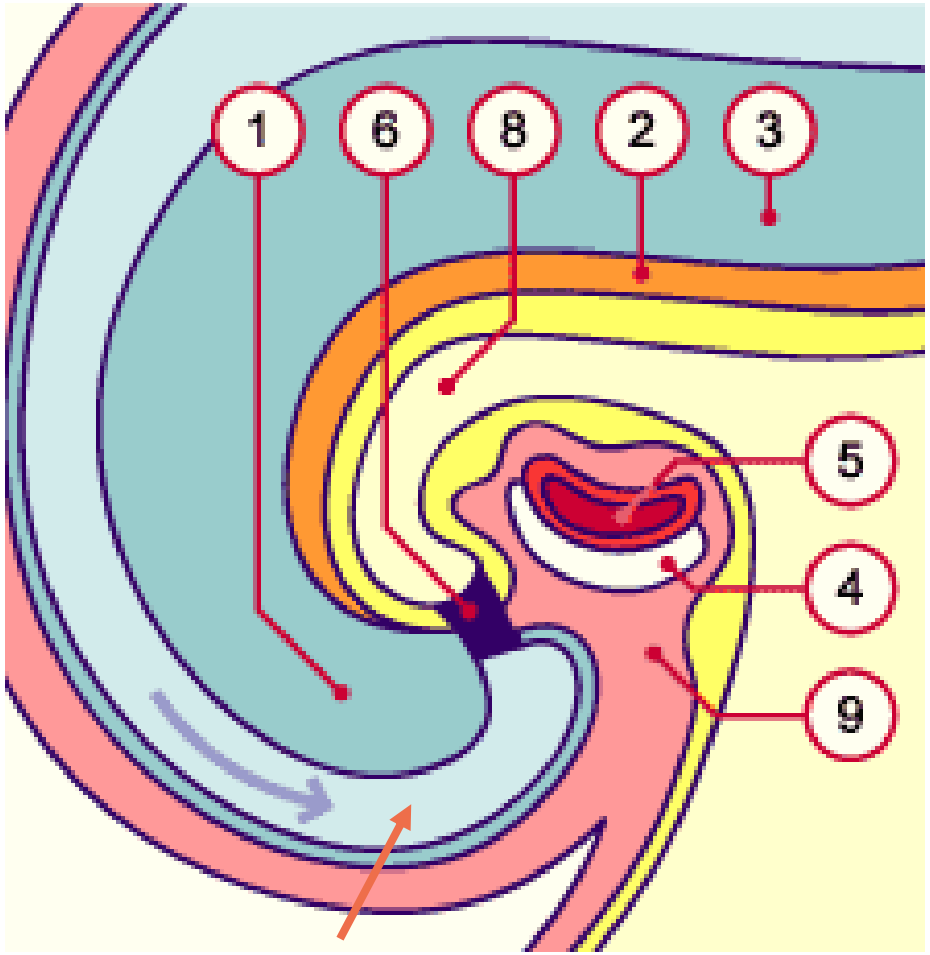




Cavidad amniótica



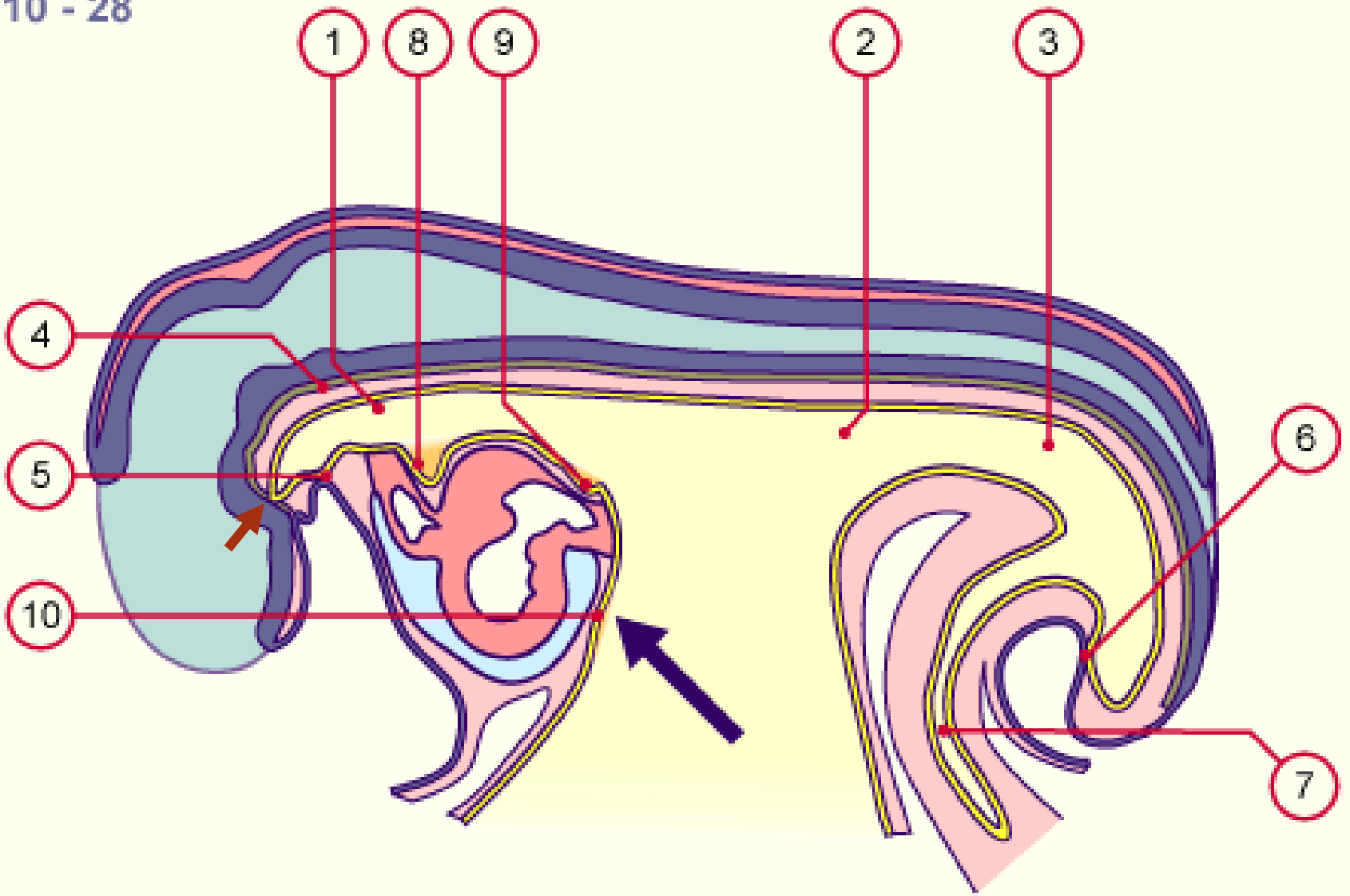
Flexión cefálica



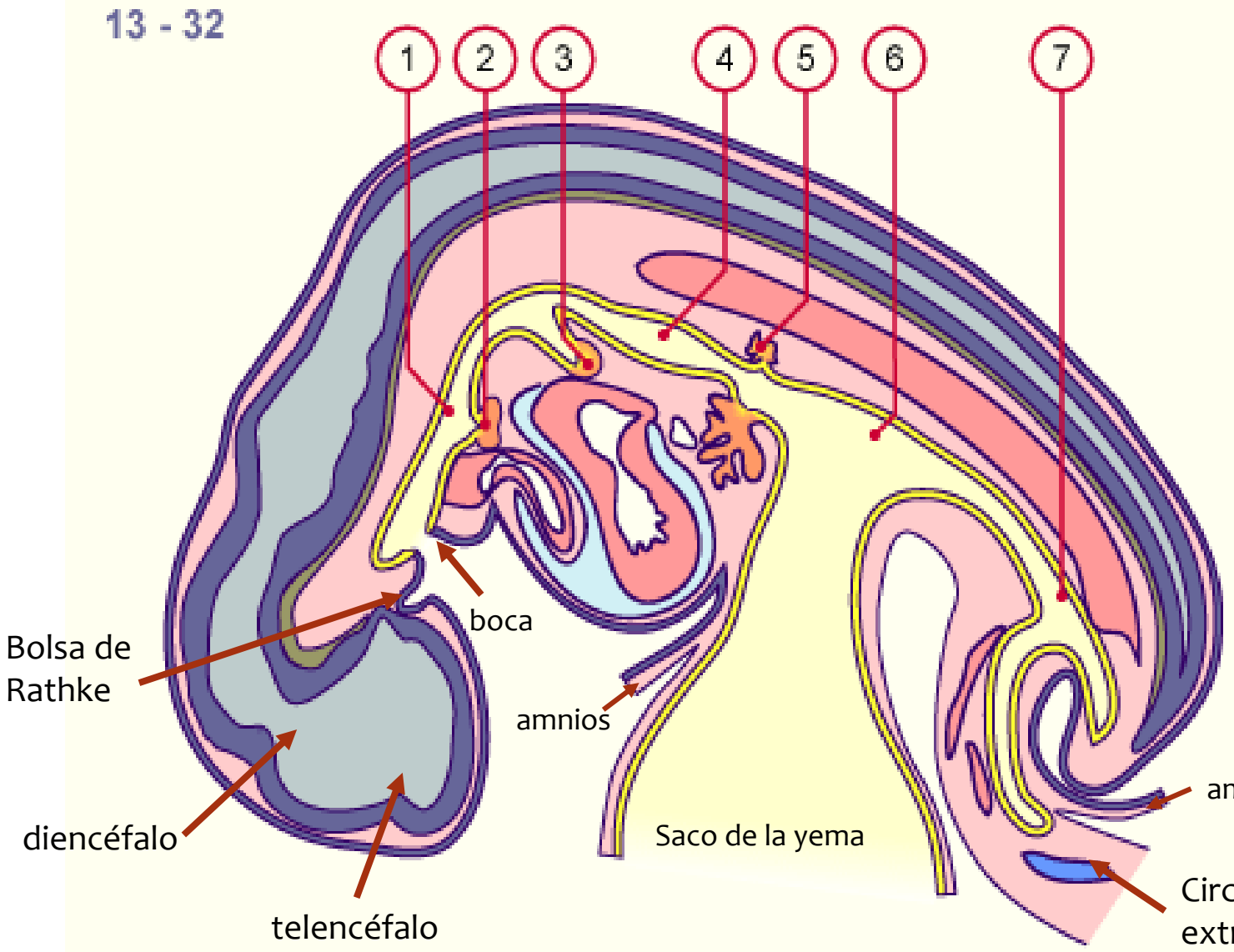
Cavidad amniótica

1. Tubo neural región cefálica
2. Notocorda
3. Tubo neural región del cuello
4. Cavidad pericardial
5. Tubo cardíaco
6. Membrana orofaríngea
7. Mesodermo lateral somático extraembrionario
8. Tubo digestivo anterior
9. Septo transverso (precursor del diafragma)

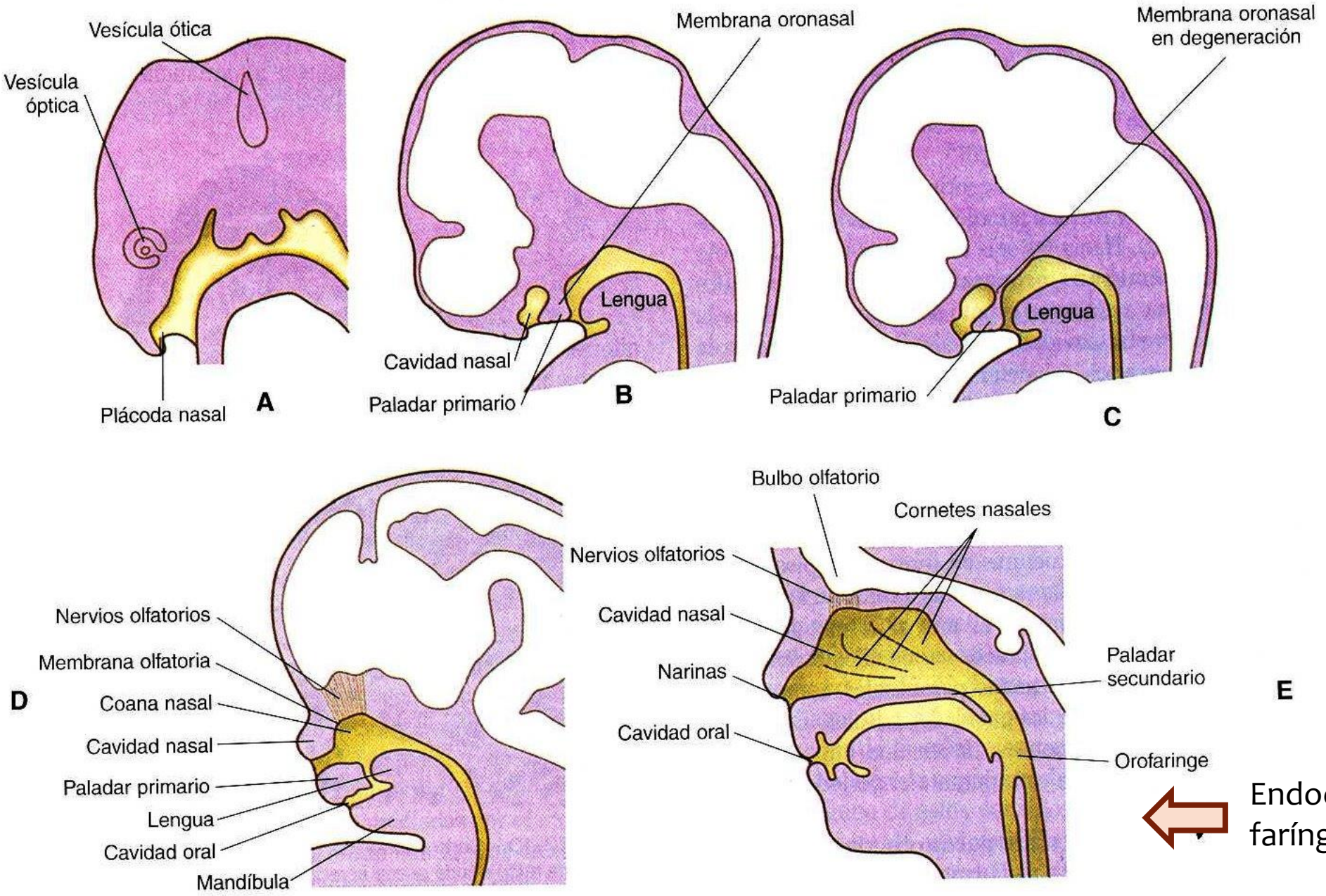
10 - 28



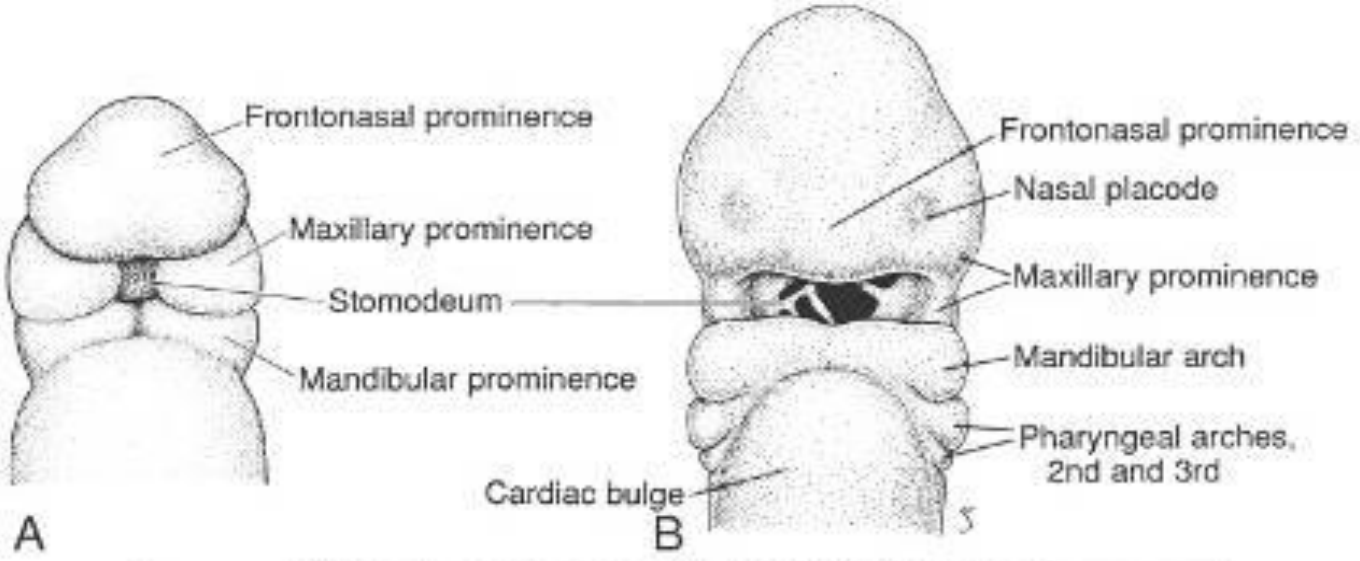
1. Tubo digestivo anterior
2. Intestino medio
3. Tubo digestivo posterior
4. Notocordo
5. Membrana orofaríngea
6. Membrana cloacal
7. Allantoides
8. Yema de la tiroides
9. Yema de los pulmones
10. Yema hepática

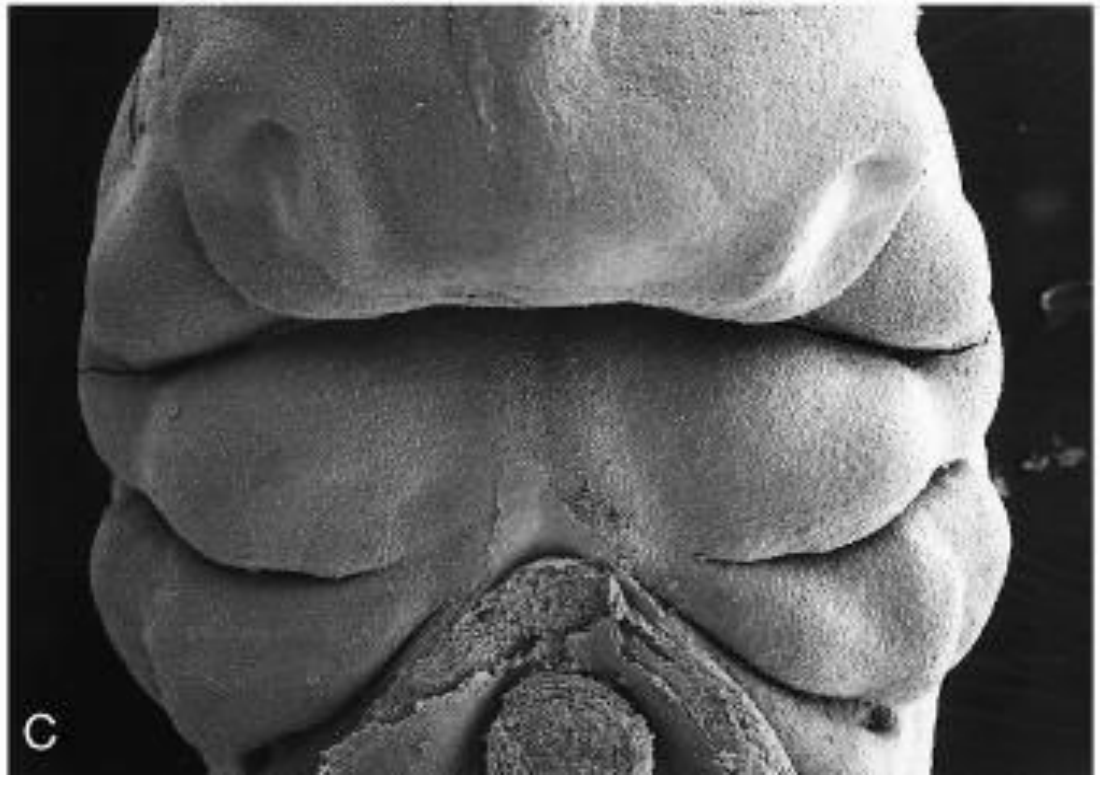


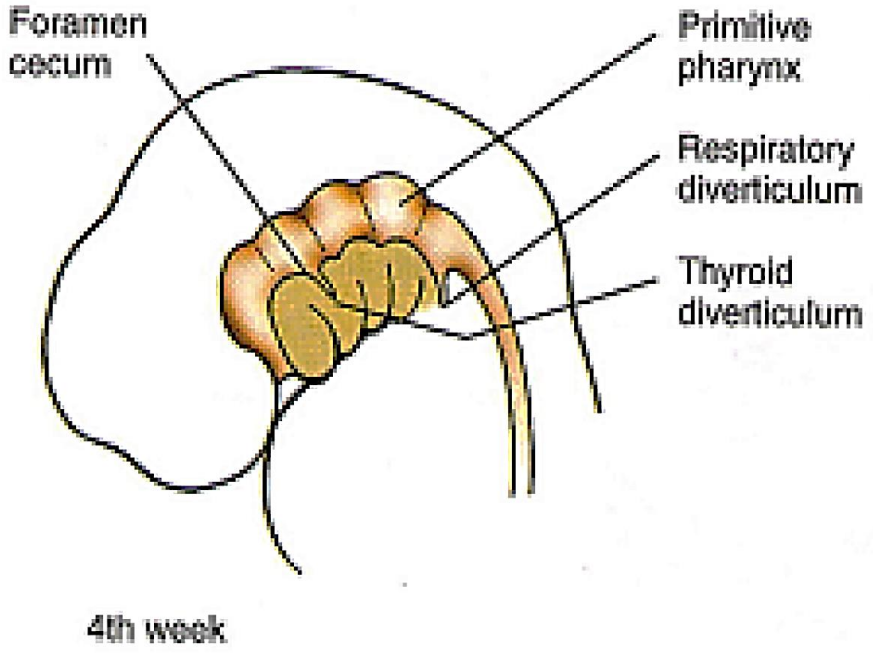
1. Tubo digestivo anterior
2. Primordio de la tiroides
3. Primordio de los pulmones
4. Estómago
5. Primordio del páncreas (dorsal y ventral)
6. Intestino medio
7. Intestino posterior.



Endodermo región faríngea y laringe

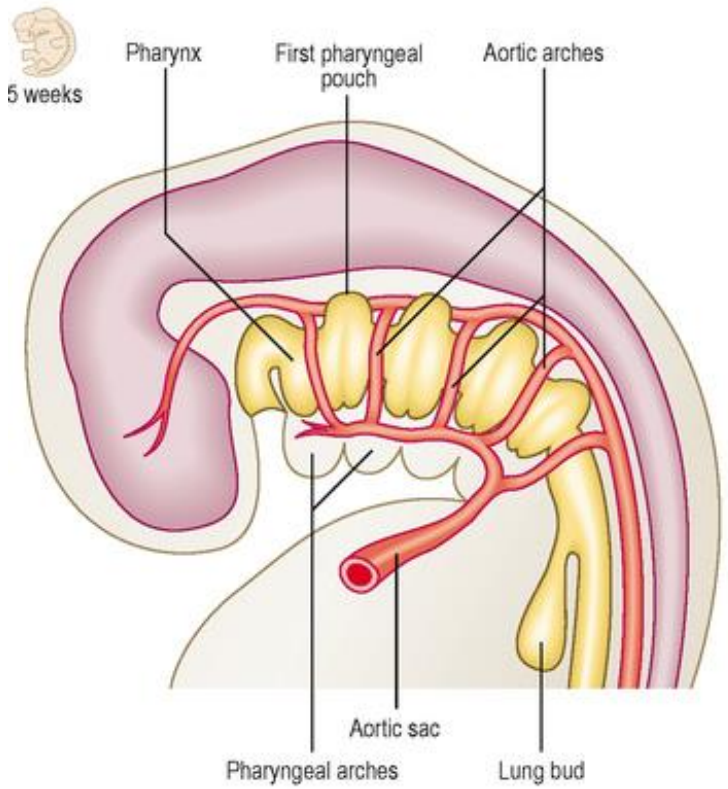




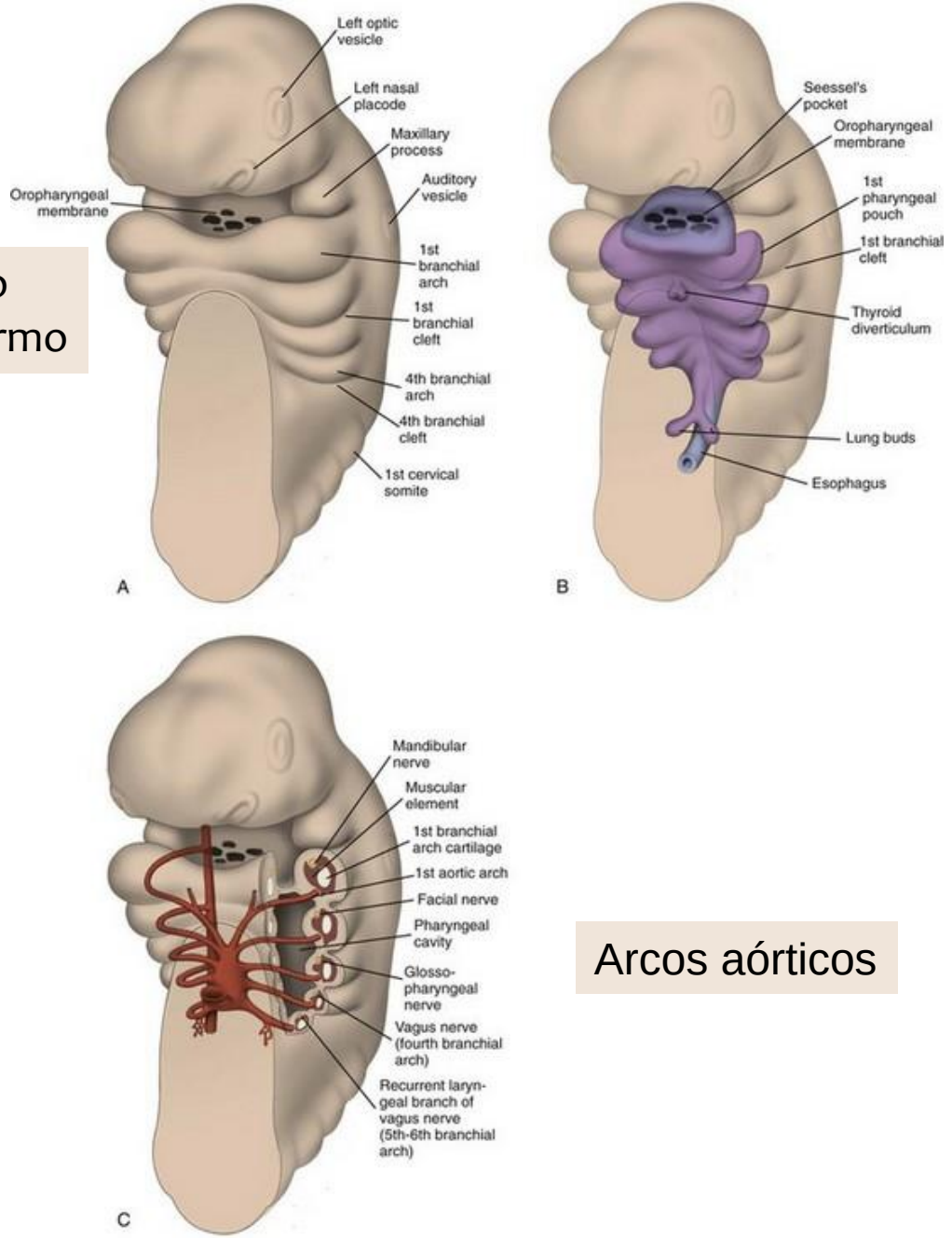


Intestino anterior

Derivados endodérmicos

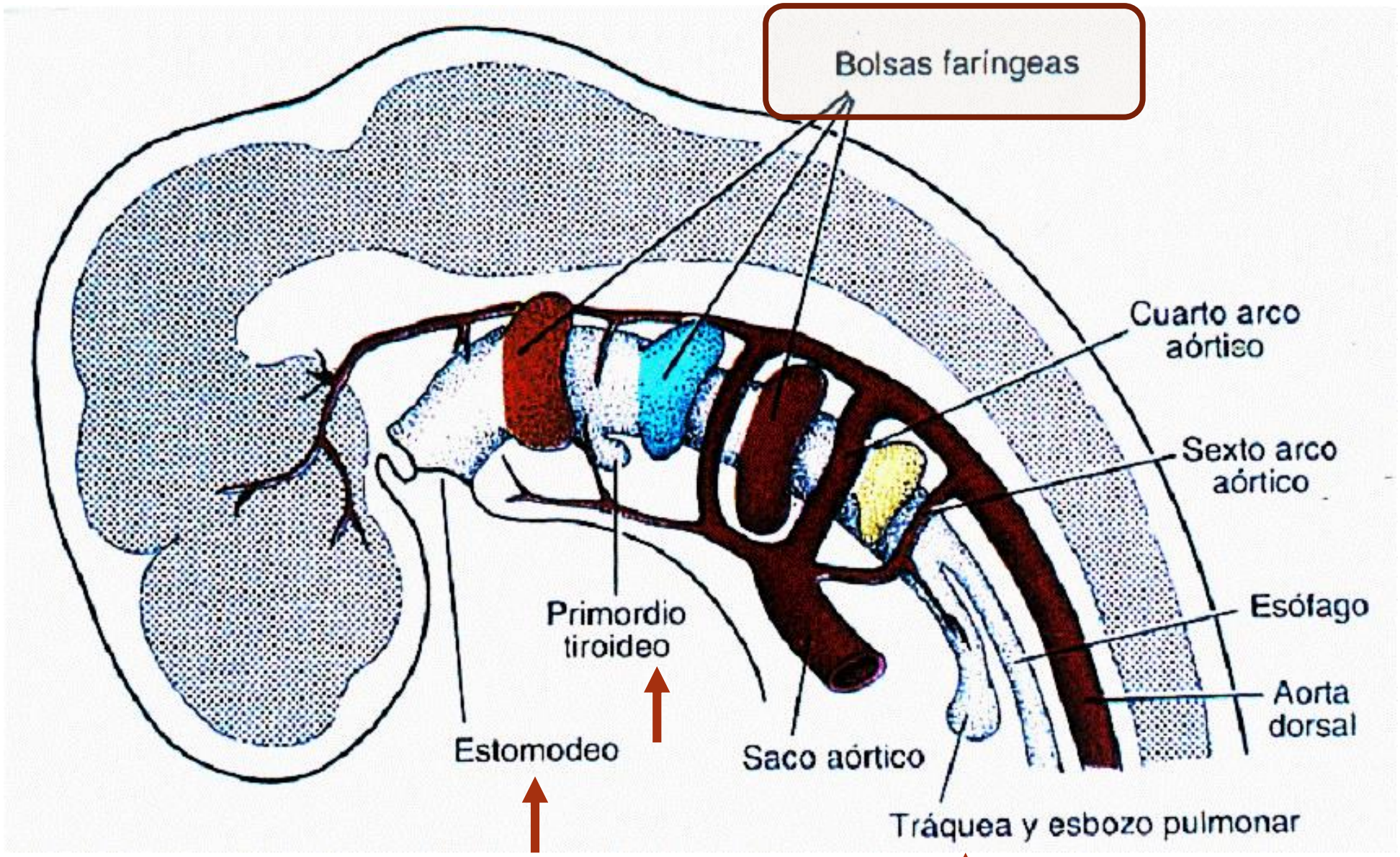


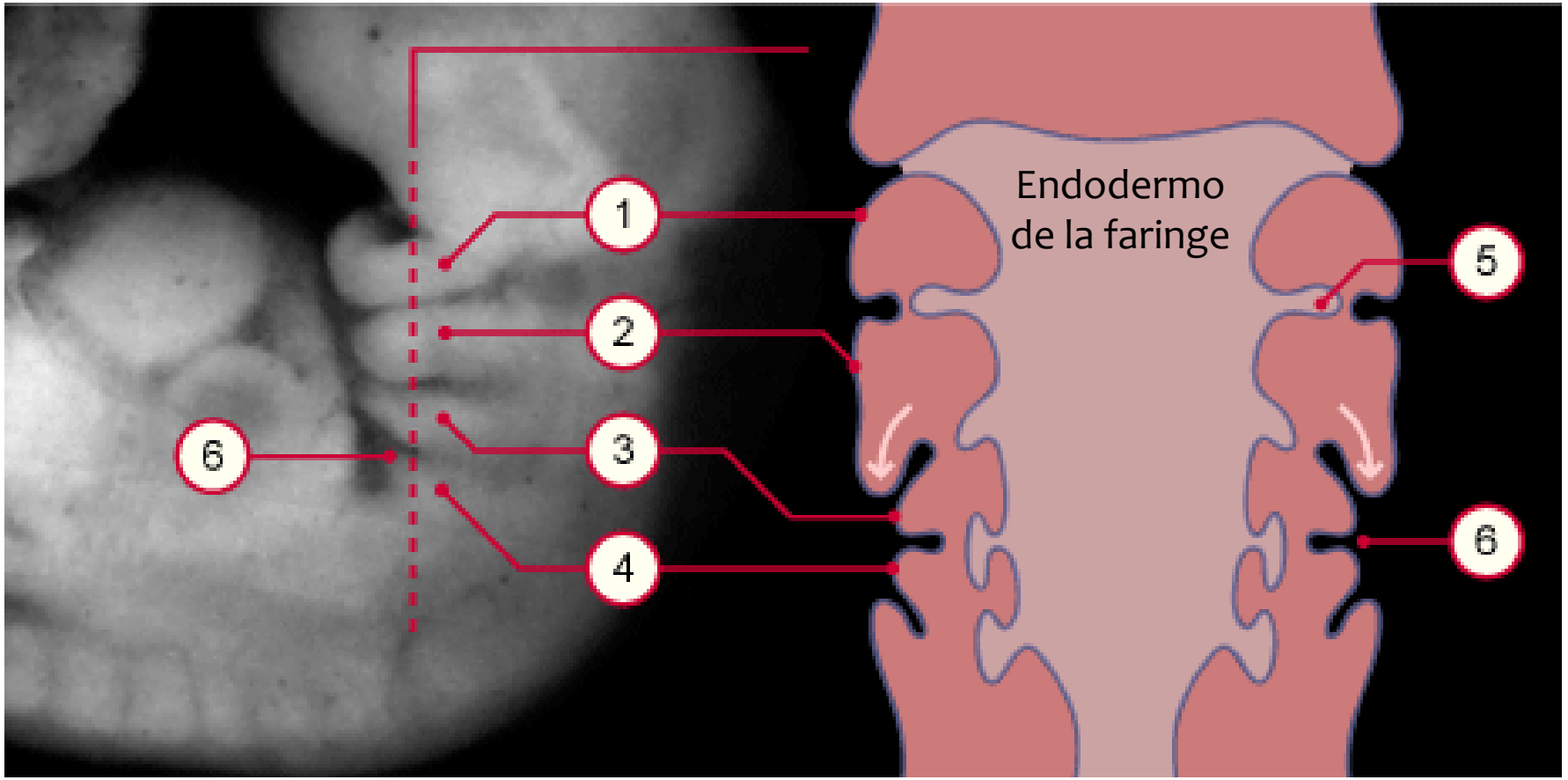
Externo
ectodermo



Interno
Endodermo

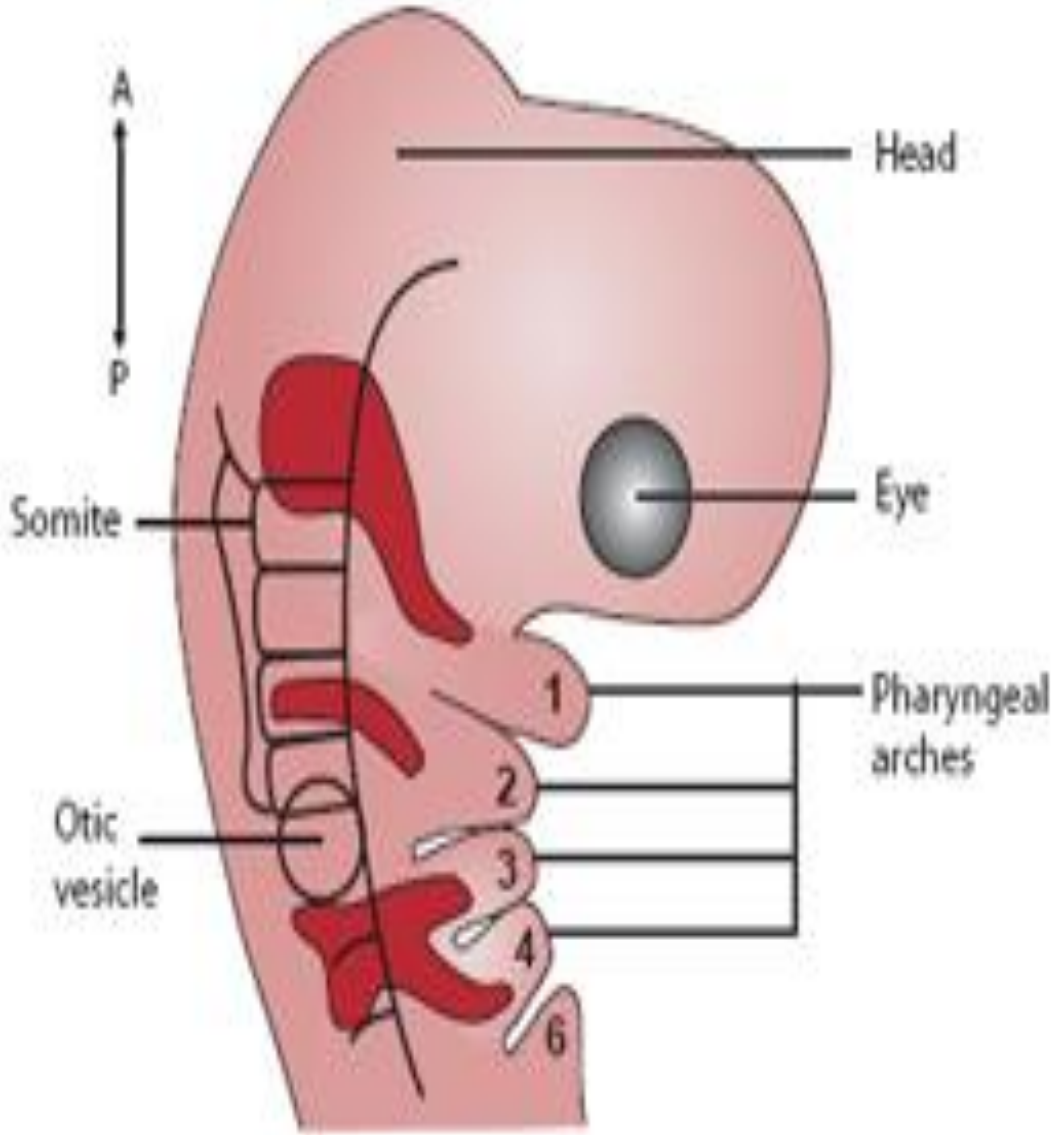
Arcos aórticos

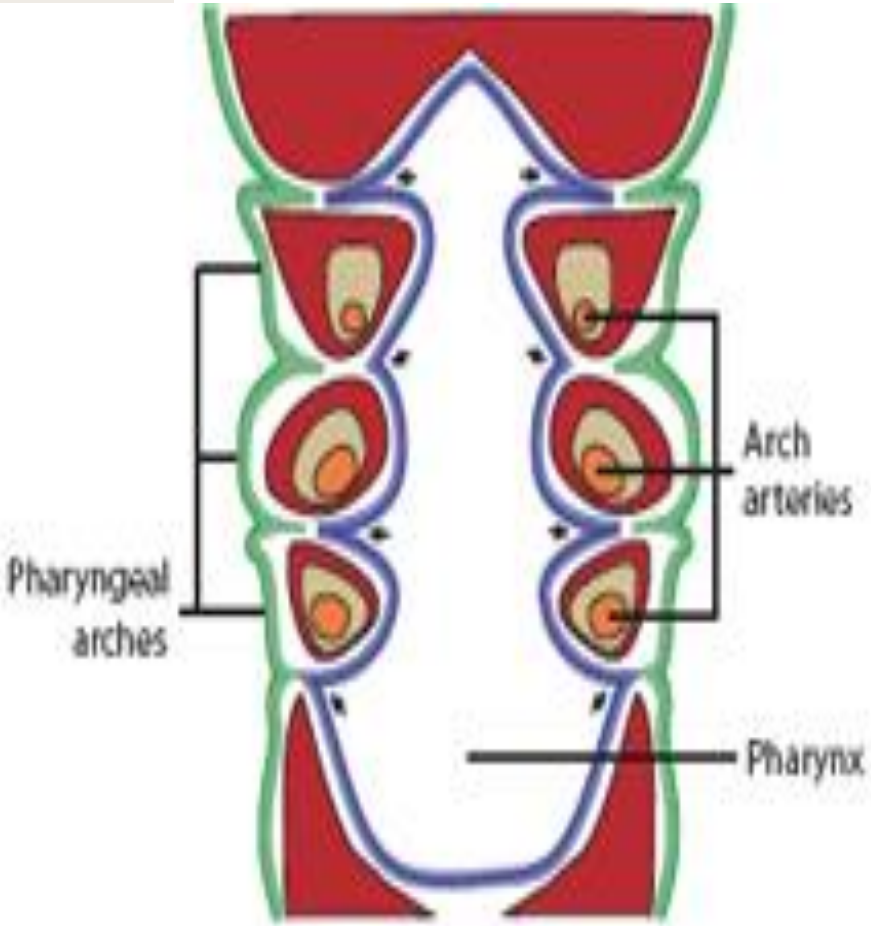

Bolsas faríngeas
Cuarto arco aórtico
Sexto arco aórtico
Esófago
Aorta dorsal
Primordio tiroideo
Estomodeo
Saco aórtico
Tráquea y esbozo pulmonar



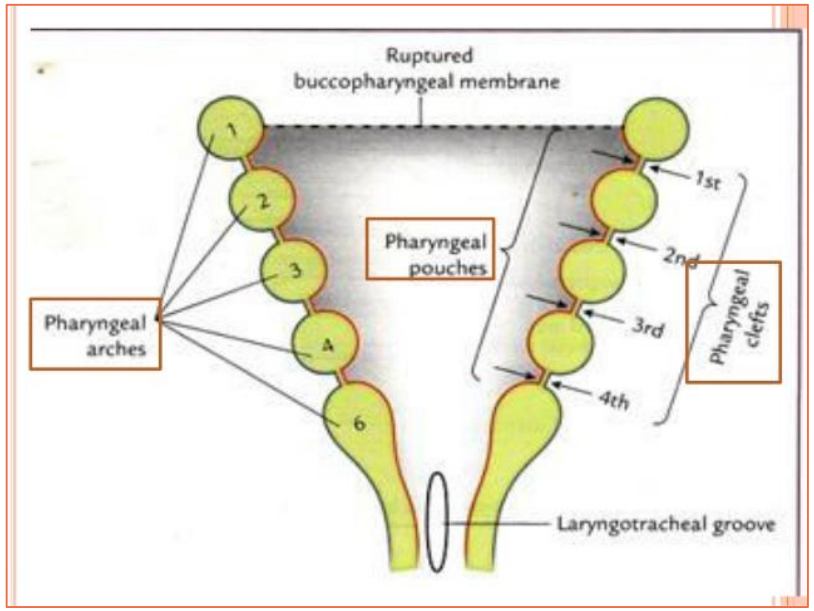
1. Arco faríngeo 1 o mandibular
2. Arco faríngeo 2 o hioideo
3. Arco faríngeo 3
4. Arco faríngeo 4
5. bolsa faríngea (endodermo)
6. Pliegues faríngeos (ectodermo)

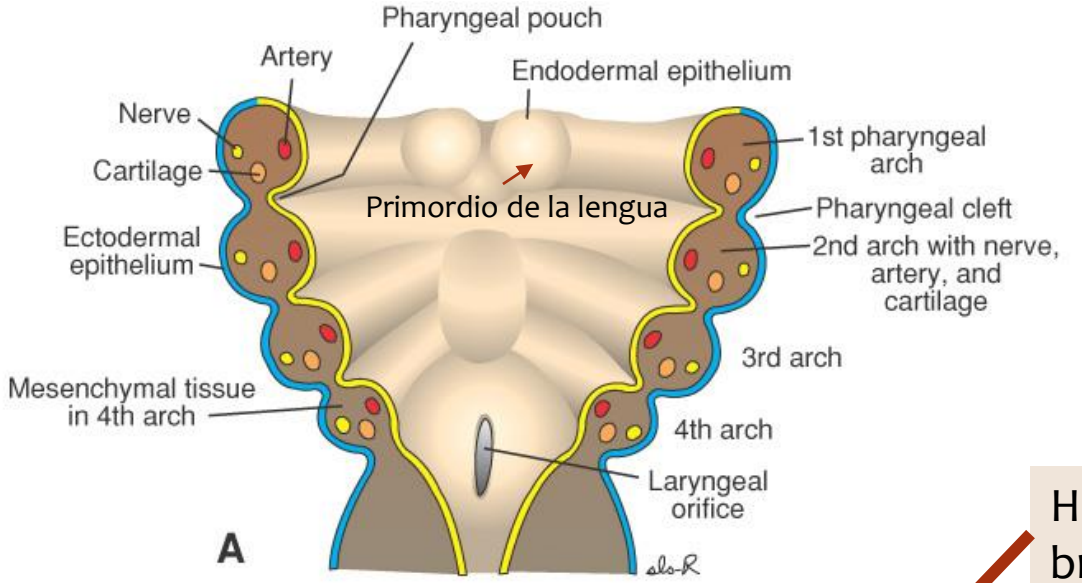
Los tres tejidos fundamentales construyen los arcos branquiales

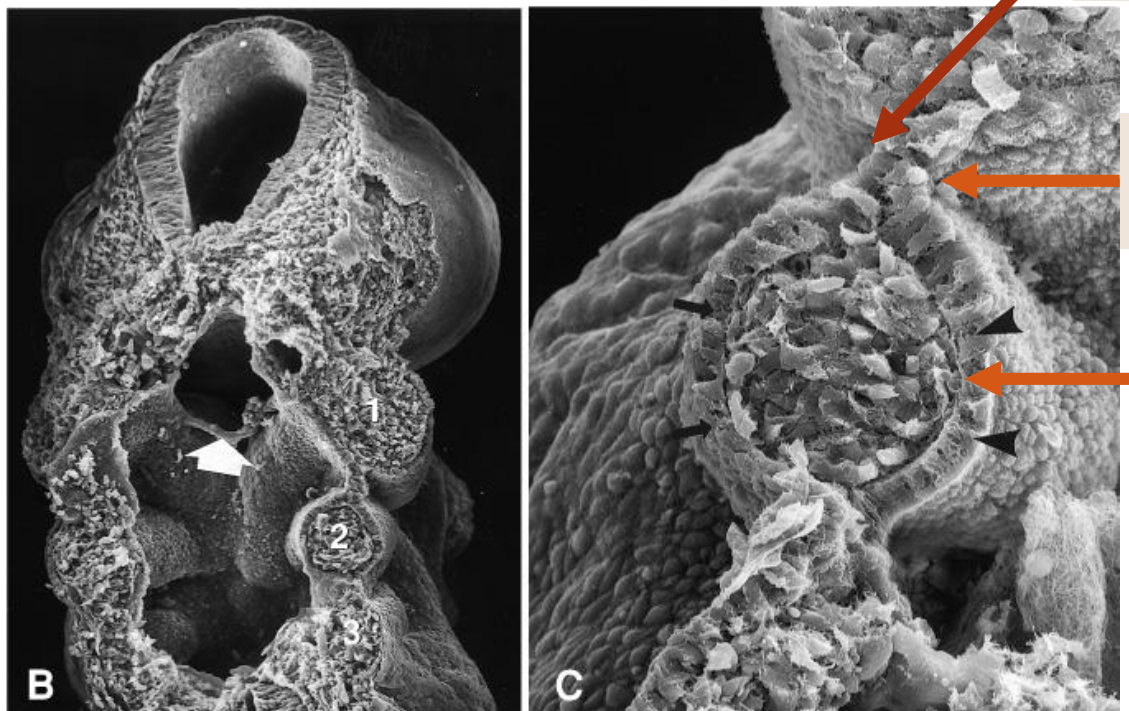




Derivados endodérmicos





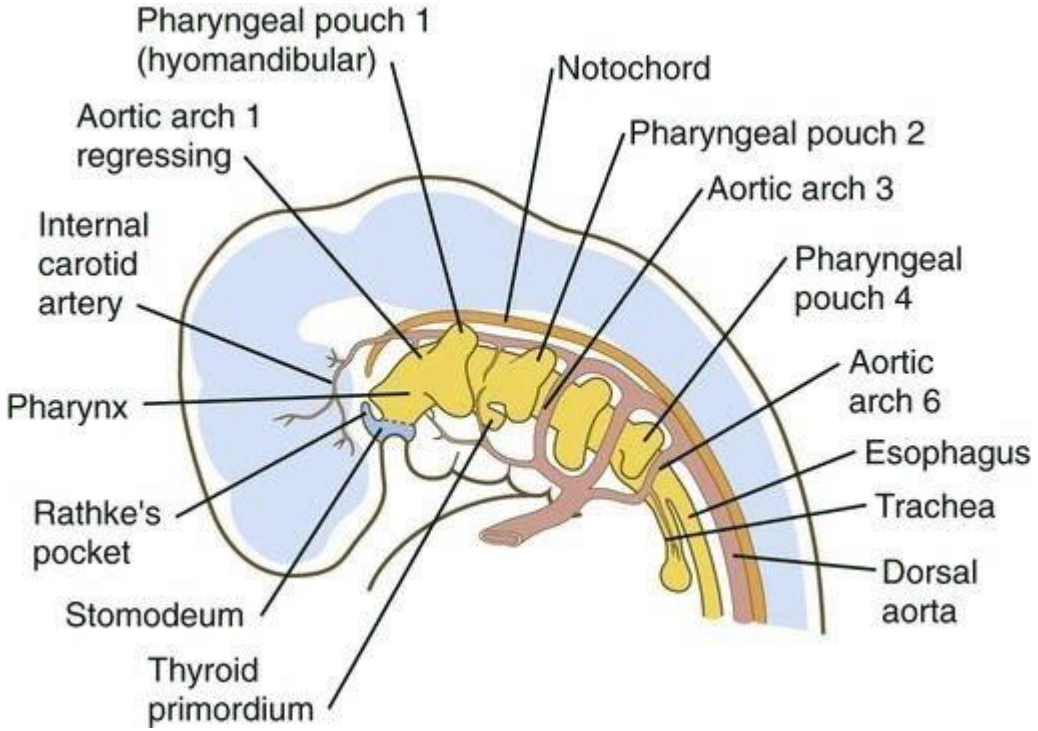


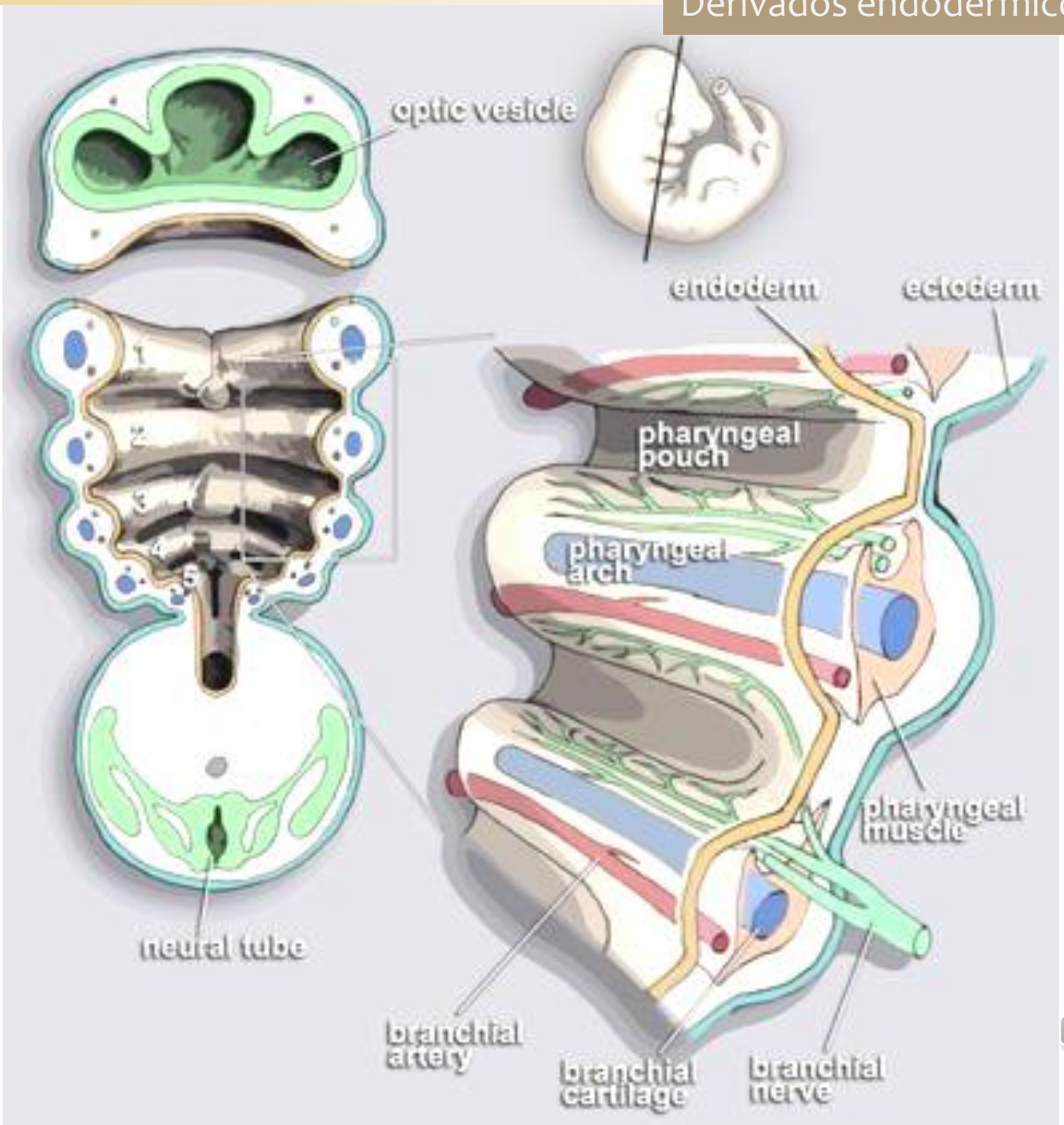
Hendiduras branquiales

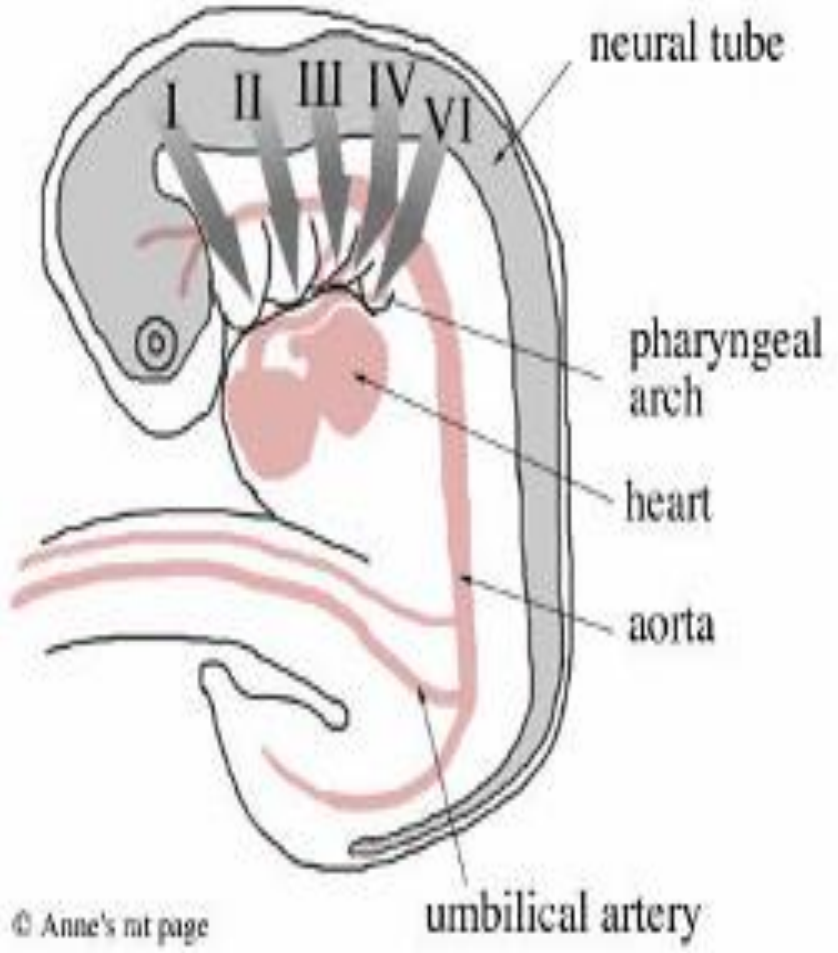
Bolsas faríngeas

Arcos branquiales

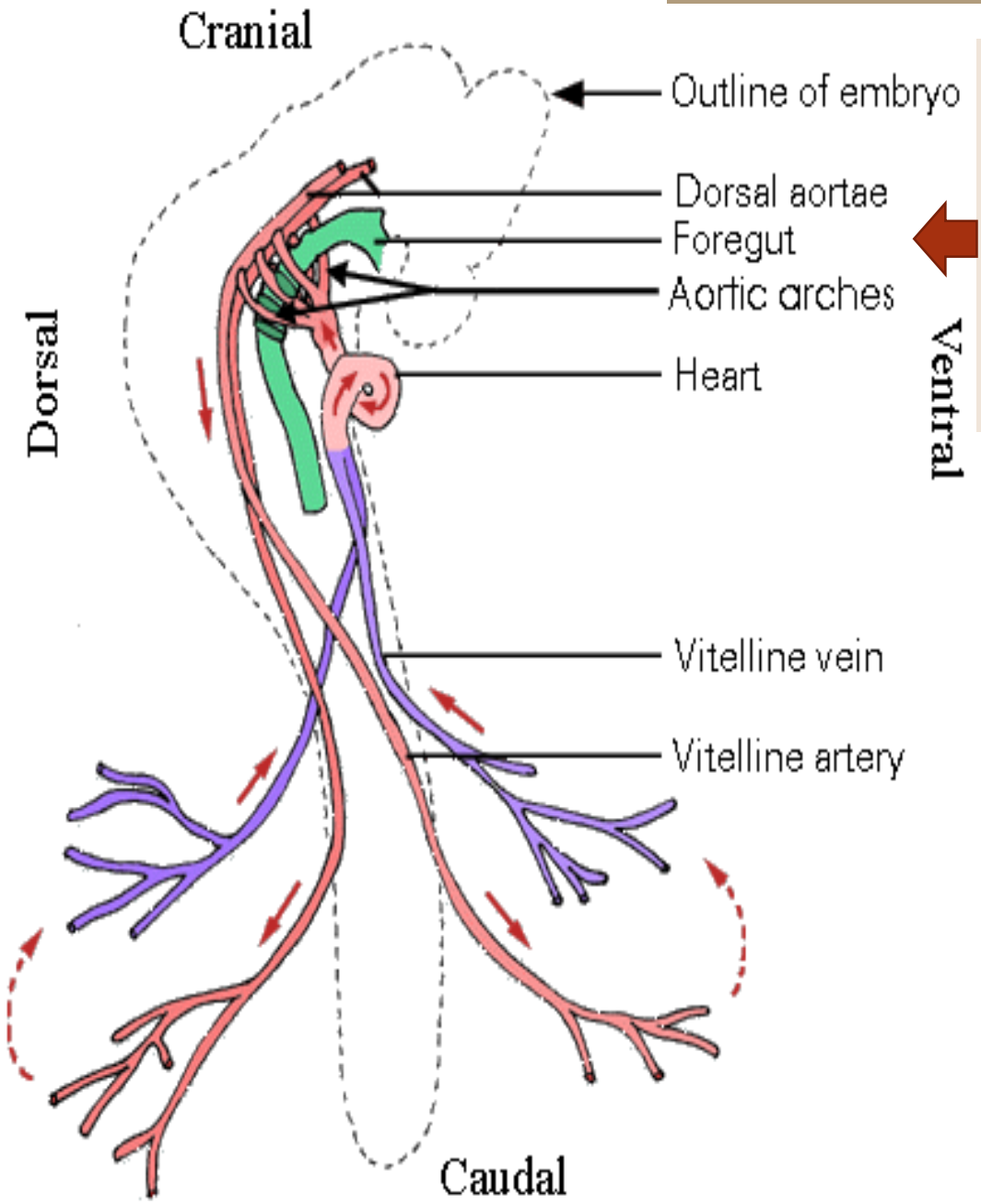
Derivados endodérmicos



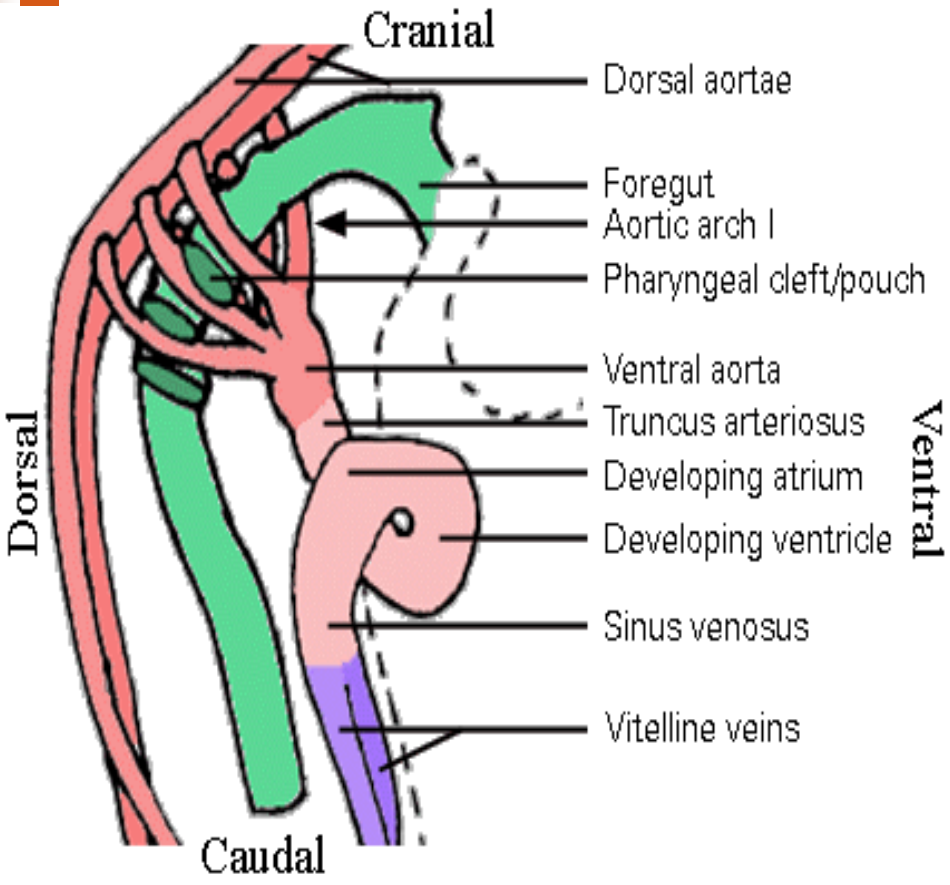




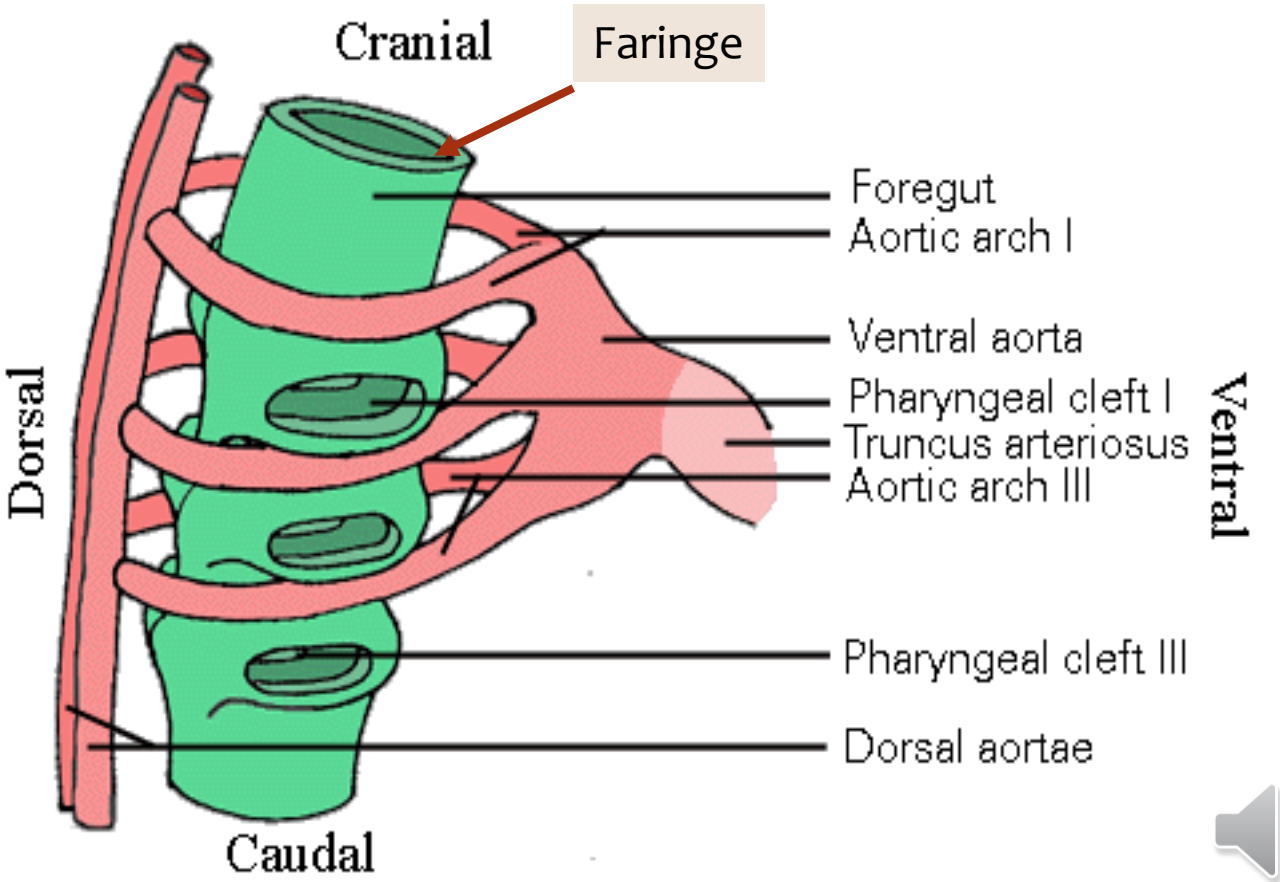
Células de la cresta neural forman el esqueleto de los arcos branquiales

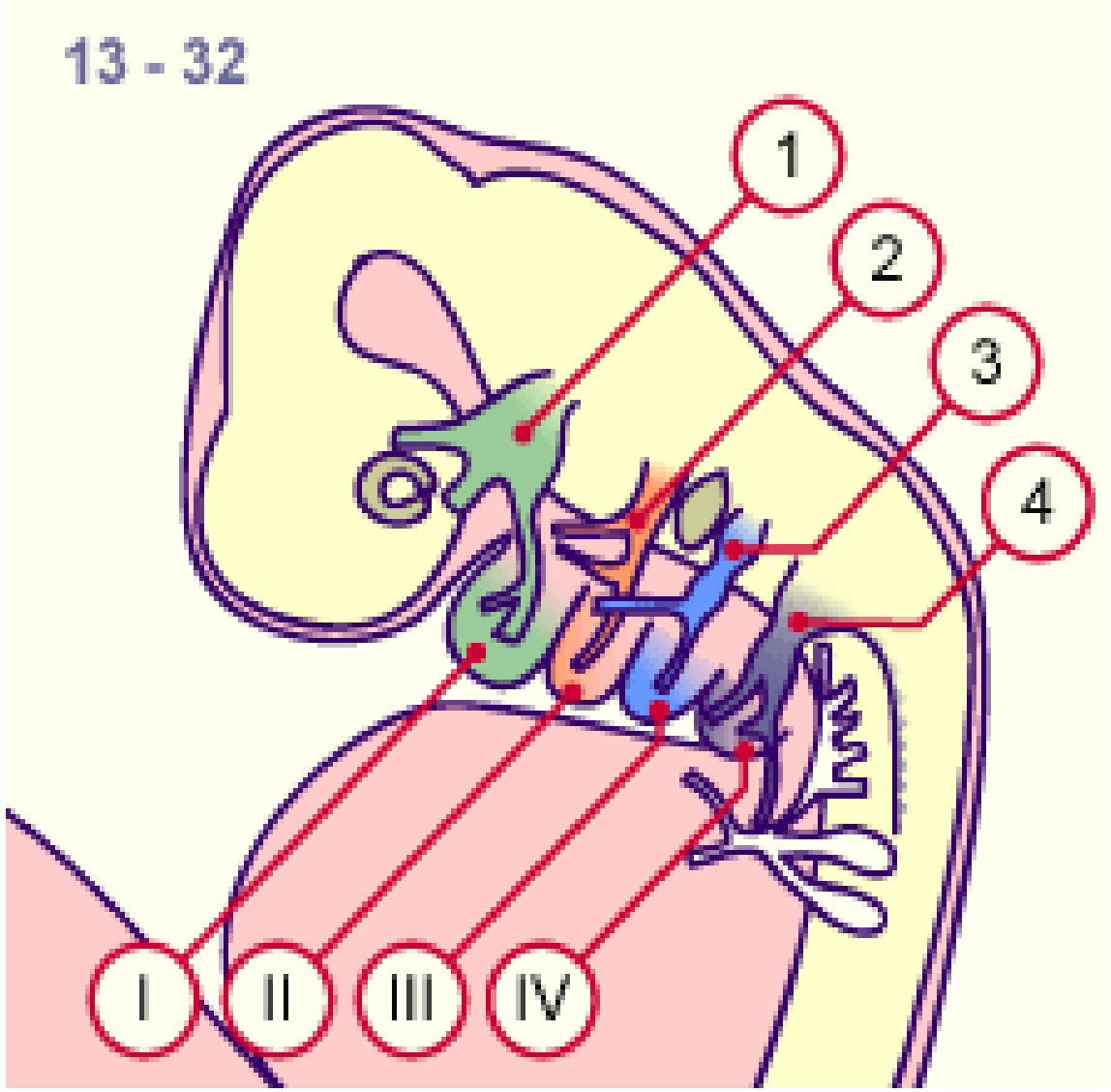


El mesodermo lateral esplácnico forma los arcos aórticos-



Arcos aórticos y hendiduras branquiales





1. Nervio trigémino
2. Nervio facial
3. Nervio glosofaríngeo
4. Nervio vago

I-IV cuatro arcos branquiales

Inervación de los arcos branquiales (ectodermo neural – rombencéfalo – y células de la cresta neural)

ARCOS BRANQUIALES

Una serie de 5-6 barras de cartílago se desarrollan sobre la región ventrolateral de la región cefálica

Los arcos se recubren de ectodermo, el ectodermo forma hendiduras branquiales

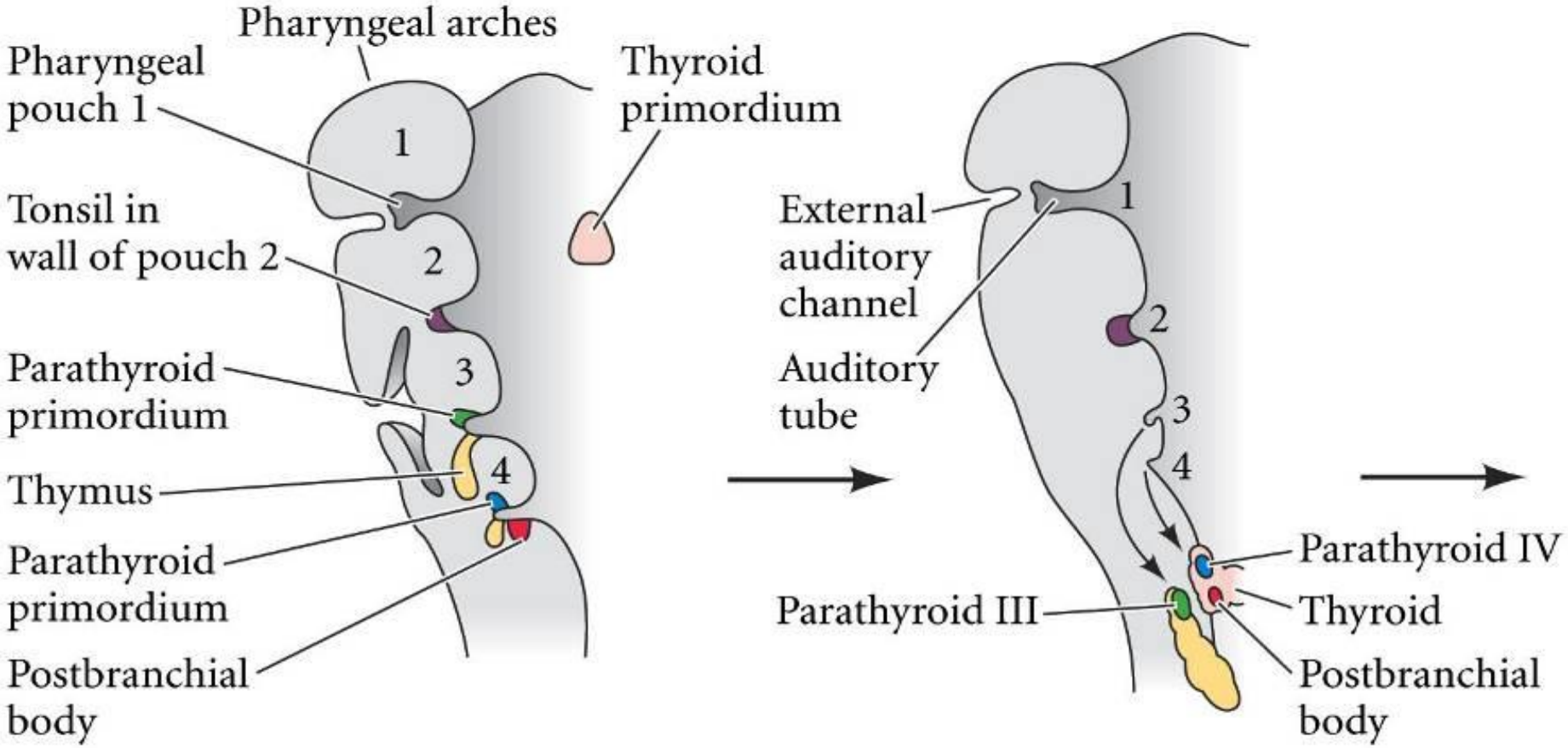
Los arcos se bordean internamente por la faringe que es endodérmica

La faringe forma bolsas faríngeas que convergen con las hendiduras faríngeas

Las bolsas y las hendiduras se aproximan formando la membrana faríngea

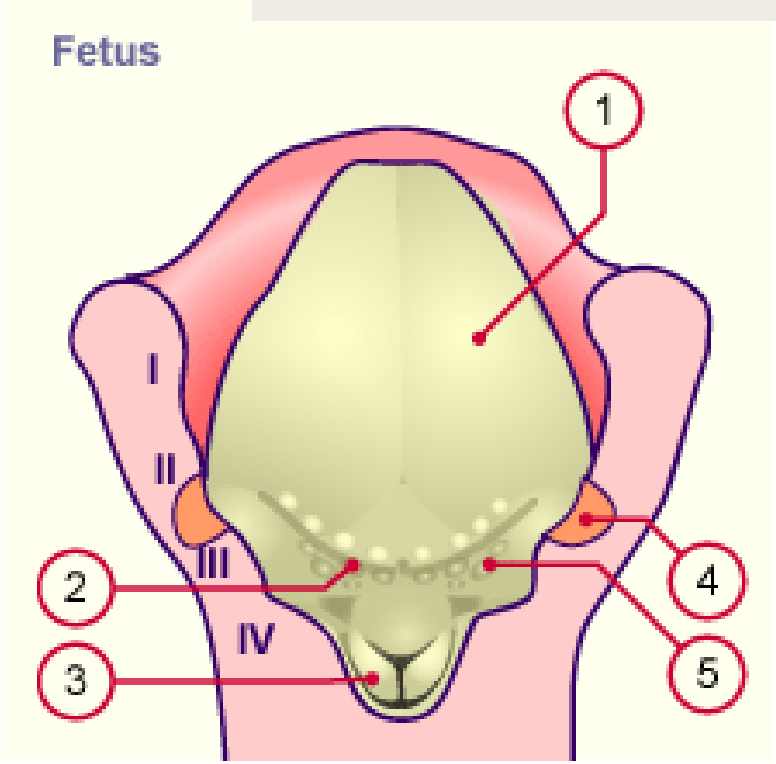
Cada arco contiene un centro cartilaginoso, un arco aórtico y un nervio craneal

Las glándulas derivadas de las bolsas faríngeas tienen origen endodérmico

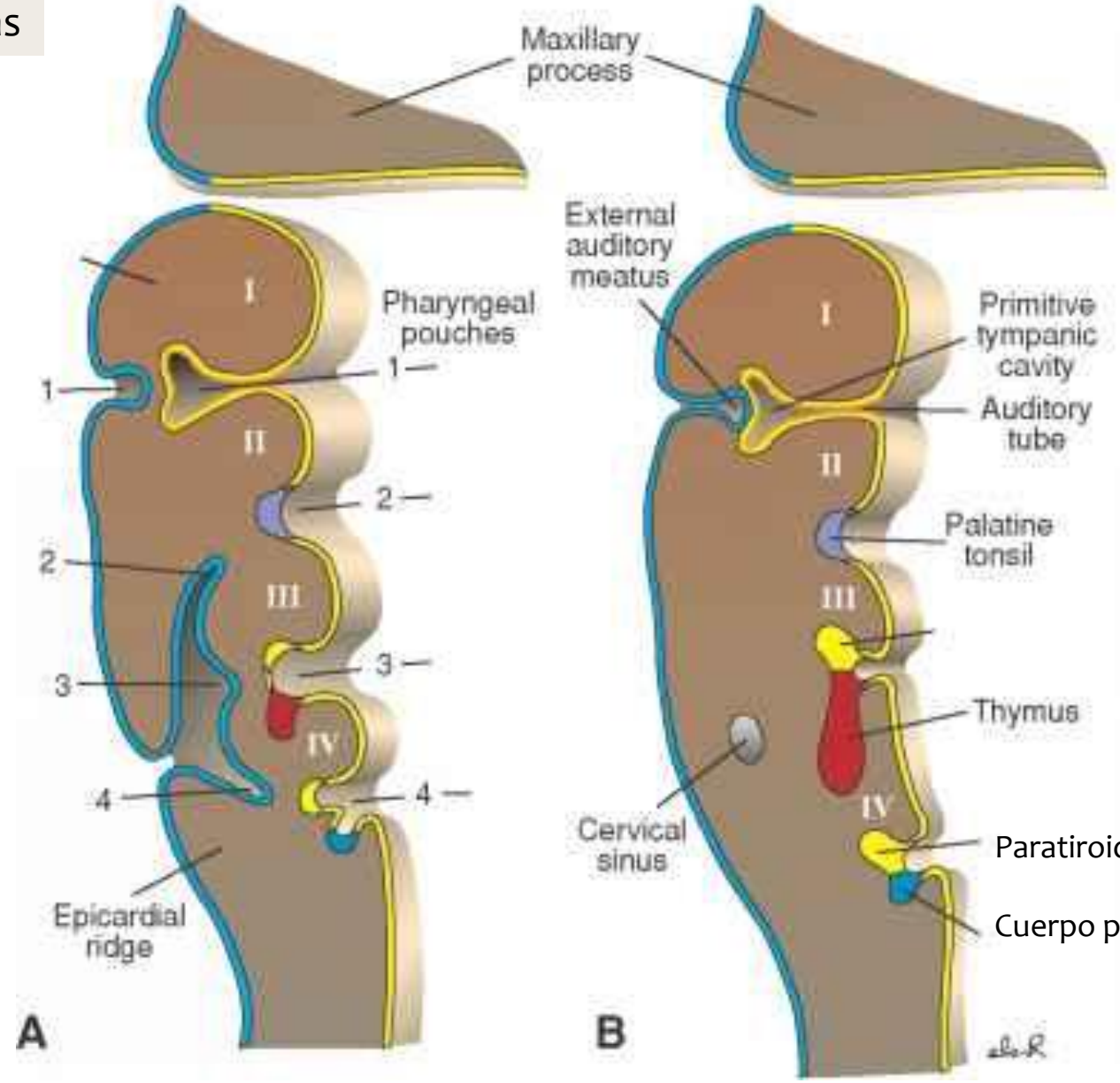


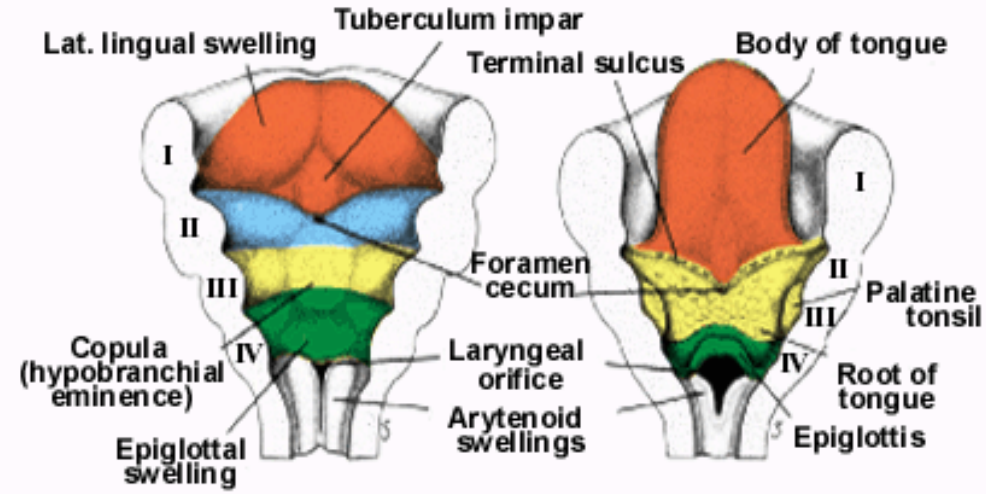
DEVELOPMENTAL BIOLOGY, Eighth Edition, Figure 15.25 (Part 1) © 2006 Sinauer Associates, Inc.

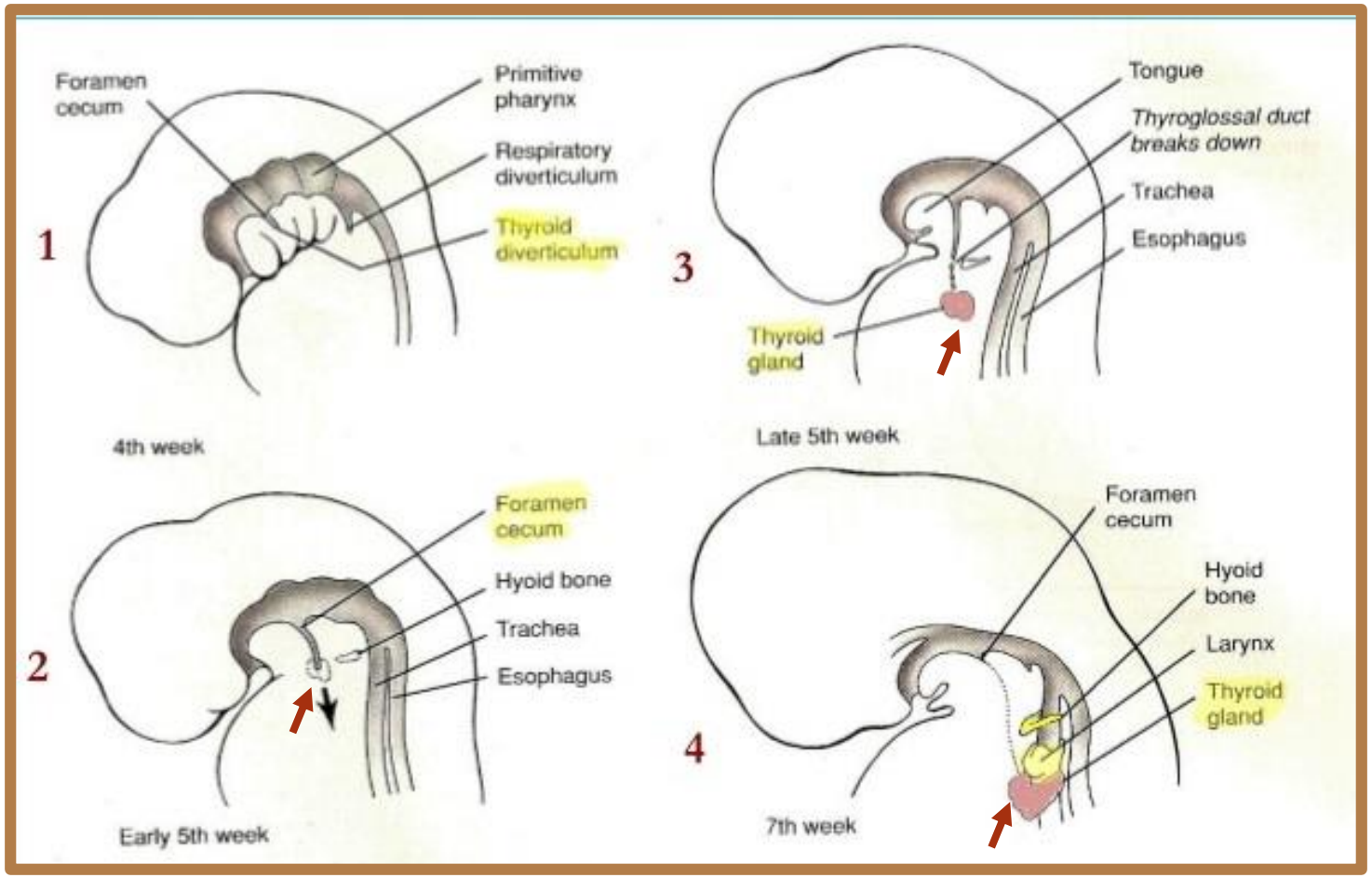
Derivados de las bolsas faríngeas



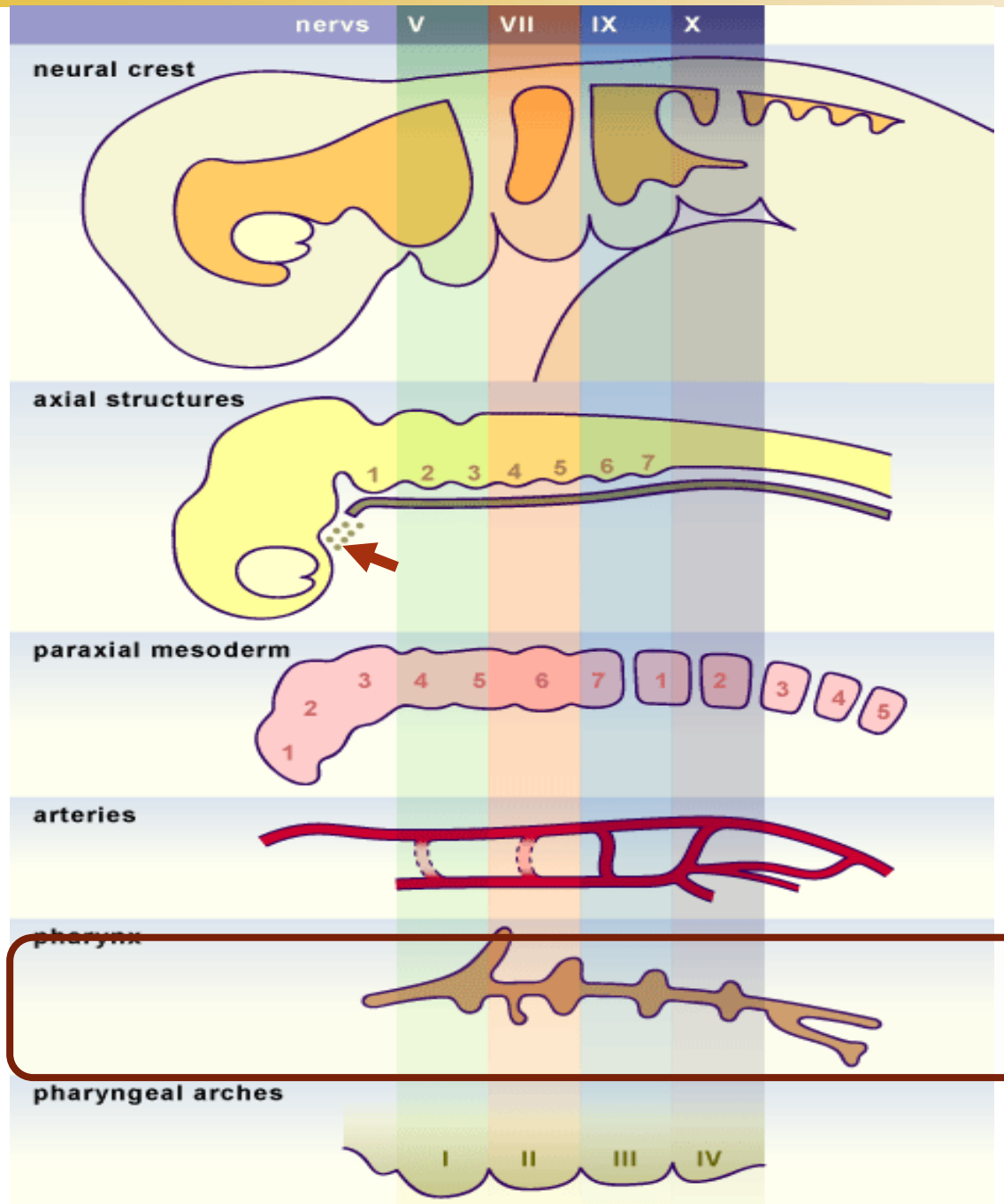
1. Lengua
2. Surco terminal
3. Prominencia aritenoide
4. **Amigdala**
5. Papila lenticular




Lat. lingual swelling
Tuberculum impar
Terminal sulcus
Body of tongue
I
II
III
IV
Foramen cecum
Copula (hypobranchial eminence)
Laryngeal orifice
Arytenoid swellings
Epiglottal swelling
Palatine tonsil
Root of tongue
Epiglottis


1
Foramen cecum
Primitive pharynx
Respiratory diverticulum
Thyroid diverticulum
4th week
2
Foramen cecum
Hyoid bone
Trachea
Esophagus
Early 5th week
3
Tongue
Thyroglossal duct breaks down
Trachea
Esophagus
Thyroid gland
Late 5th week
4
Foramen cecum
Hyoid bone
Larynx
Thyroid gland
7th week

Organización de la cabeza y la región faríngea con los diferentes tejidos.



Del ectodermo neural, las células de la cresta neural migran ventralmente en la región faríngea.

El notocordo (en marrón) ejerce su acción inductora hasta la región del primer arco branquial (1).

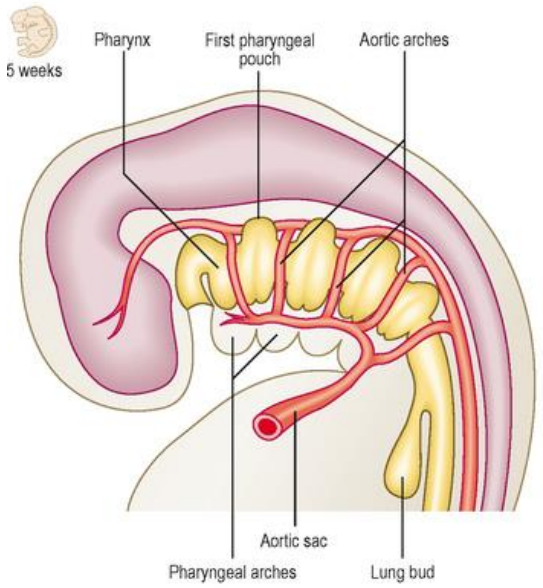
El mesodermo paraxial es parcialmente metamerizado en la región faríngea y cefálica (somitómeros 1-7).

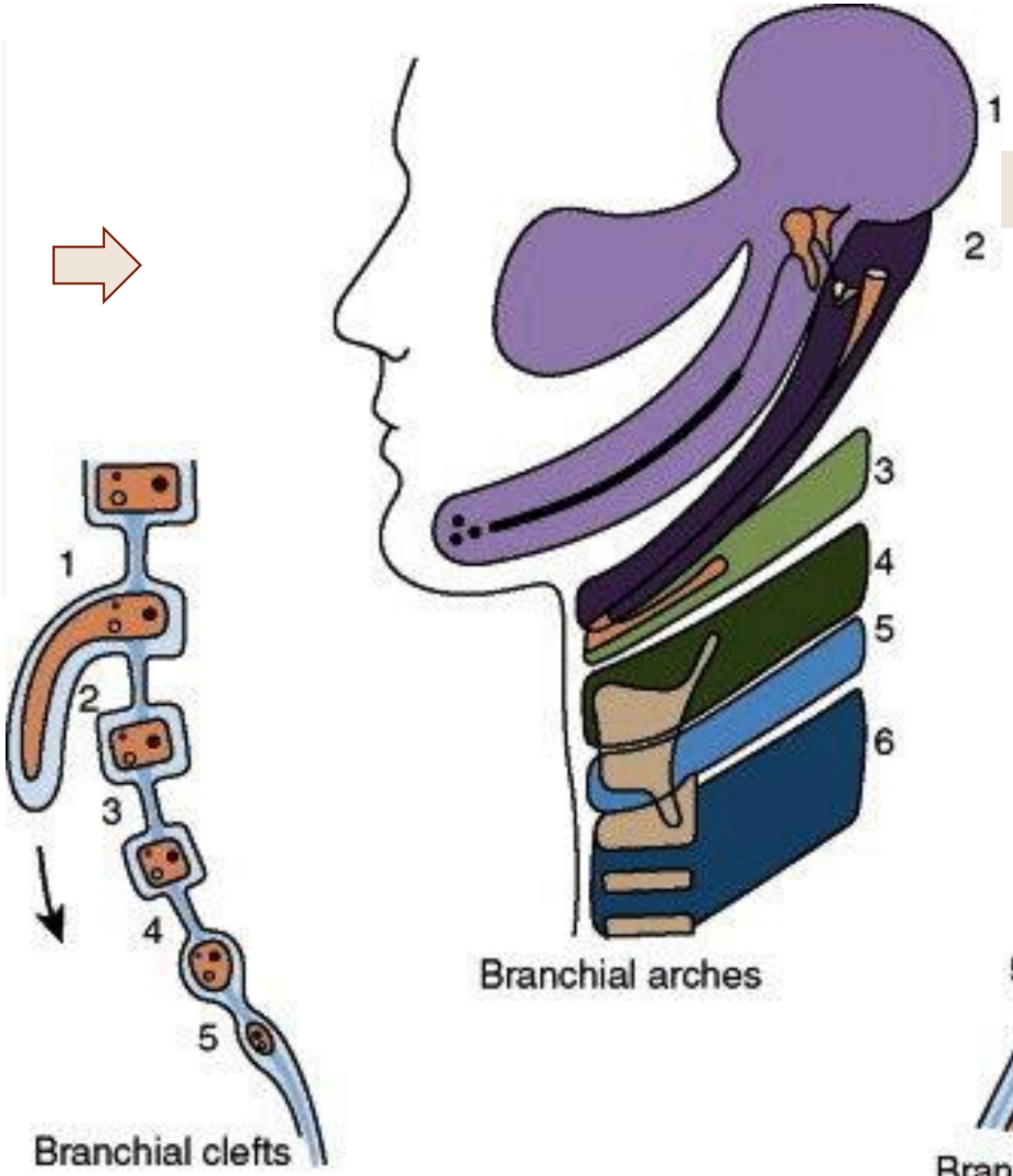
Un gran arco aórtico que descarga en la aorta pasa a través de cada arco faríngeo junto con un nervio craneal y mesénquima precartilaginoso.

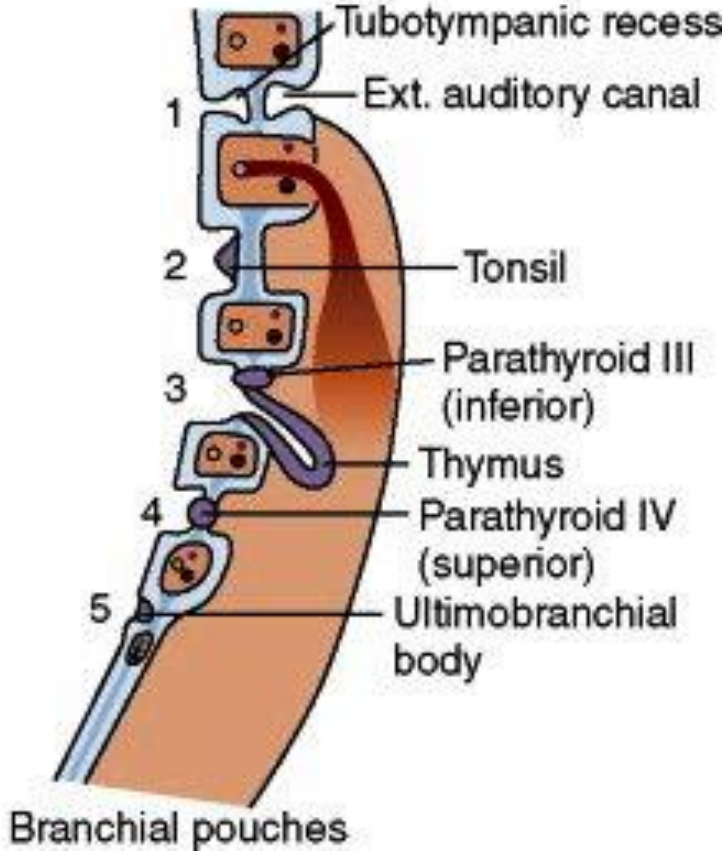
La faringe con sus bolsas que formarán glándulas.

Los arcos faríngeos en su región externa.

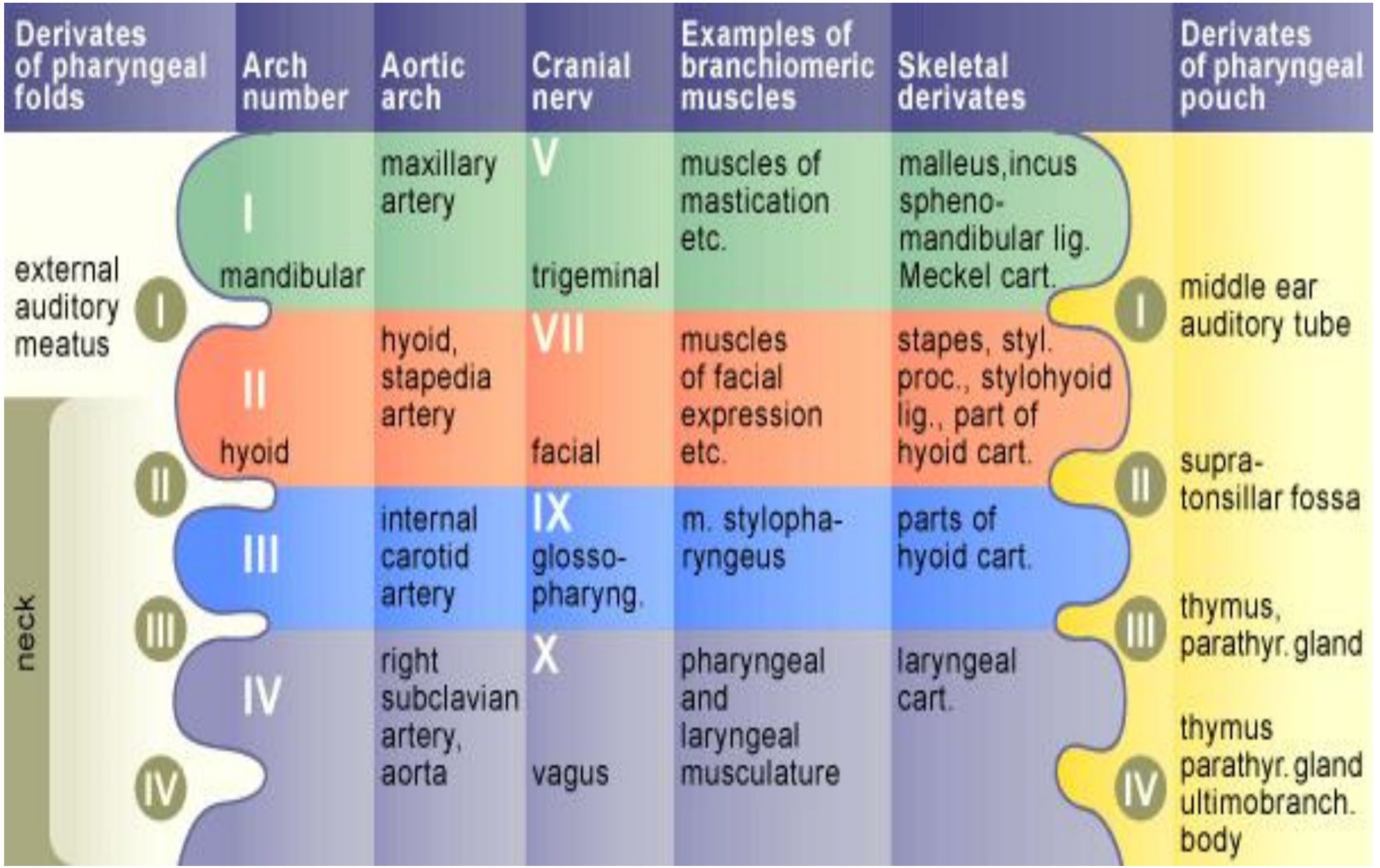
Derivados de los arcos branquiales



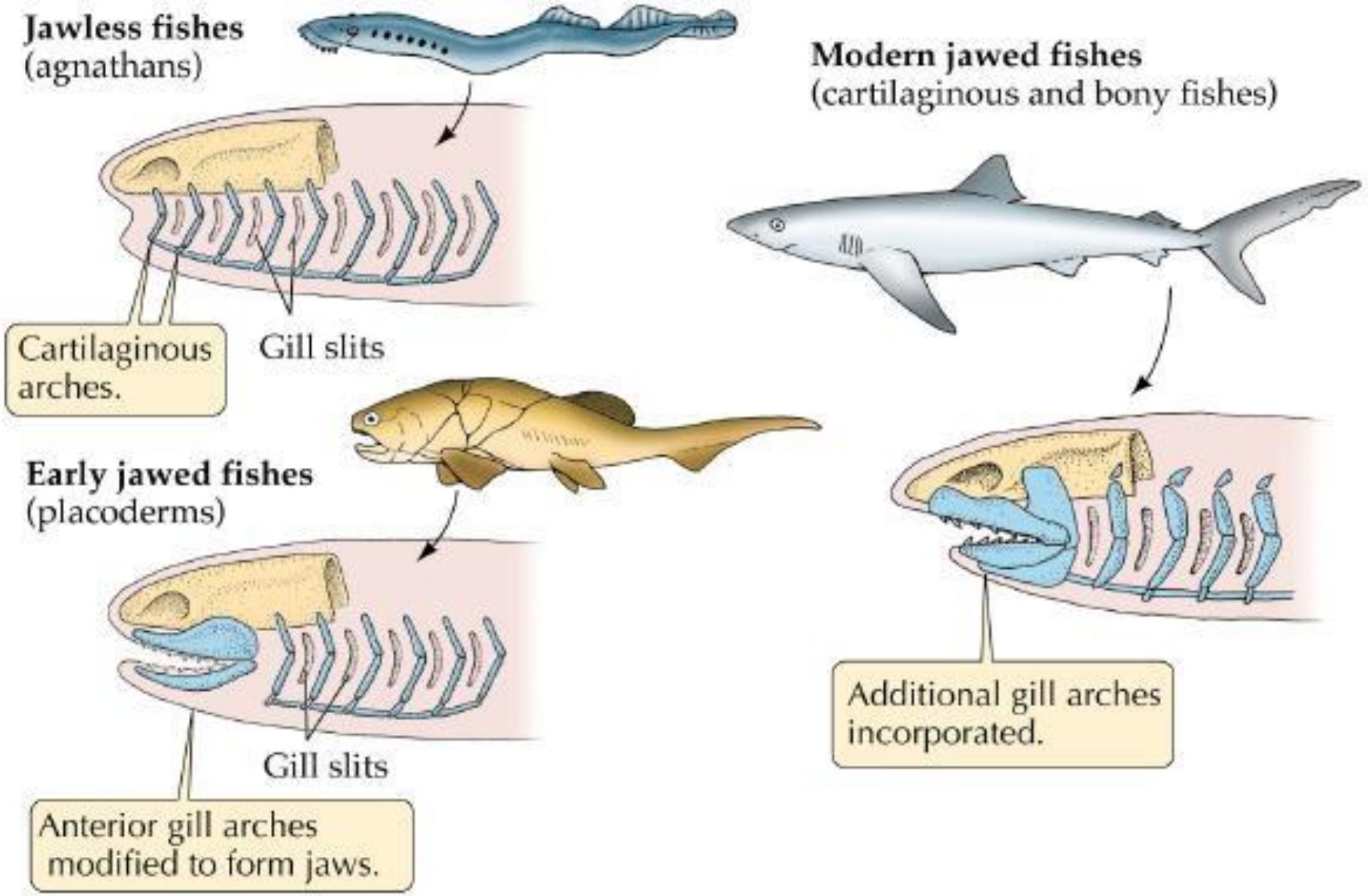


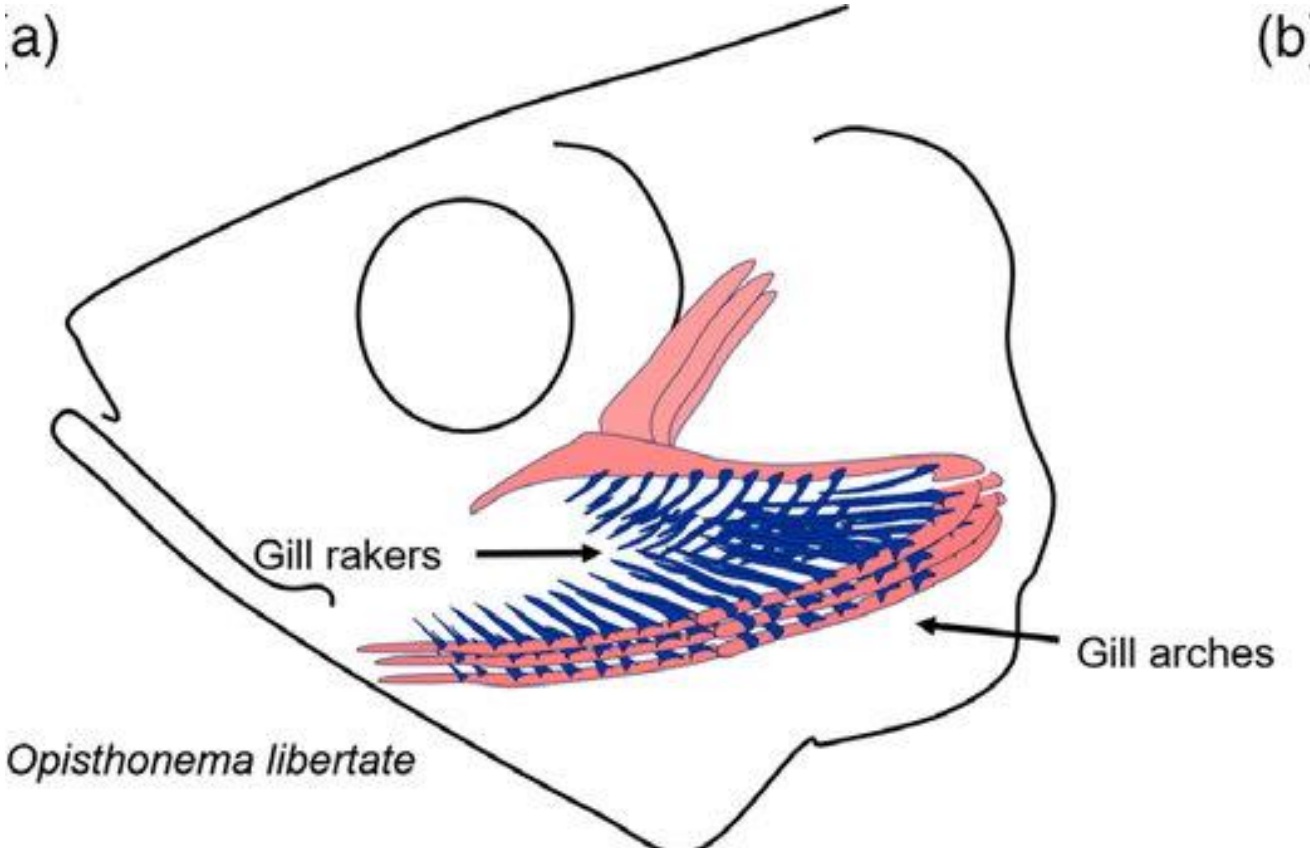


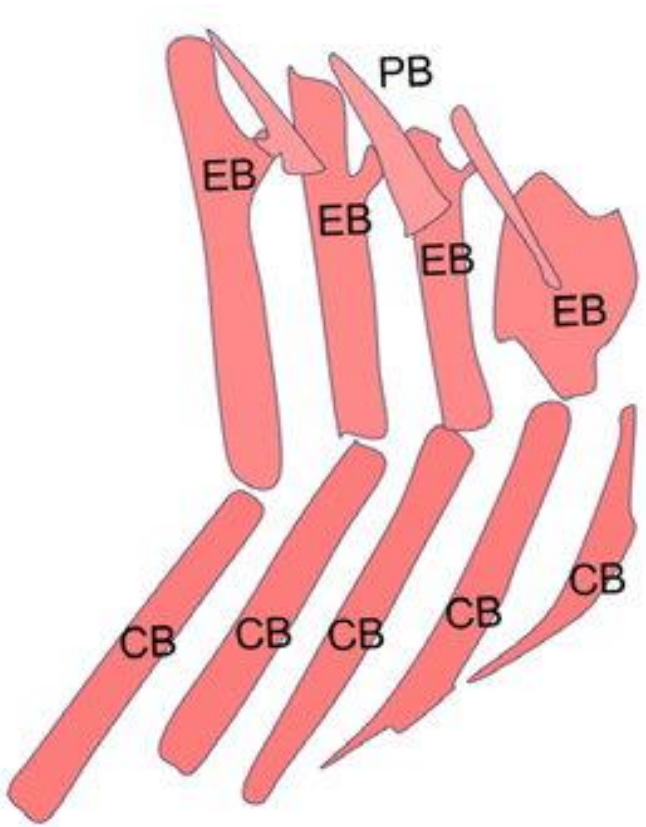
ectodermo

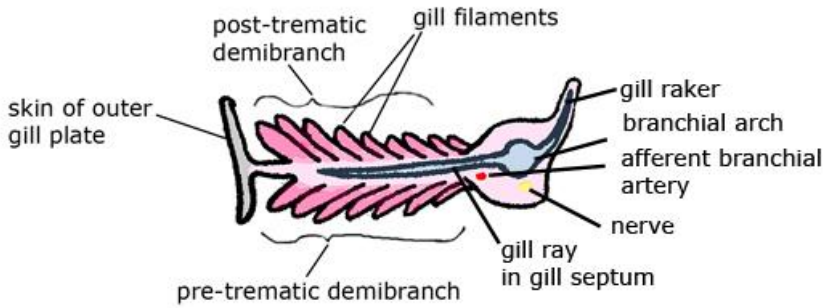


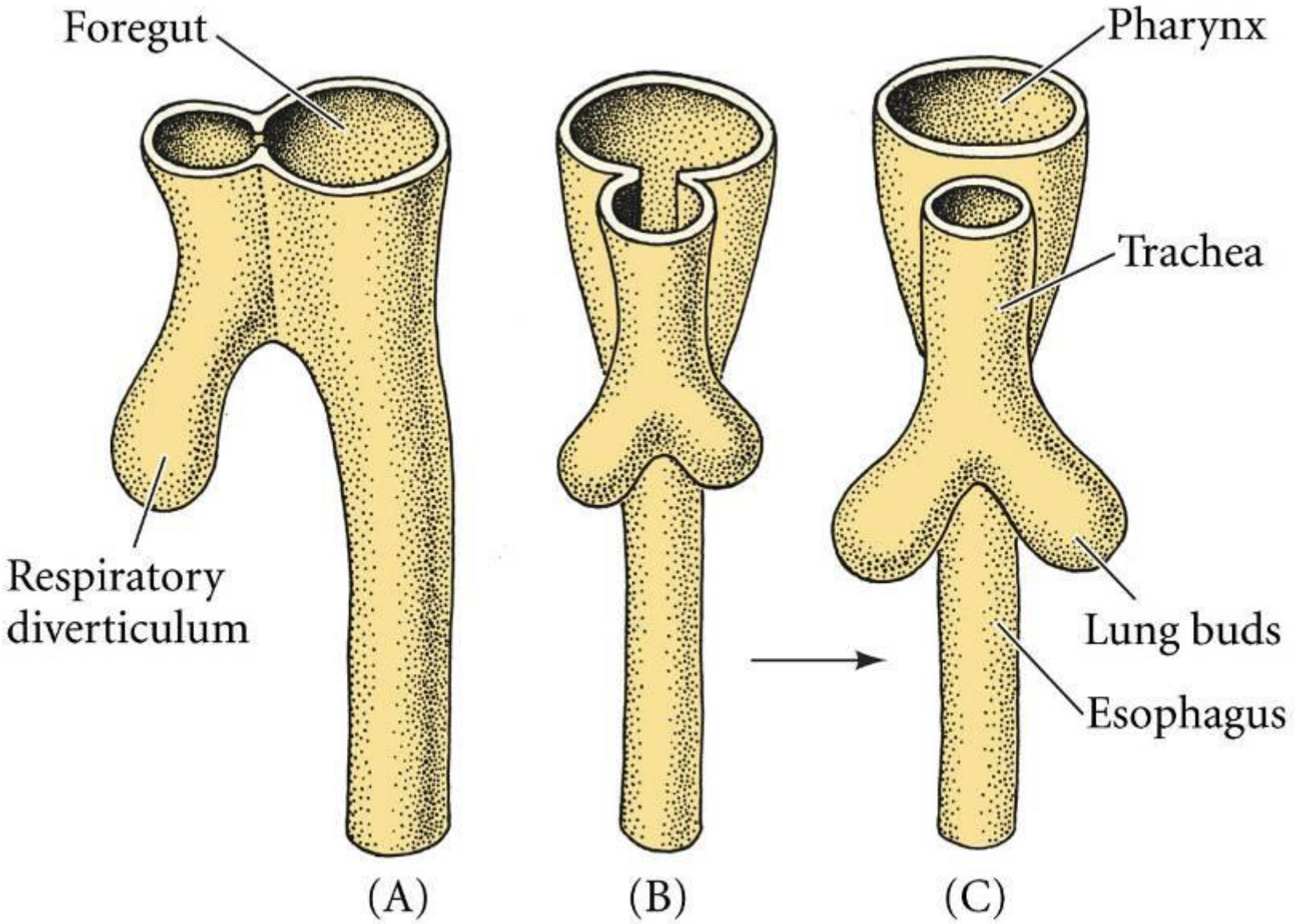
endodermo




(a)
Gill rakers
Gill arches
Opisthonema libertate


(b)
PB
EB
EB
EB
EB
CB
CB
CB
CB
CB


post-trematic demibranch
gill filaments
skin of outer gill plate
gill raker
branchial arch
afferent branchial artery
nerve
gill ray in gill septum
pre-trematic demibranch



Del intestino anterior derivan los pulmones, el endodermo de la tráquea y pulmones es endodérmico