The University Of Jordan
Faculty Of Medicine

Derivatives of the three germ layers

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Derivatives of Ectoderm

1- The epidermis of the skin including skin glands ,hair & nails

2. Nervous system :

- ***The neural tube*** gives brain , spinal cord , Peripheral nerves.
- ***Sensory*** epithelium of sensory organs eg. Olfactory epithelium and taste buds .

3. Ear : external auditory meatus & outer layer of ear drum .

4. Respiratory system : nasal epithelium

5. Gastrointestinal tract : anterior part of oral cavity and lower ½ of anal canal .

Neural crests:

They are: 2 strips of ectodermal cells present on both sides of neural plate

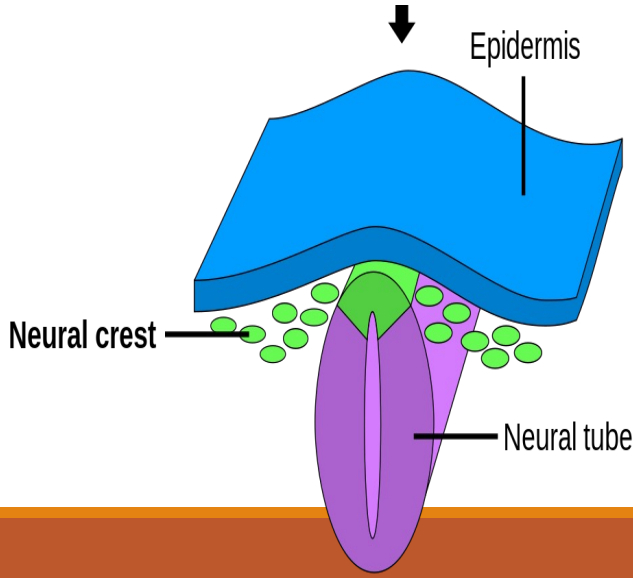
Derivatives

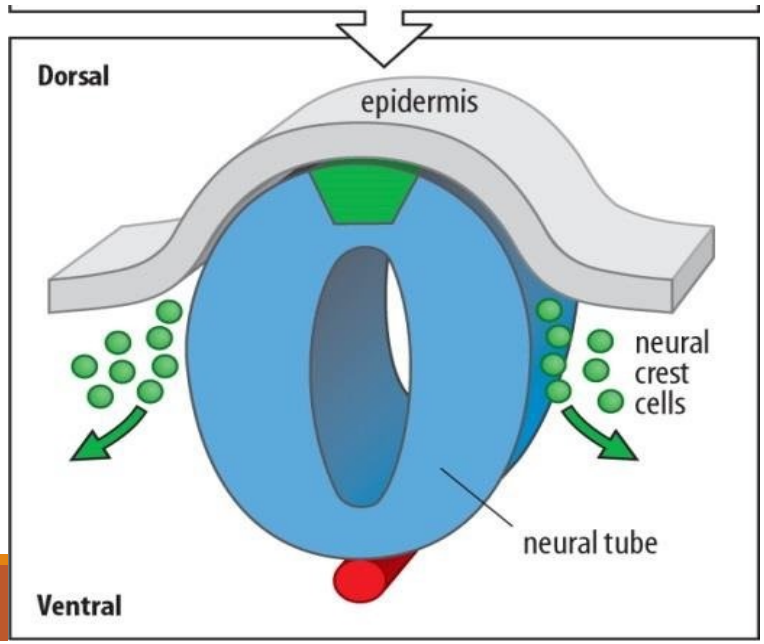
1.Ganglia: sensory, sympathetic & parasympathetic.

2.Cells : Glial and melanocyte cells

3.Adrenal medulla

4.Septum between ascending aorta & pulmonary trunk





- **Derivatives of Endoderm :**

1- Epithelium lining of

A. Gastrointestinal tract **Except** anterior part of oral cavity and lower ½ of anal canal

B. Most of urinary bladder and urethra

C. Middle ear and Eustachian tube

2-Parenchyma of Palatine tonsils, thyroid, Liver & pancreas

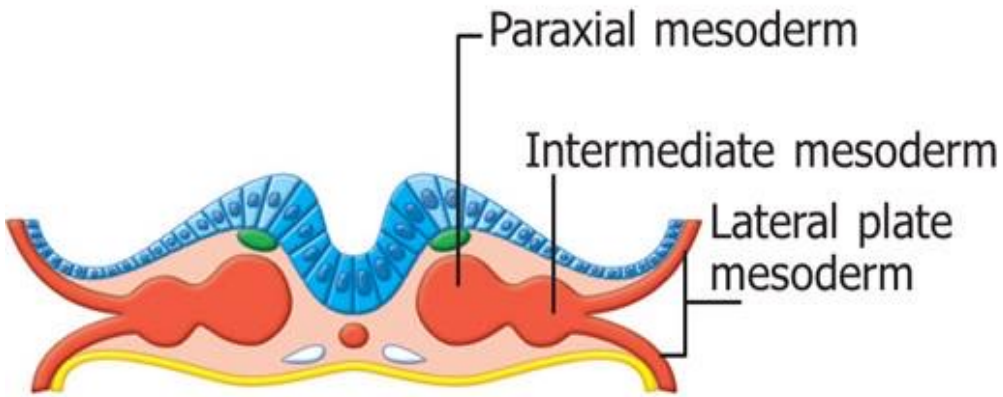
c) Development of the intraembryonic mesoderm :

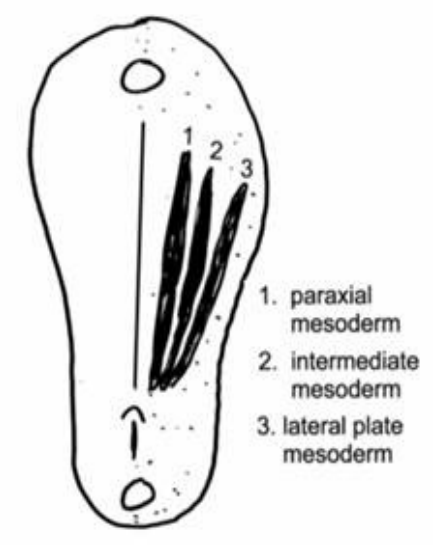
At 17th Day it differentiates into

a) Paraxial mesoderm

b) Intermediate mesoderm:

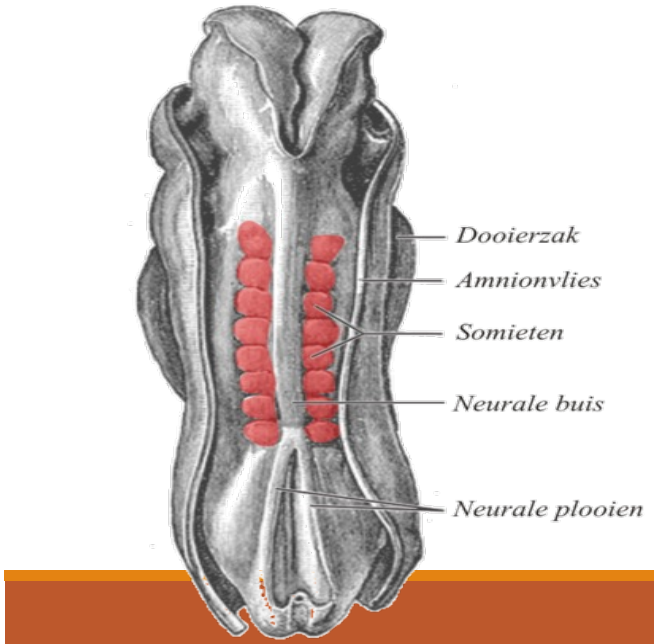
c) Lateral plate mesoderm:

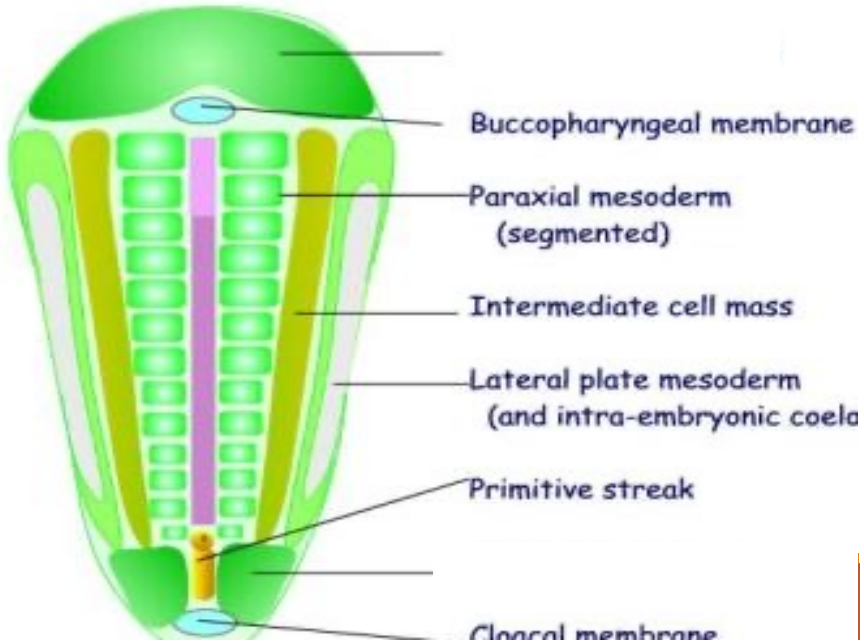




1- Paraxial mesoderm:

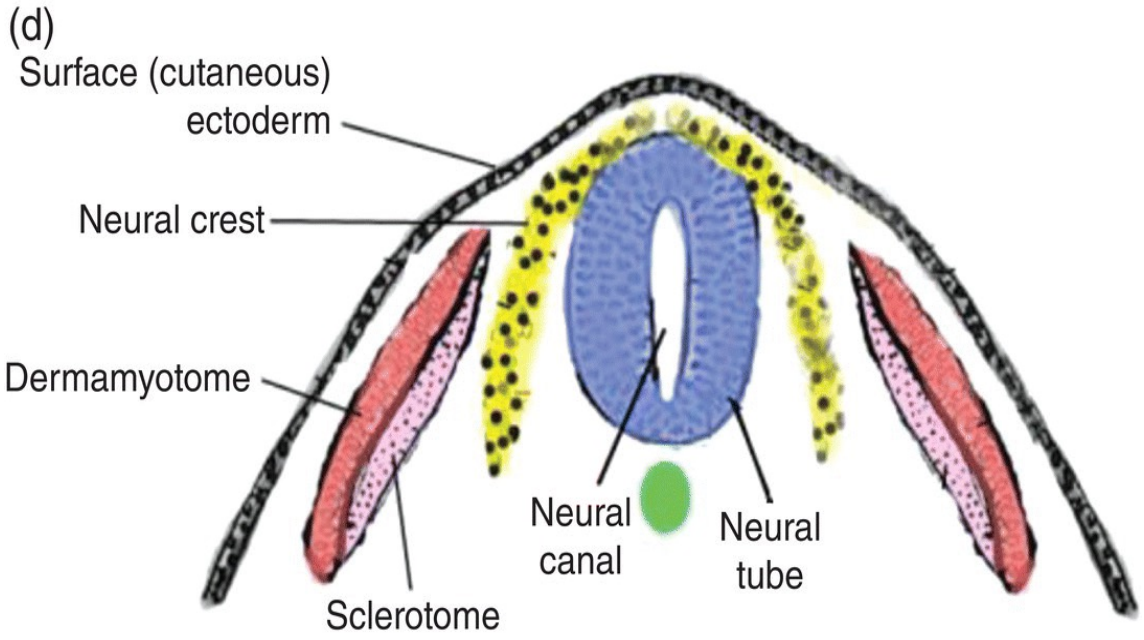
- It is segmented in the head region to form 7 ***somitomeres*** which gives skeletal muscles of face , jaws and throat .
- It is segmented from the occipital region caudally to form the ***somites***.

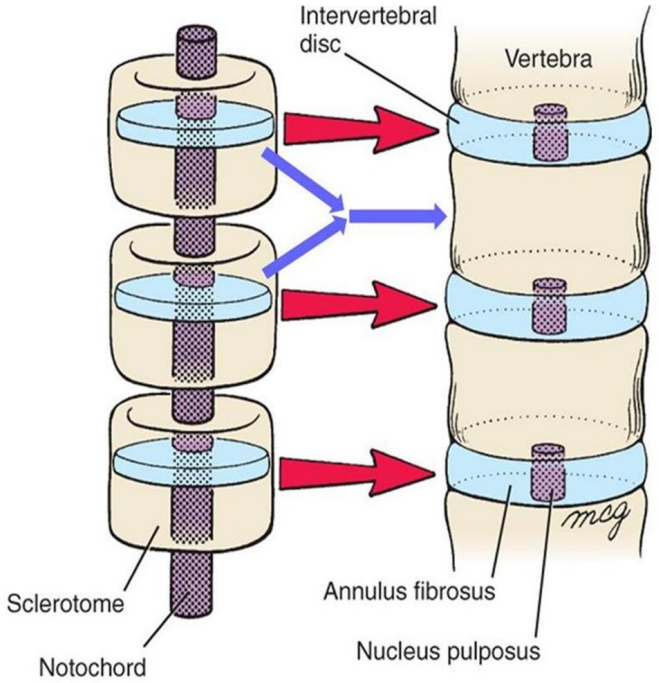




Derivatives of somites : Each somite **divides** into :

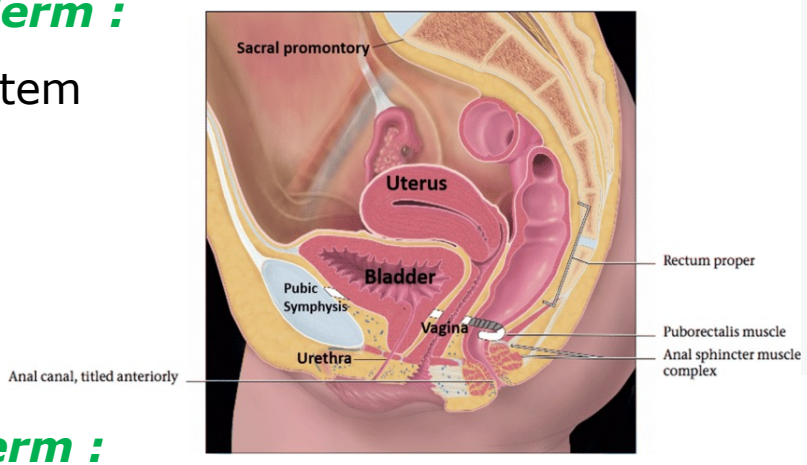
- **A ventro-medial part** called the ***sclerotome*** which surround the neural tube & notochord to form the **vertebral column**.
- **A dorso-lateral part** called the ***dermo-myotome*** which divides into ***dermatome*** which form the dermis of skin and ***myotome*** which form the striated muscles .

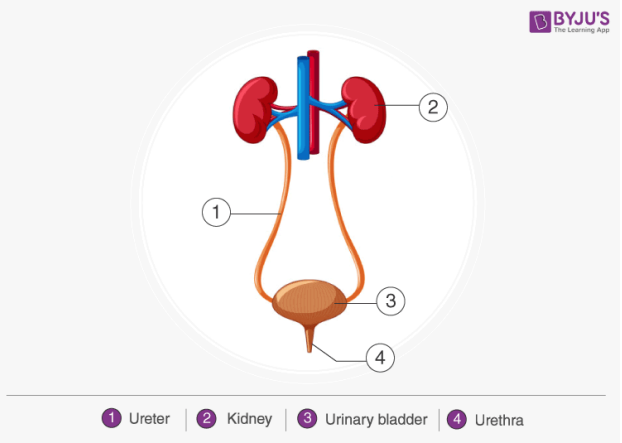




2. Intermediate mesoderm :

Most of the urogenital system





3. Lateral plate mesoderm :

A U shaped cavity in the lateral plate mesoderm is formed ; it is called the intraembryonic coelomic cavity

- The central part will form the pericardial cavity.
- The cranial part of the 2 limbs will form the 2 pleural cavity.
- The caudal part of the 2 limbs will form the peritoneal cavity .

The intraembryonic coelomic cavity **divides the lateral plate mesoderm** into:

The somatic mesoderm:

1-It becomes adherent to ectoderm to forms the striated muscles and connective tissue of the **lateral & ventral aspect of body wall** .

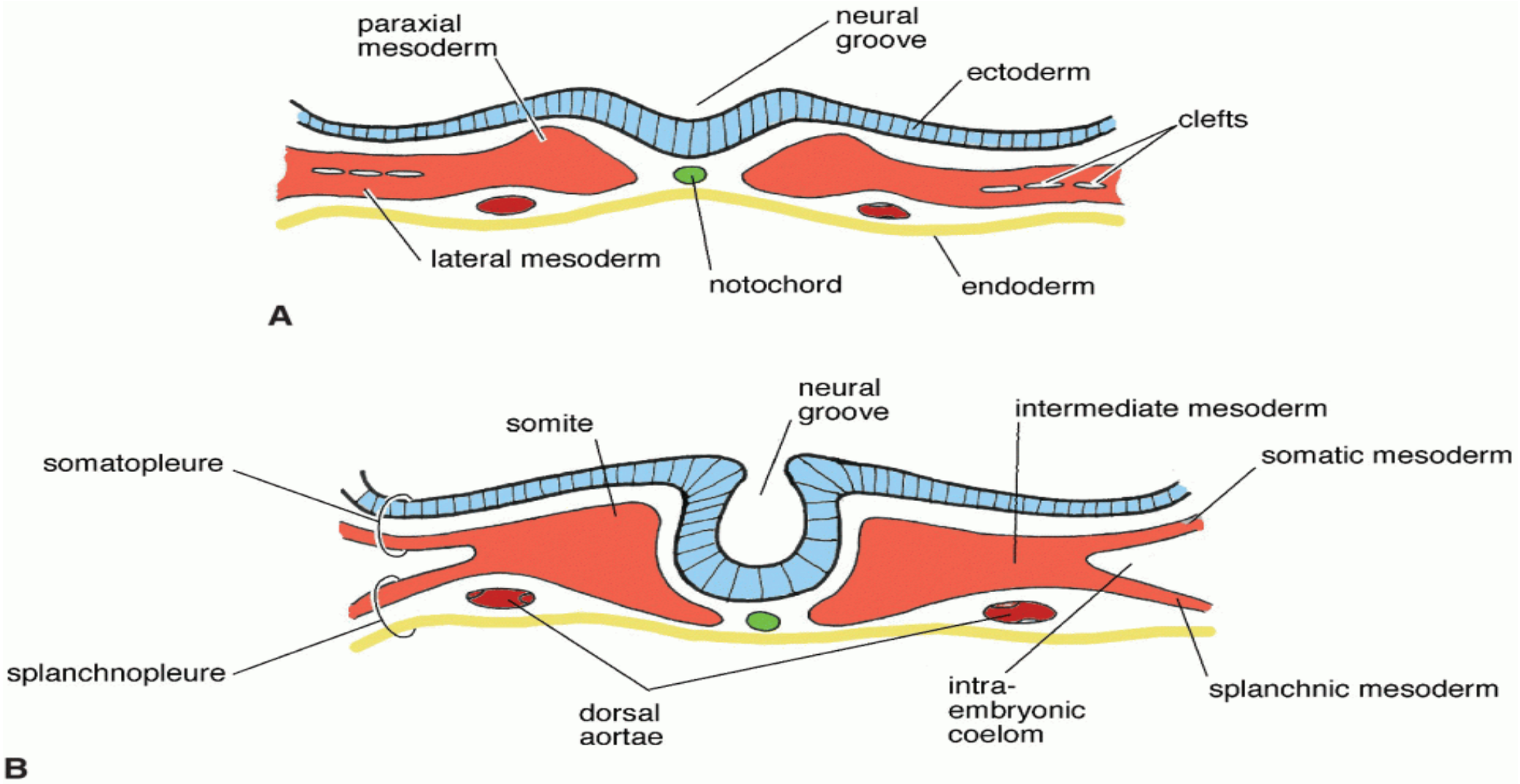
2-Parietal layers of **serous membranes** (pericardial ,pleural and peritoneum)

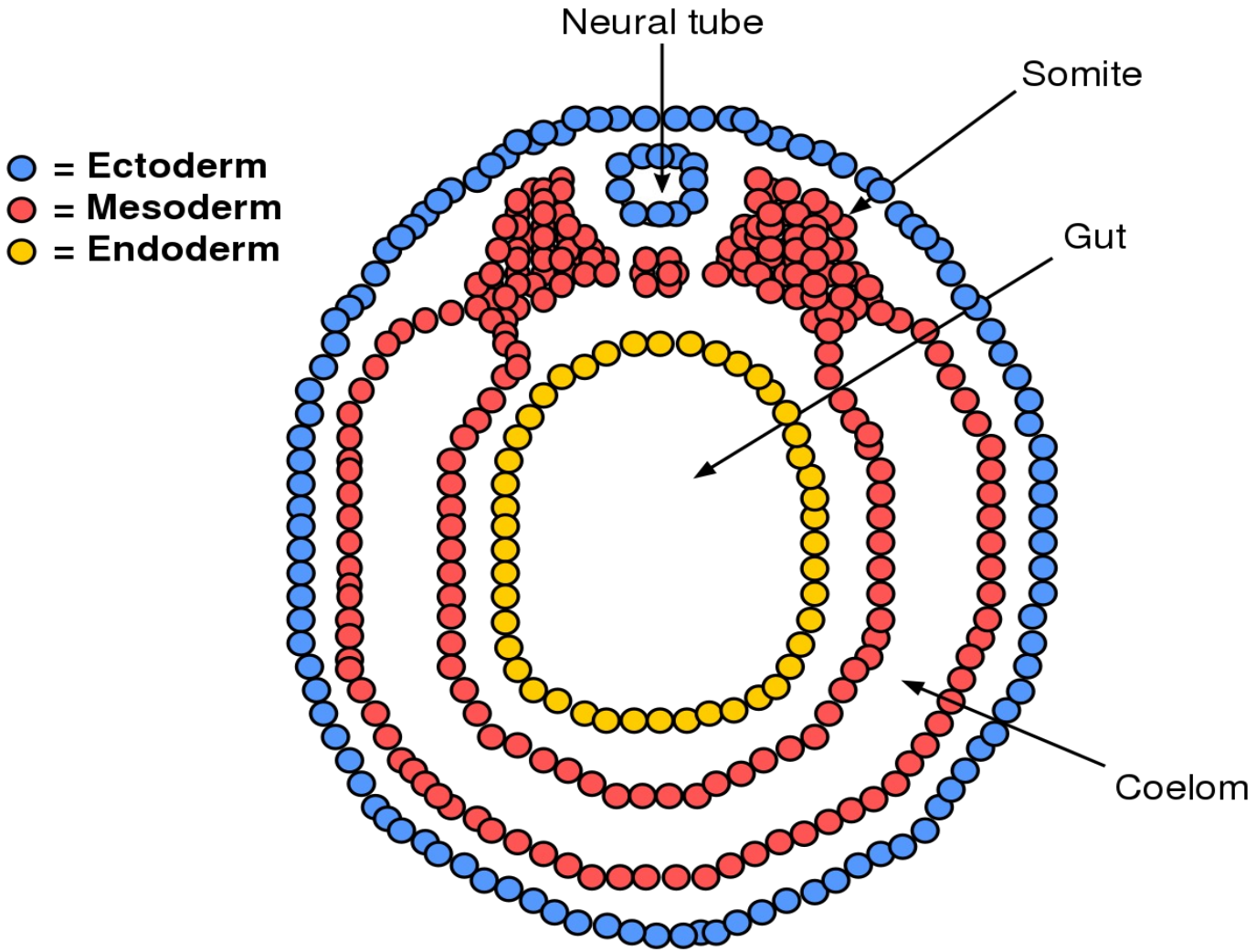
The splanchnic mesoderm:

1-It becomes adherent to endoderm to forms the smooth muscles and connective tissue of the **gut & respiratory system .**

2-Cardiac muscles .

3-Visceral layer of **serous membranes** (pericardial ,pleural and peritoneum)


paraxial mesoderm
neural groove
ectoderm
clefts
lateral mesoderm
notochord
endoderm
A
somite
neural groove
intermediate mesoderm
somatopleure
somatic mesoderm
splanchnopleure
dorsal aortae
intra-embryonic coelom
splanchnic mesoderm
B


= Ectoderm
= Mesoderm
= Endoderm
Neural tube
Somite
Gut
Coelom

Three Germ Layers

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- ***Sensory*** epithelium of sensory organs

3. External auditory meatus & outer layer of ear drum .
4. Nasal epithelium
5. Anterior part of oral cavity and lower ½ of anal canal .

Neural crest

1.Ganglia

2.Cells : Glial and melanocyte cells

3.Adrenal medulla

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Endoderm

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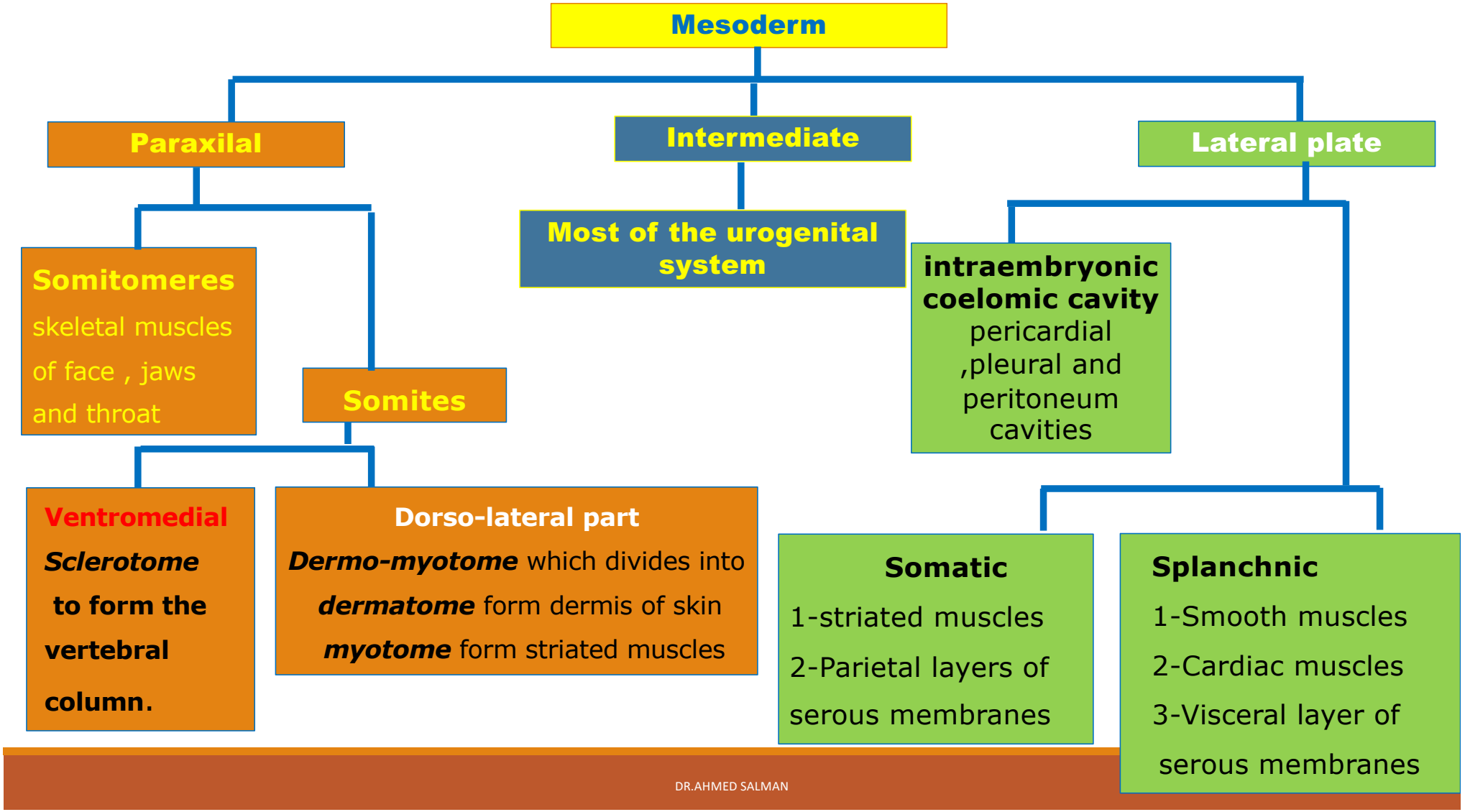
A. Most of GIT

B. Most of urinary bladder and urethra

C. Middle ear and Eustachian tube

2-Parenchyma of

Palatine tonsils, thyroid, Liver & pancreas


Mesoderm
Paraxilal
Intermediate
Lateral plate
Somitomeres
skeletal muscles of face , jaws and throat
Somites
Most of the urogenital system
intraembryonic coelomic cavity
pericardial ,pleural and peritoneum cavities
Ventromedial
Sclerotome
to form the vertebral column.
Dorso-lateral part
Dermo-myotome which divides into
dermatome form dermis of skin
myotome form striated muscles
Somatic
1-striated muscles
2-Parietal layers of serous membranes
Splanchnic
1-Smooth muscles
2-Cardiac muscles
3-Visceral layer of serous membranes


THANK YOU