

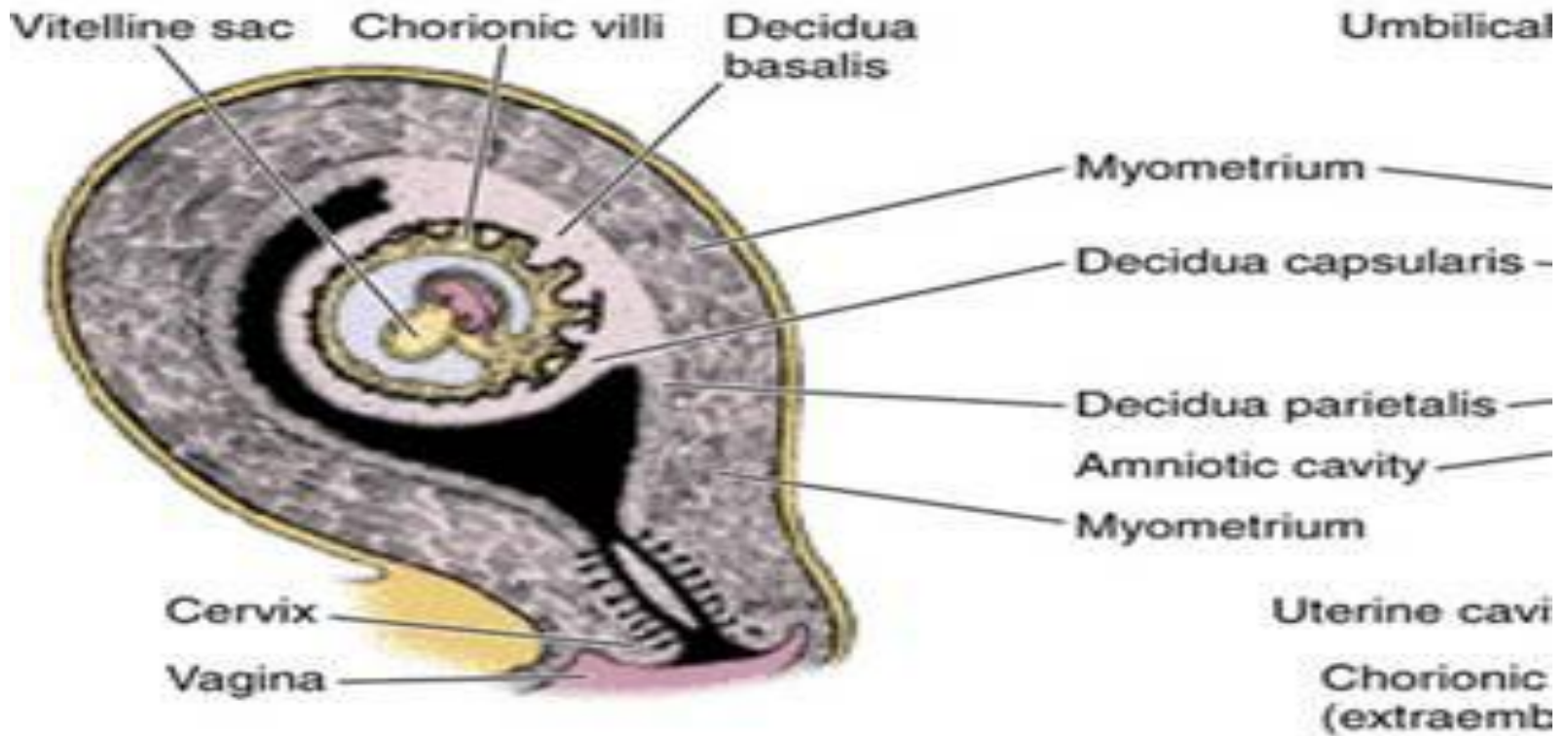
Formation of tri laminar embryonic disc

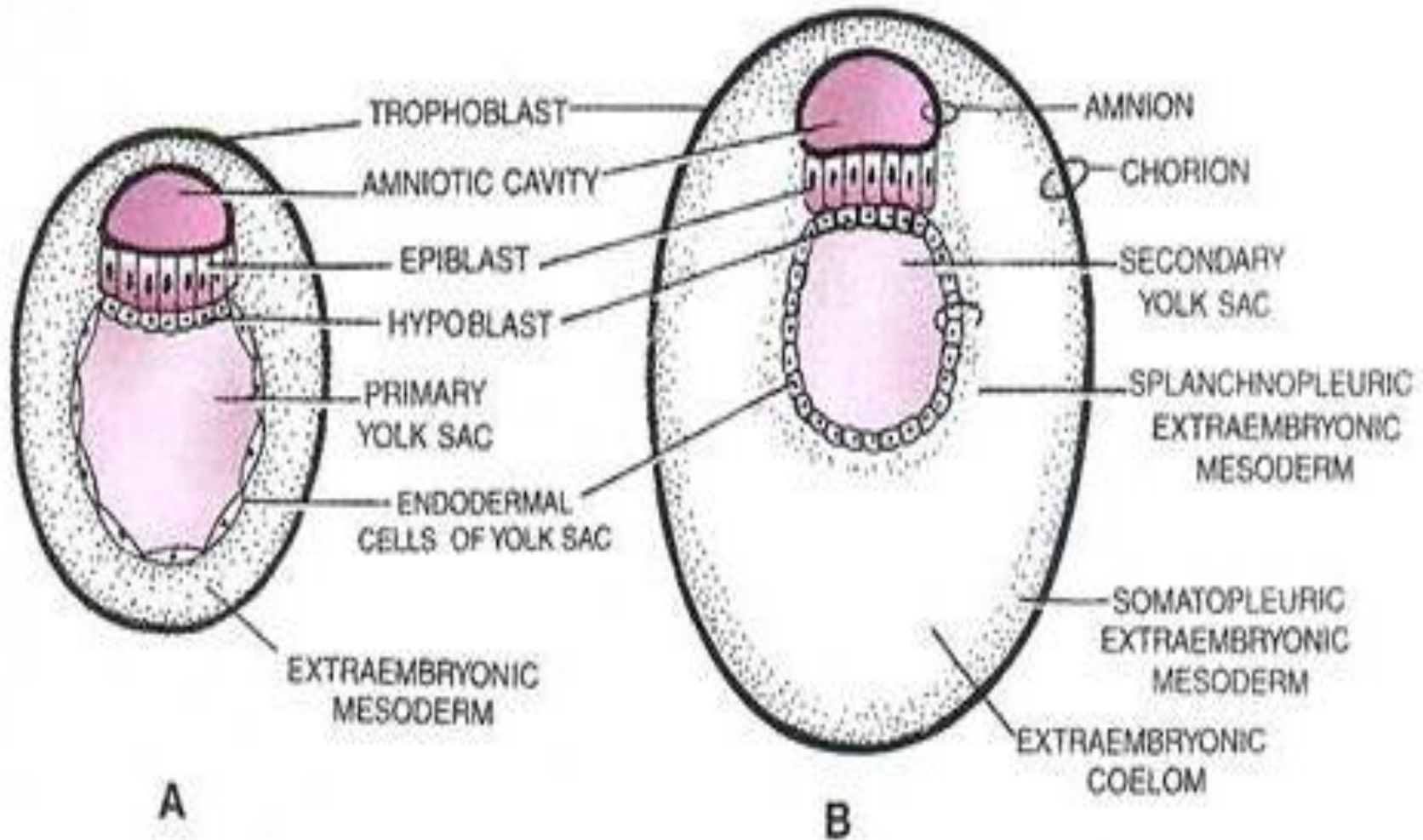
By Dr. Navneet Kumar

Professor Anatomy

K . G. Medical University Lucknow

• *Background*





Diagrams showing formation of extra-embryonic mesoderm and extra-embryonic coelom.

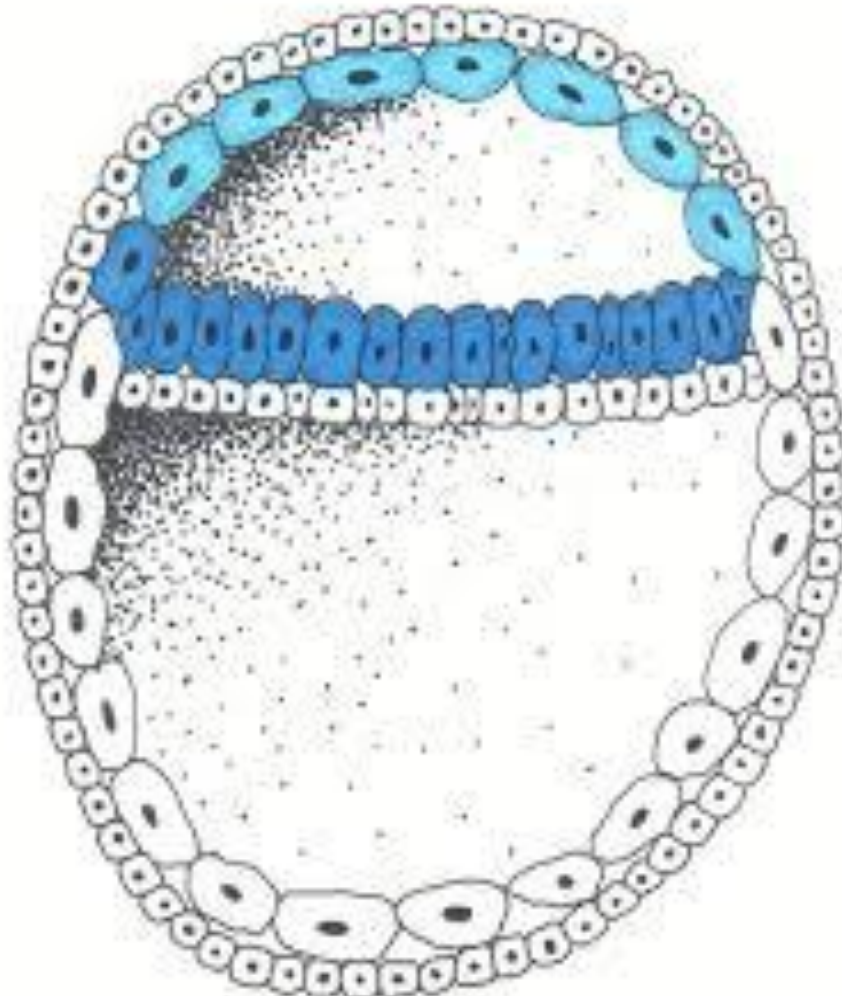
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Formation of tri laminar embryonic disc

- Process of formation of intra embryonic mesoderm is **Gastrulation**
- **Gastrulation** starts at 14 days after fertilization
- 3rd week to 2nd month is **Embryonic period** of gestation (pregnancy)

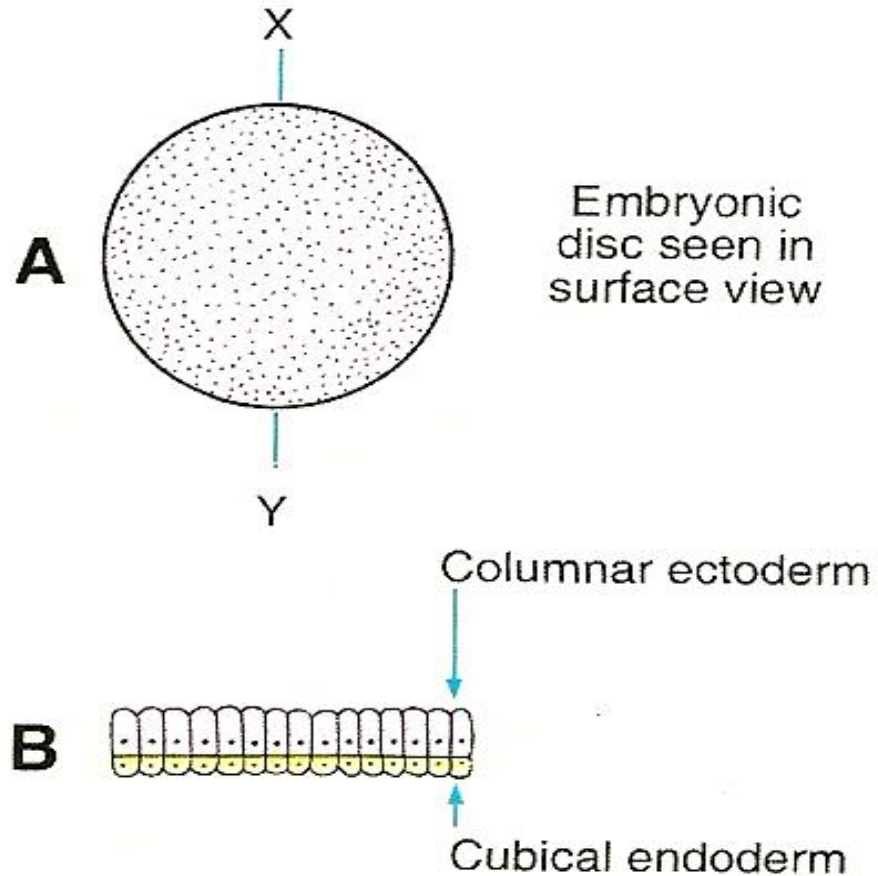
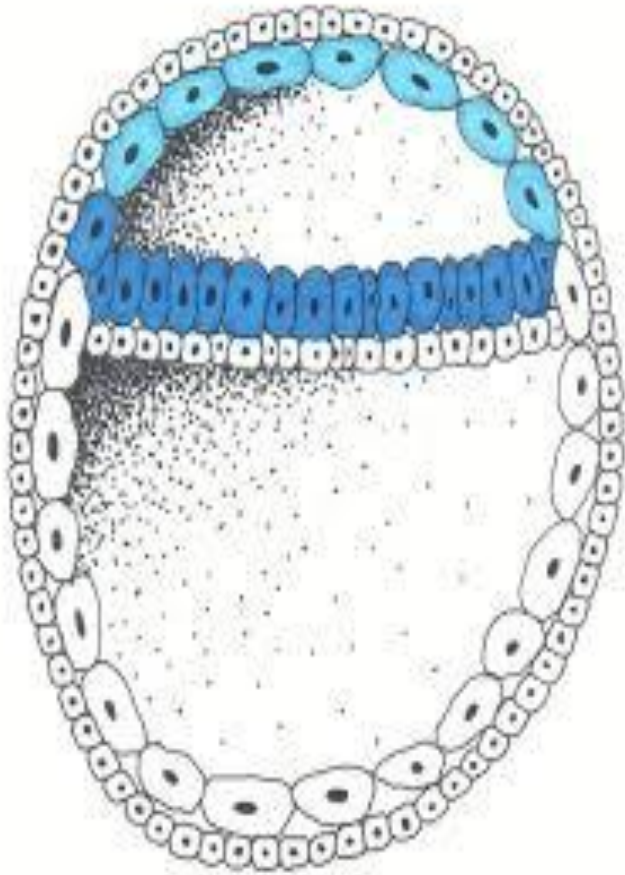
Formation of tri laminar embryonic disc

- **Prochordal plate**
- **Primitive streak**
- **Intra embryonic mesoderm**
- **Definite Endoderm and Ectoderm**
- **Notochord and Neural tube**
- **Segmentation of intra embryonic mesoderm**
- **Folding of embryonic disc**



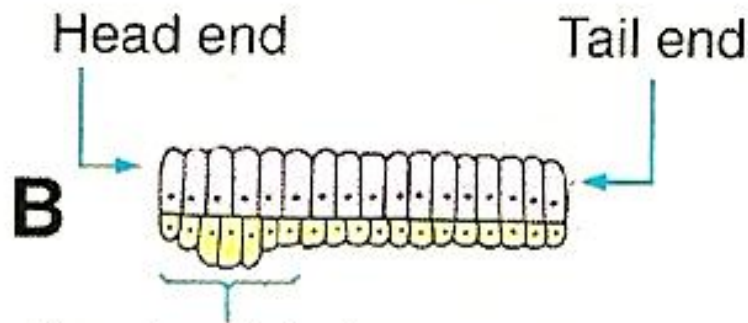
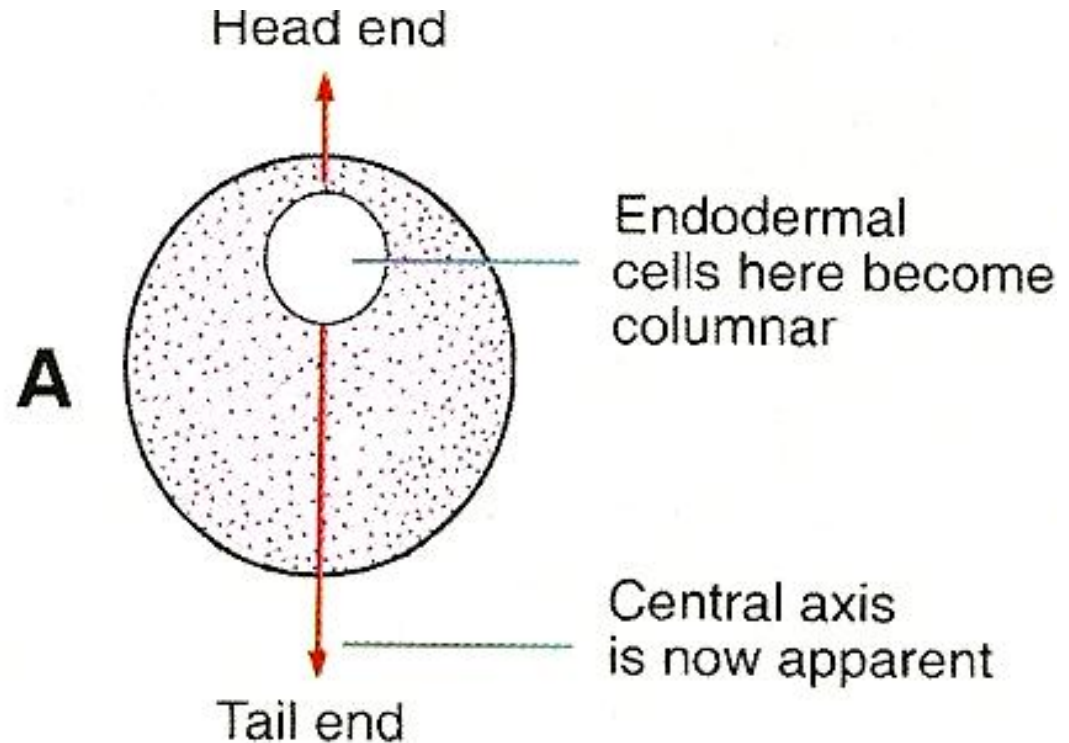
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Formation of tri laminar embryonic disc



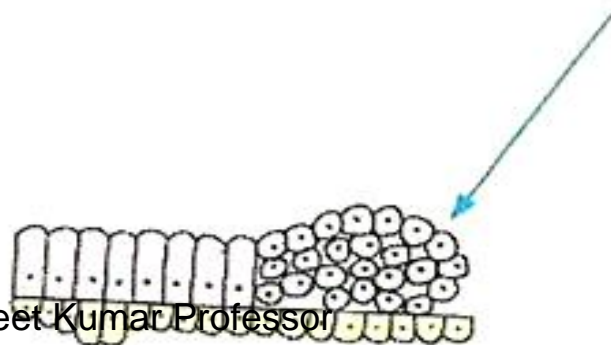
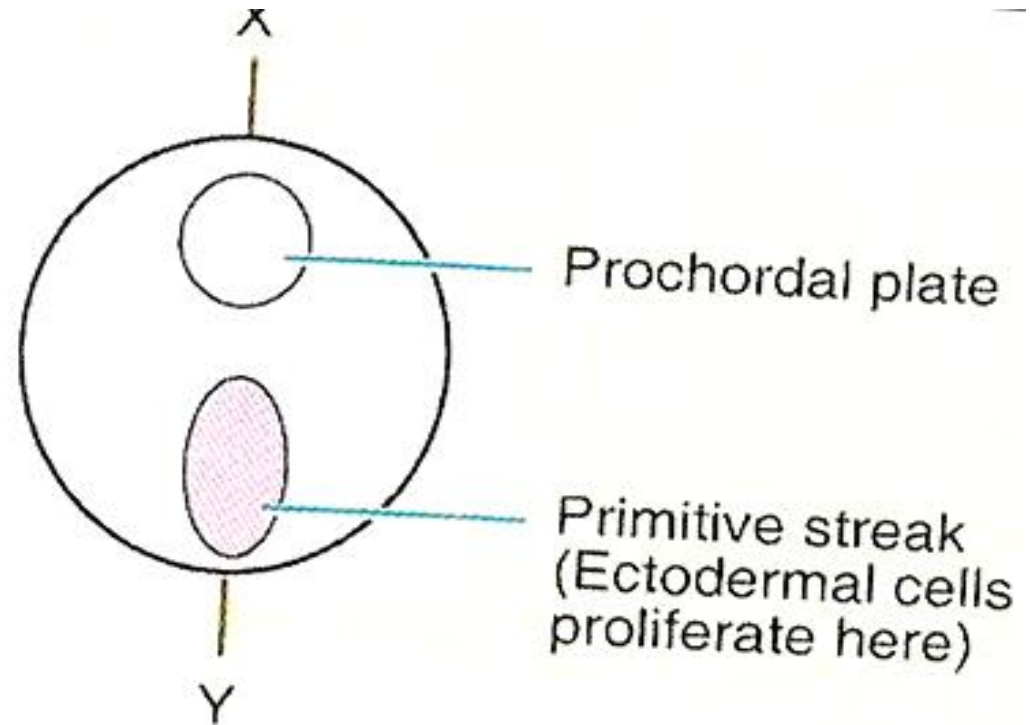
Formation of tri laminar embryonic disc.... **Prochordal plate**

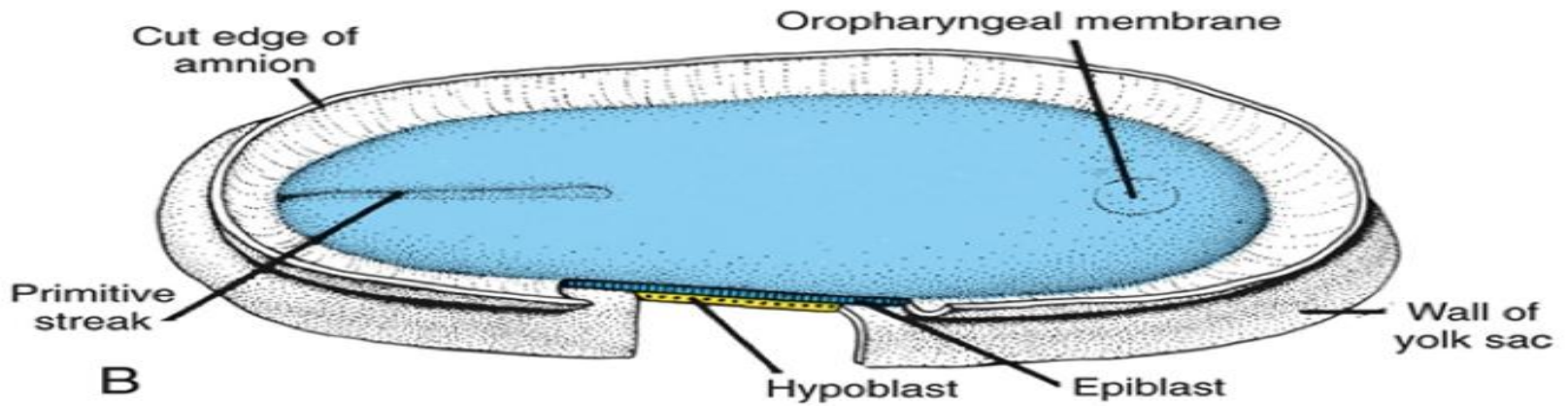
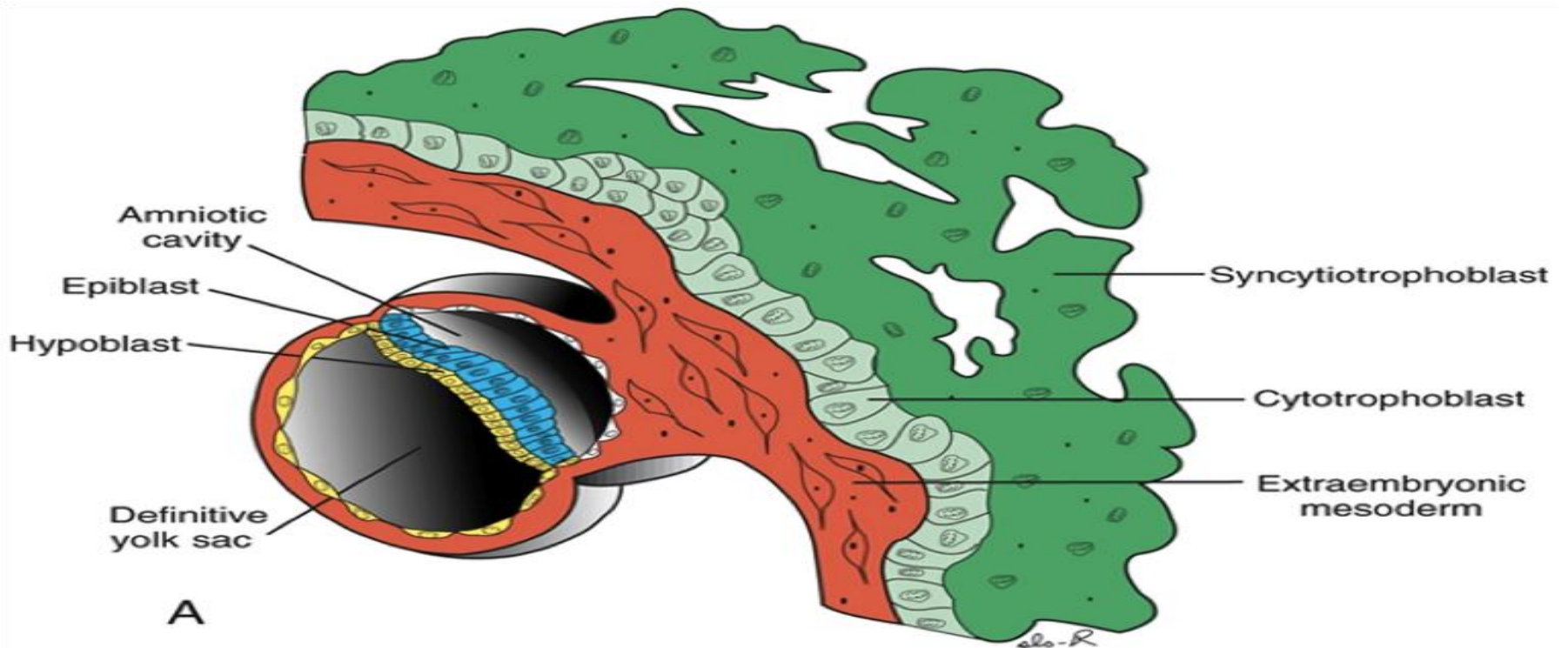
- some cells of primitive endoderm (hypoblast) become columnar at one end of bi laminar embryonic disc. This area is called as **Prochordal plate**



Formation of tri laminar embryonic disc.... **Primitive streak.**

- **Primitive ectodermal cells (Epiblast) also proliferate at opposite end**
This is Primitive streak.

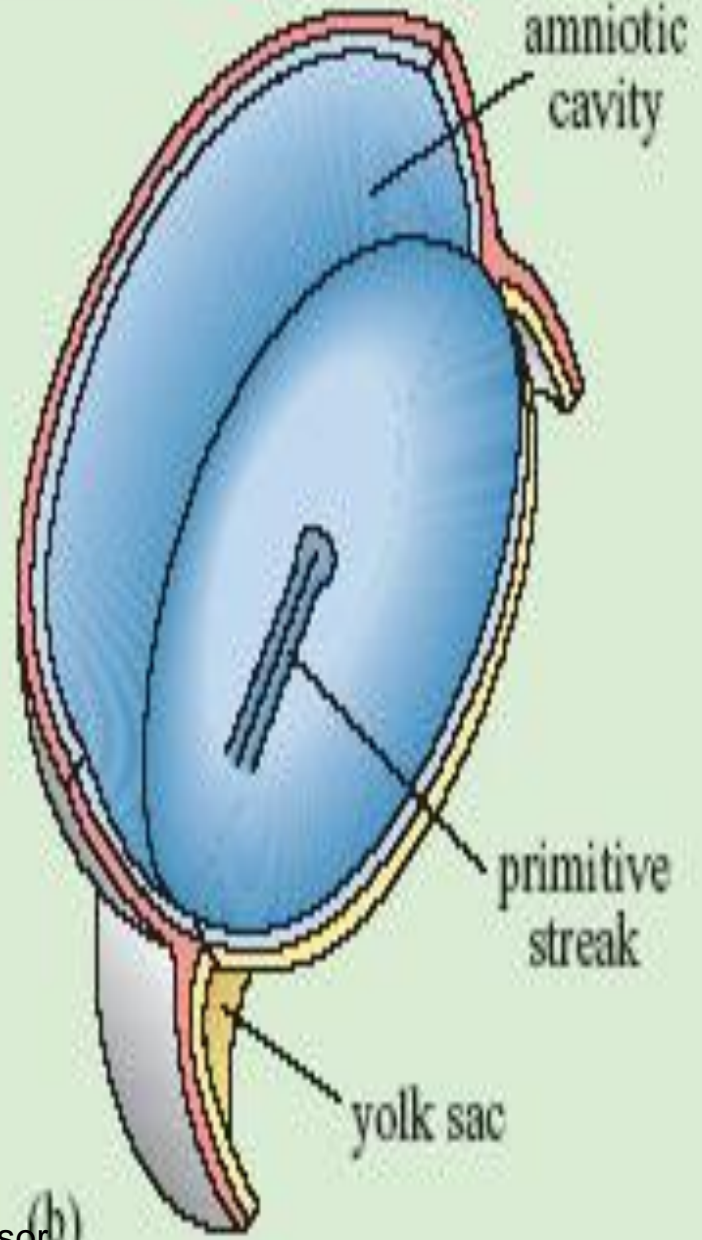
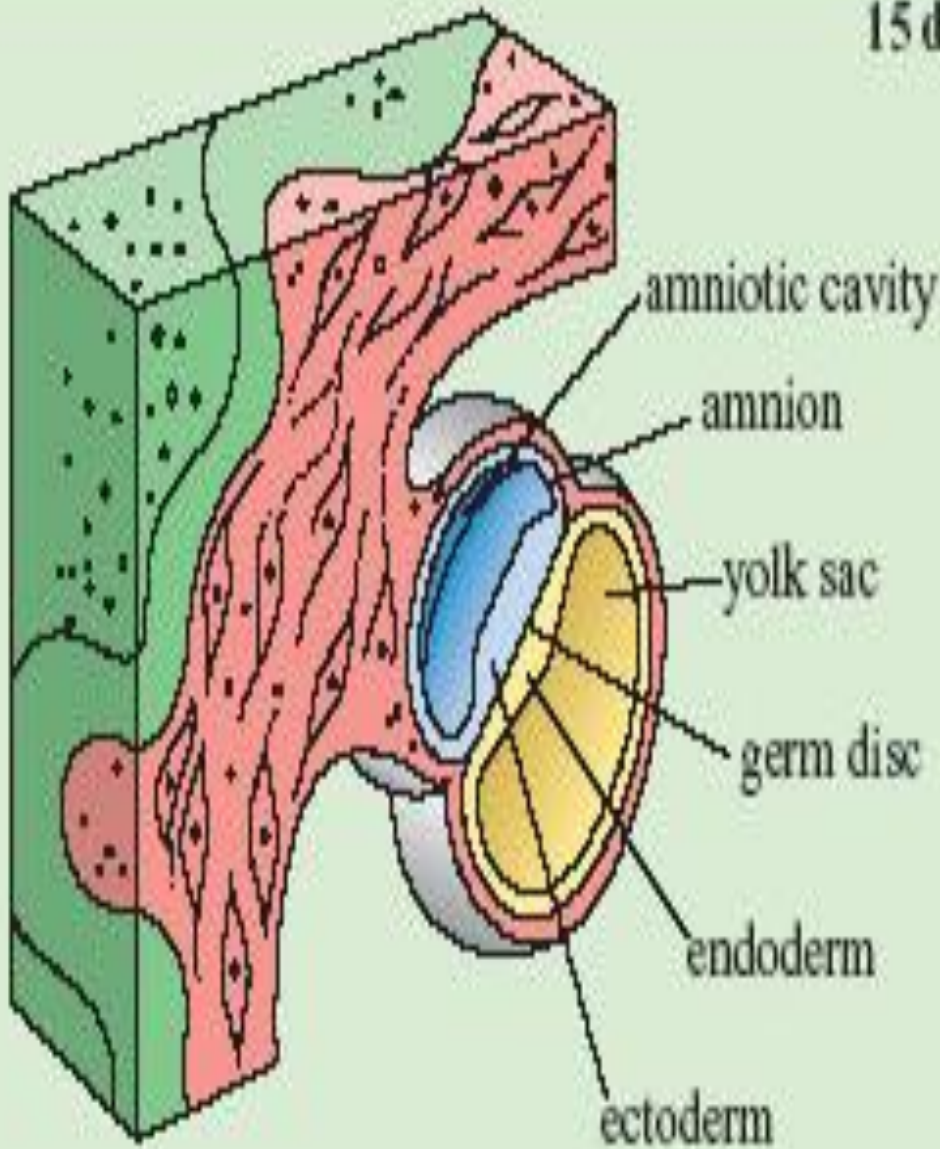




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15 days

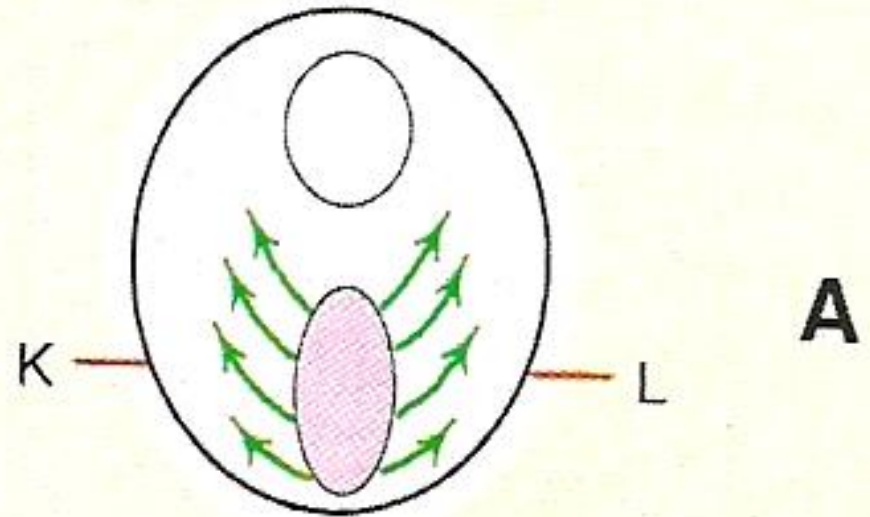


(a)

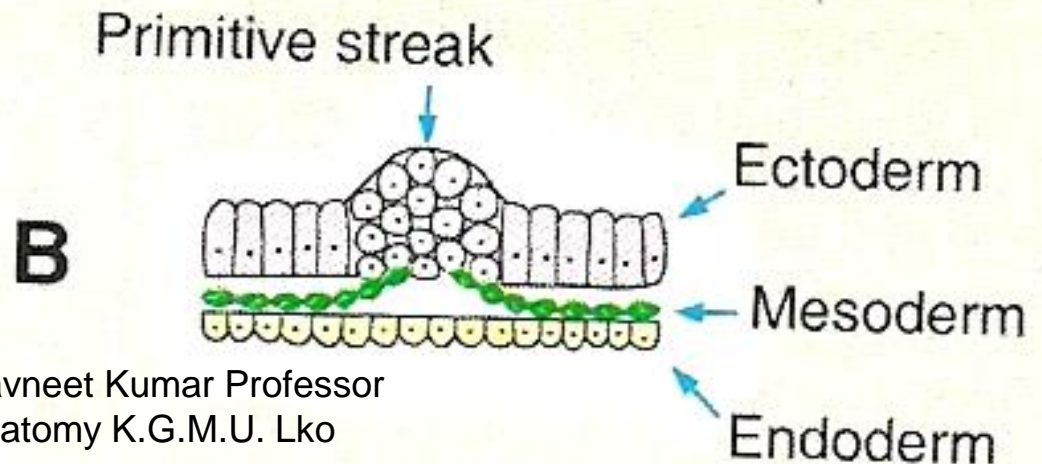
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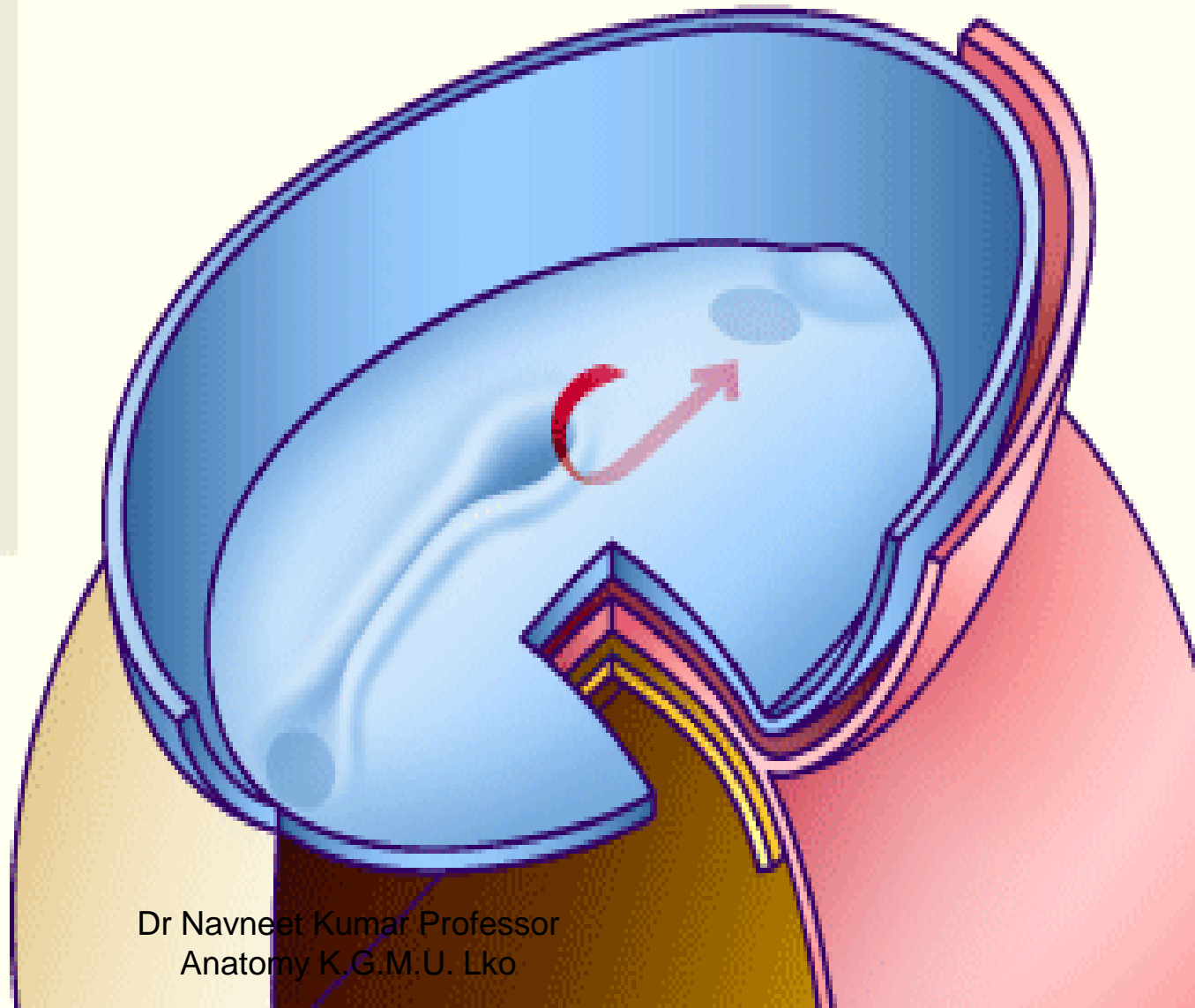
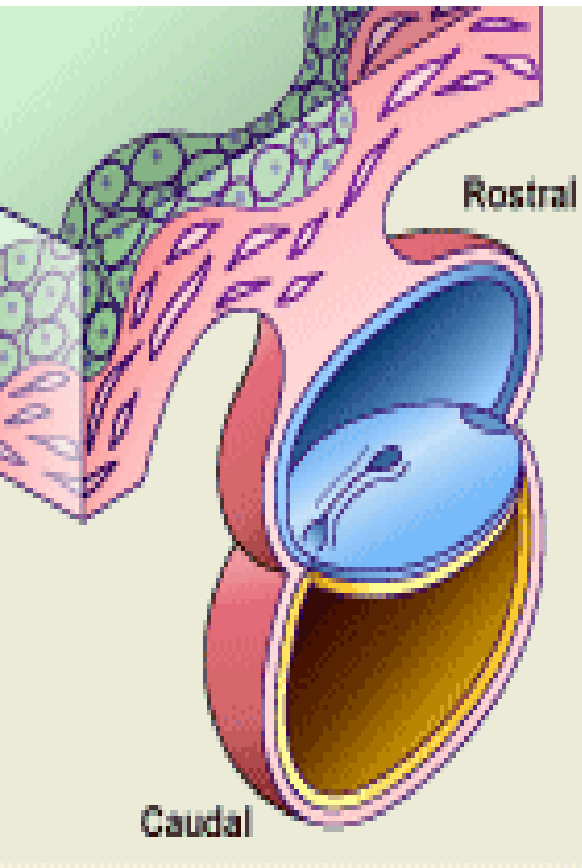
Formation of tri laminar embryonic disc.... **Intra embryonic mesoderm**

The cells of primitive streak divide very rapidly and spread between Primitive ectoderm (Epiblast) and Primitive endoderm (hypoblast). Now this layer is **intra embryonic mesoderm**.



Mesodermal cells spread sideways from primitive streak

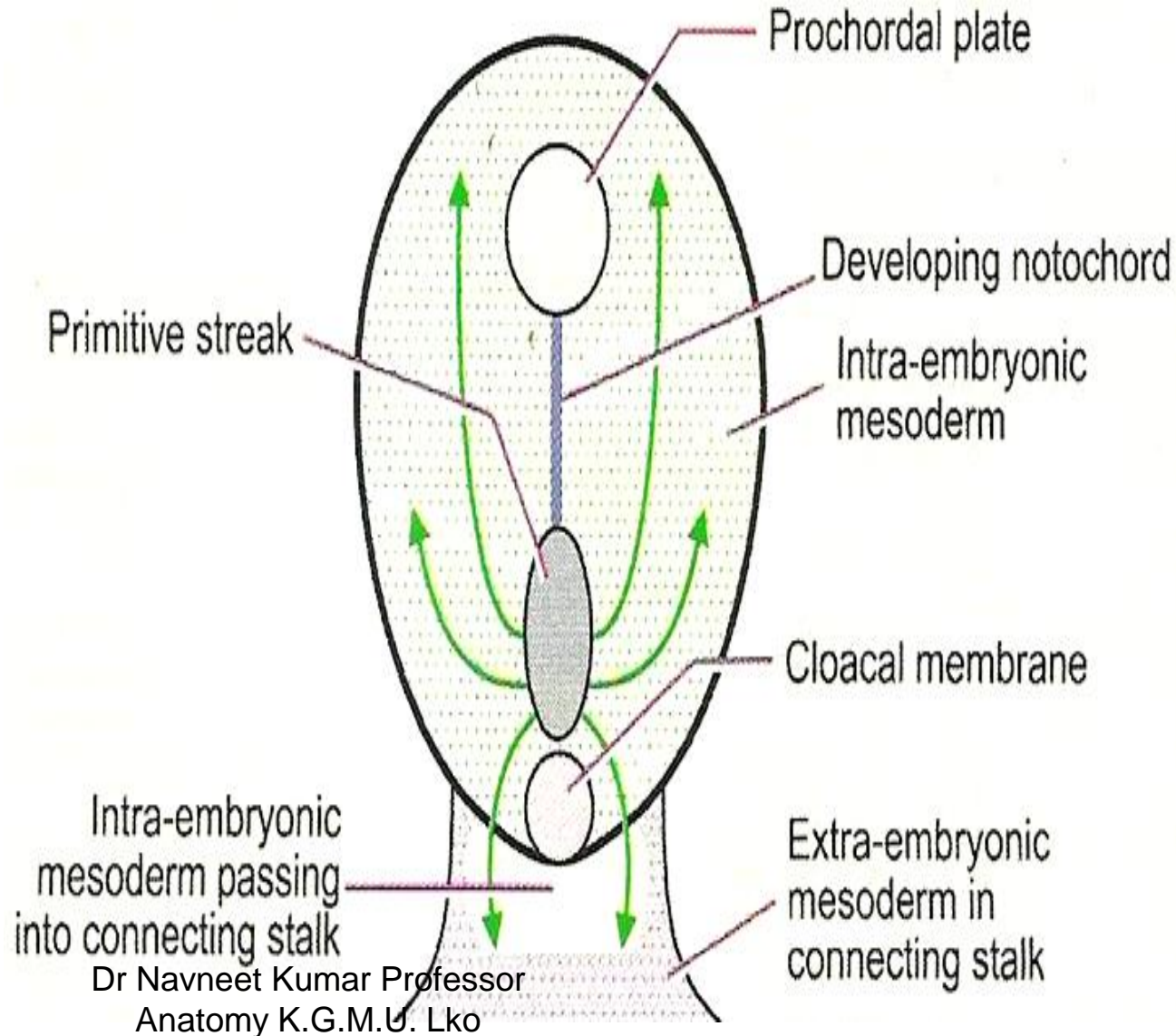


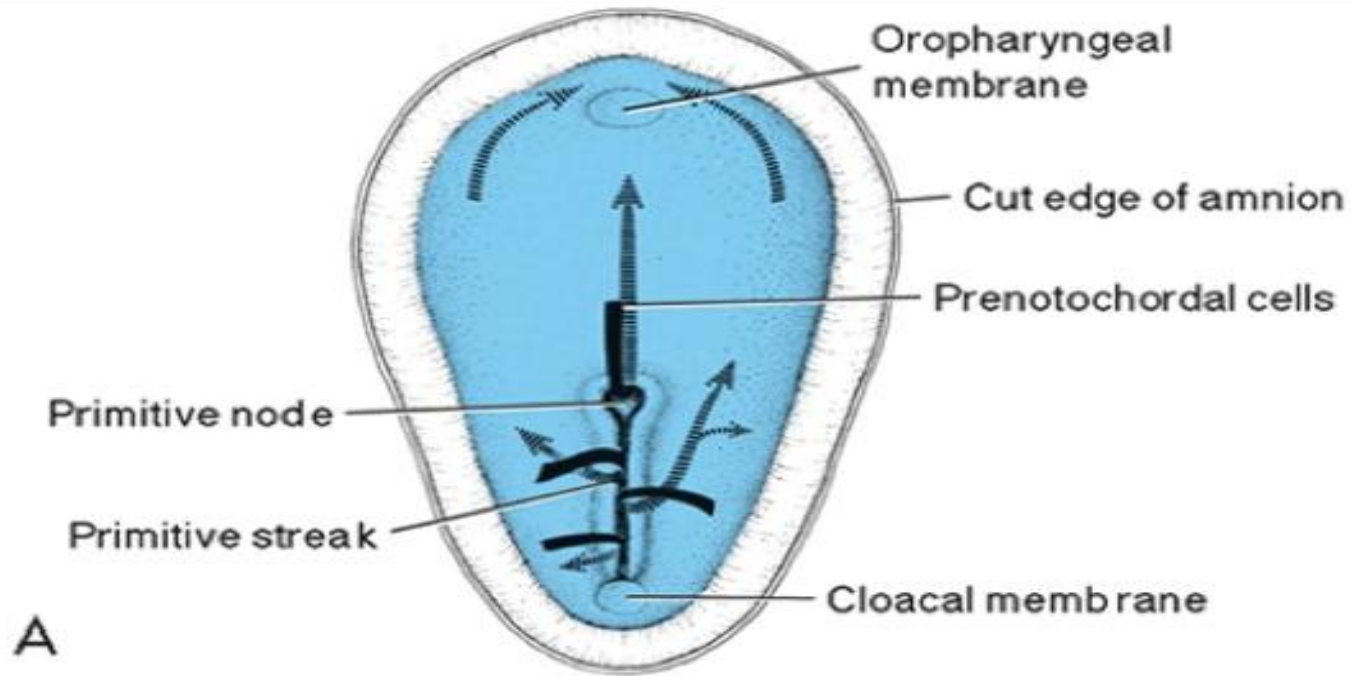


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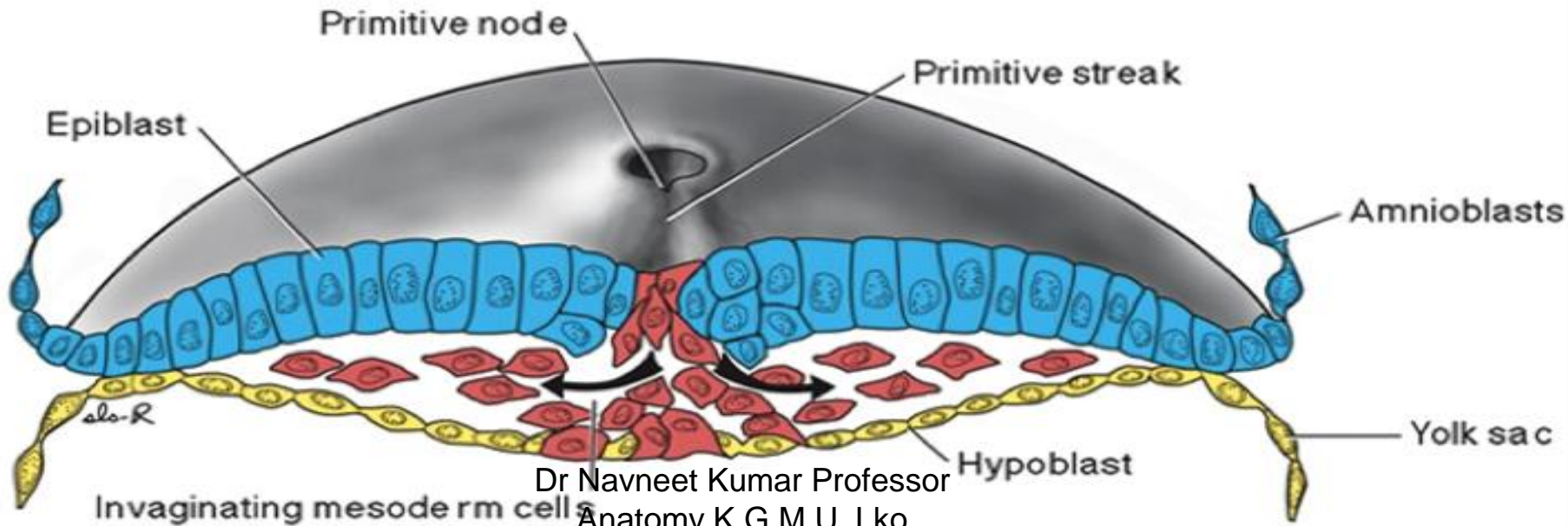
Formation of tri laminar embryonic disc.... **Intra embryonic mesoderm**

- **cells from primitive streak spread all over embryonic disc except**
at head end - Prochordal plate
at tail end – Cloacal membrane





A



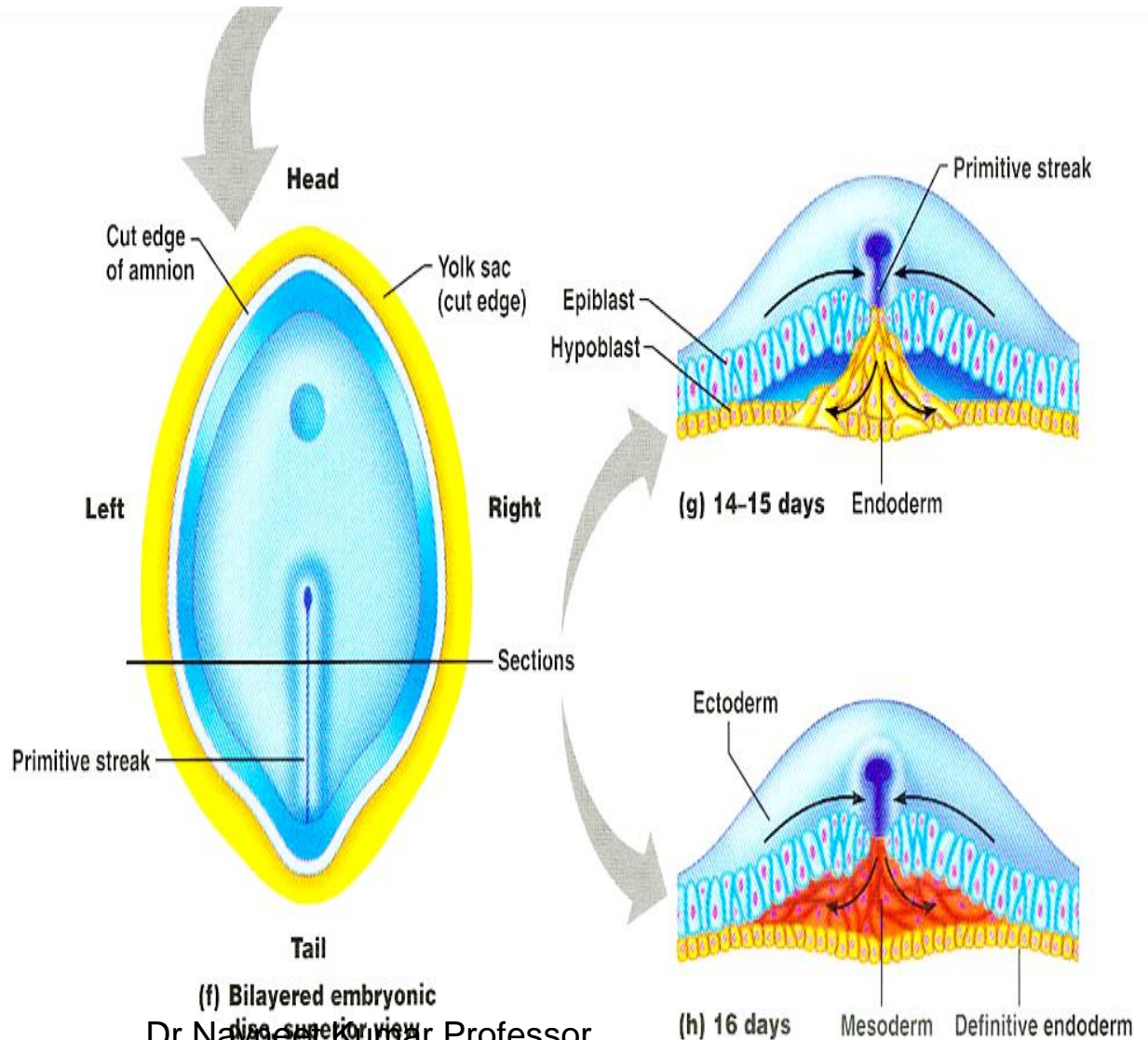
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Formation of definite endoderm and ectoderm

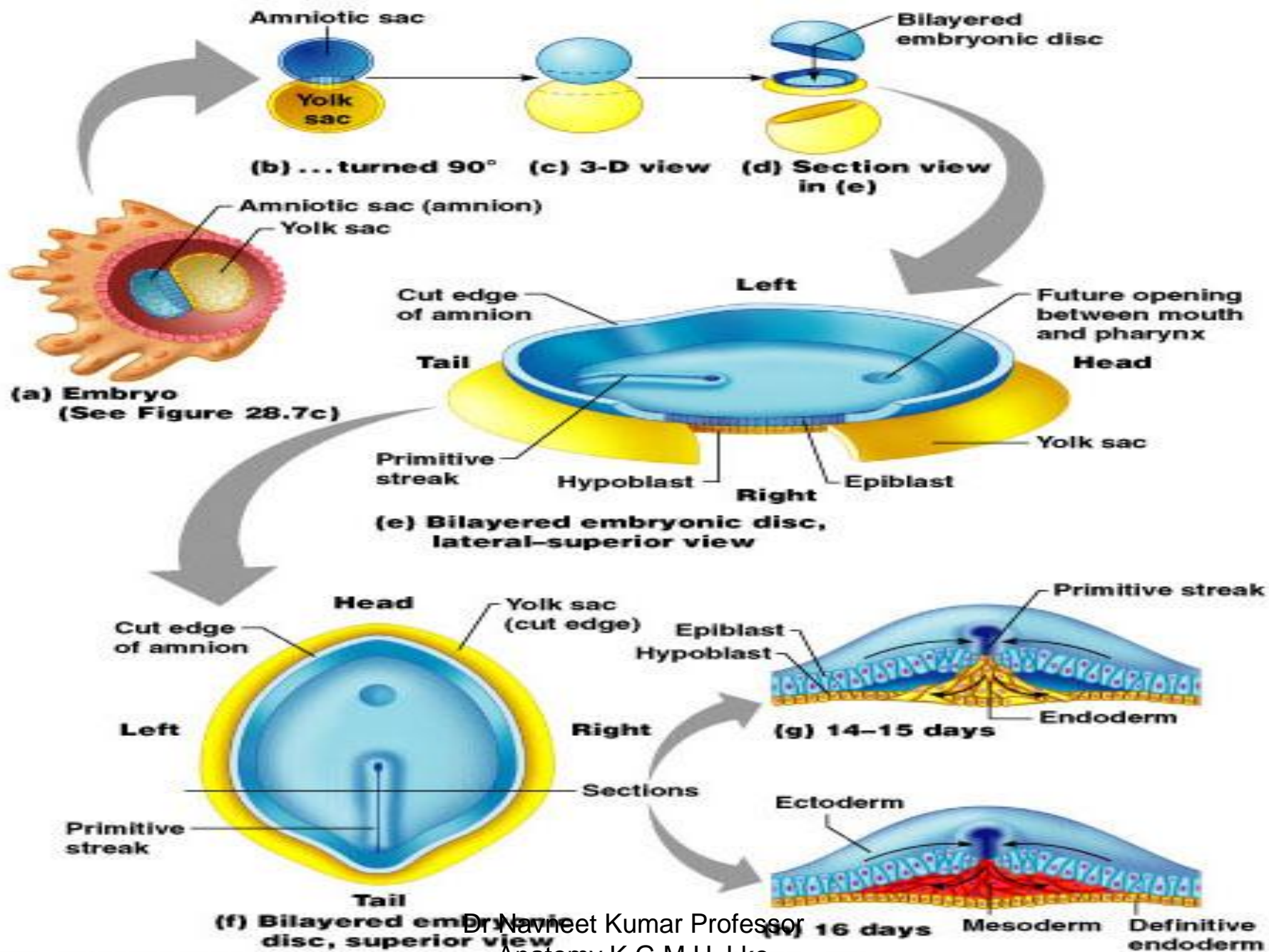
The cells of primitive streak also replace the hypoblast and form **definite endoderm**

Now remaining epiblast is **definite ectoderm**



Formation of tri laminar embryonic disc

- Process of formation of intra embryonic mesoderm is **Gastrulation**
- some cells of Primitive endo derm (hypoblast) become columnar at one end of bi laminar embryonic disc. This area is called as **prochordal plate**
- Primitive ectodermal cells (Epiblast) also proliferate at opposite end . This is **primitive streak**.
- The cells of primitive streak divide very rapidly and spread between Primitive ectoderm (Epiblast) and Primitive endo derm (hypoblast). Now this layer is **intra embryonic mesoderm**.
- The cells of primitive streak also replace the hypoblast and form **endoderm**
- Now remaining epiblast is **Ectoderm**.

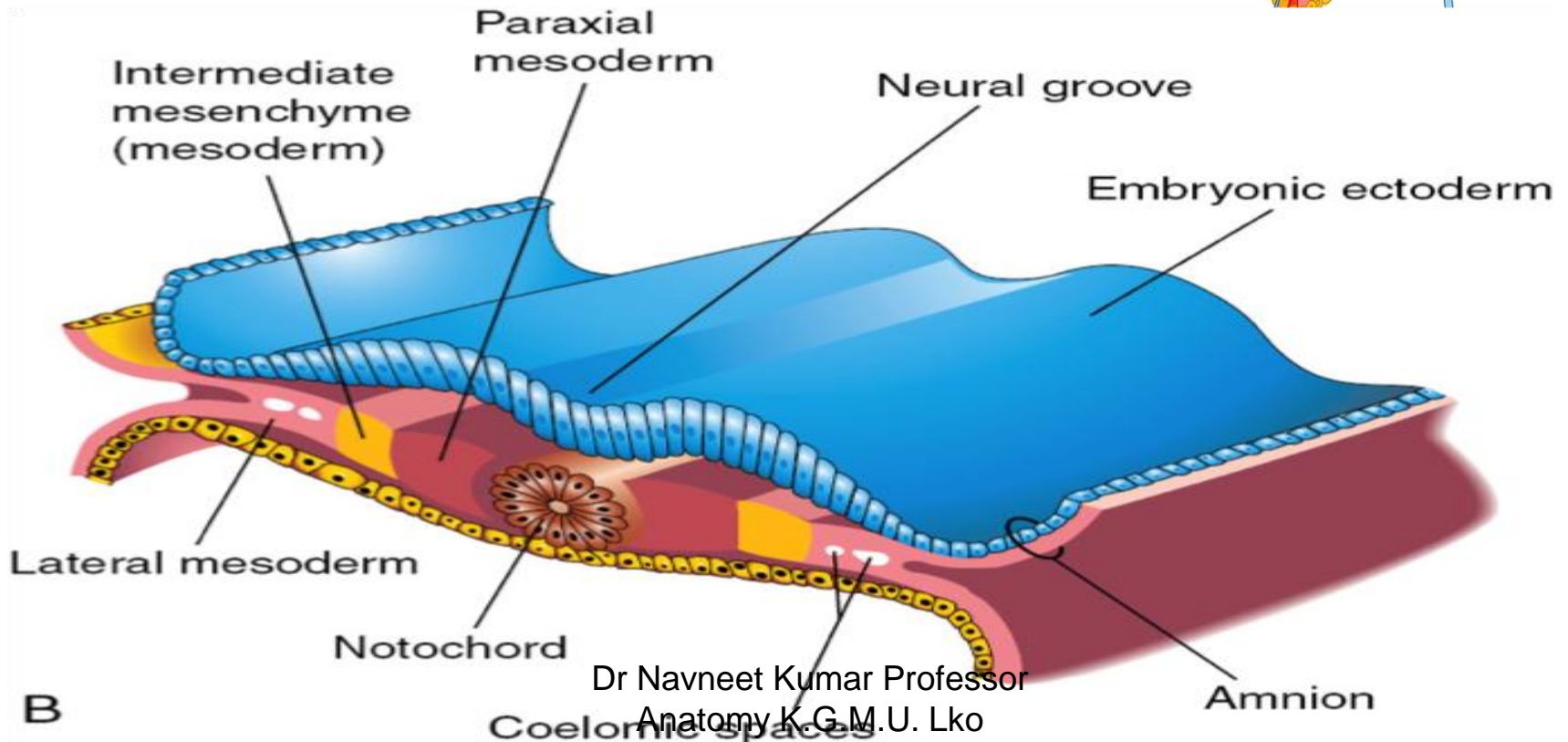
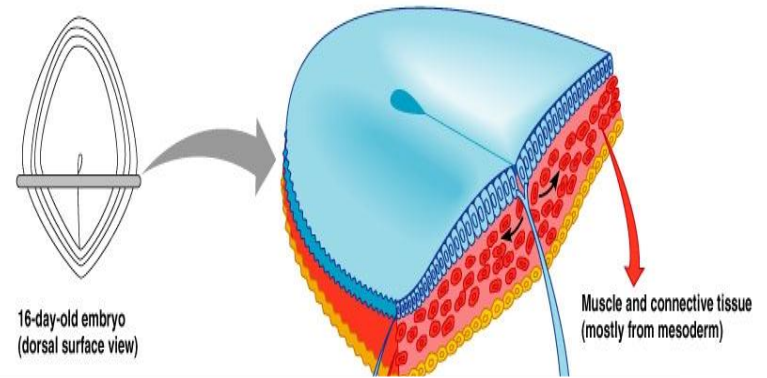


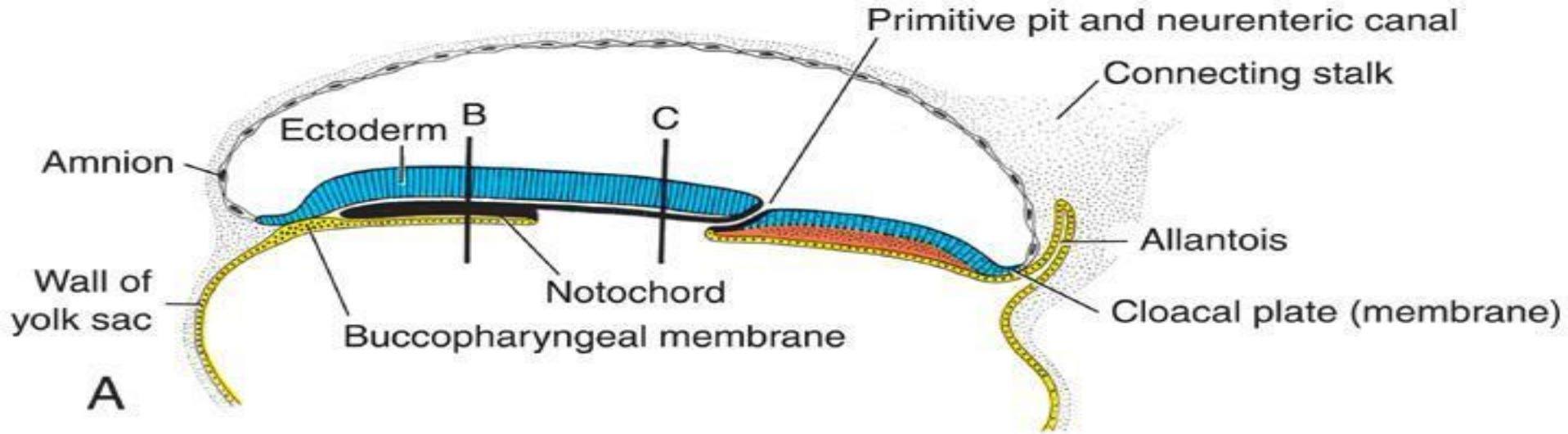
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- **Formation of notochord**
- **Formation of neural tube**
- **sub division of intra embryonic meso derm**
- **folding of embryonic disc**

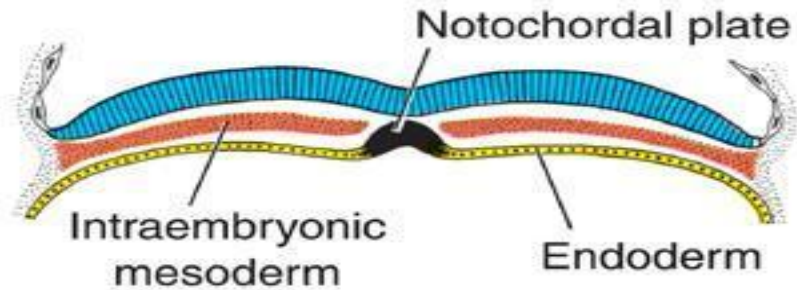
Subdivision of mesoderm

- 1. Para axial mesoderm
- 2. Intermediate mesoderm
- 3. Lateral plate mesoderm

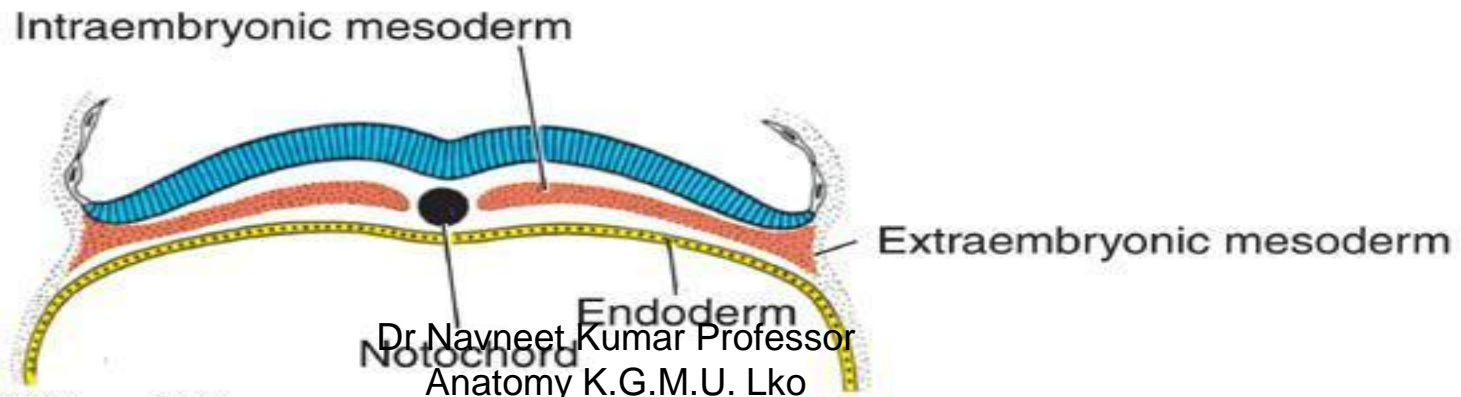




A

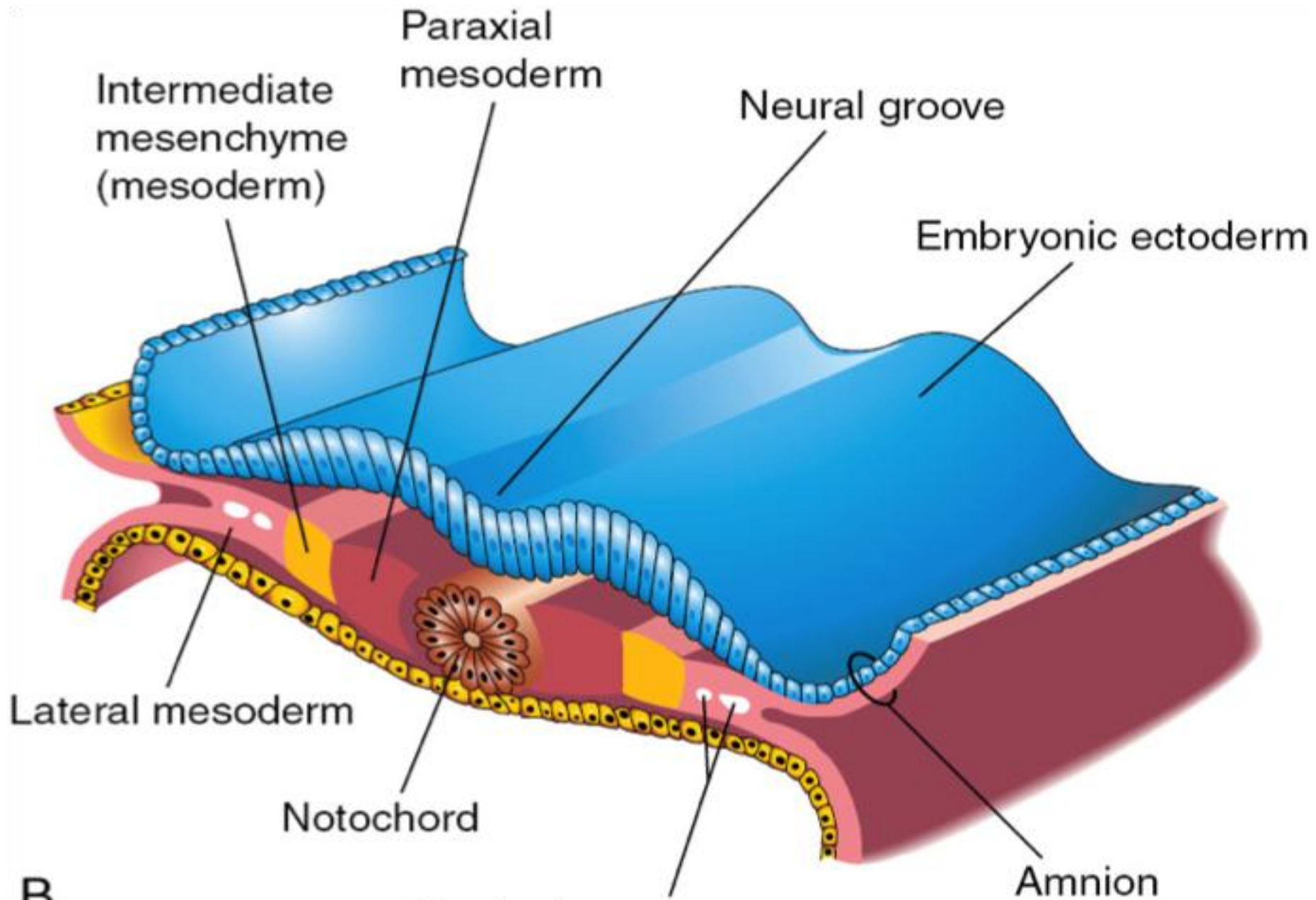


B



C

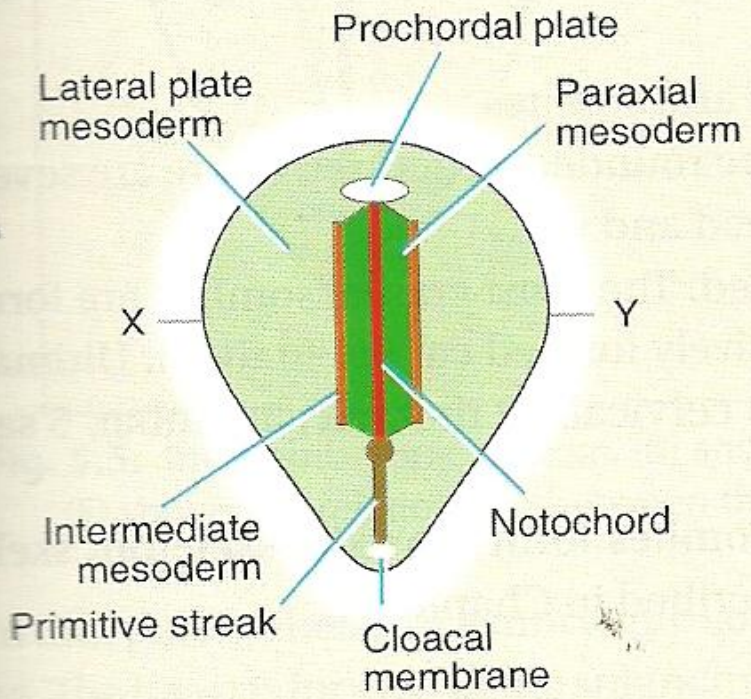
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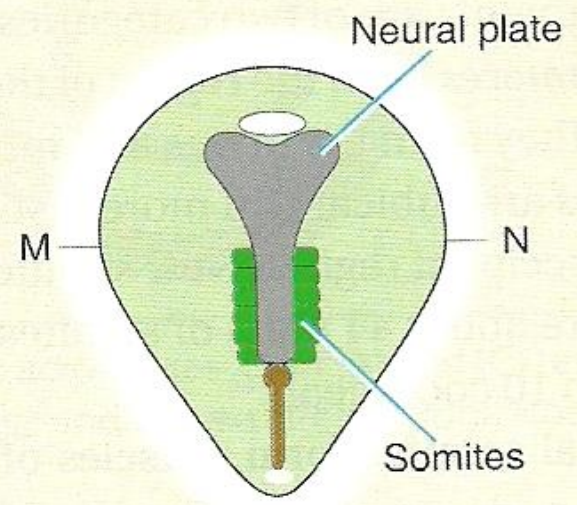
B

Coelomic spaces

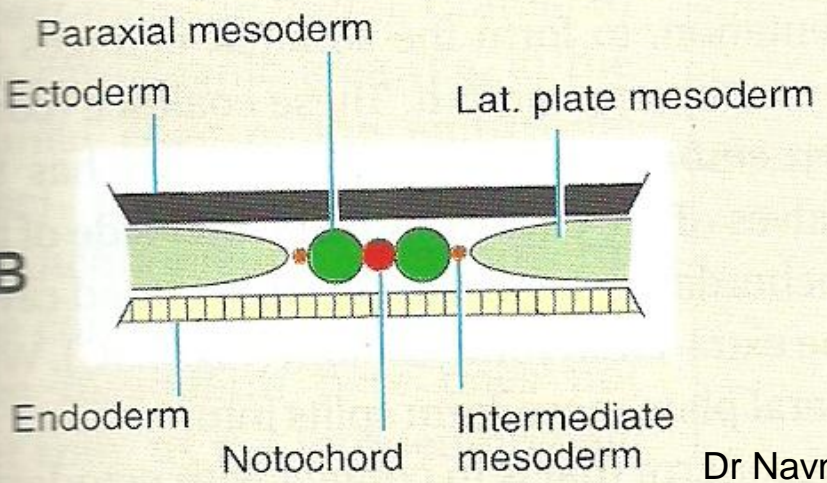
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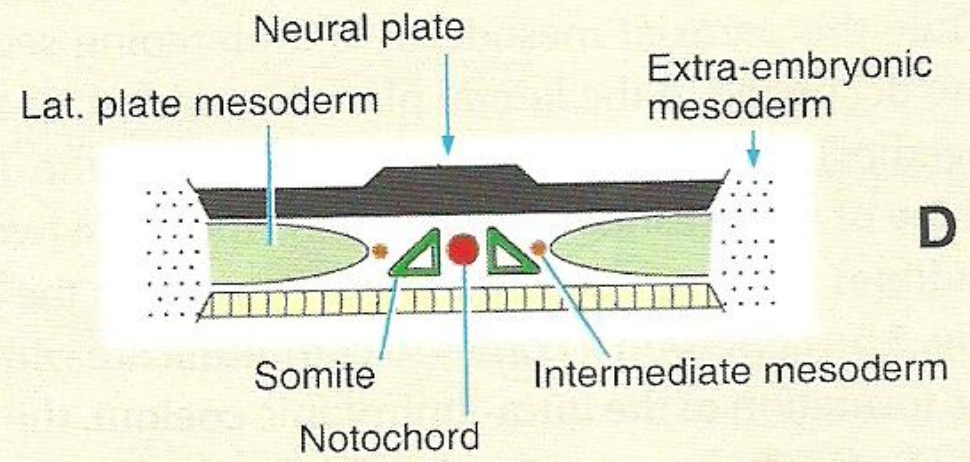
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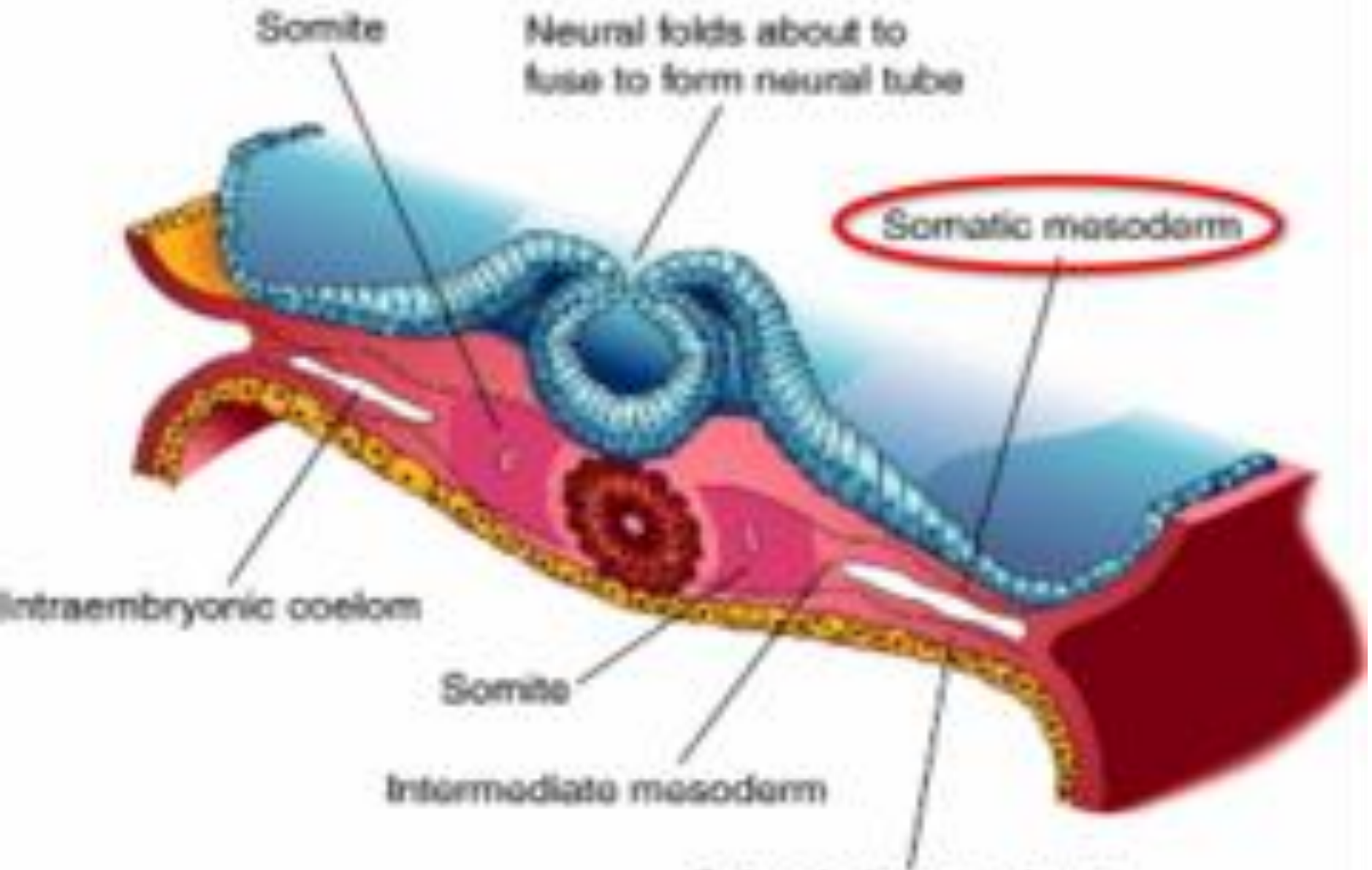
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D



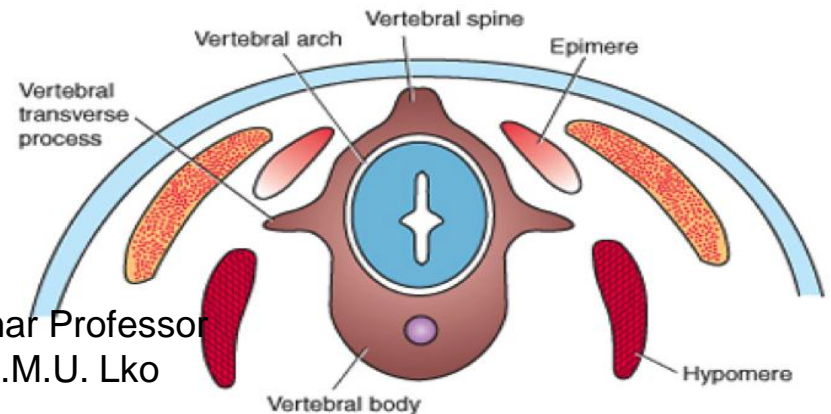
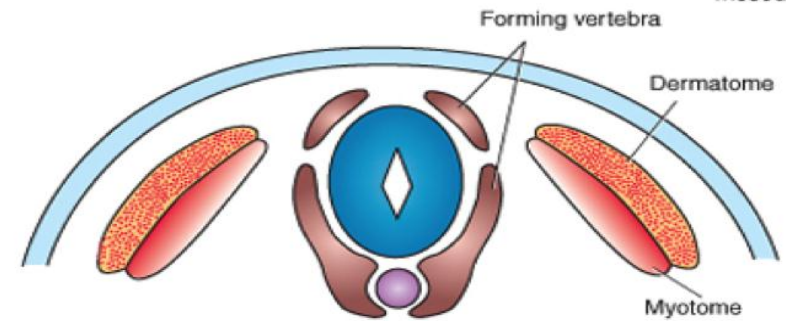
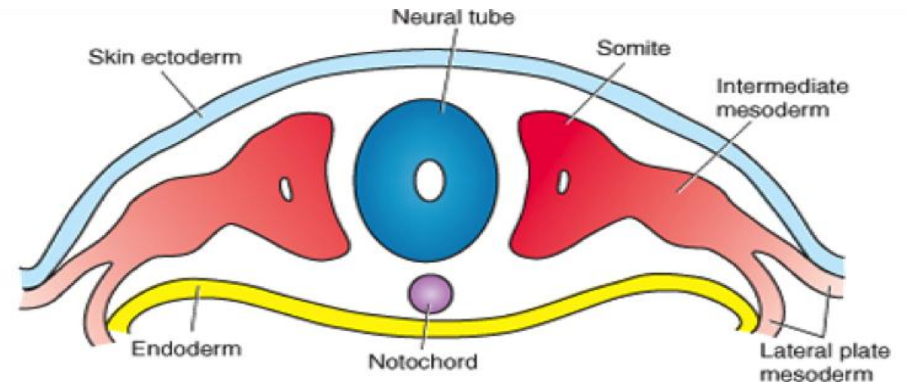
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Subdivision of mesoderm.... 1. Para axial mesoderm

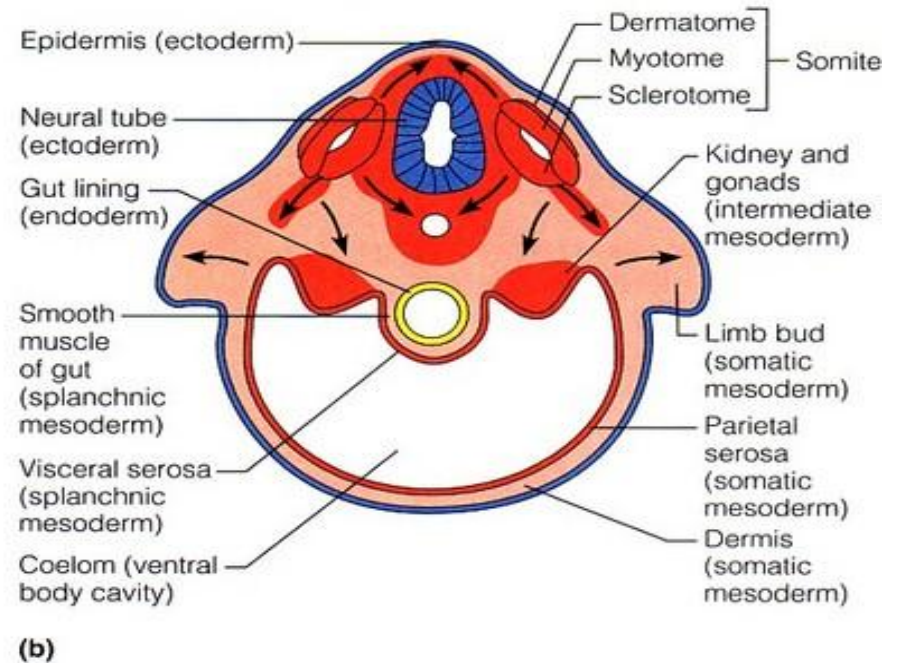
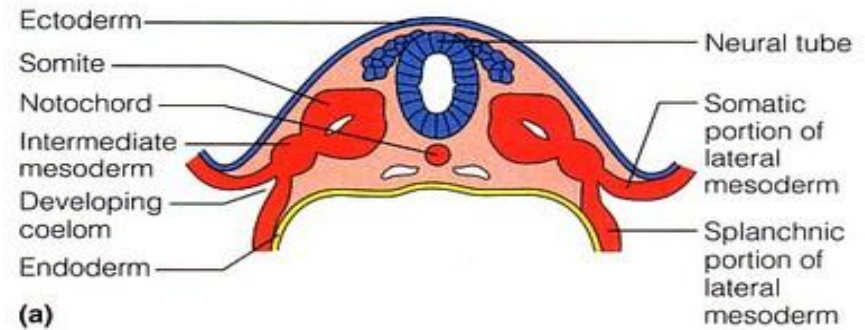
- **Somites** –Dermatome
- Sclerotome
- Myotome



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Subdivision of mesoderm.... 2. Intermediate mesoderm

- urogenital system

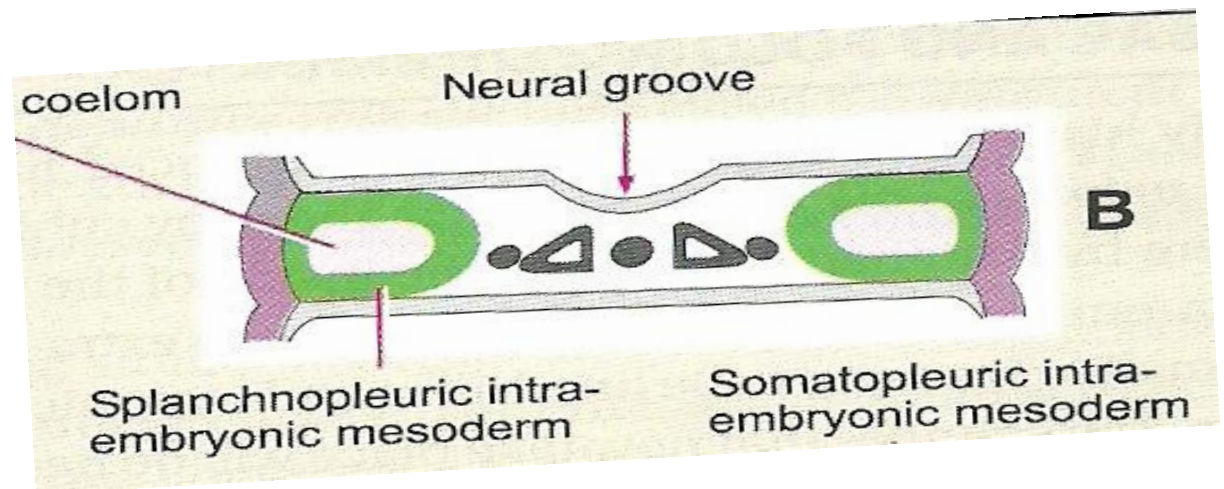
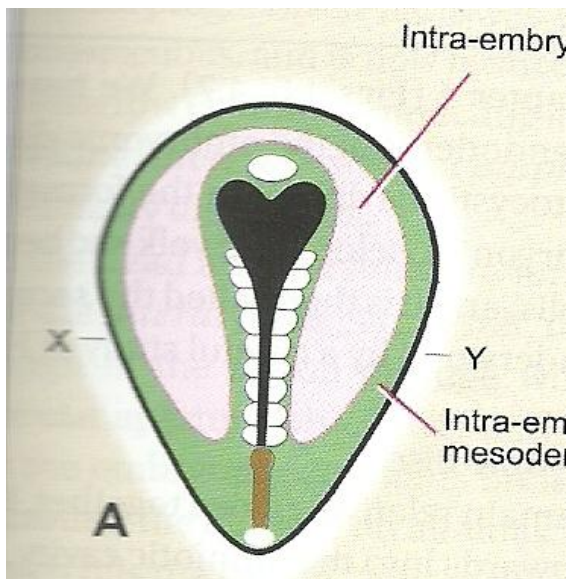


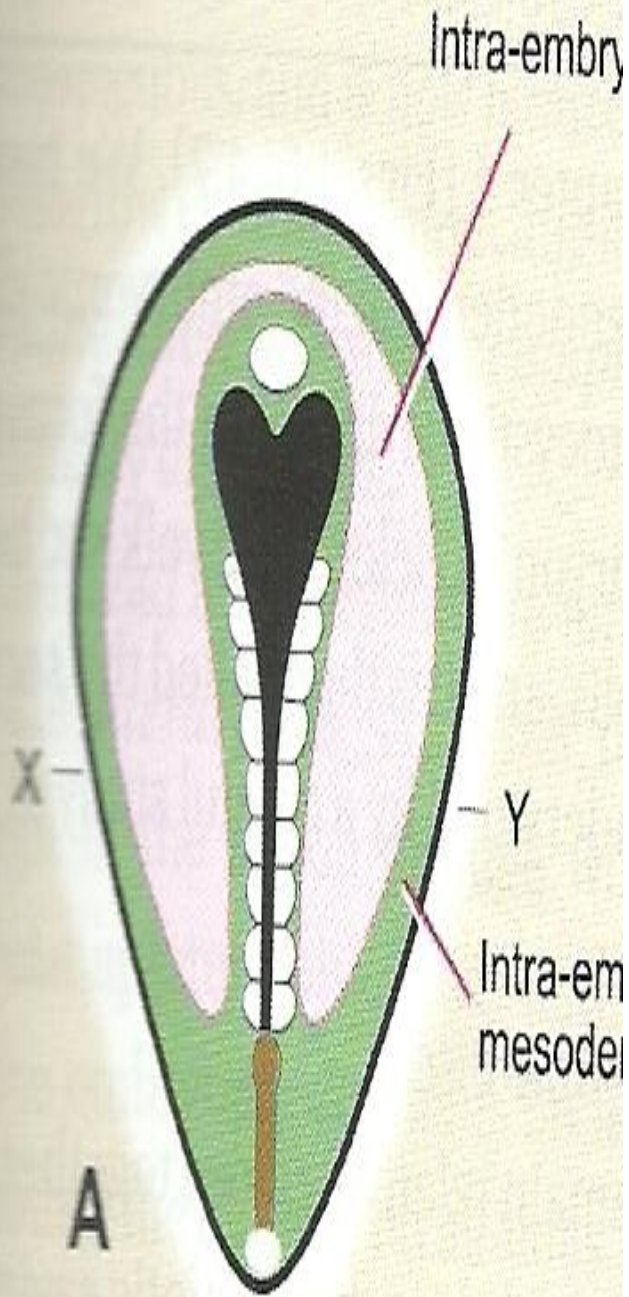
Subdivision of mesoderm.... **3. Lateral plate mesoderm**

Somatopleuric Intra embryonic mesoderm

Splanchnopleuric Intra embryonic mesoderm

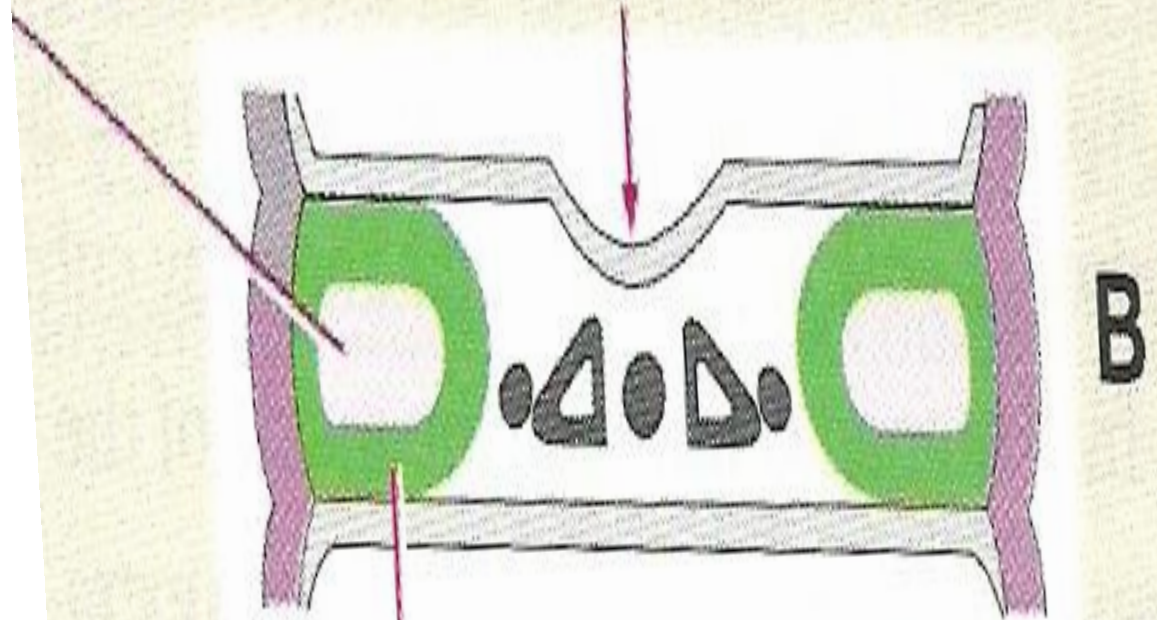
- **Intra embryonic coelom**





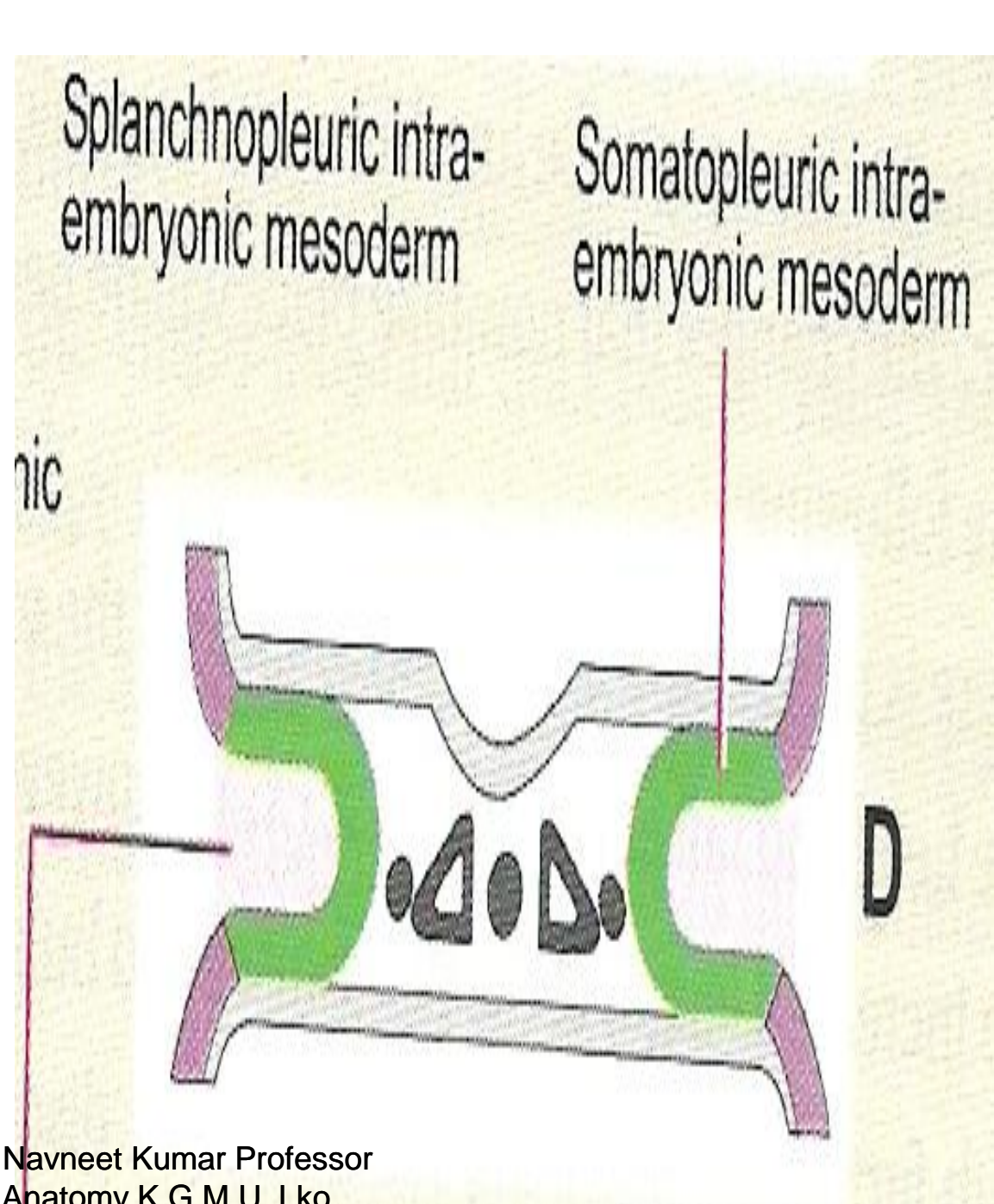
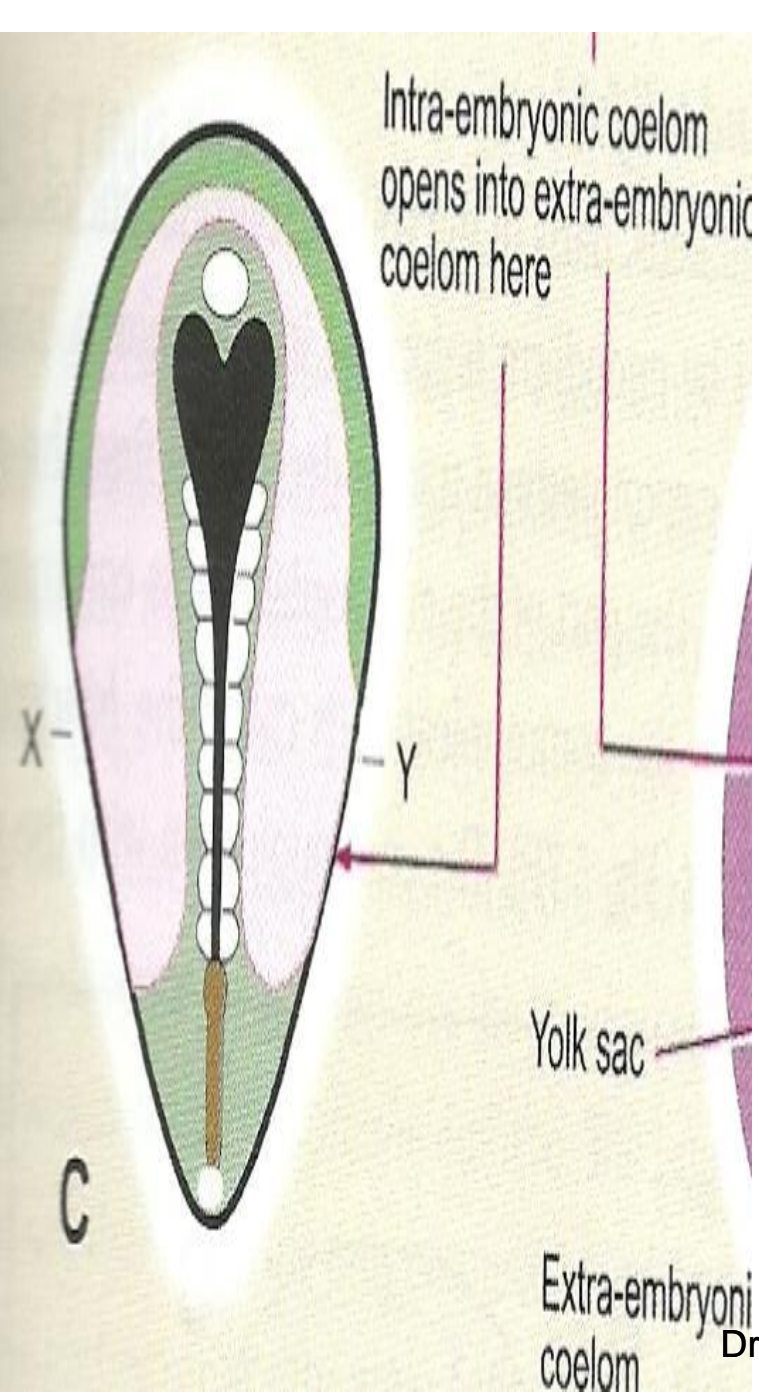
coelom

Neural groove



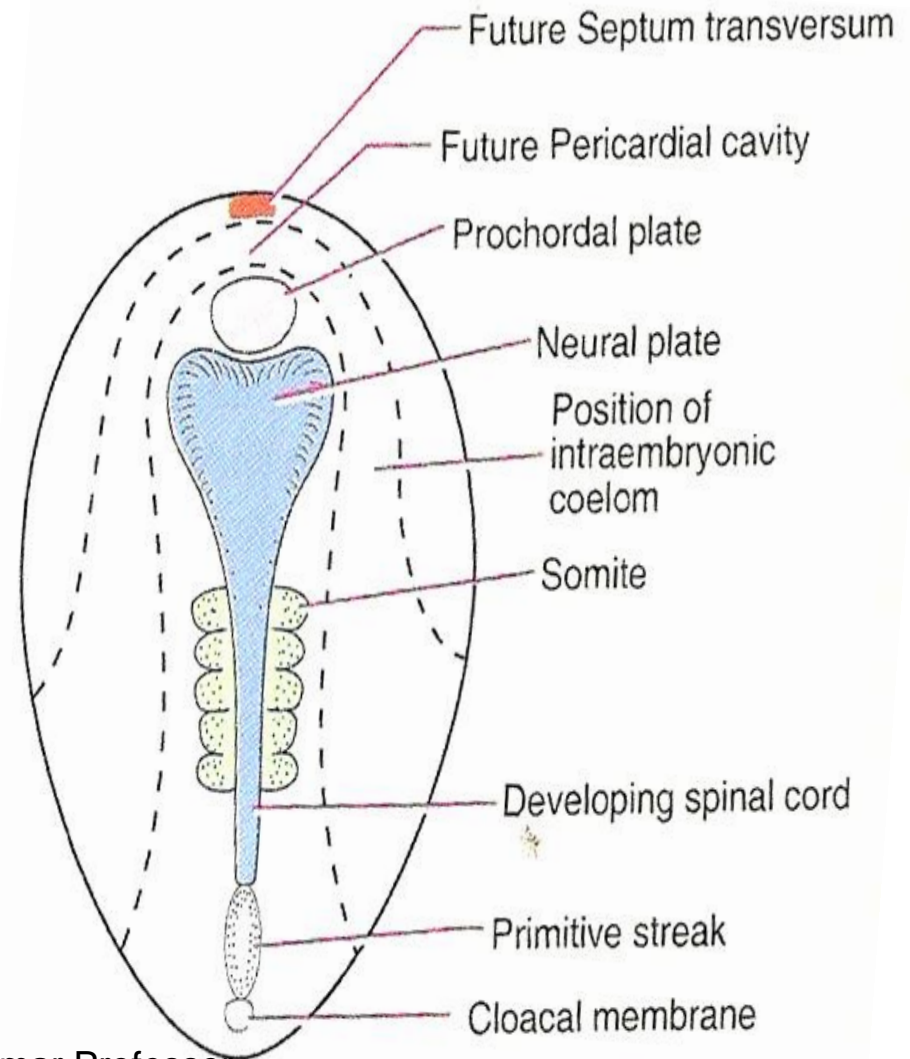
Splanchnopleuric intra-embryonic mesoderm

Somatopleuric intra-embryonic mesoderm



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- **Septum transversum**
- **Pericardial cavity**
- **Cardiogenic area**
- **Bucco pharyngeal membrane**
- **Neural tube and notochord**
- **Primitive node and primitive streak**
- **Cloacal membrane**



MCQ.1.

Implantation begins at

- (a) 6th day
- (b) 10th day
- (c) 14th day
- (d) 21st day

MCQ.2.

Chorion is formed by

- (a) Somatopleuric extra embryonic mesoderm and trophoblast
- (b) Splanchnopleuric extra embryonic mesoderm and trophoblast
- (c) Somatopleuric extra embryonic mesoderm and aminoblast
- (d) Splanchnopleuric extra embryonic mesoderm and hypoblast

MCQ.3.

Heuser membrane form

- (a) Amniotic cavity
- (b) Yolk sac
- (c) Extra embryonic coelom
- (d) Intra embryonic coelom

MCQ.4.

Ectoderm is formed by

- (a) Hypoblast
- (b) Epiblast
- (c) Trophoblast
- (d) Outer cell mass

MCQ.5.

Prochordal plate develops as

- (a) Neural plate
- (b) Connecting stalk
- (c) Notochord
- (d) Bucco pharyngeal membrane

MCQ.6.

Intra embryonic coelom develop in

- (a) Para axial mesoderm
- (b) Intermediate mesoderm
- (c) Blastocoel
- (d) Lateral plate mesoderm

MCQ.7.

Gastrulation is the process of formation of

- (a) Intra embryonic mesoderm
- (b) Extra embryonic mesoderm
- (c) Bi laminar embryonic disc
- (d) Placenta

MCQ.8.

In intra uterine life **Gastrulation begins** at

- (a) 3rd week
- (b) 4th week
- (c) 2 month
- (d) 4 month

MCQ.9.

Intermediate sub division of intra embryonic mesoderm of embryonic disc give rise some part of

- (a) Notochord
- (b) Neural tube
- (c) Intra embryonic coelom
- (d) Urogenital system

MCQ.10.

Cloacal membrane has

- (a) Mesoderm and ectoderm
- (b) Ectoderm and endoderm
- (c) Endoderm and mesoderm
- (d) Endoderm , mesoderm and Ectoderm