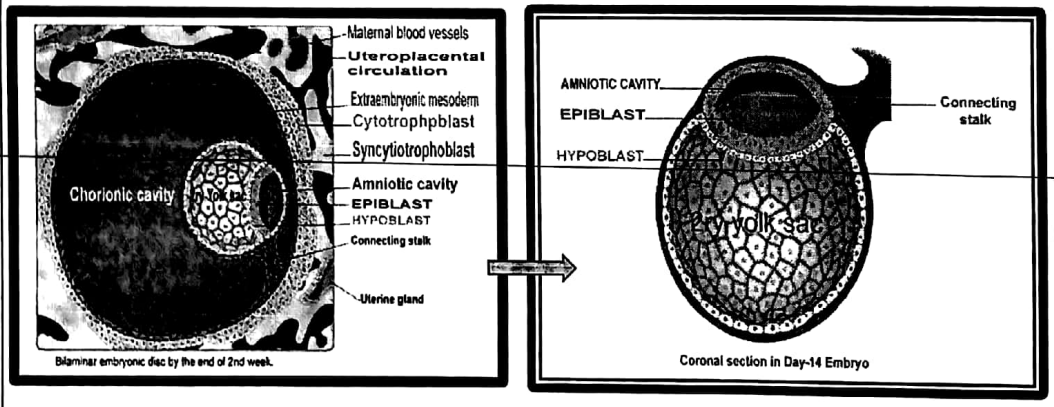
Third week embryo

Third week marked by:

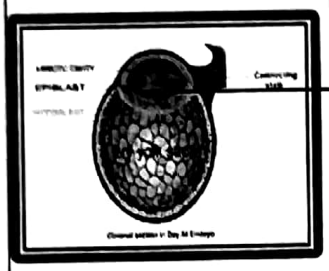
- Beginning of embryonic period 3rd-8th week.
- Rapid development of embryo.
- Gastrulation:
  - A process of transforming the Bilaminar embryo into Trilaminar embryo with the 3 distinctive germ layers:
    1. Ectoderm
    2. Endoderm
    3. Mesoderm

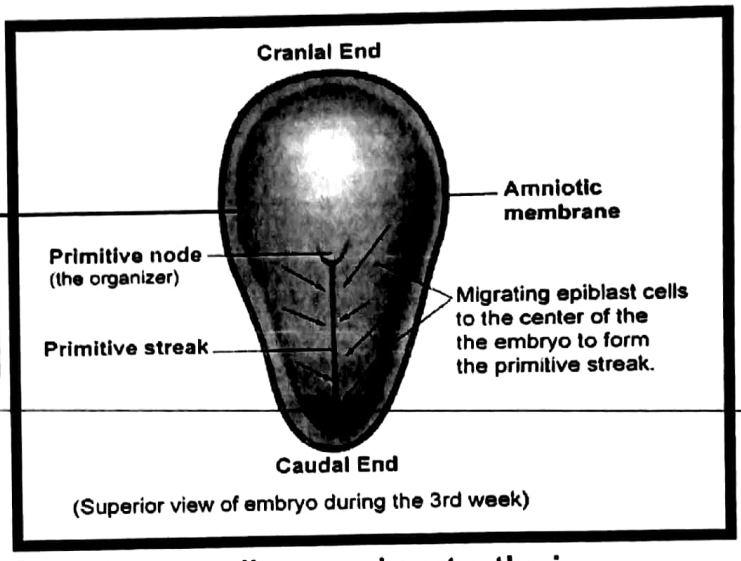
Third week

- Throughout the 3rd week of development, the bilaminar embryonic disc differentiated to establish **the 3 germ layers** in a process known as (Gastrulation).



Primitive streak formation

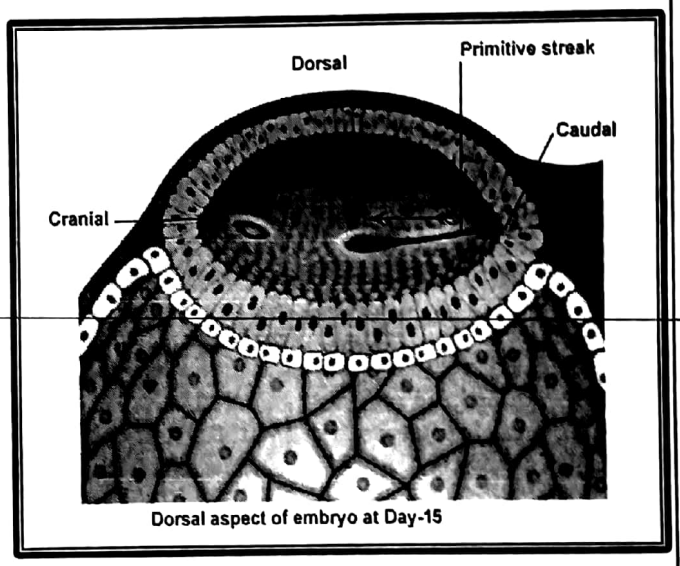




- Around Day 15, epiblast cells accelerate their formation and migrated to the **center** of the embryo.

Primitive streak

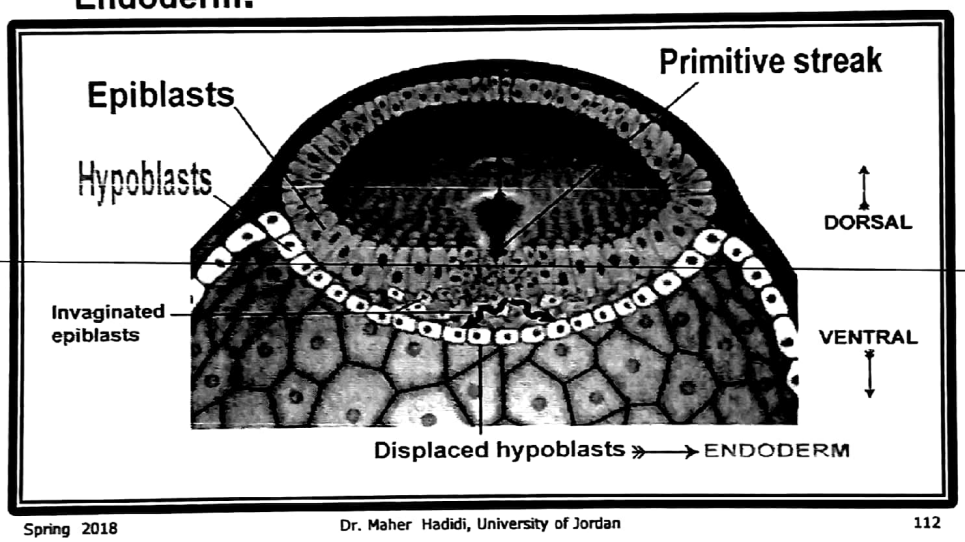
- Epiblasts massing up at the center and form two hilltops with a groove in between called the **Primitive Streak** .
- **P Streak** appears **caudally** and grow cranially in the median plane of the dorsal aspect of the embryonic disc.
- PS define the cranial end and the caudal of the embryo.



Dorsal aspect of embryo at Day-15

Third week.. continued

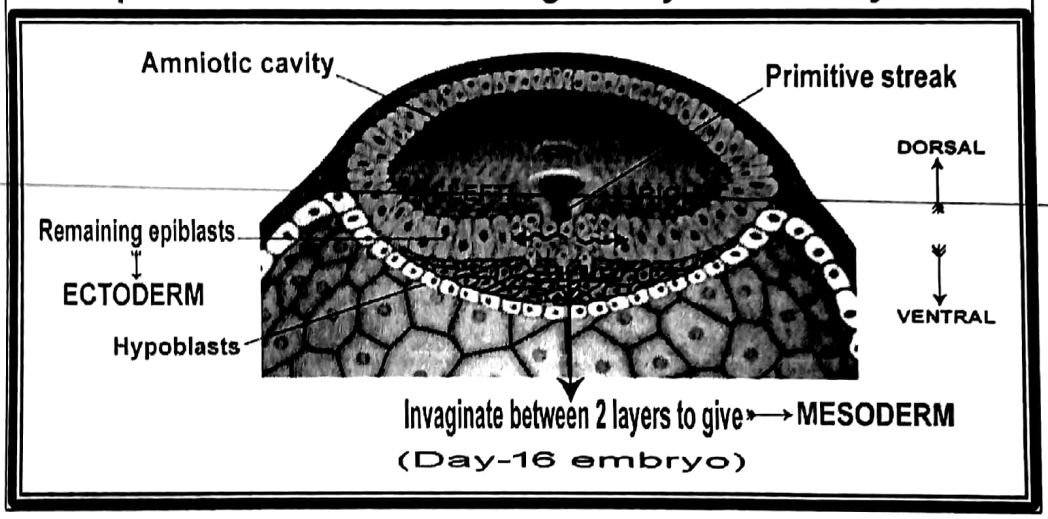
1. Some primitive streak epiblast cells invigilated down and displace the hypoblast cells and form the definitive **Endoderm.**



Third week.. continued

2. Another epiblast cells from primitive streak invaginates between epiblast and hypoblast to give the **Mesoderm.**
3. The remaining epiblast cells, form definitive **Ectoderm.**

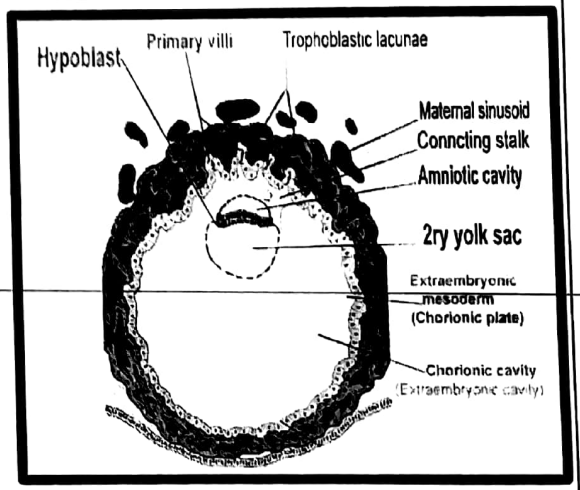
➢ **Epiblast is the source of all germ layers in embryo.**

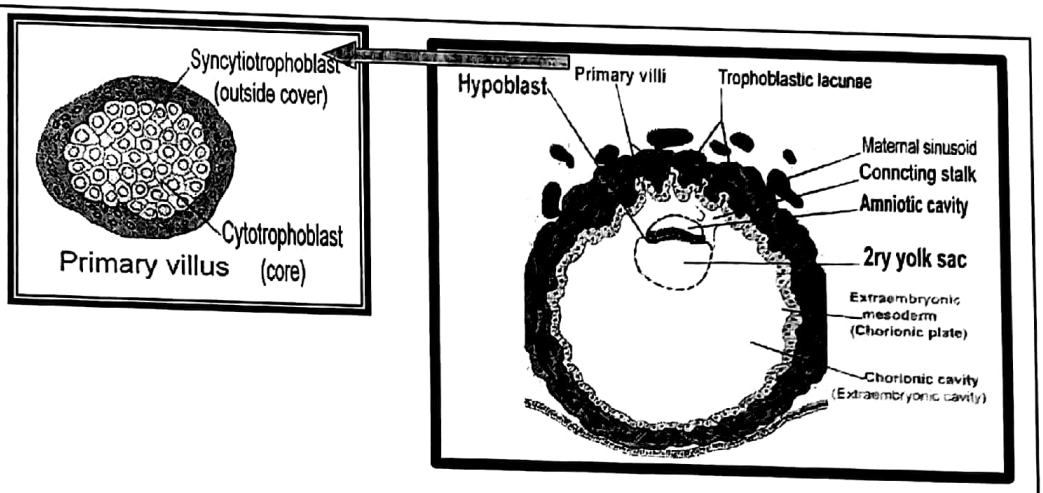


Placenta

Recall some of the events at the end of the 2nd week are:

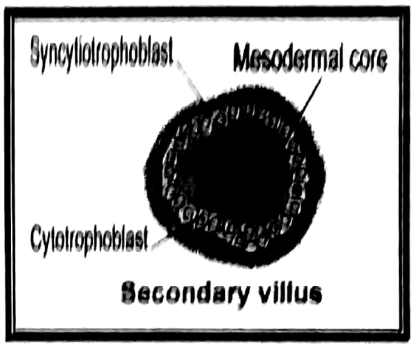
1. Formation of a fingerlike processes from cytotrophoblasts that invade the syncytiotrophoblast to form the **Primary chorionic villi.**
2. The extraembryonic mesoderm lining the cytotrophoblast also known as **chorionic plate.**

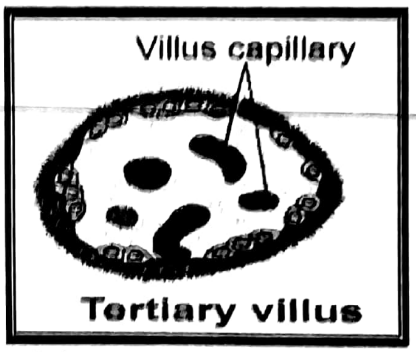


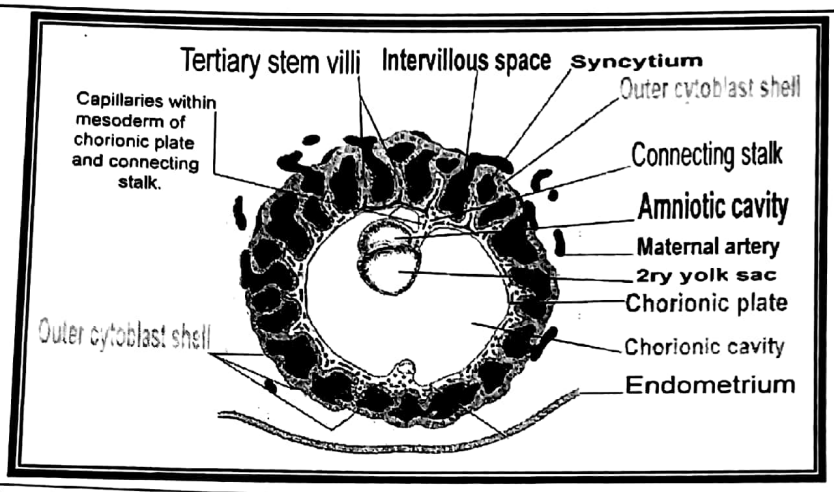


❖ By the beginning of the 3rd week, **1ry chorionic villi form** with cytotrophoblastic core covered by syncytiotrophopblasts.

- Afterward, extraembryonic mesodermal cells invade the core of the **1ry villi** to give the **2ry villi.**
- By the end of the 3rd week, the core mesodermal cells differentiates into fetal blood capillaries and the villi become **3ry villi** (chorionic villi) with capillary system.
- So each villus (passes through 1ry, 2ry and 3ry grades of histological differentiation).

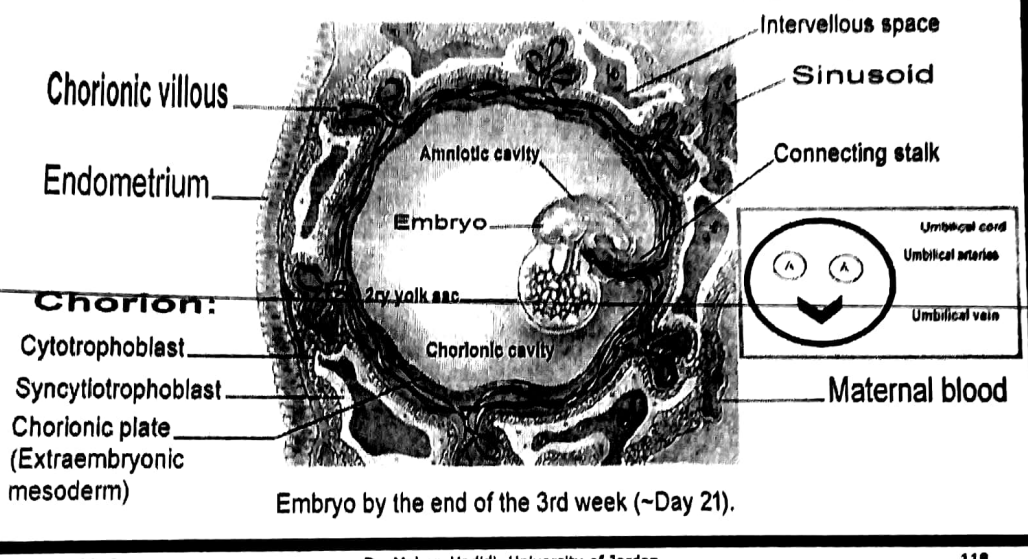






- From now, embryonic blood begins to circulate through capillaries of chorionic villi, establishing a union between intraembryonic circulatory system and placenta before heart beat in the 4th week.
- Now, the villous system is ready to provide the embryo with necessary nutrients and oxygen.

- Consequently, capillaries in the **chorionic villi** connect with the embryonic heart via the 2 umbilical arteries and one umbilical vein.



Embryo by the end of the 3rd week (~Day 21).