

## Discuss the second week of development

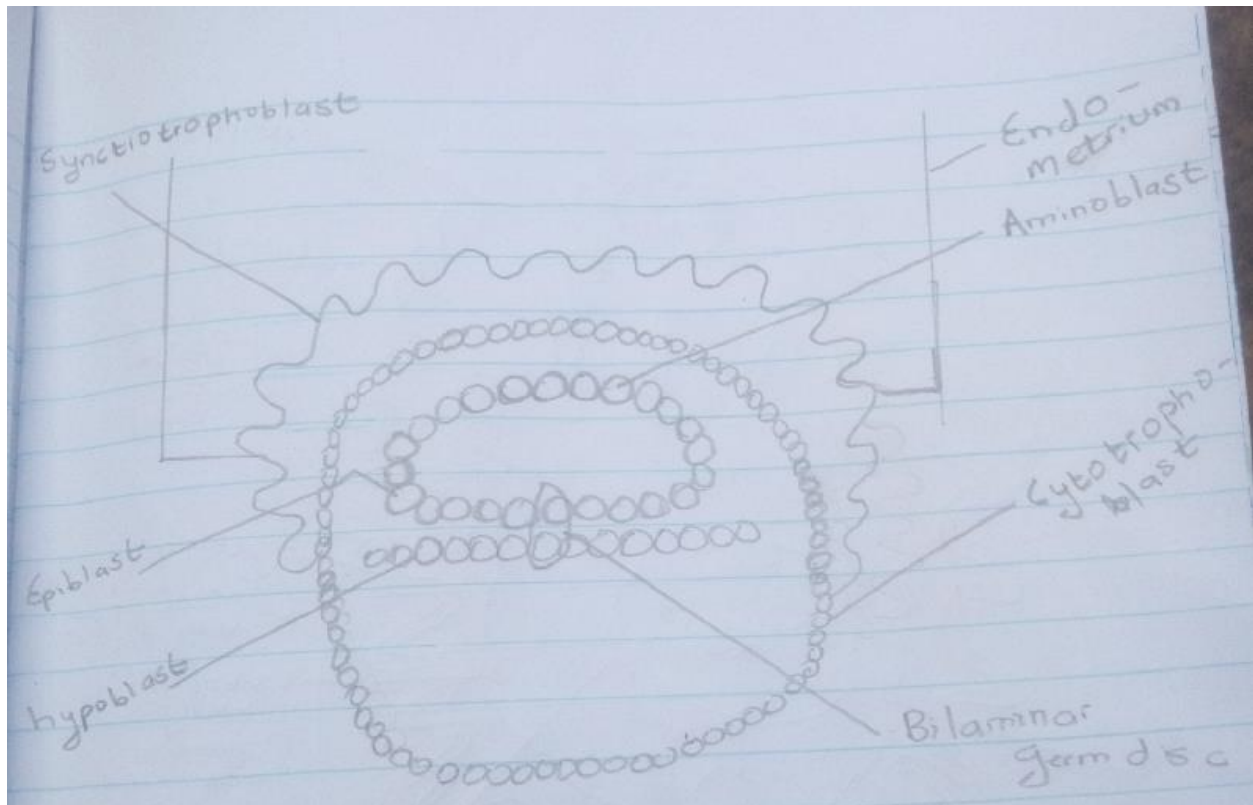
### Answers

During the second week of embryonic development, 3 events take place:  
Completion of implantation, Formation of a bilaminar germ disc (epiblast and hypoblast),  
Development of extra embryonic structures (amniotic cavity, amnion, umbilical vesicle {yolk sac}, connecting stalk, and chorionic stalk).

They are days in which events particularly occur. It will be discussed in tantrum.

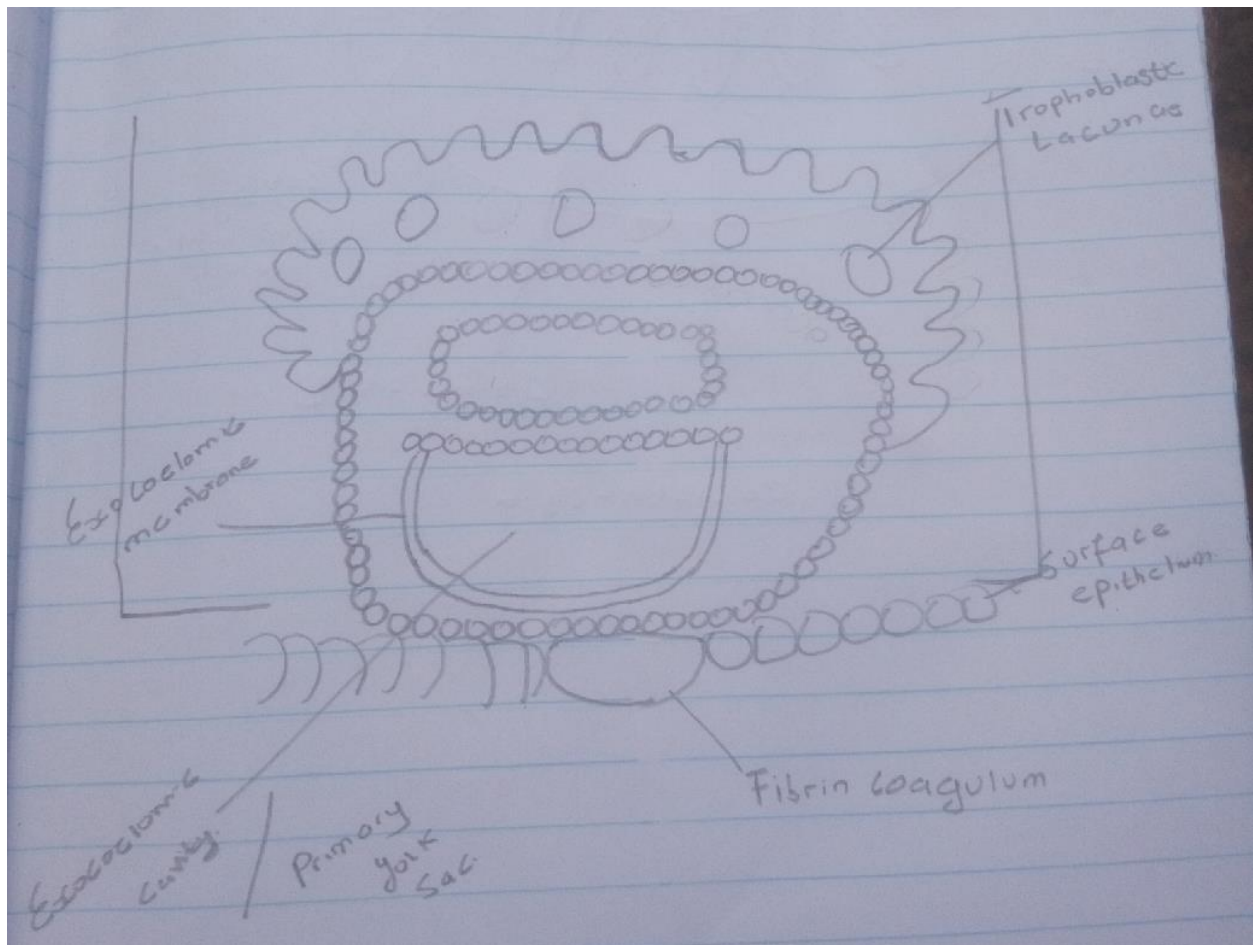
Day 8

- a) Blastocyst is partially embedded in the endometrium.
- b) Syncytiotrophoblast will continue to erode the endometrium.
- c) The cytotrophoblast will continue to divide and migrate into the region of the syncytiotrophoblast.
- d) The embryoblast will divide into two (2) cells-Hypoblast (A cuboidal cell), Epiblast ( A columnar cell).
- e) The cell of the epiblast that is adjacent to the cytotrophoblast is called aminoblast. These surround the amniotic cavity.
- f) The epiblast and hypoblast give rise to the bilaminar germ disc.



### Day 9

- a) Blastocyst is deeply embedded in the endometrium.
- b) The surface epithelium is closed by a blockage/coagulum called FIBRIN.
- c) The syncytiotrophoblast can continue to erode the endometrium.
- d) The cytotrophoblasts will continue to divide and migrate into the syncytiotrophoblast.
- e) Exocoelomic cavity lines the wall of the cytotrophoblast.
- f) Vacuoles develop in the region of syncytiotrophoblast and enlarge to become TROPHOBLASTIC LACUNAE.



Day 11-12

- a) Blastocyst is completely embedded in the endometrium.
- b) The syncytiotrophoblast will continue to erode the endometrium.
- c) The surface epithelium almost entirely covers the original defect in the uterine wall.
- d) At this stage, sinusoids (blastocysts ruptured capillaries) communicate with lacunae transporting blood and nutrients to developing embryo i.e. entering the region of blastocysts.
- e) A primordial uteroplacenta circulation is established.

f) A space of mesoderm develops between the cytotrophoblast and the aminoblast and exocleomic membrane except at the point of the connective stalk.

This space is known as EXTRAEMBRYONIC MESODERM.

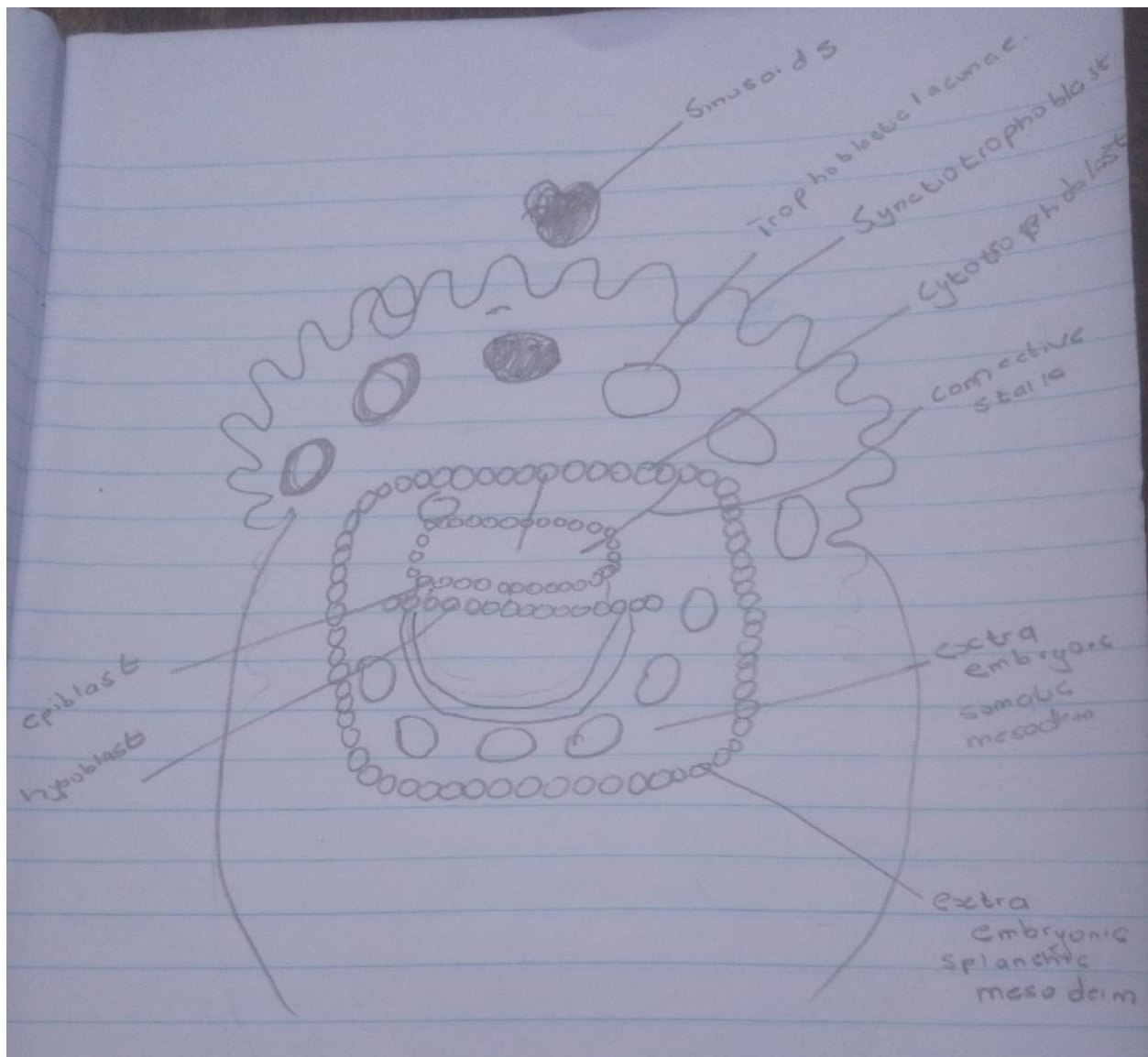
g) Inside this mesoderm, extra embryonic cavity develops

h) This cavity divides the mesoderm into two parts. The part that is adjacent to the cytotrophoblast is the EXTRA EMBRYONIC SOMATIC MESODERM while the other one is the EXTRA EMBRYONIC SPLANCHNIC MESODERM (lining covering the yolk sac).

i) As the conceptus implants, the endometrial connective tissue cells under a transformation is called a DECIDUAL REACTION.

j) During this transformation, the cells of the endometrium swell because of the accumulation of glycogen and lipid in their cytoplasm, and they are known as DECIDUAL CELLS.

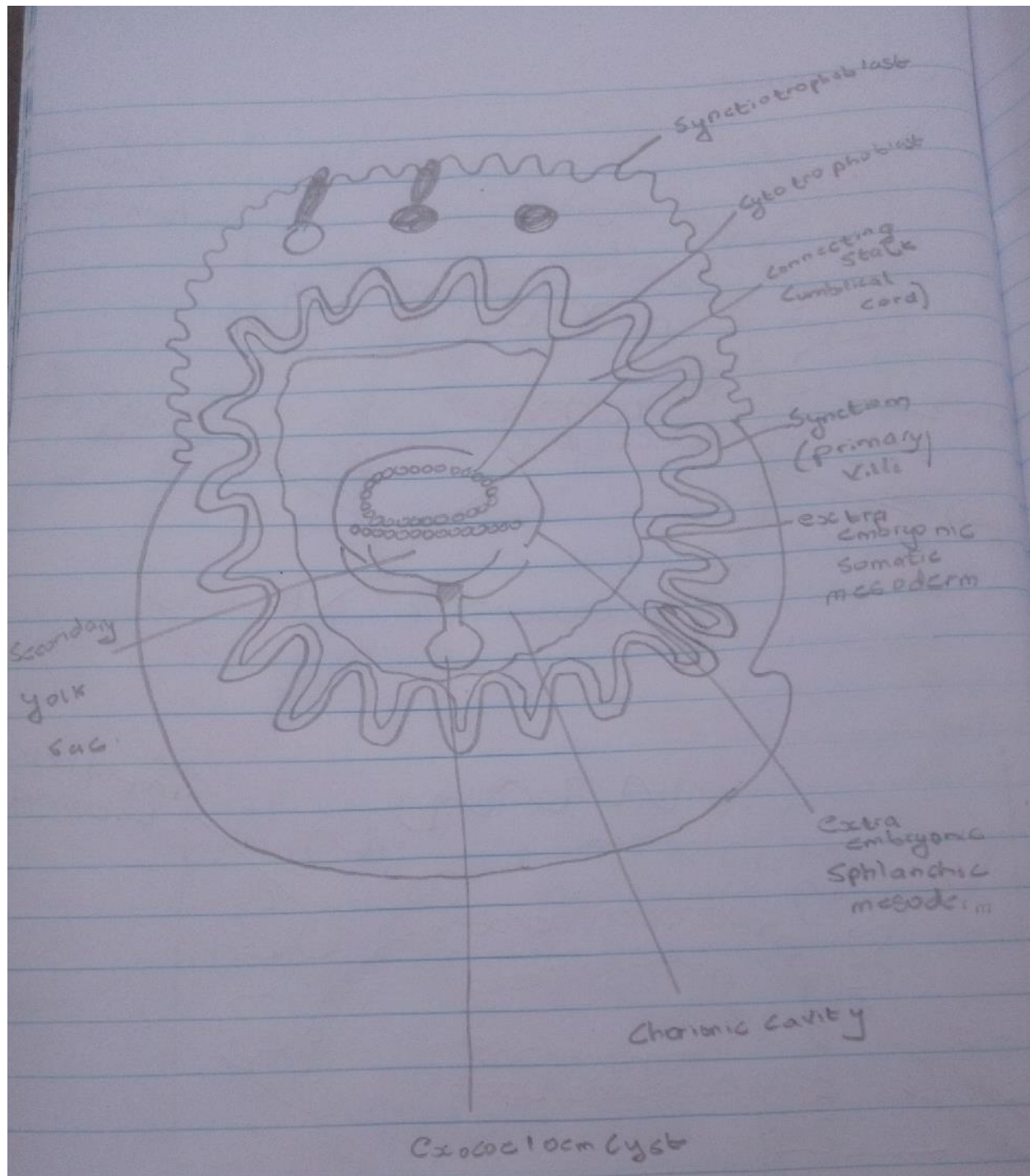
k) The primary function of the decidual reaction is to provide nutrition of the early embryo and an immunologically privileged site for the conceptus.



Day 13

- a) When the cytotrophoblast is covered by syncytium, this is called a PRIMARY VILLIA.
- b) Connective stalk forms the PRIMORDIAL UMBILICAL CORD.
- c) The extra embryonic cavity becomes enlarged and this is called the CHORIONIC CAVITY.
- d) Primary yolk sac becomes smaller and becomes SECONDARY UMBILICAL VESICLE.

- e) A small portion of exocoelomic cavity is plucked off is called the EXOCOELOMIC CYST.
- f) The extraembryonic mesoderm lining the inside of the cytotrophoblast is then known as the CHORIONIC\_PLATE.
- g) The only place where extraembryonic mesoderm traverses\_the chorionic cavity is in the CONNECTING STALK.



### Clinical correlates

HCG ( Human chorionic gonadotrophoblast) is produced by syncytiotrophoblast. Its function is keeping the corpus luteum secreting estrogen and progesterone as it

enters the maternal blood via the lacunae. HCG maintains the hormonal activity of the corpus luteum in the ovary during pregnancy. HCG can be detected in maternal blood or urine as early as day 10 of pregnancy and is the basis for pregnancy tests. Enough HCG is produced by the syncytiotrophoblast at the end of the second week to give a positive pregnancy test, even though the woman is probably unaware that she is pregnant.

### Extrauterine implantation

Blastocysts may implant outside the uterus. These implantations result in ectopic pregnancies. 95% to 98% of ectopic implantations occur in the uterine tubes, most often in the ampulla and isthmus.