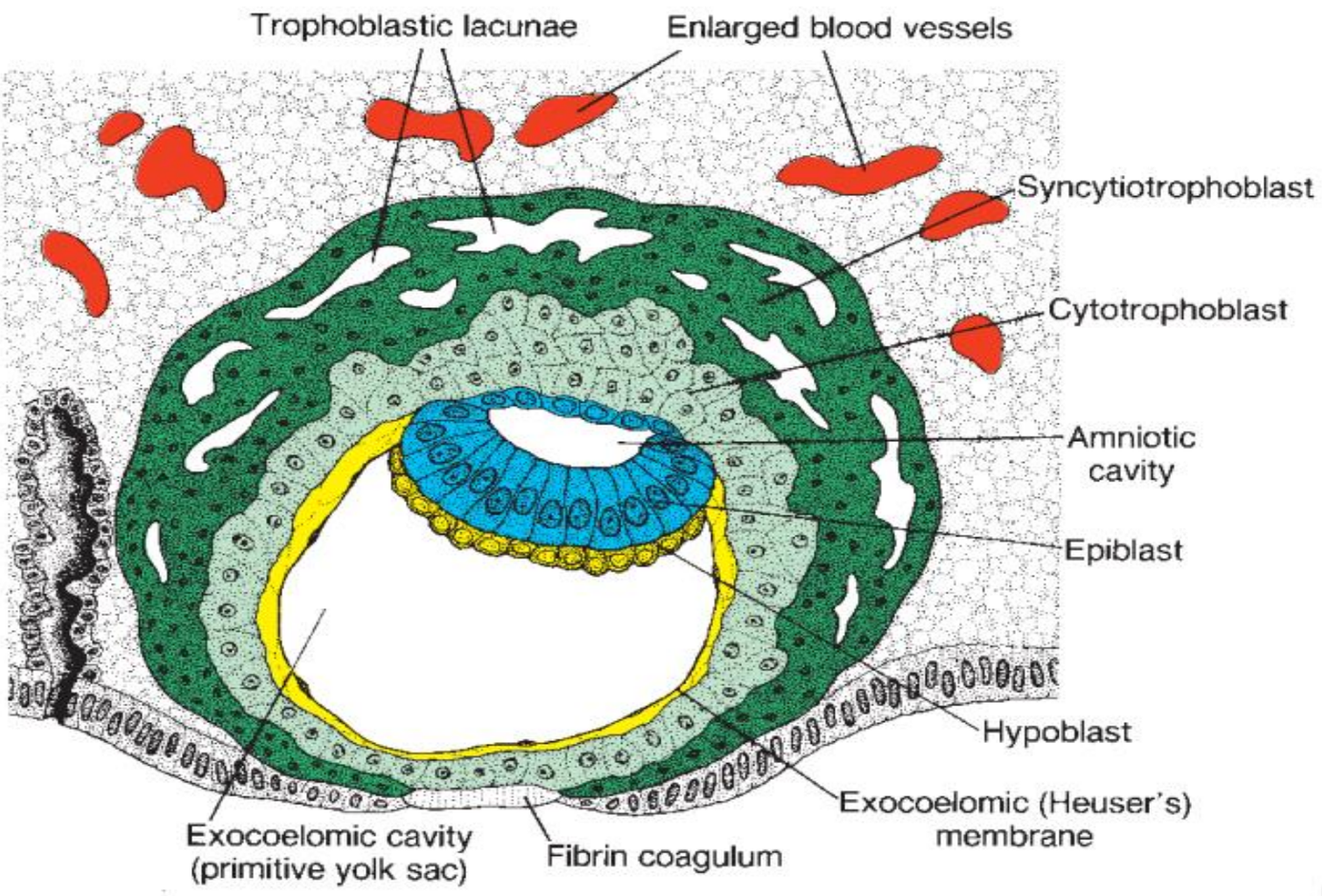
YOLK SAC

★ It is the cavity develops on the ventral aspect of the embryonic disc.

★ **Development:**

1. Primary yolk sac:

- It appears at the **9th** and 10th days.
- Flat cells from the hypoblast form **Heuser's membrane** which lines the inner surface of the blastocele .
- The original blastocele is now called the primary yolk sac.



2. Secondary yolk sac:

- The hypoblast at the end of the 2nd week produces cells that migrate inside of Heuser's membrane to form a smaller cavity within the primary yolk sac known as the secondary yolk sac.

3. Definitive yolk sac:

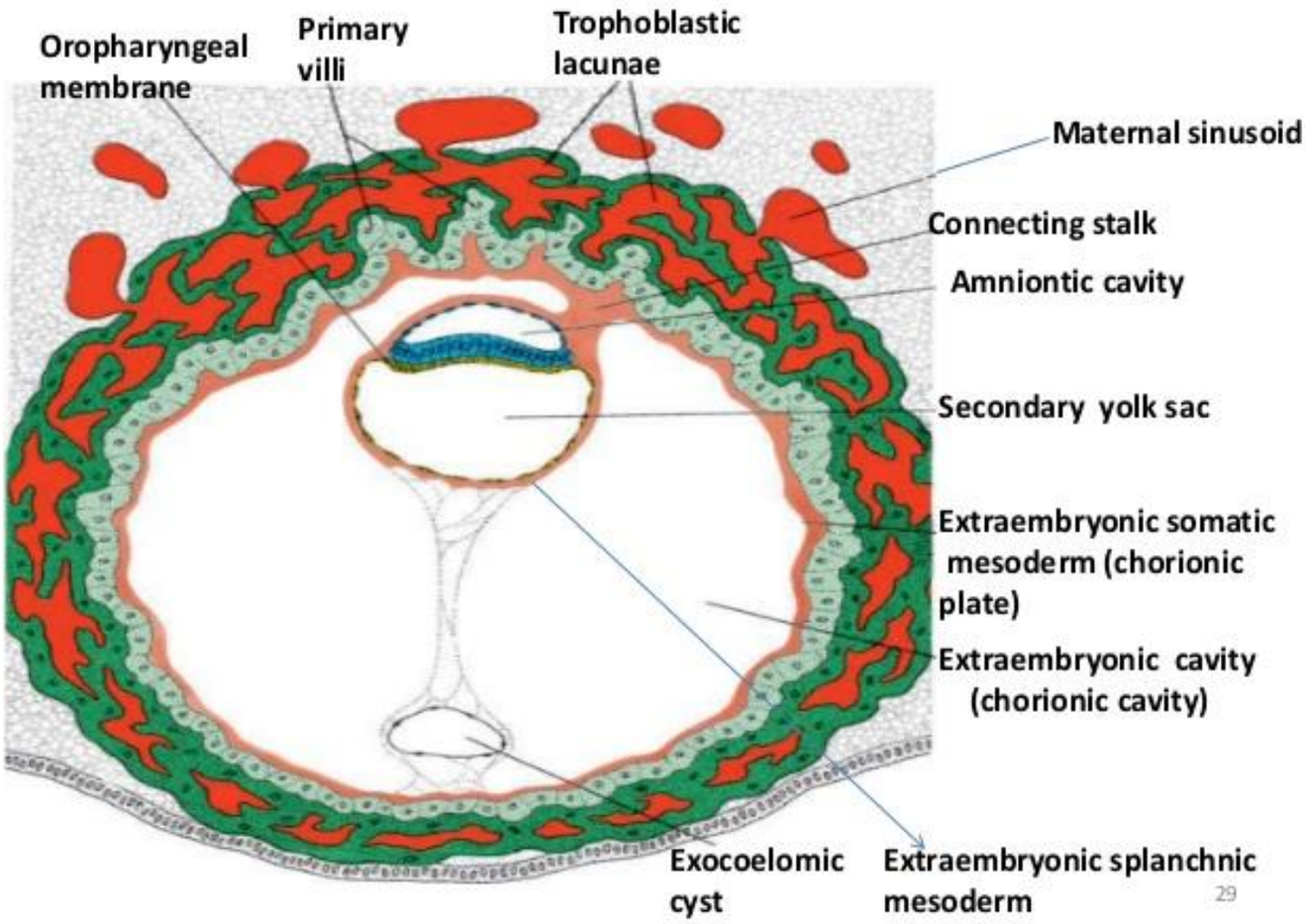
- During the **3rd week** the hypoblast is replaced by the **endoderm** which forms the roof of the yolk sac .
- As a result of **folding** , the secondary yolk sac is divided into :

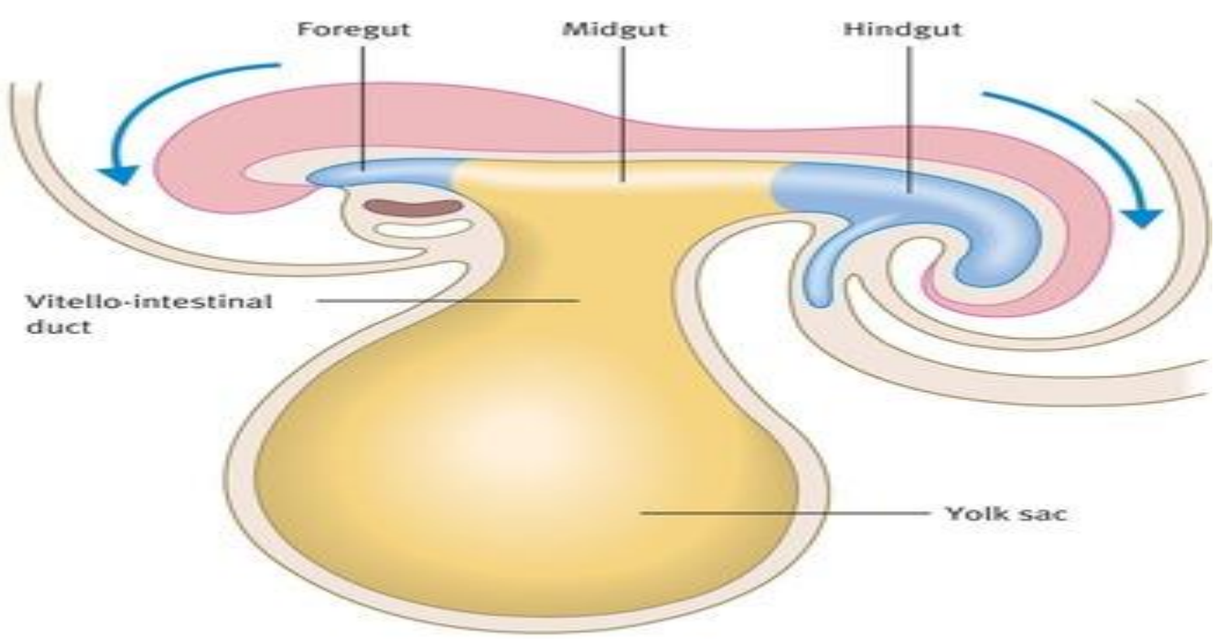
1- **The gut** :The upper part inside the embryo .

2- **Definitive yolk sa**c : The lower part outside the embryo inside the primitive umbilical cord .

3- **vitallo-intestinal duct** (yolk sac stalk) which present in the primitive umbilical cord and connects the midgut with the definitive yolk sac.

★ **Fate:** the definitive yolk sac and vitallo-intestinal duct are gradually disappear.





Arrows indicate the formation of head and tail folds.

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★ **Functions of the yolk sac**

1. Formation of the ***gut.***
2. From its caudal wall migrate the ***primordial germ cells*** to the developing gonad .
3. The **mesoderm covering** the wall of the yolk sac forms the ***blood cells*** (3-6 week of embryonic life) and the ***vitelline vessels***.
4. The intra-embryonic parts of the **vitelline vessels** form the single branches of the abdominal aorta, the portal and hepatic veins and the liver sinusoids.