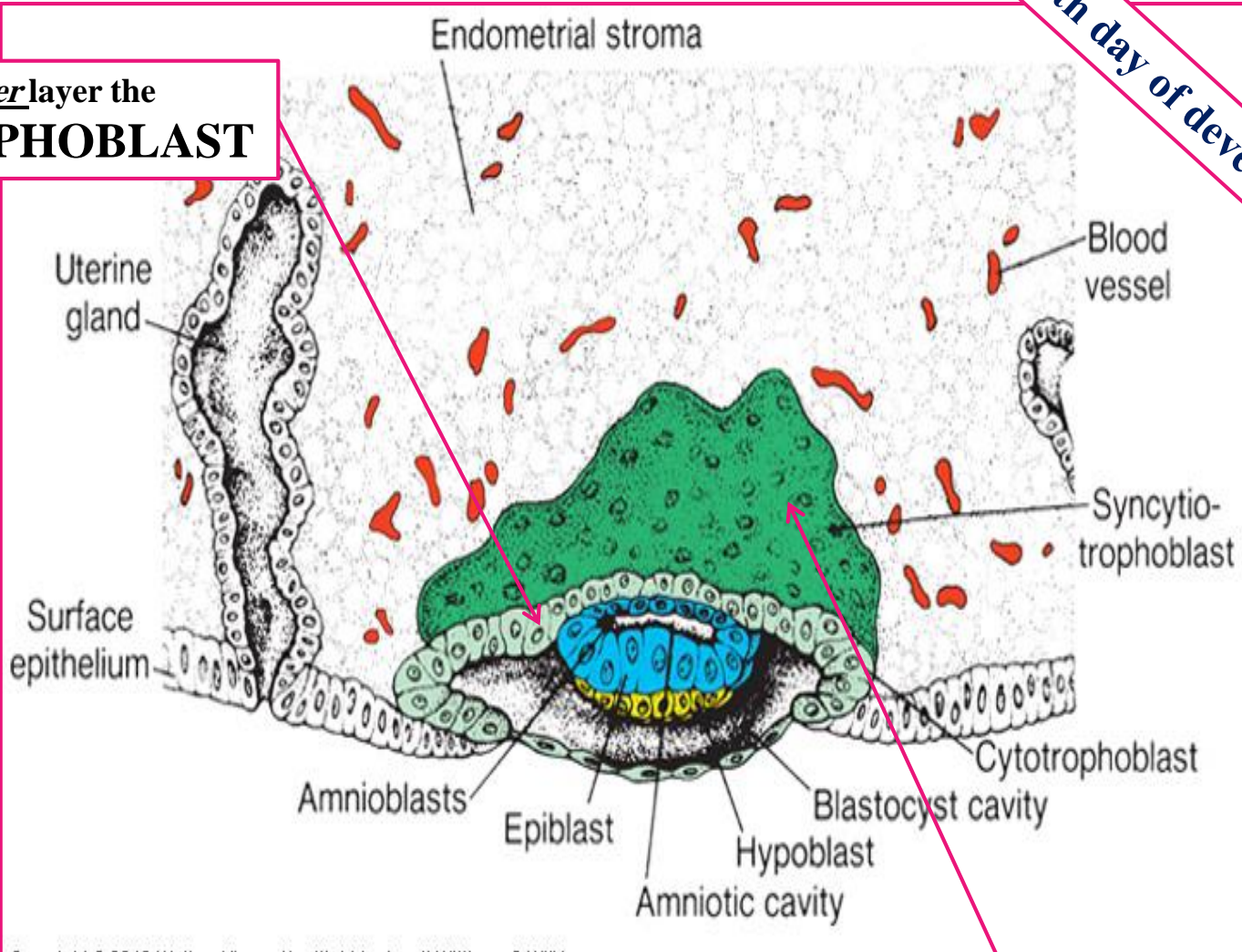


The trophoblast differentiates into two layers:

At the eighth day of development

(1) *an inner* layer the **CYTOTROPHOBLAST**



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(2) *an outer* zone the **SYNCYTIOTROPHOBLAST**

DAY 9

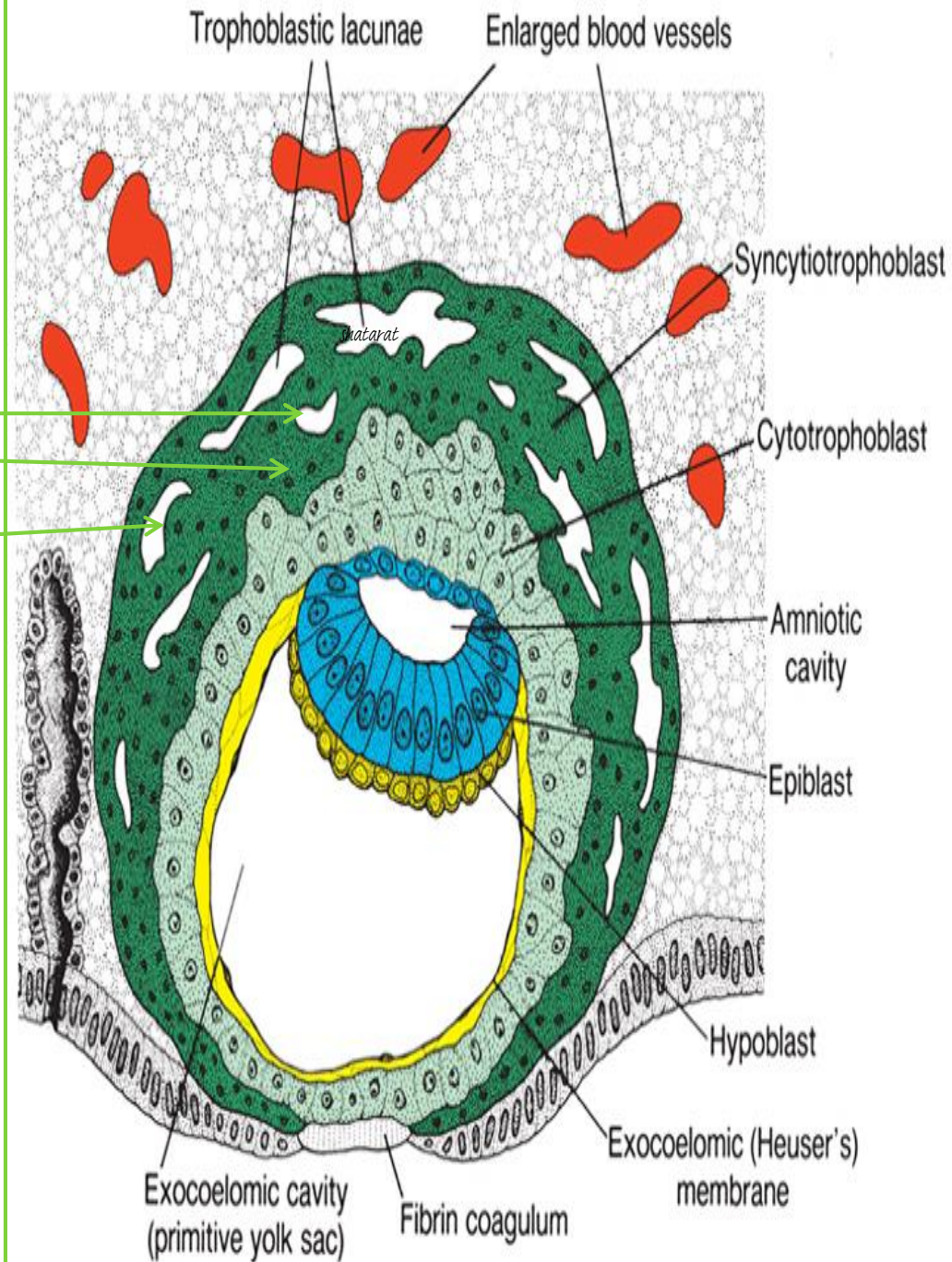
❖ At the trophoblast
vacuoles

appear in the syncytium.

These vacuoles fuse and form large
lacunae

This phase of trophoblast development
is known as the

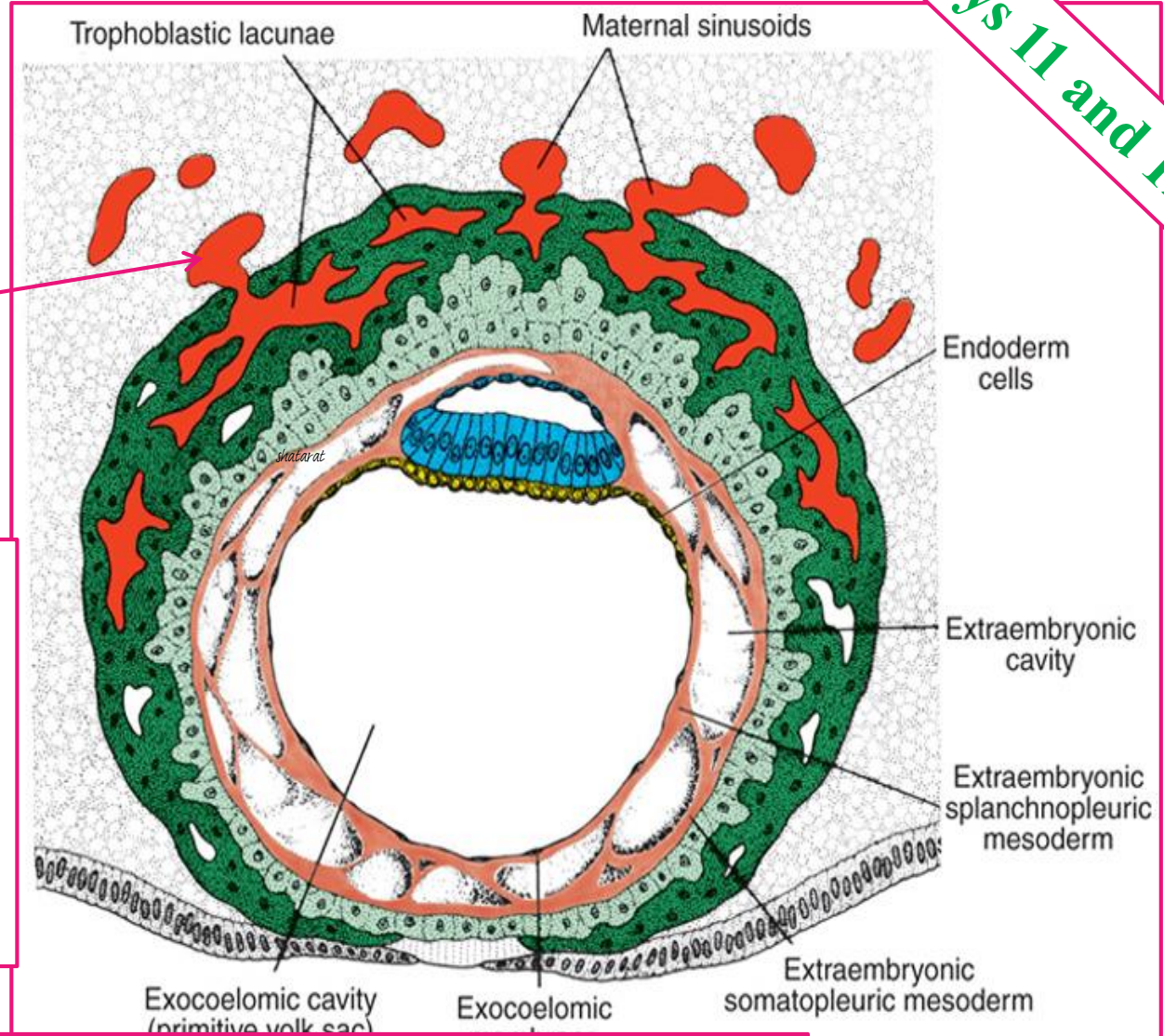
LACUNAR STAGE



Days 11 and 12

➤ The **syncytiotrophoblast** start to penetrate deeper into the stroma and eroding the **maternal capillaries** known as sinusoids.

➤ The syncytial lacunae become continuous with the sinusoids, and maternal blood enters the **lacunar system**



Thus establishing the

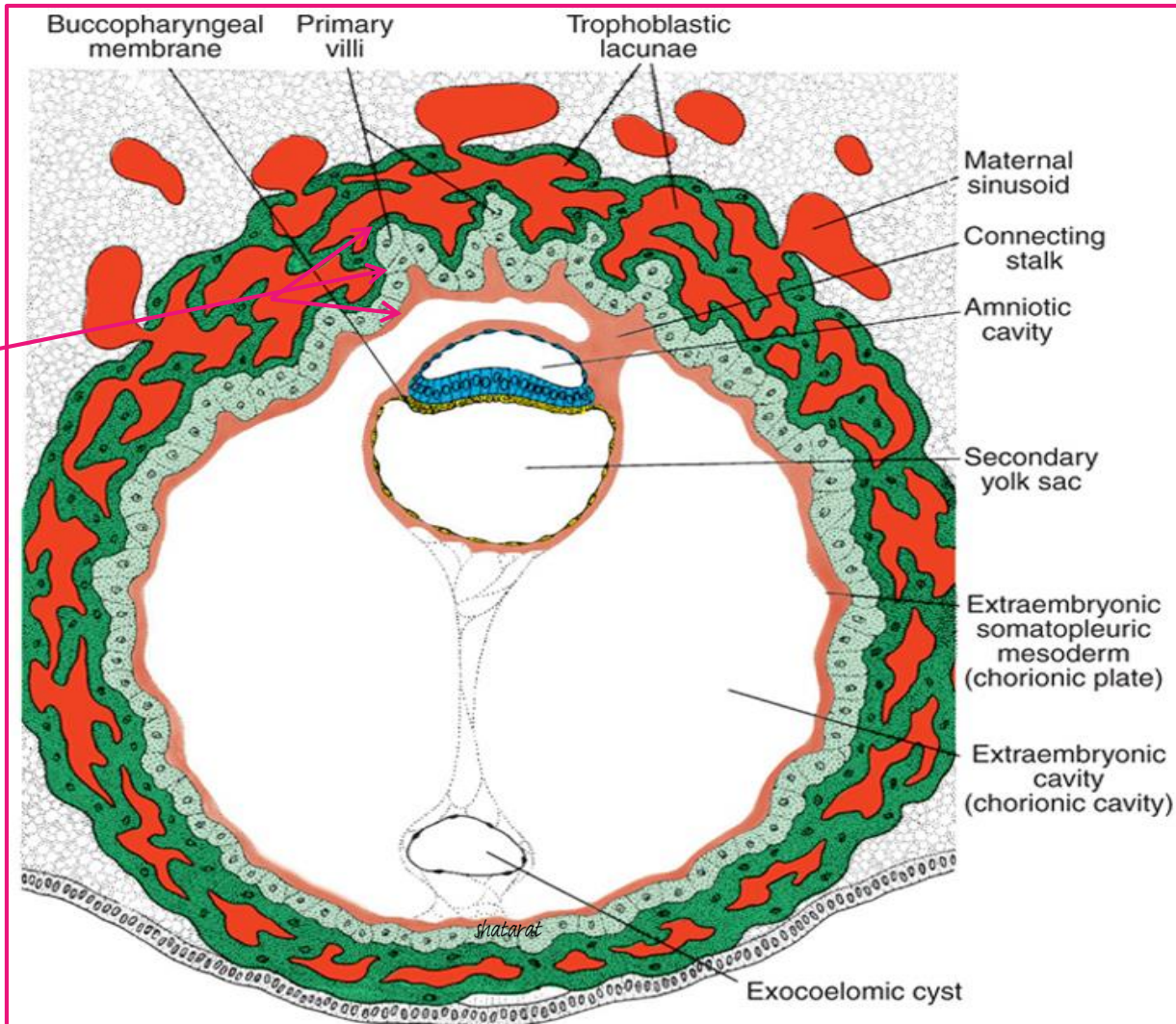
UTEROPLACENTAL CIRCULATION

Cells of the cytotrophoblast proliferate

locally and penetrate into the syncytiotrophoblast, forming cellular columns surrounded by syncytium.

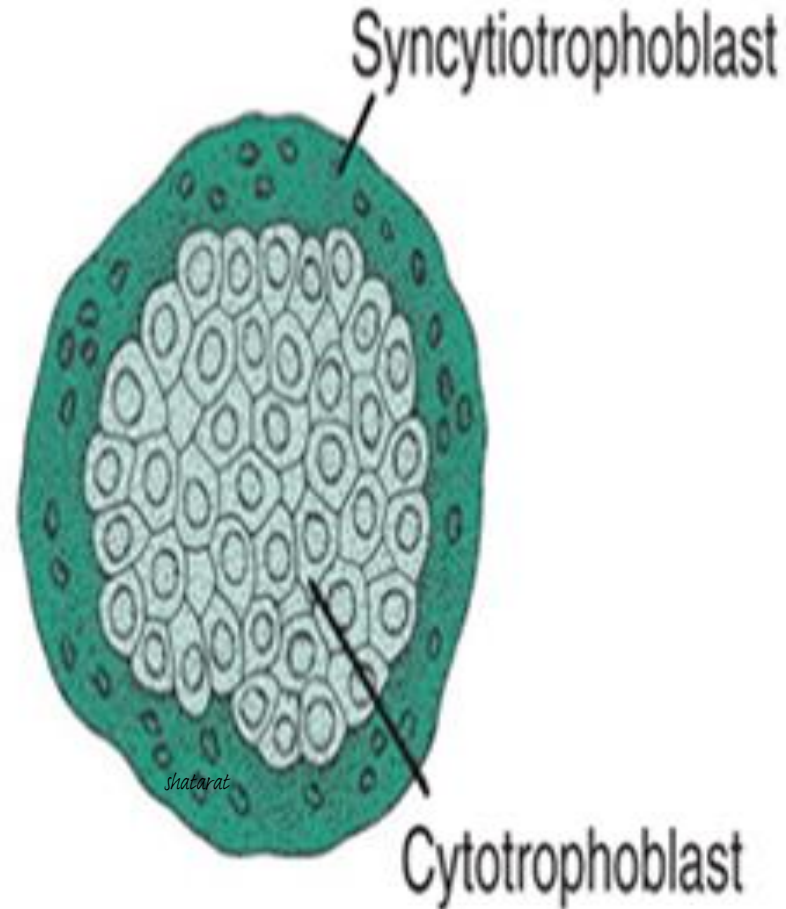
Cellular columns with the syncytial covering are known as

PRIMARY VILLI



Dr. A.T Shatarat, Dep. Anatomy, School of medicine, The University of Jordan

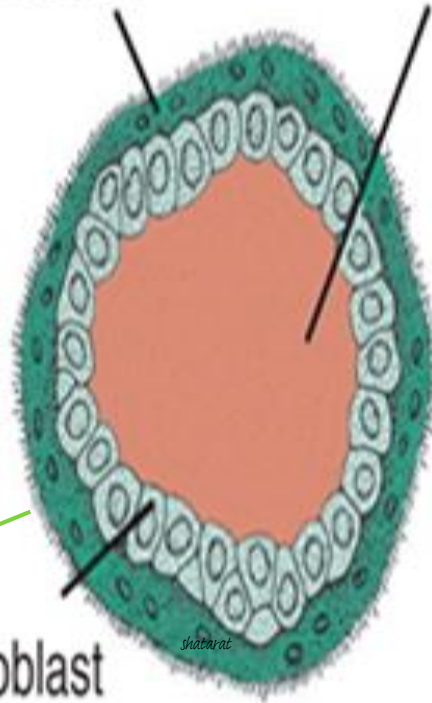
By the beginning of the third week
The trophoblast is characterized by
primary villi
that consist of a
cytotrophoblastic core covered
by asyncytial layer



A Primary villus

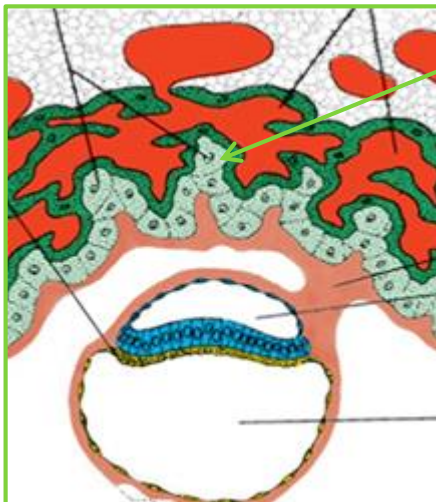
During further development mesodermal cells penetrate the core of primary villi and grow toward the decidua
The newly formed structure is known as
a secondary villus

Syncytiotrophoblast Mesoderm core



Cytotrophoblast

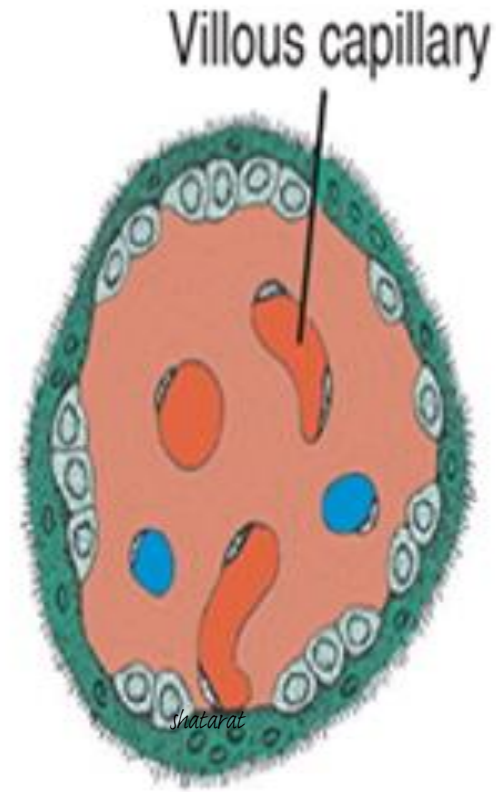
B Secondary villus



By the end of the third week, mesodermal cells in the core of the villus begin to differentiate into blood cells and small blood vessels

forming the villous capillary system The villus is now known as a

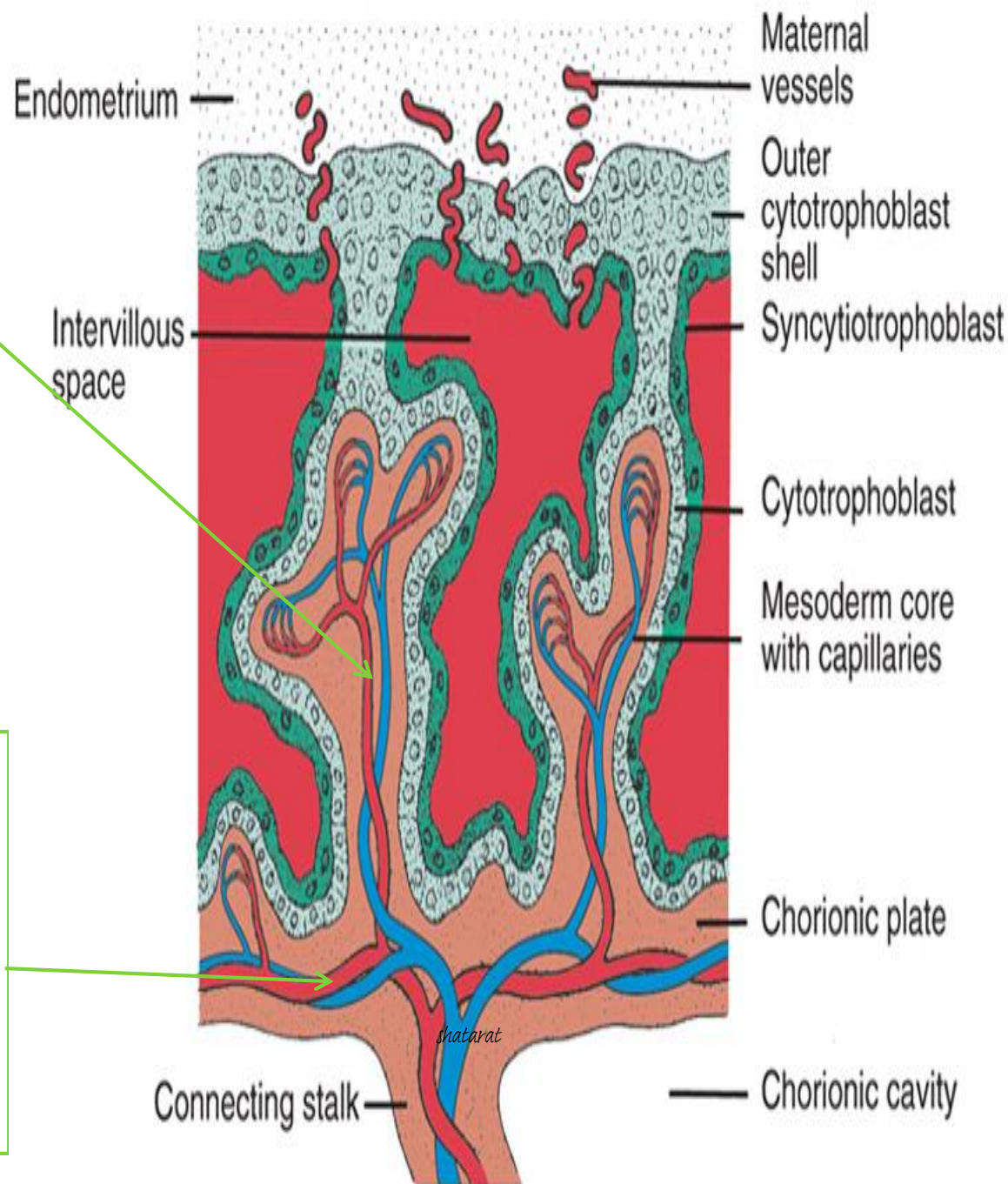
Tertiary villus
or
definitive placental villus



C Tertiary villus

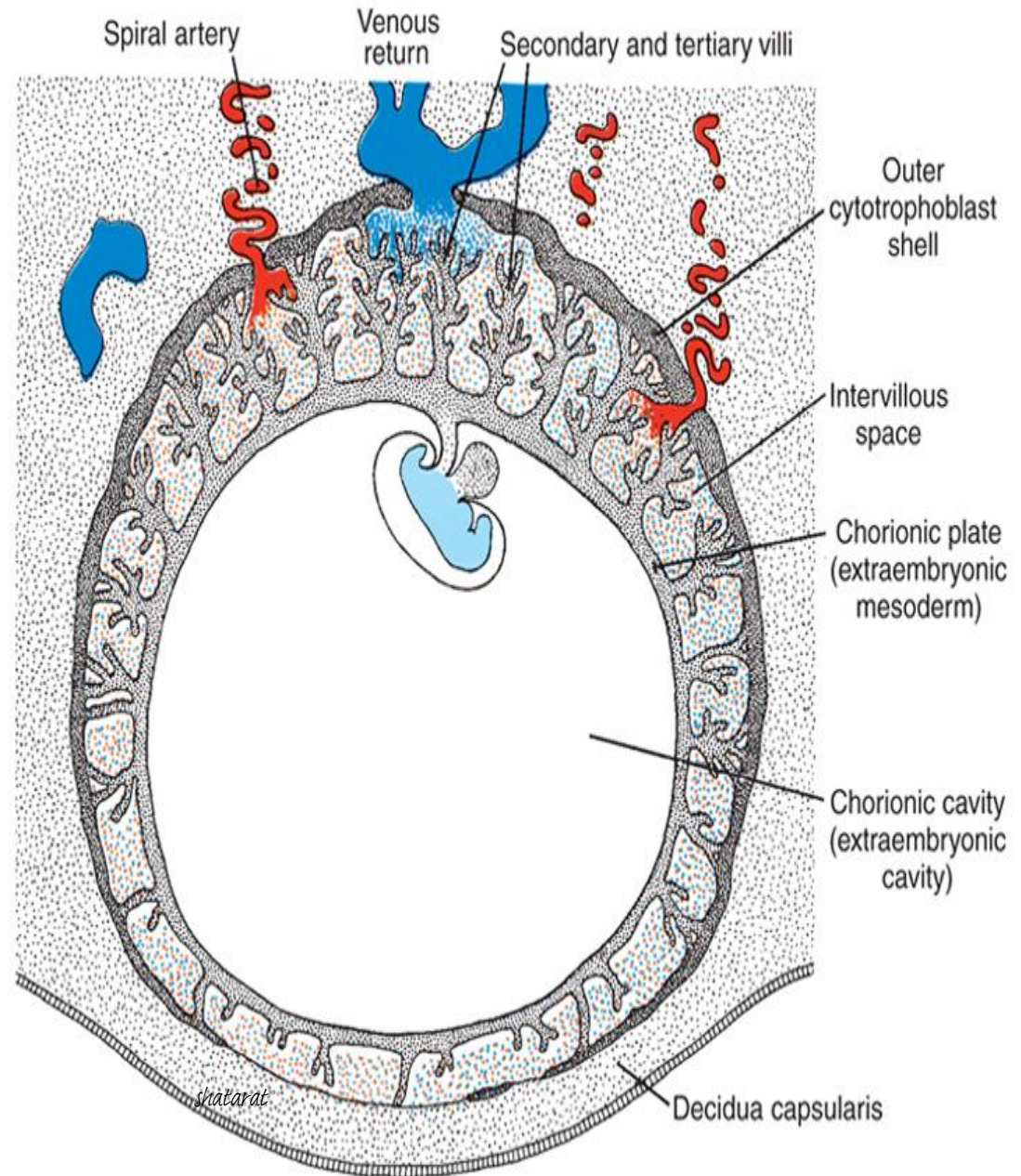
➤ **Capillaries in tertiary villi make contact with capillaries developing in the mesoderm of the chorionic plate and in the connecting stalk**

These vessels, in turn, establish contact with the intraembryonic circulatory system, connecting the placenta and the embryo



Maternal blood is delivered to the placenta by spiral arteries in the uterus

➤ During the following months, numerous small extensions grow out from existing stem villi and extend as free villi into the surrounding lacunar or intervillous spaces.



The placental membrane, which separates maternal and fetal blood, is initially composed of four layers:

- (1) the endothelial lining of fetal vessels
- (2) the connective tissue in the villus core
- (3) the cytotrophoblastic layer
- (4) the syncytium



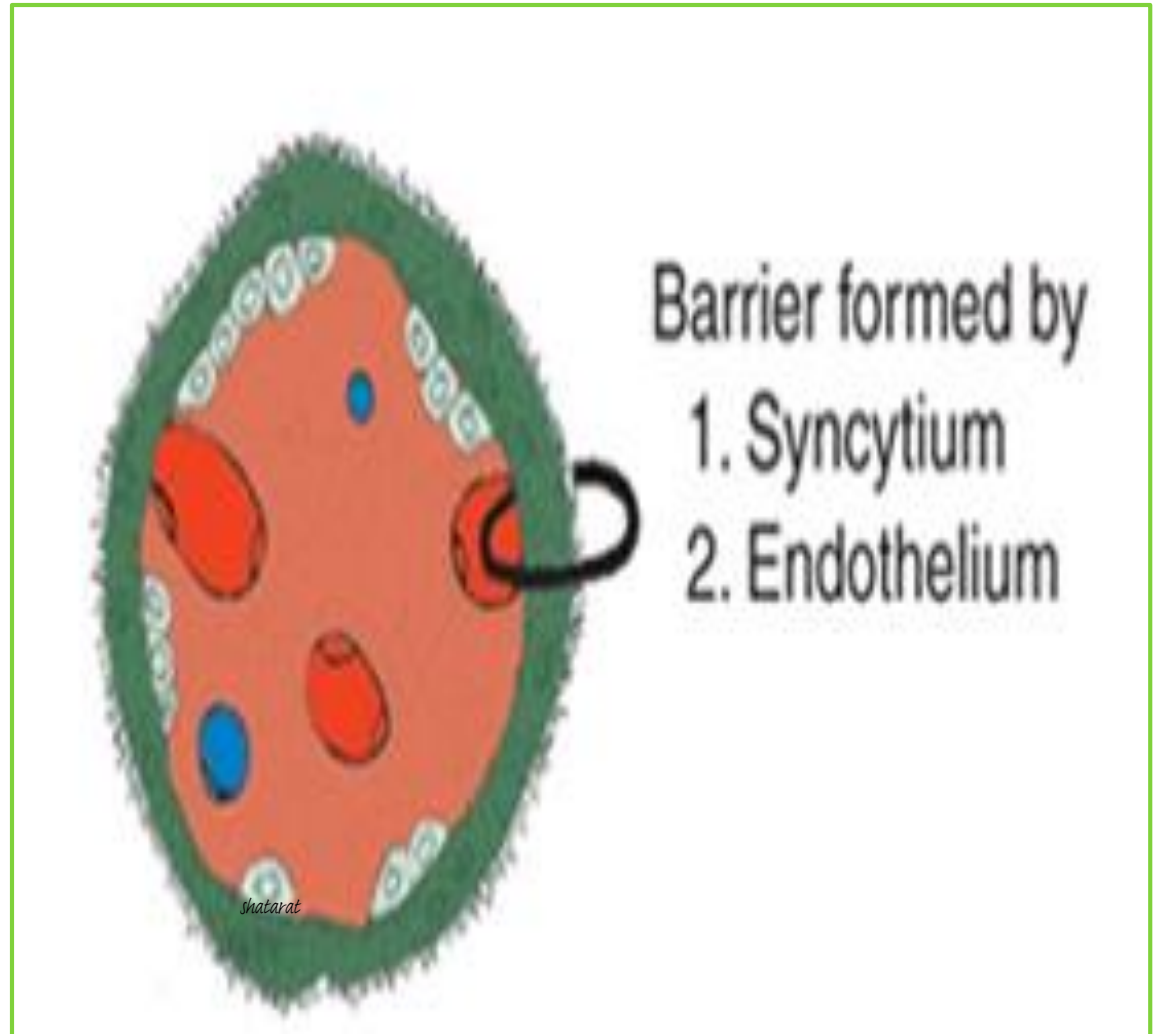
- Barrier formed by
1. Syncytium
 2. Cytotrophoblast
 3. Connective tissue
 4. Endothelium

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FROM THE FOURTH MONTH ON

The placental membrane **thins** because the **endothelial lining of the vessels comes in intimate contact with the syncytial membrane**, greatly increasing the rate of exchange

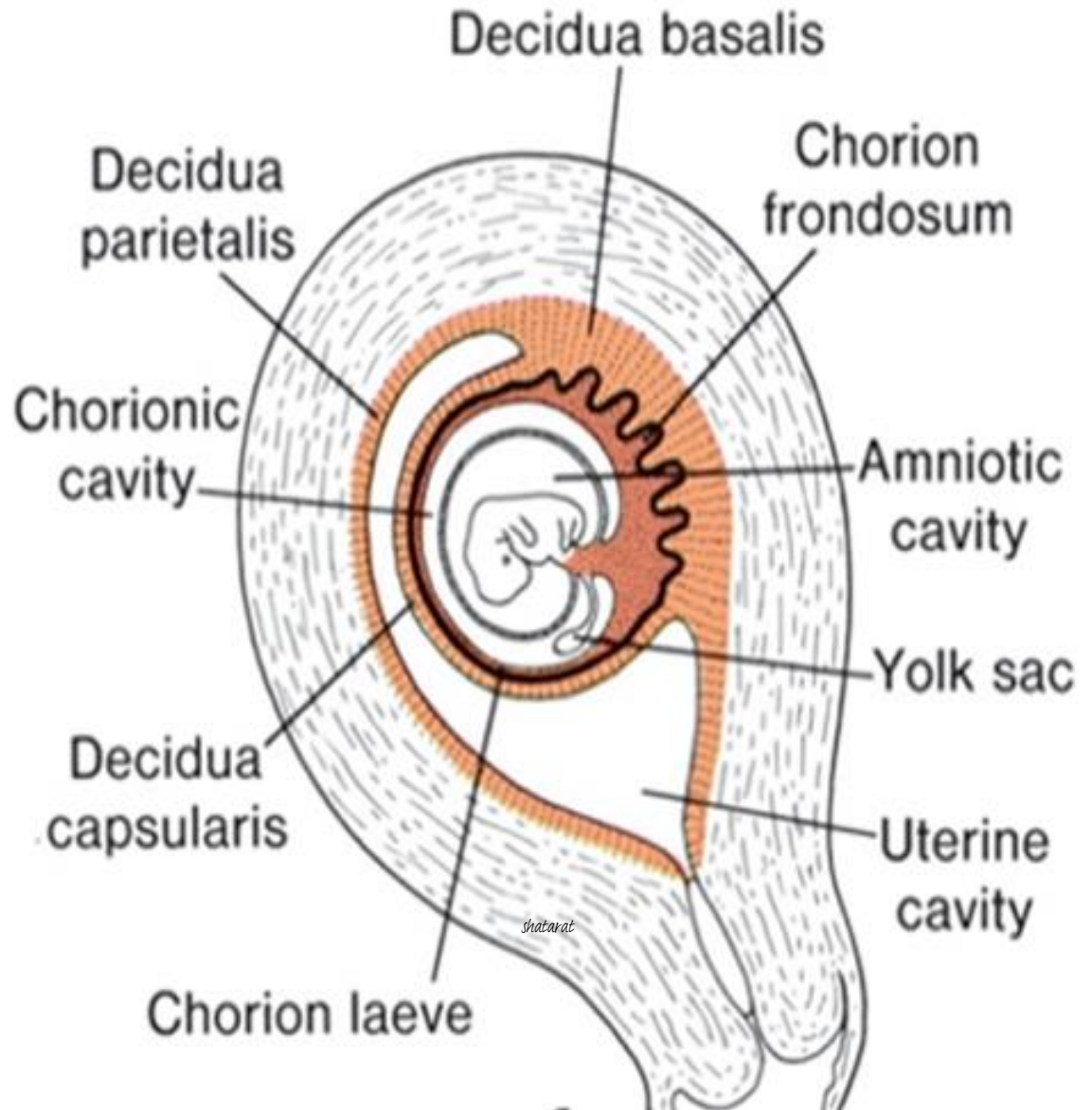
Some times called the **placental barrier**, the placental membrane is not a true barrier, as many substances pass through it freely



By the beginning of the fourth month, the placenta has two components:

- (1) a fetal portion, **formed by the chorion frondosum**
- (2) a maternal portion, formed by **the decidua basalis**

In the junctional zone, trophoblast and decidual cells intermingle.



PLACENTA

Two component

Fetal

is derived from the trophoblast and
extraembryonic mesoderm

CHORION
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FRONDOSUM

Maternal

The maternal component is derived from the
Uterine endometriumshatarat
DECIDUA BASALIS

Decidua

➤ Decidua: (is the structure that will separate)

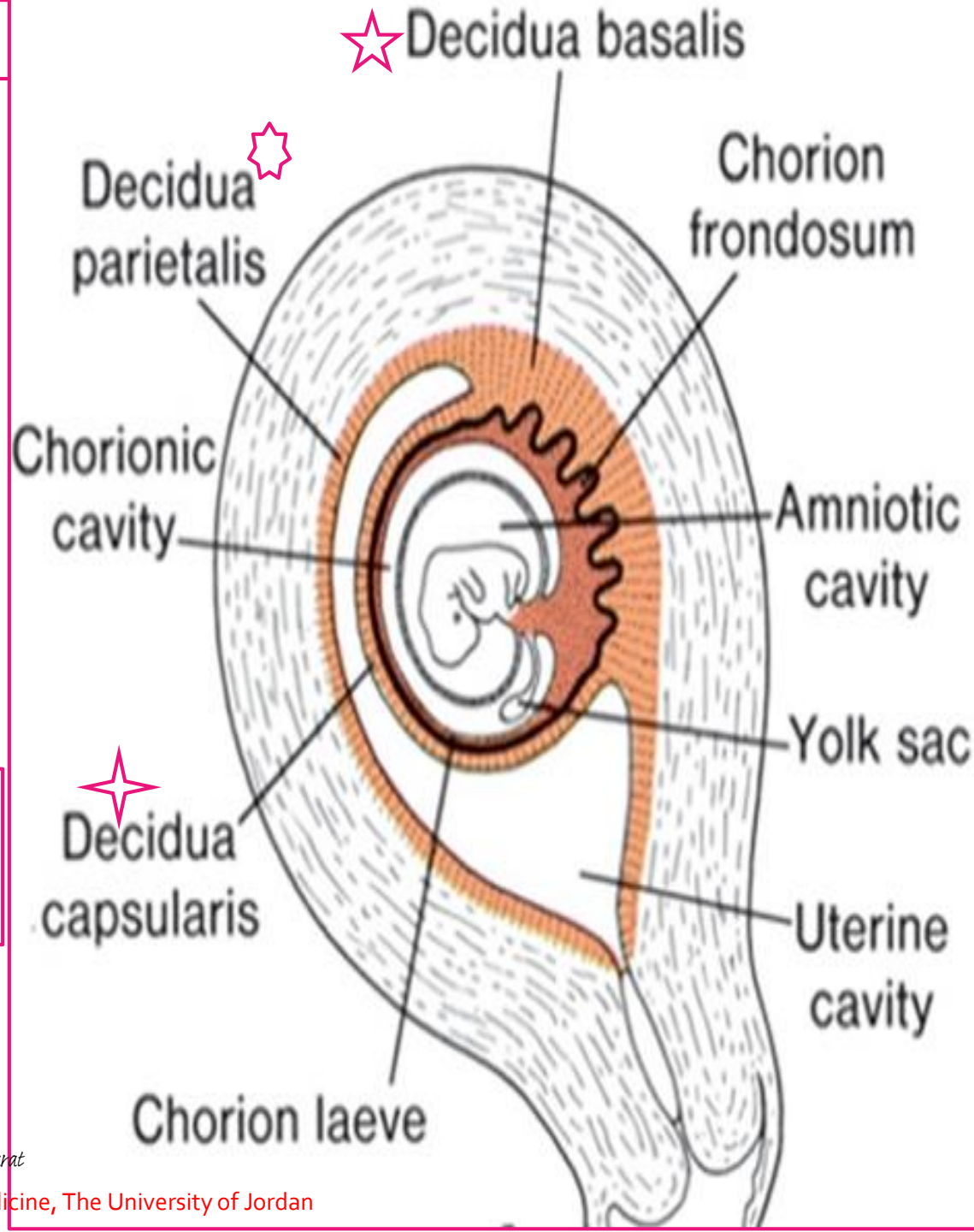
➤ is the endometrium after implantation

Parts:

➤ Decidua basalis: under the implantation site

➤ Decidua capsularis: between the implantation site and the uterine lumen

➤ Decidua parietalis: remaining endometrium

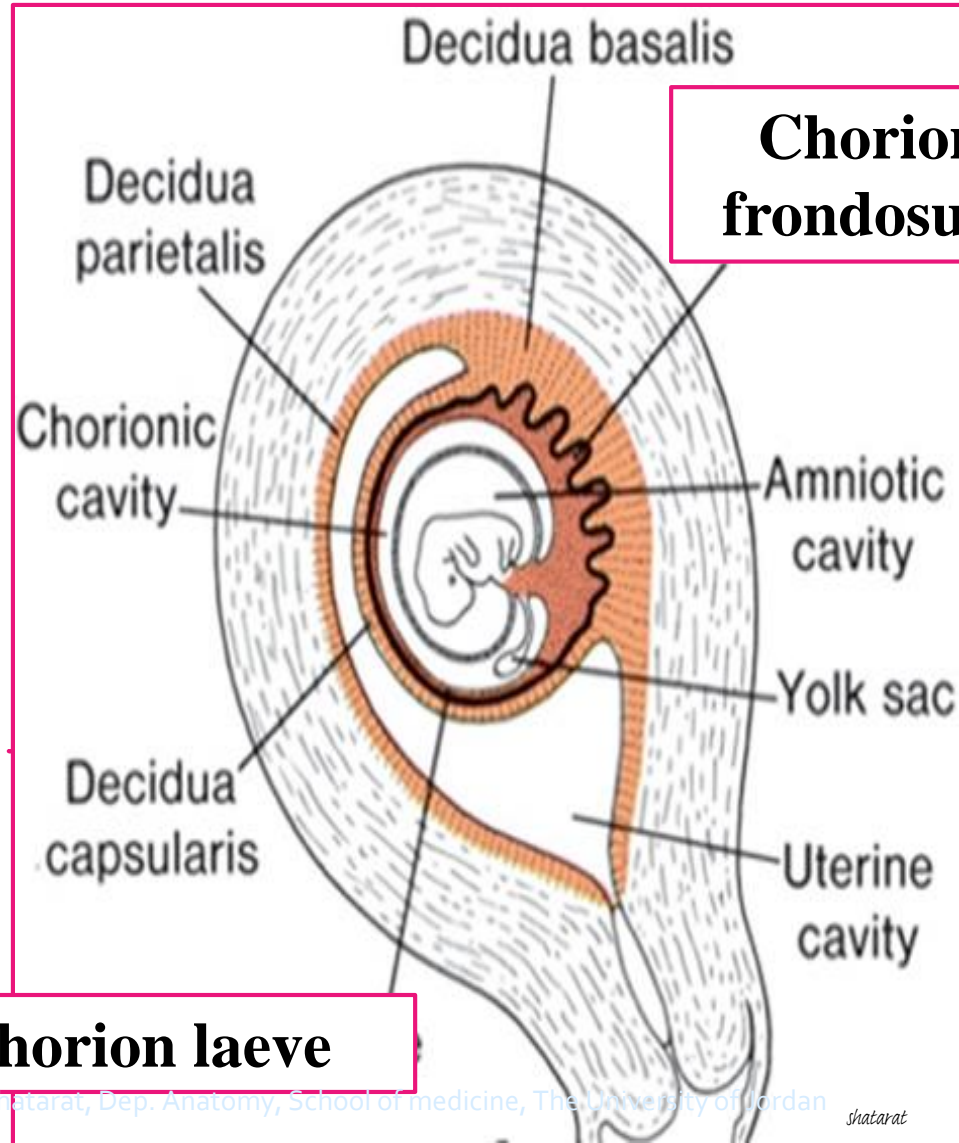


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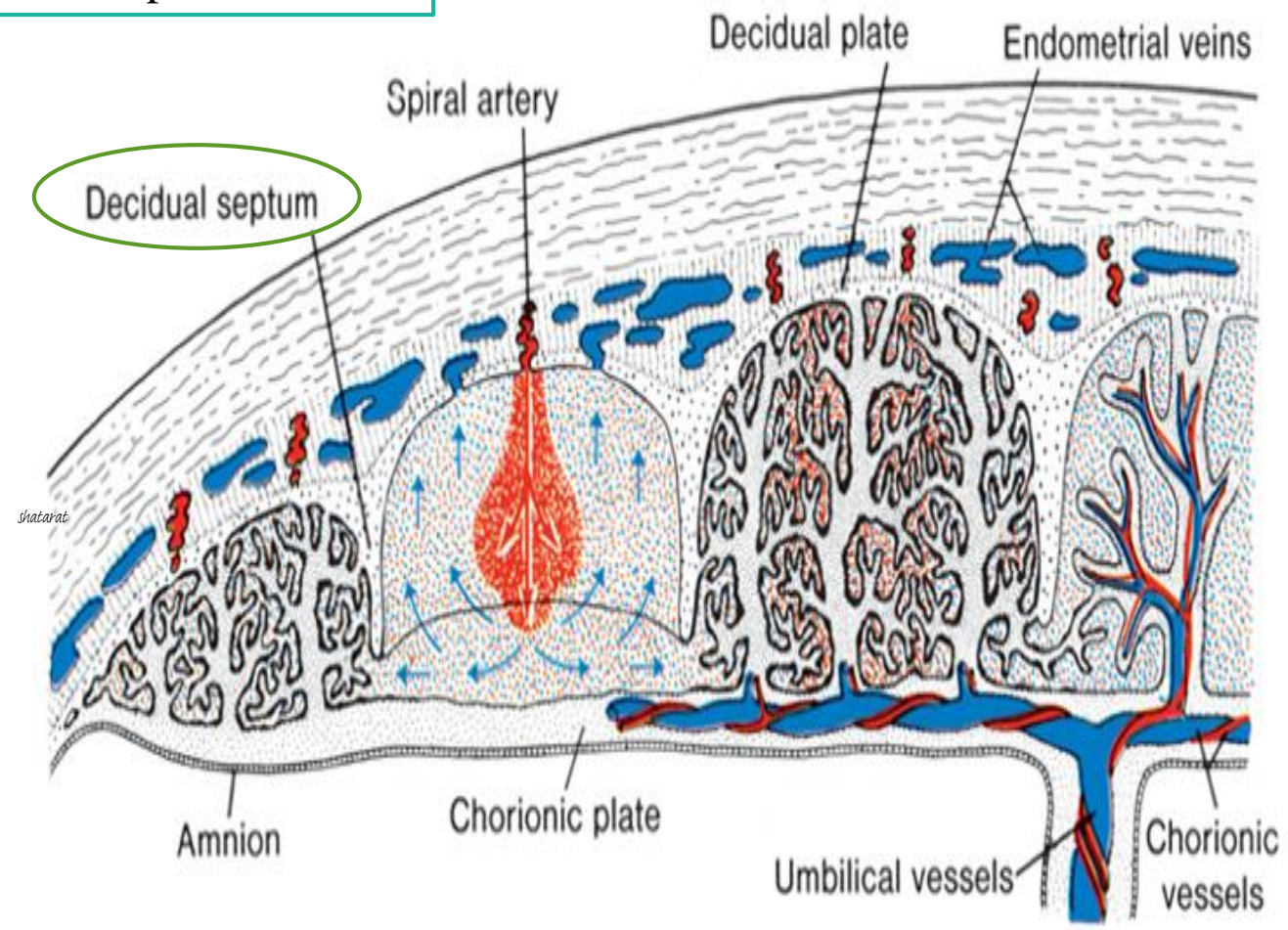
PARTS OF CHORION

1-Chorion
laeve:
adjacent to

2-Chorion
frondosum:
adjacent to



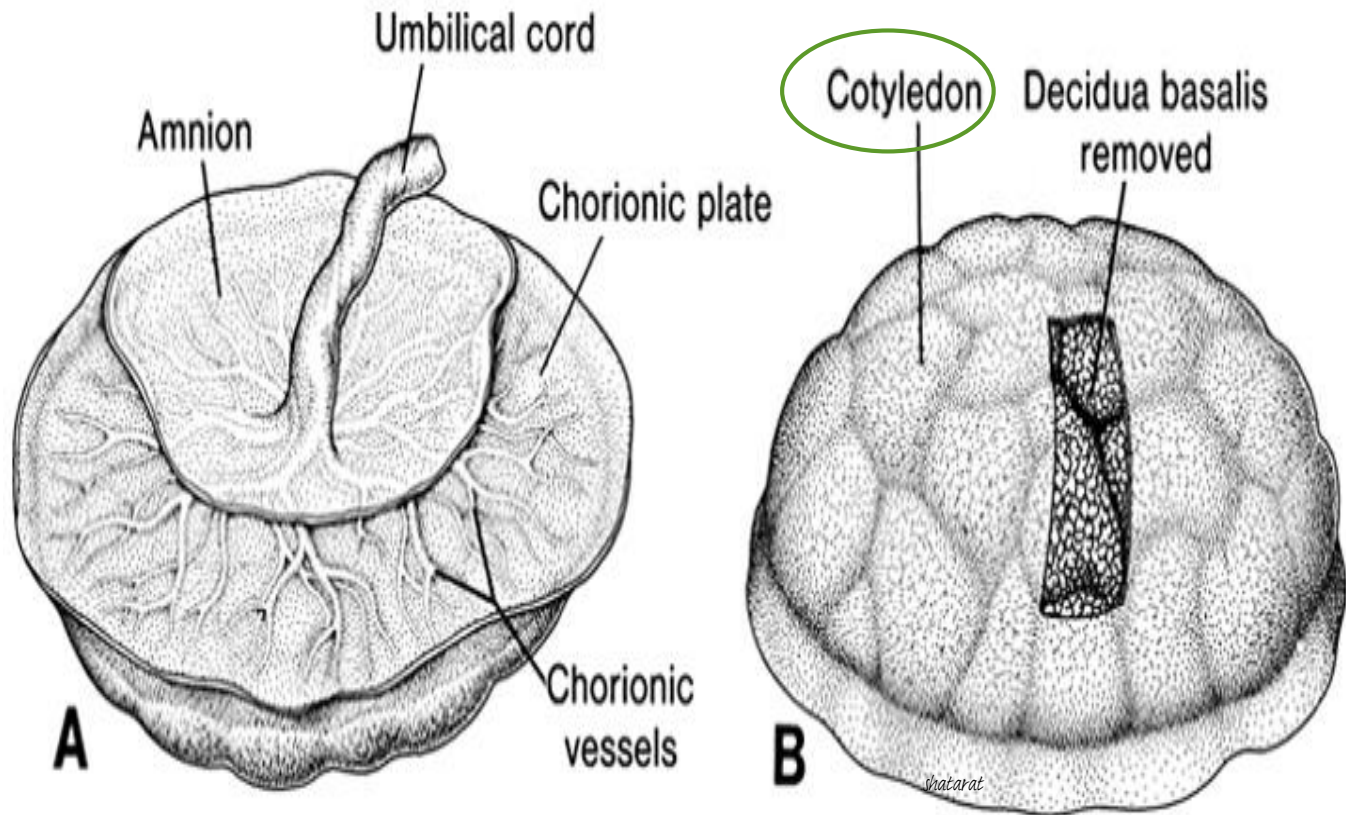
During the fourth and fifth months, the decidua forms a number of decidual septa, which project into intervillous spaces



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As a result of this septum formation, the placenta is divided into a number of compartments, or

Cotyledons



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At full term

- the placenta is discoid with a diameter of 15 to 25 cm
- is approximately 3 cm thick, and weighs about 500 to 600 g
- approximately 30 minutes after birth of the child, is expelled from the uterine cavity as the afterbirth.