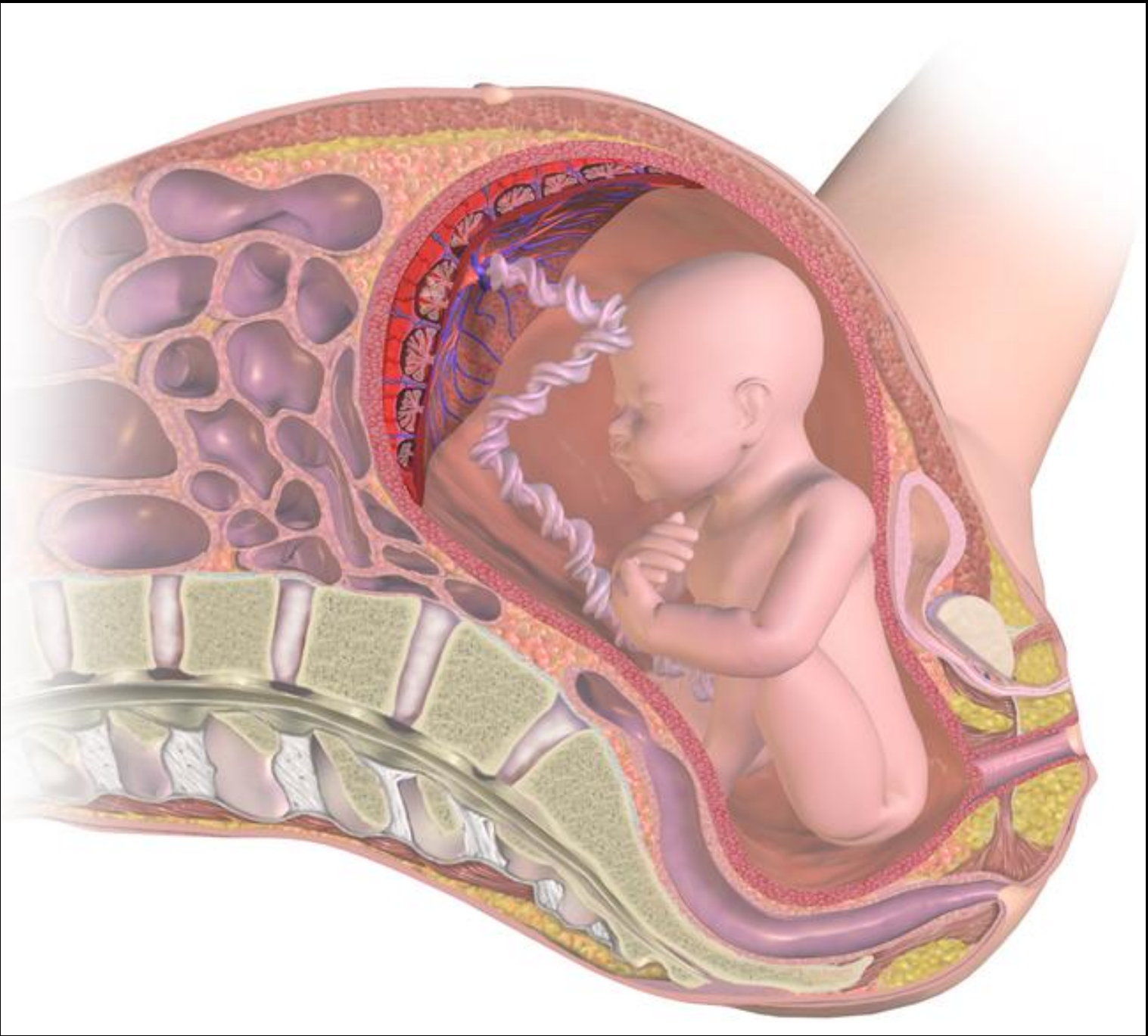


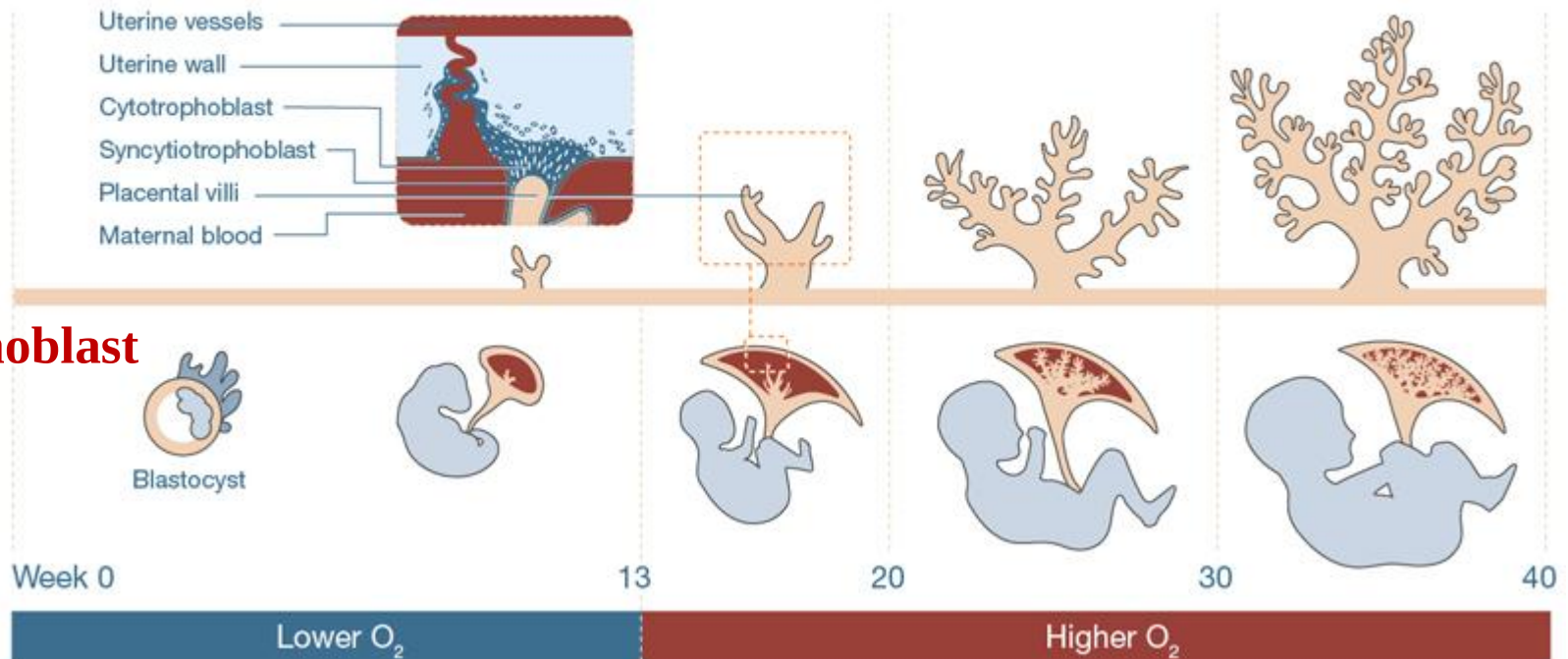
EMBRYOLOGIA

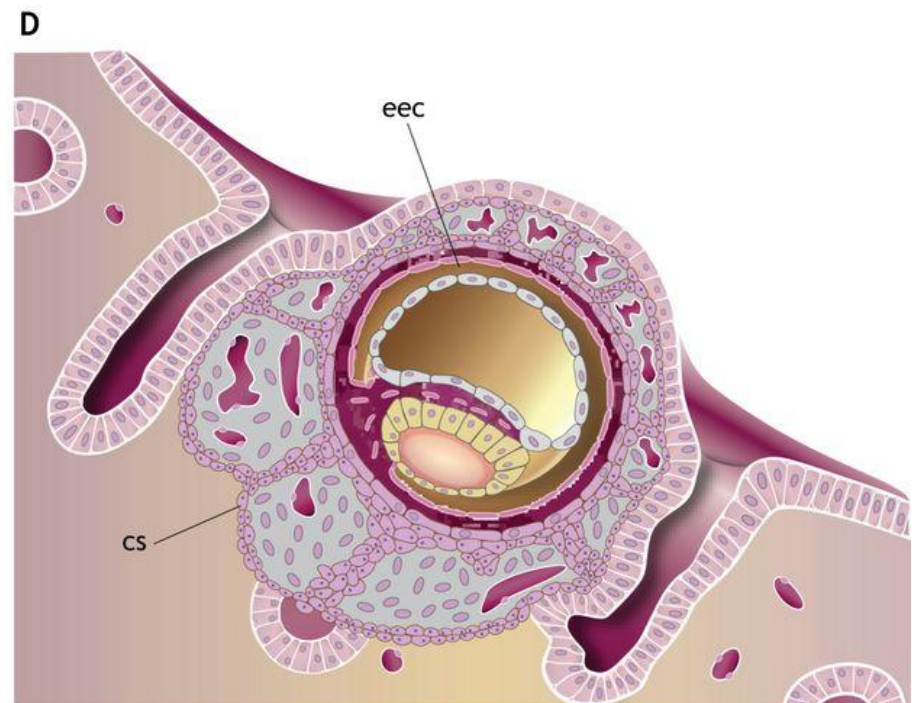
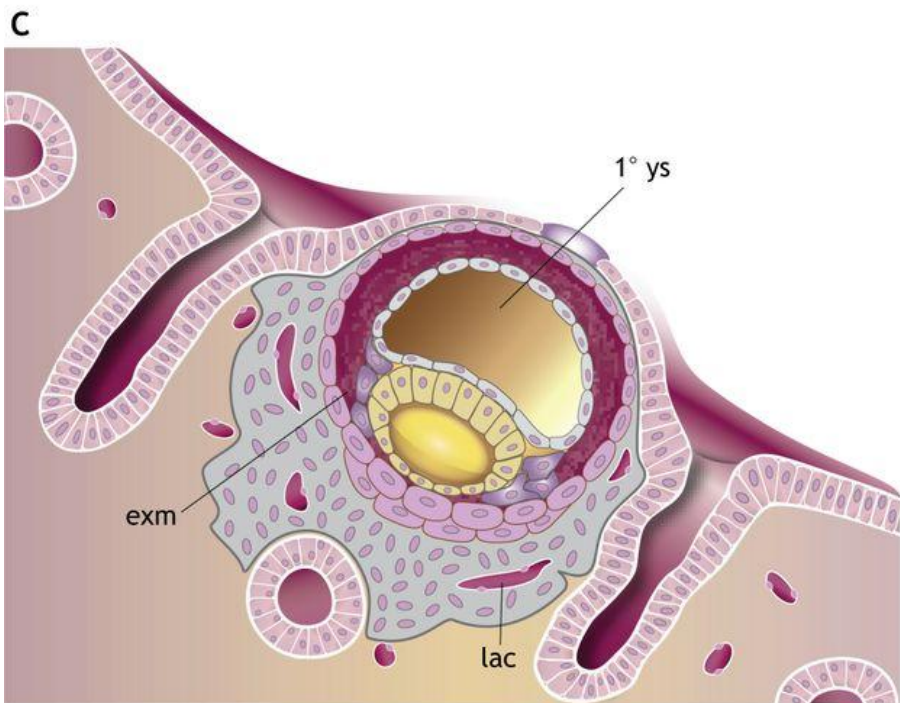
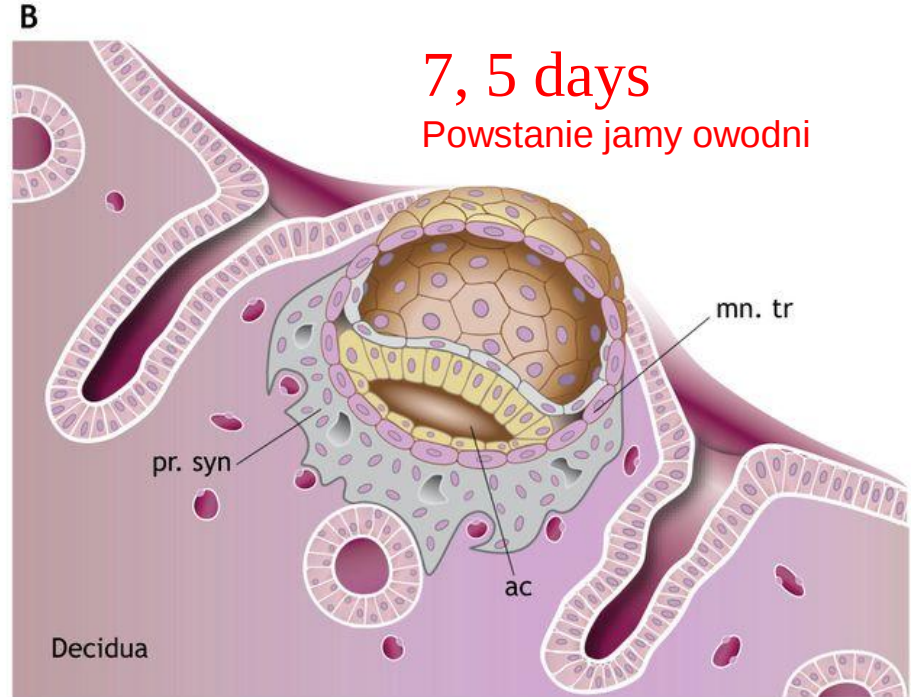
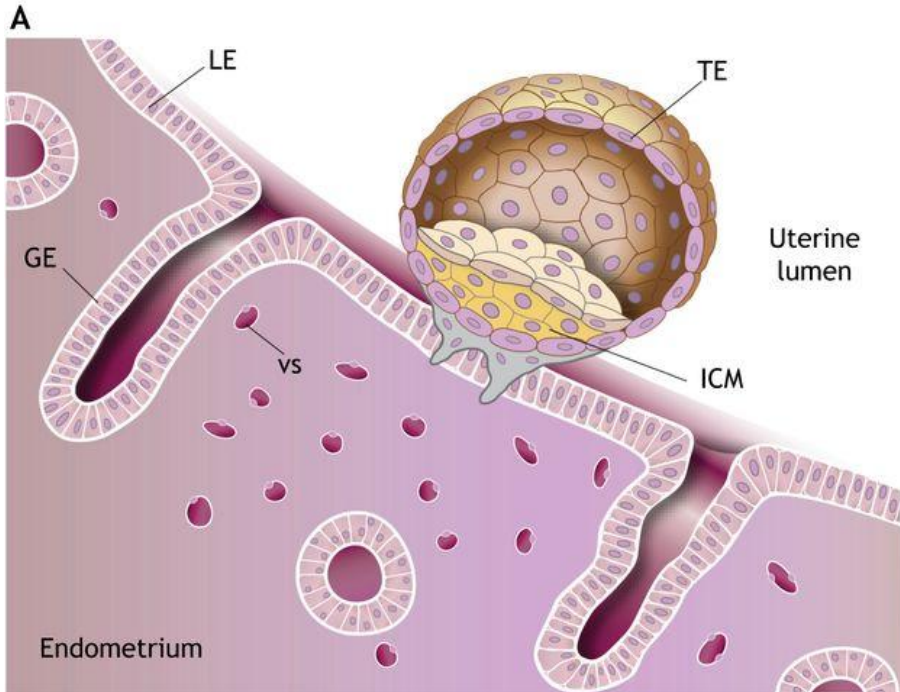


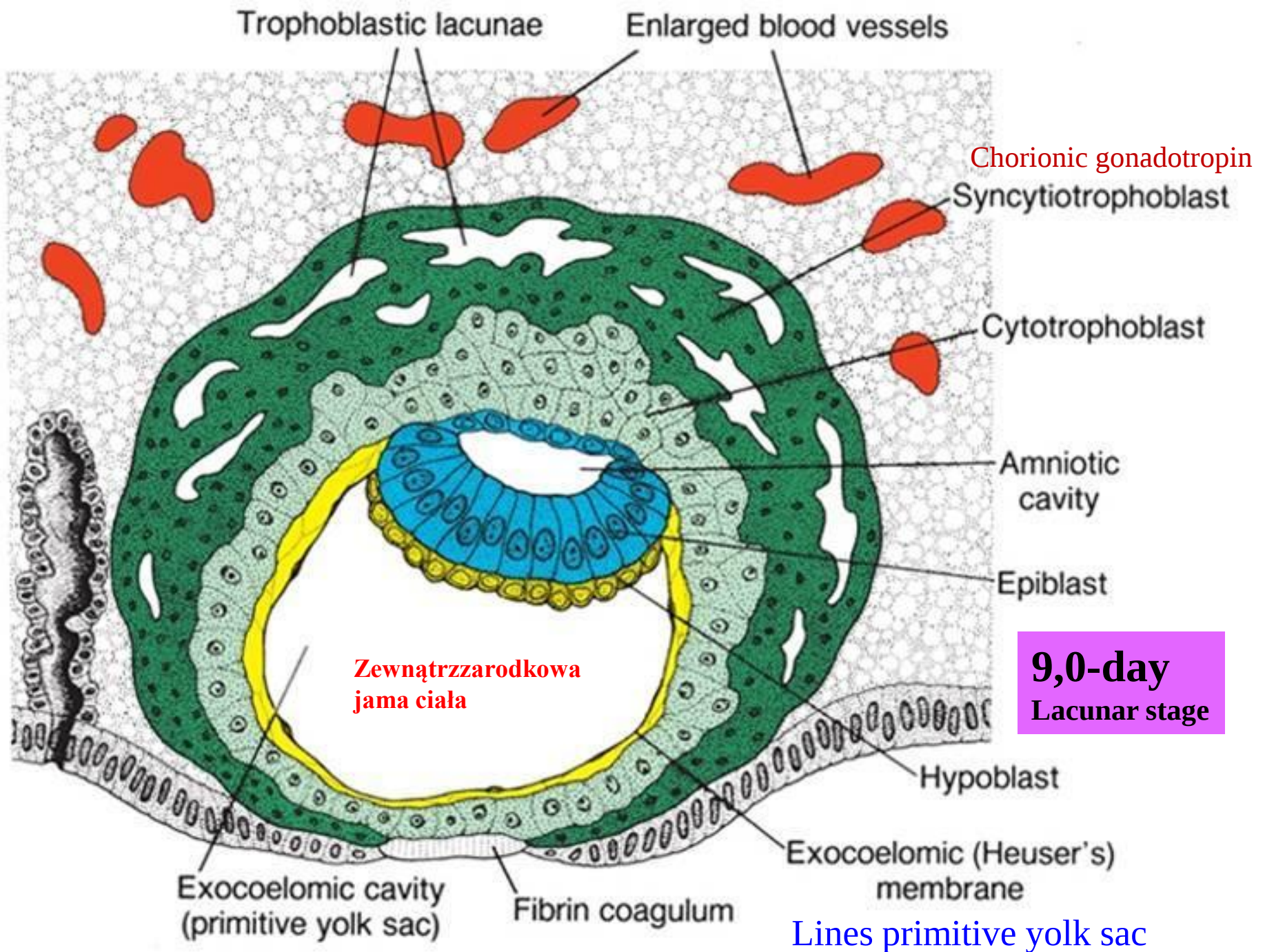
Rozwój łożyska

Placental Development: Fertilization to Full Term

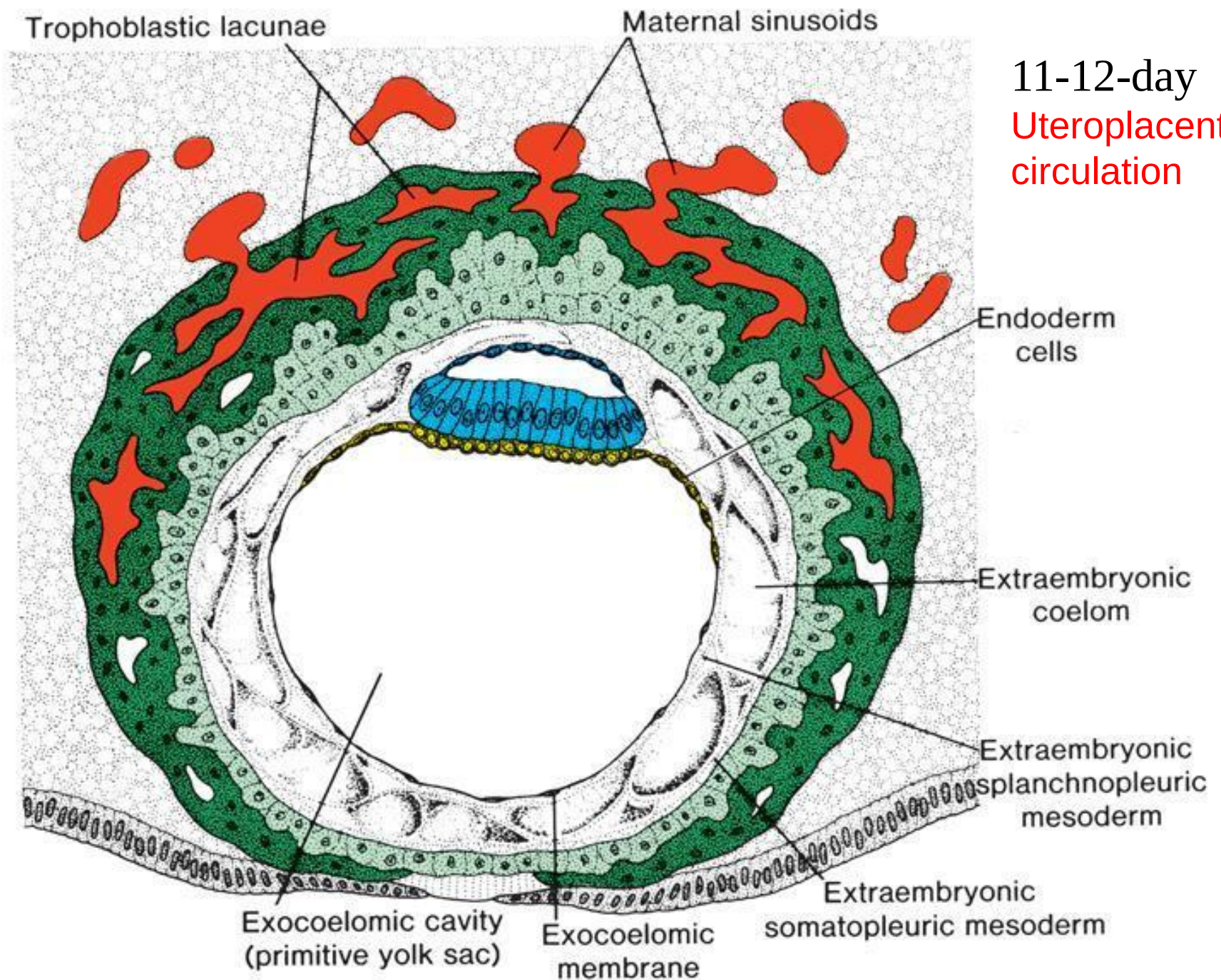
trophoblast



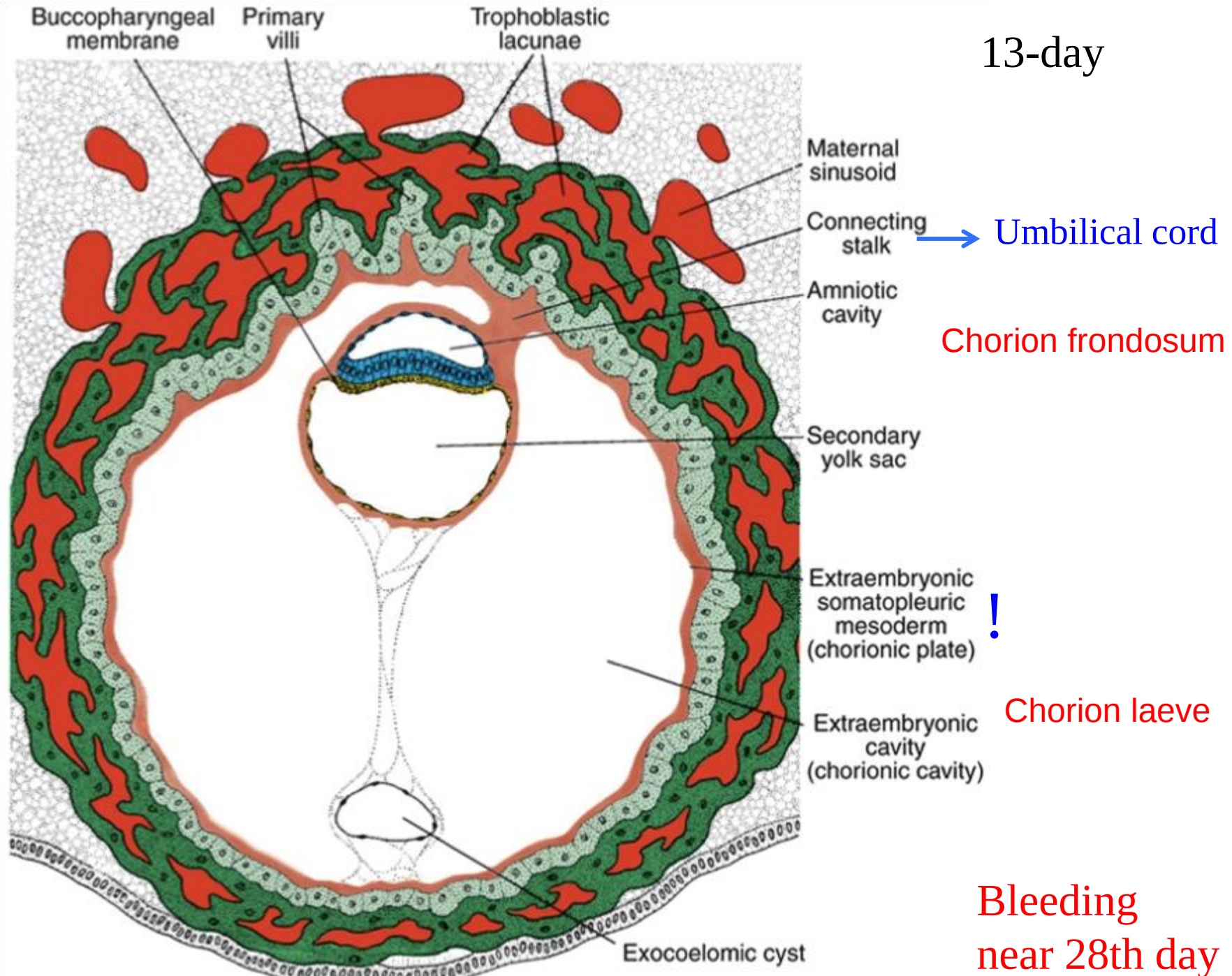




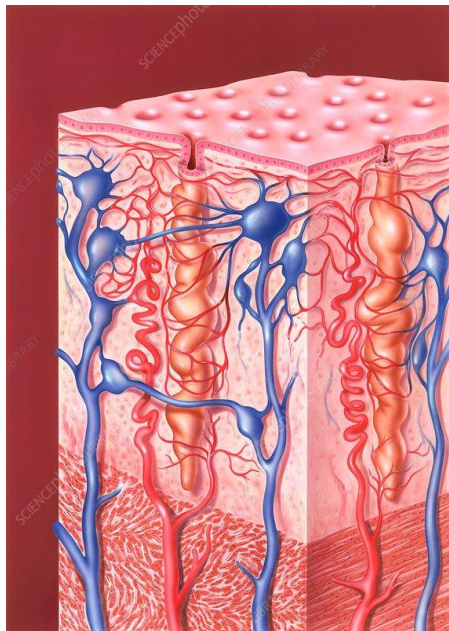
11-12-day
Uteroplacental
circulation



13-day



Reakcja doczesnowa



Early proliferative
phase

Late proliferative
phase

Secretory
phase

Uterine
lumen

Epithelium

Capillaries

Venous sinus

Endometrial gland

Spiral artery

Basal artery

Radial artery

Arcuate artery

Uterine artery

Functionalis
layer

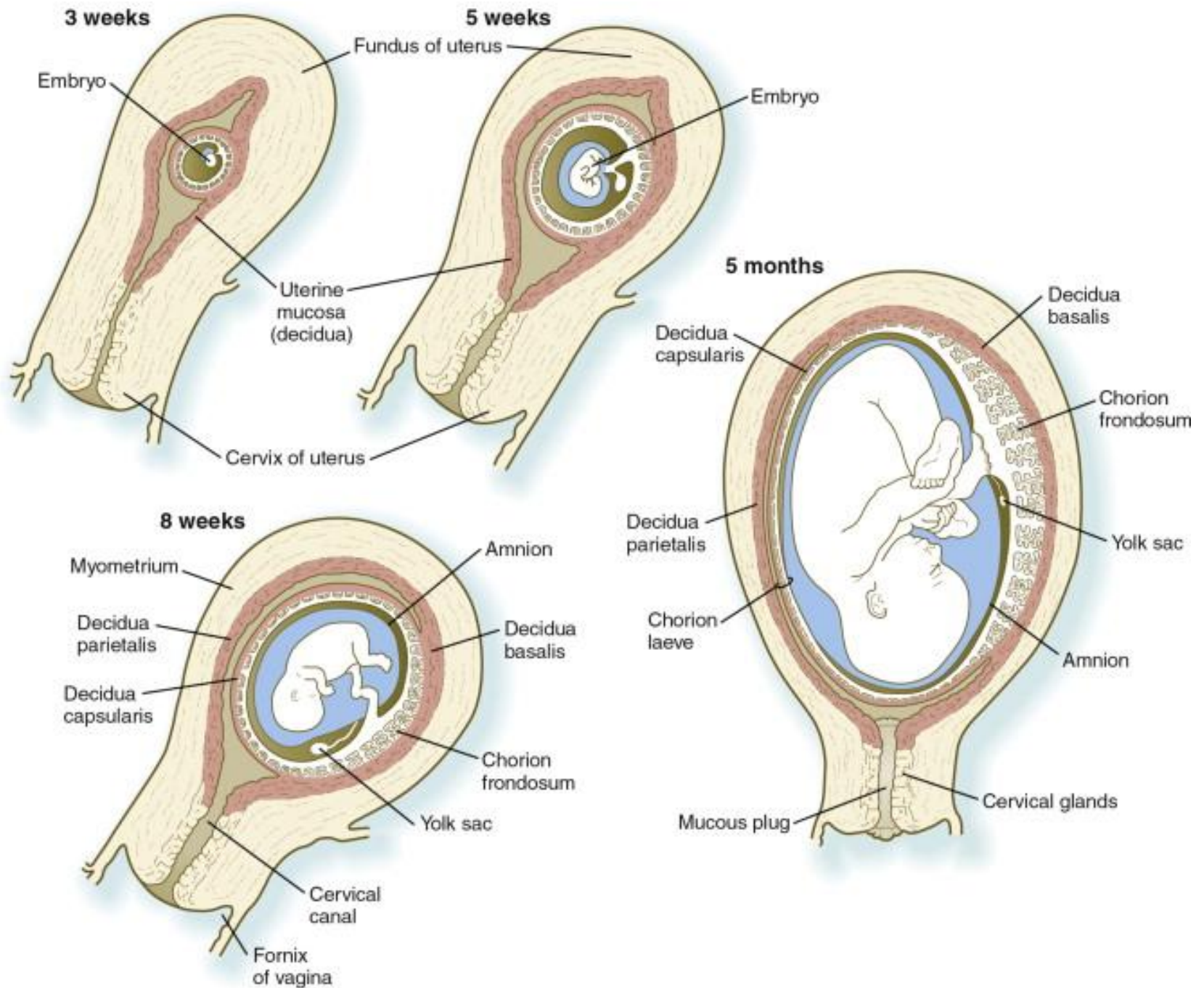
Basalis layer

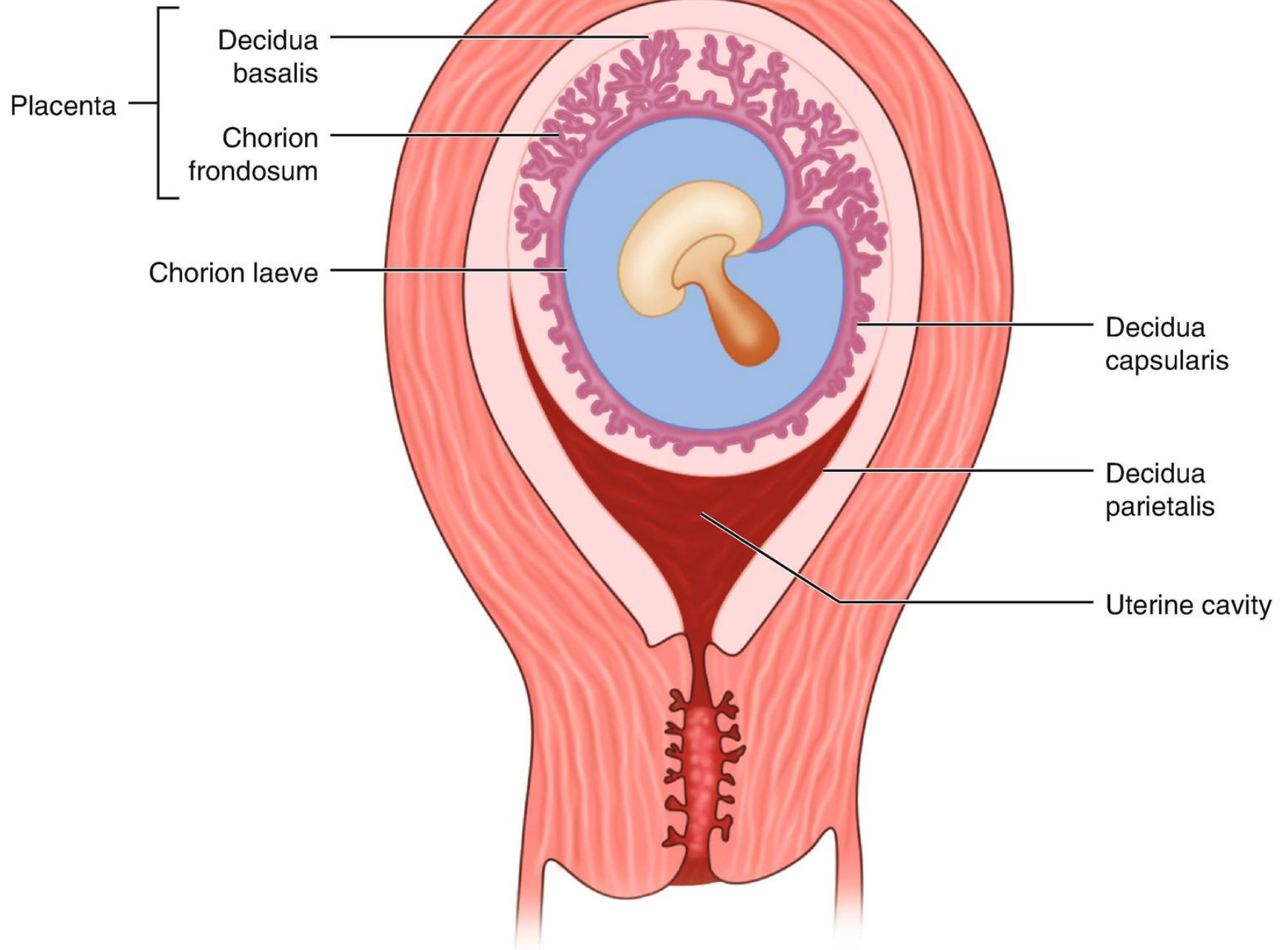
Myometrium

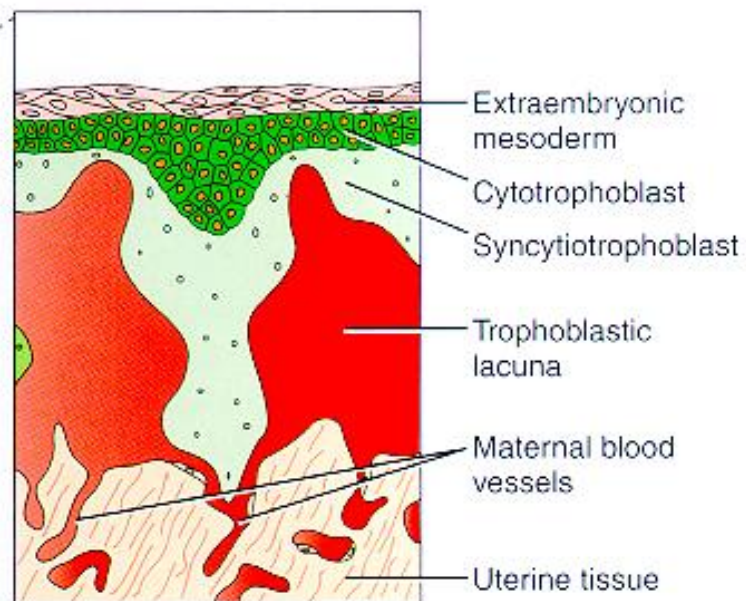
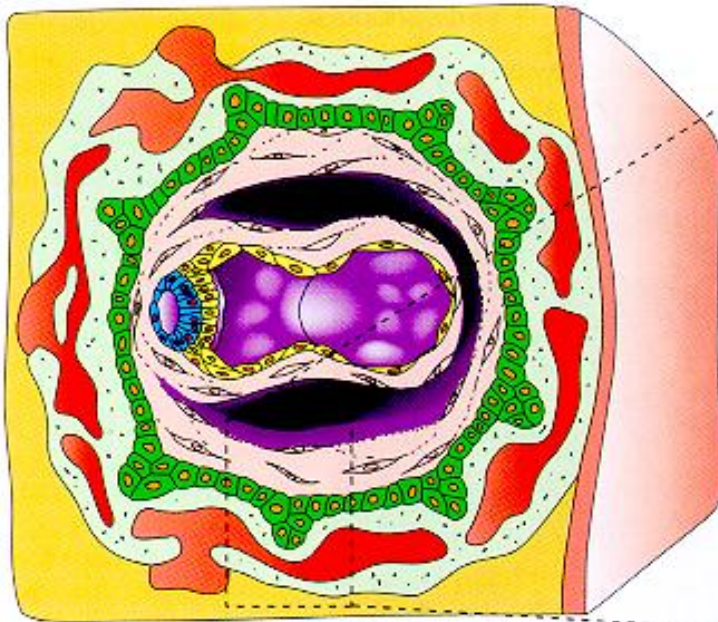
estrogeny

progesteron

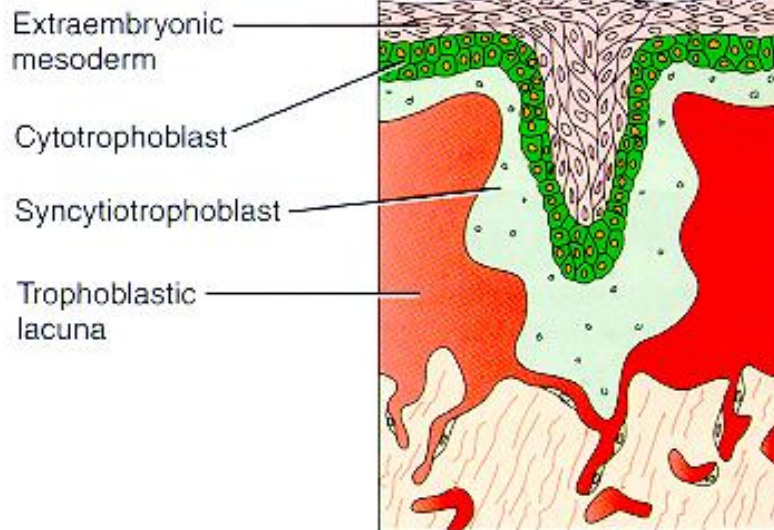
Senza



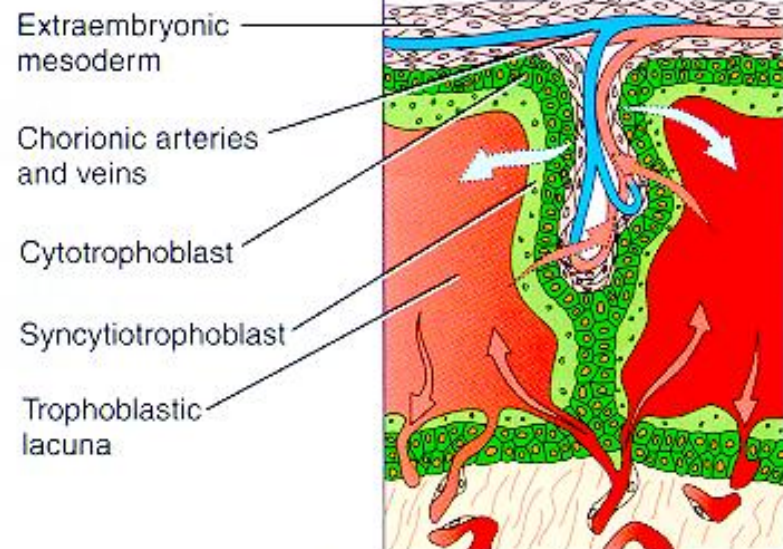




A Primary stem villus (11-13 days)



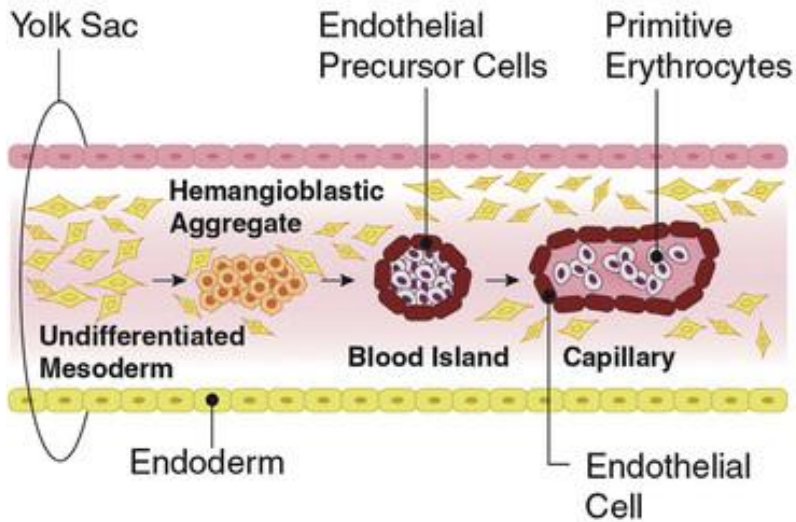
B Secondary stem villus (16 days)



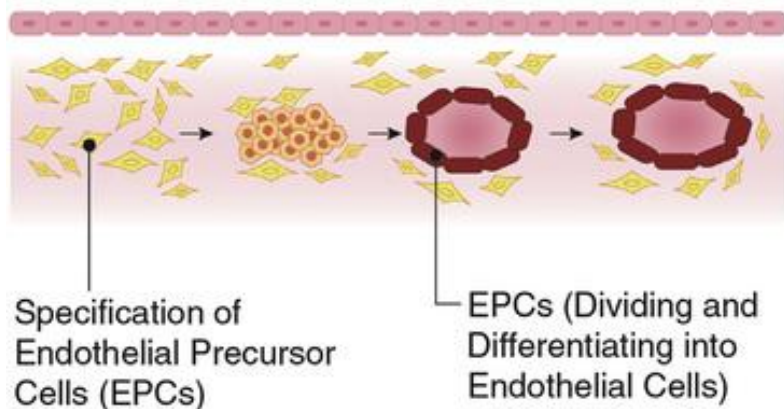
C Tertiary stem villus (21 days)

Vasculogenesis

Extraembryonic Mesoderm

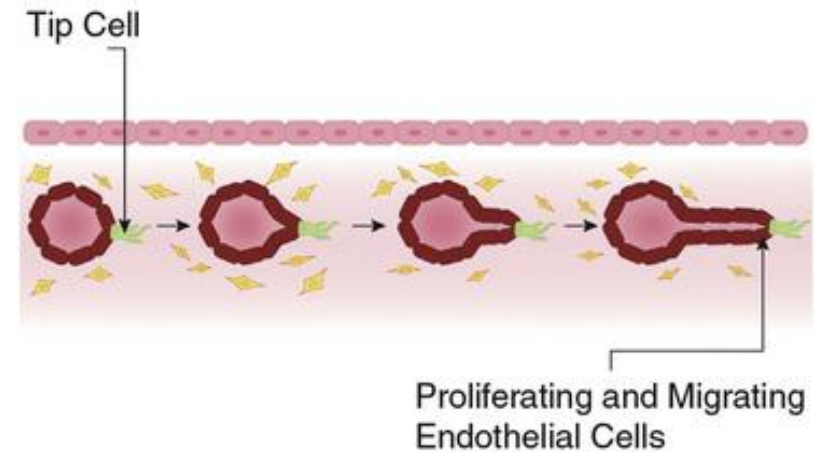


Intraembryonic Mesoderm

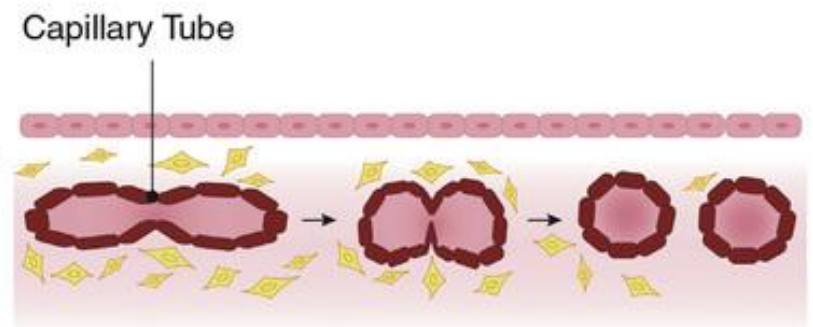


Angiogenesis

Sprouting

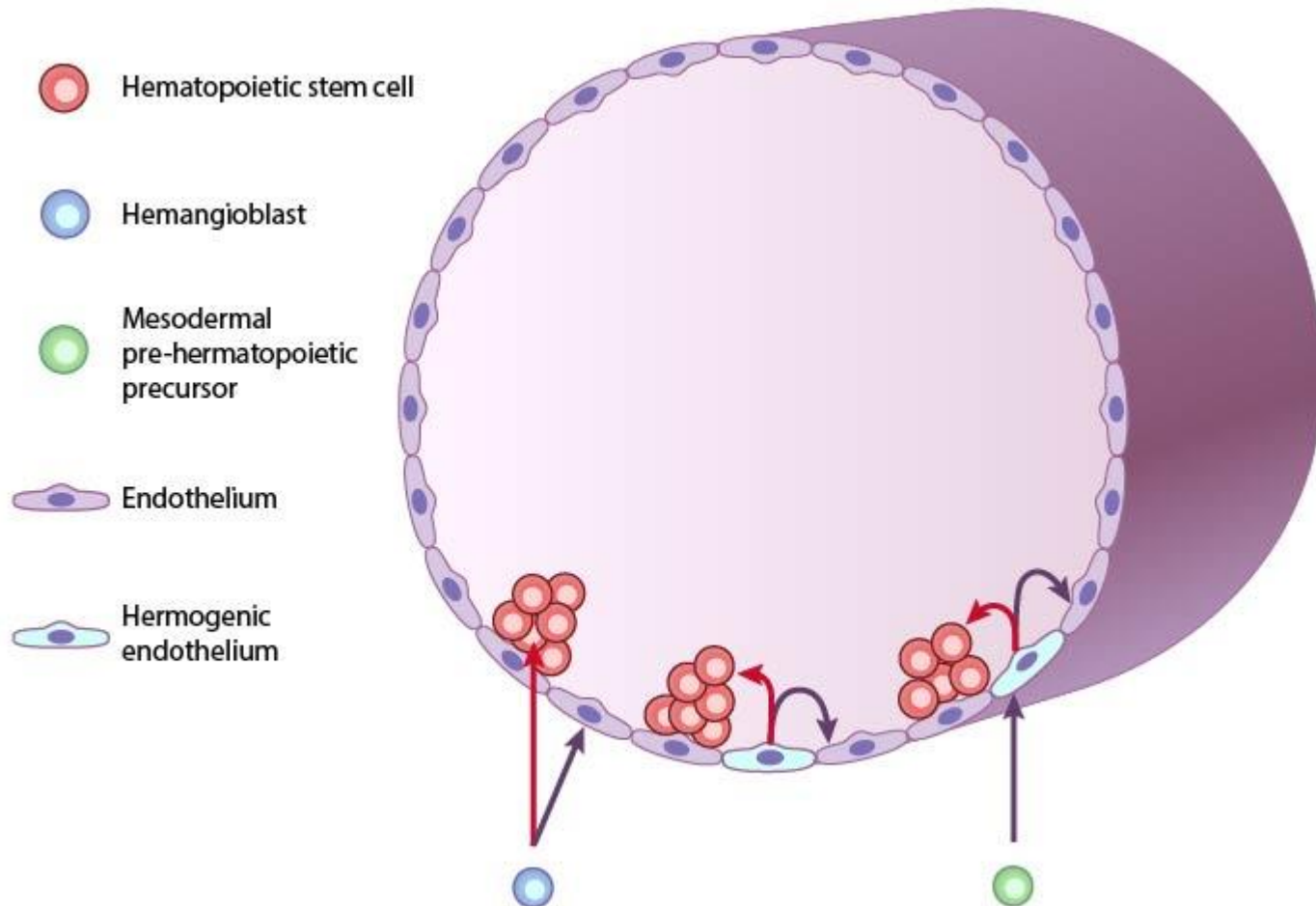


Intussusception



The definitive hematopoietic **stem cells** (HSCs) develop intra-embryonically in the **aorta-gonad-mesonephros** (AGM) region

Aorta - gonada - śródnercze

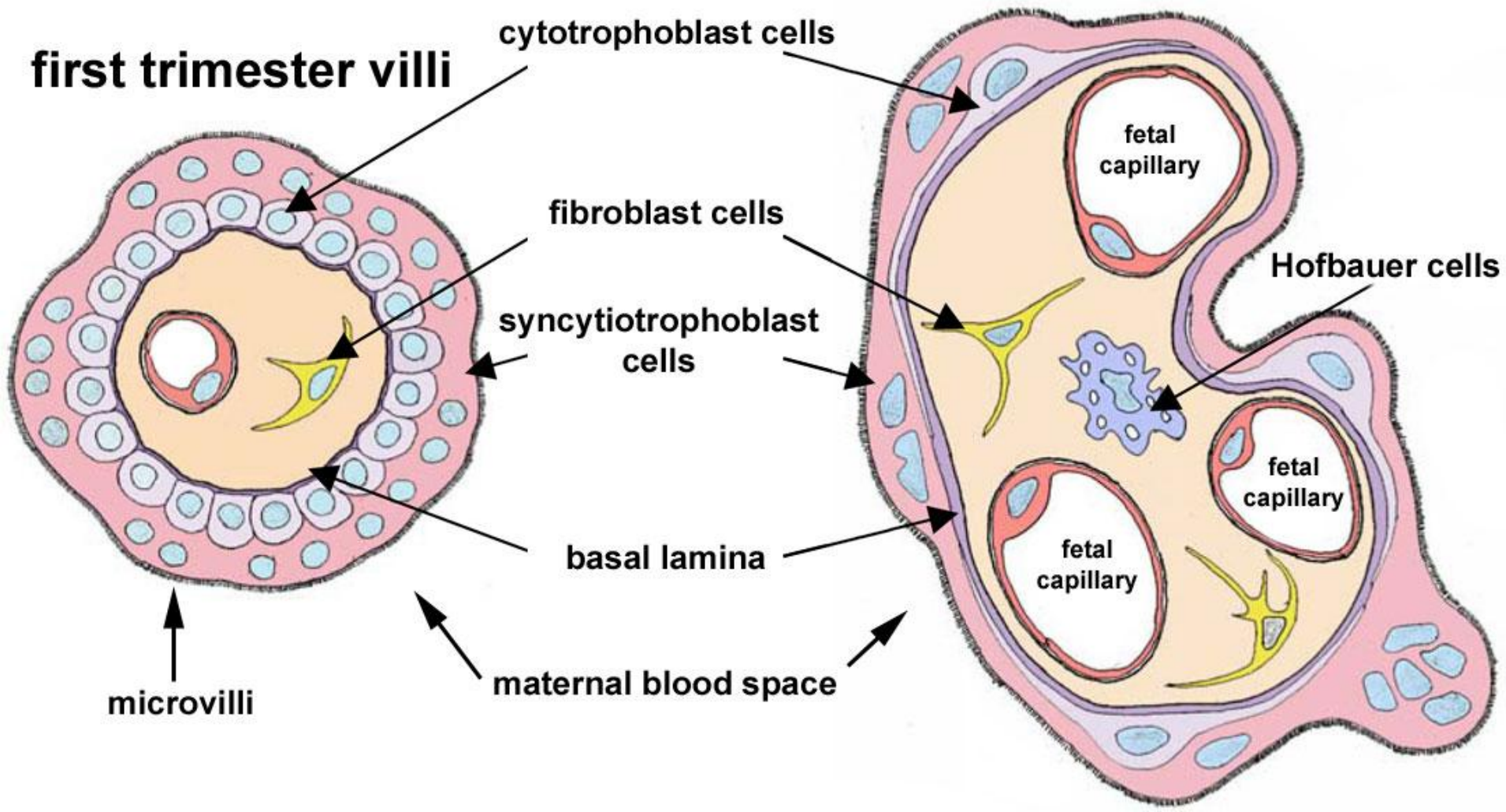


Human floating chorionic villi

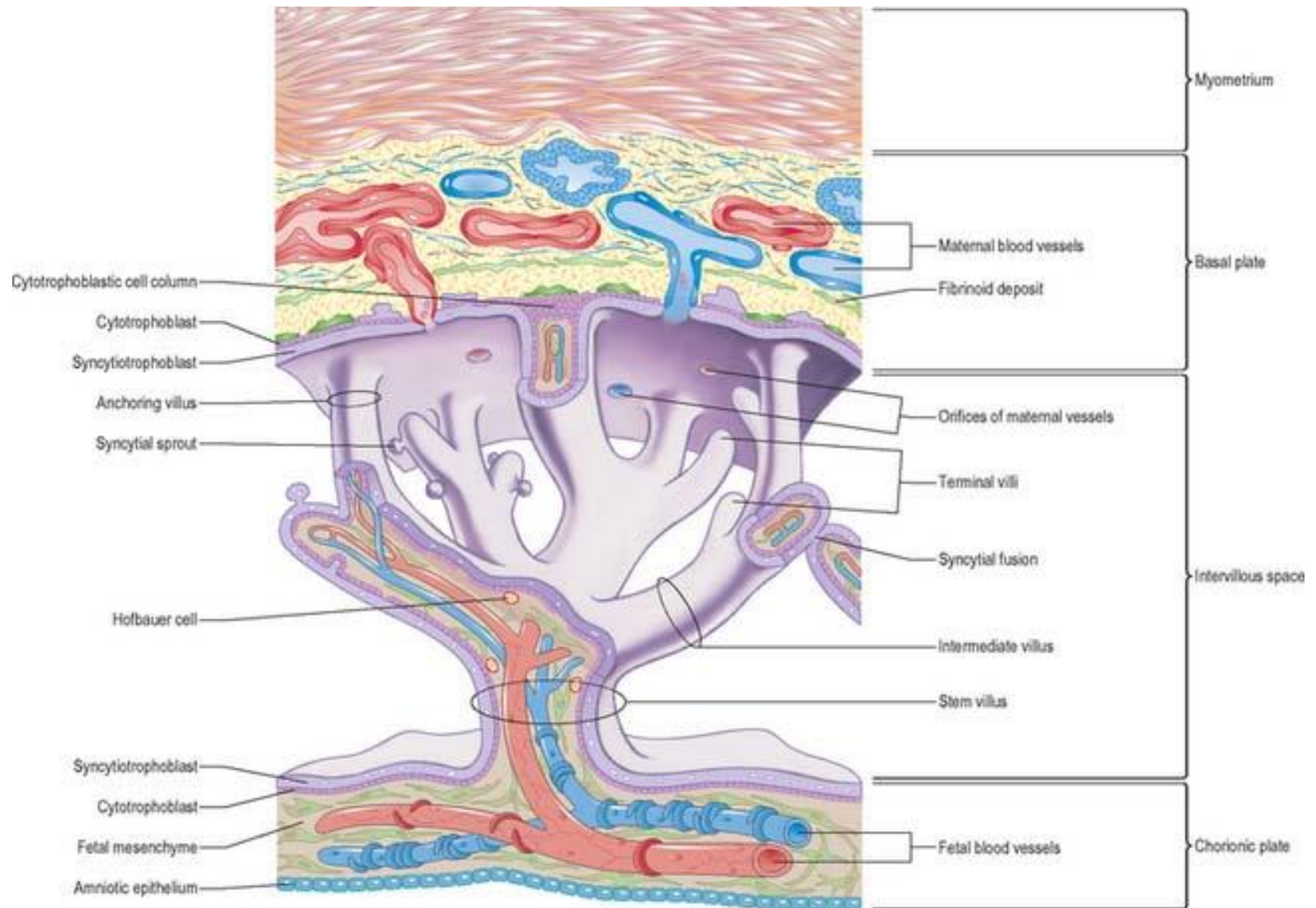
(cross-section)

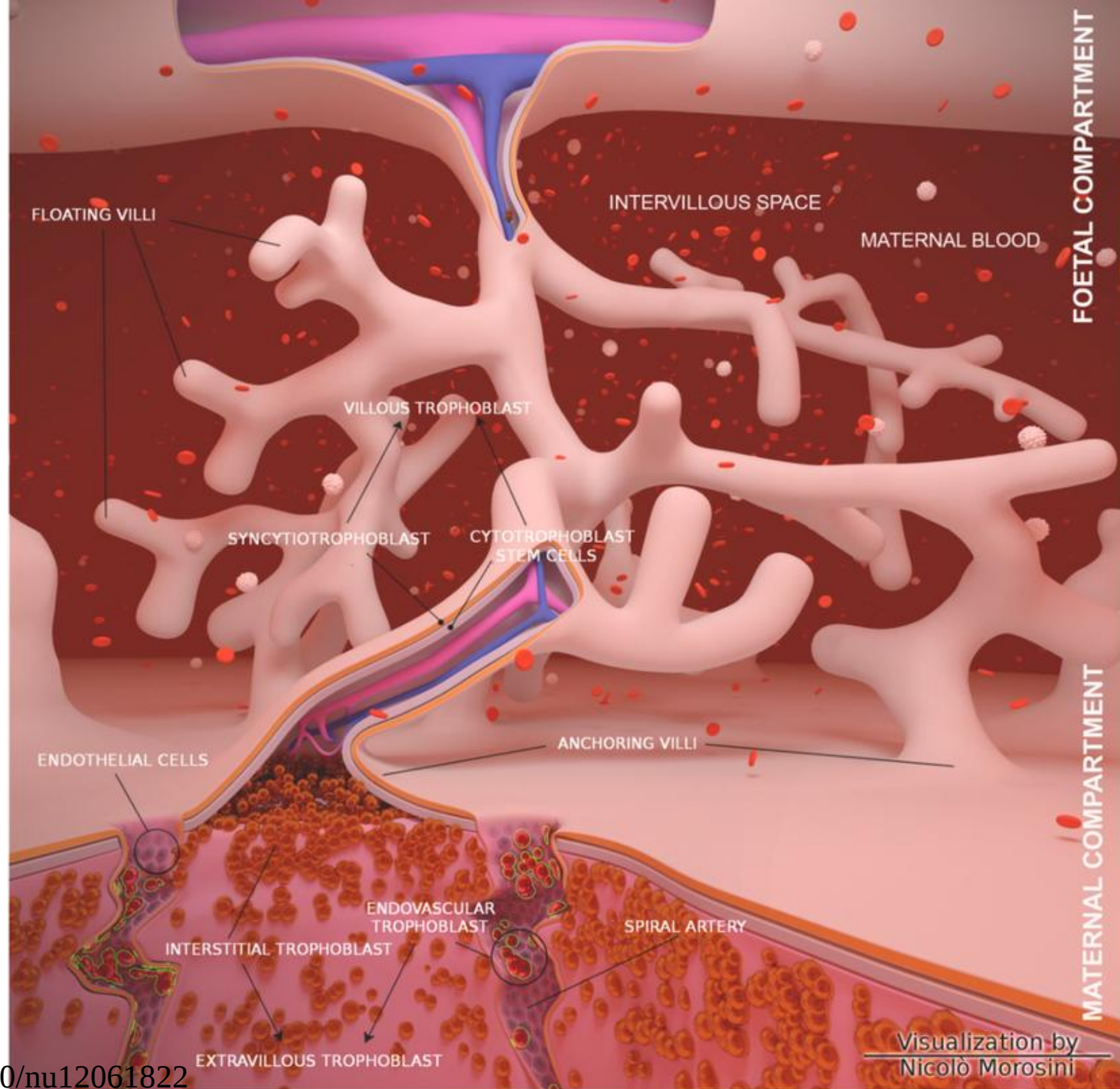
first trimester villi

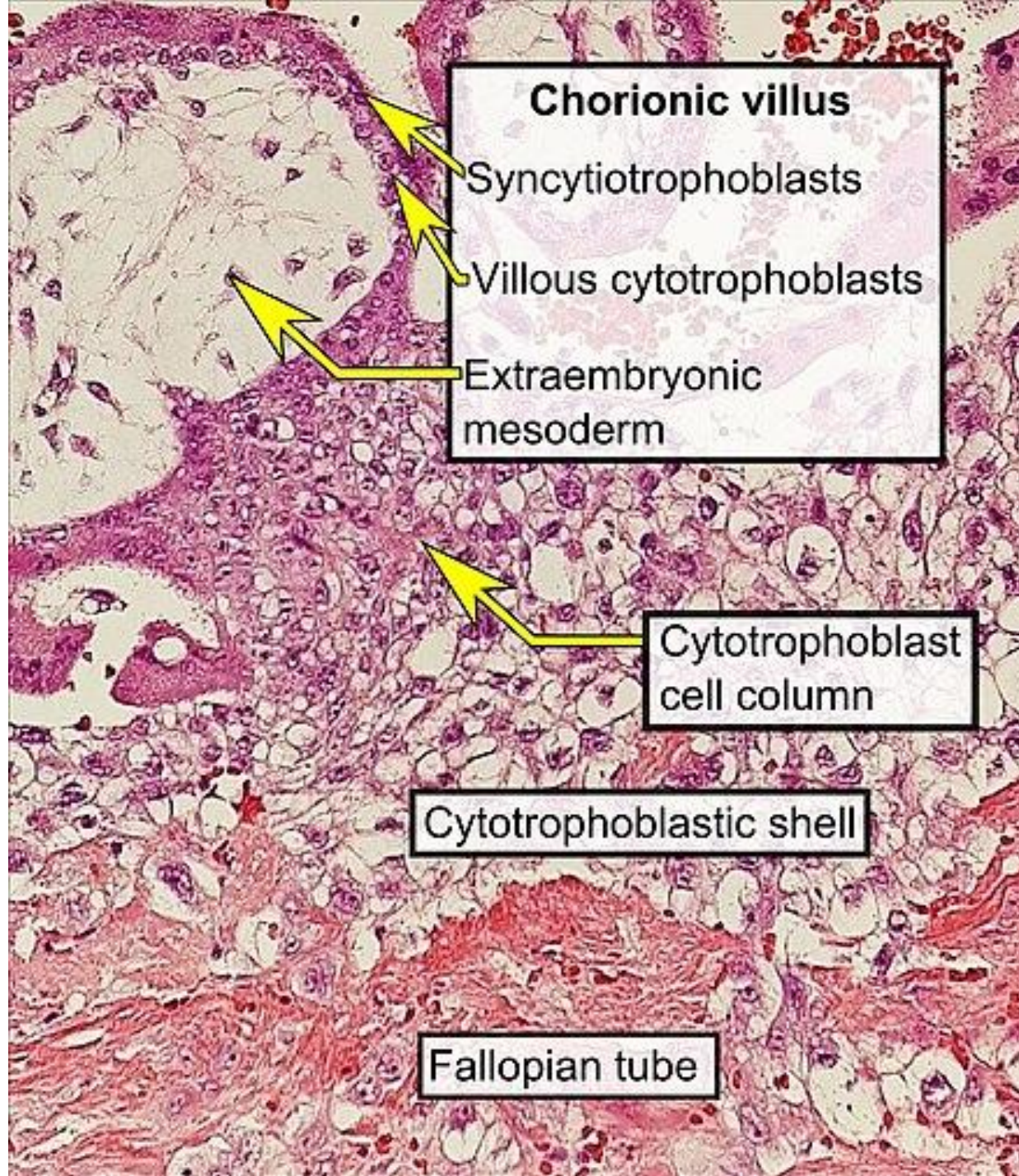
term villi



Villus at the end of the 3rd week of development

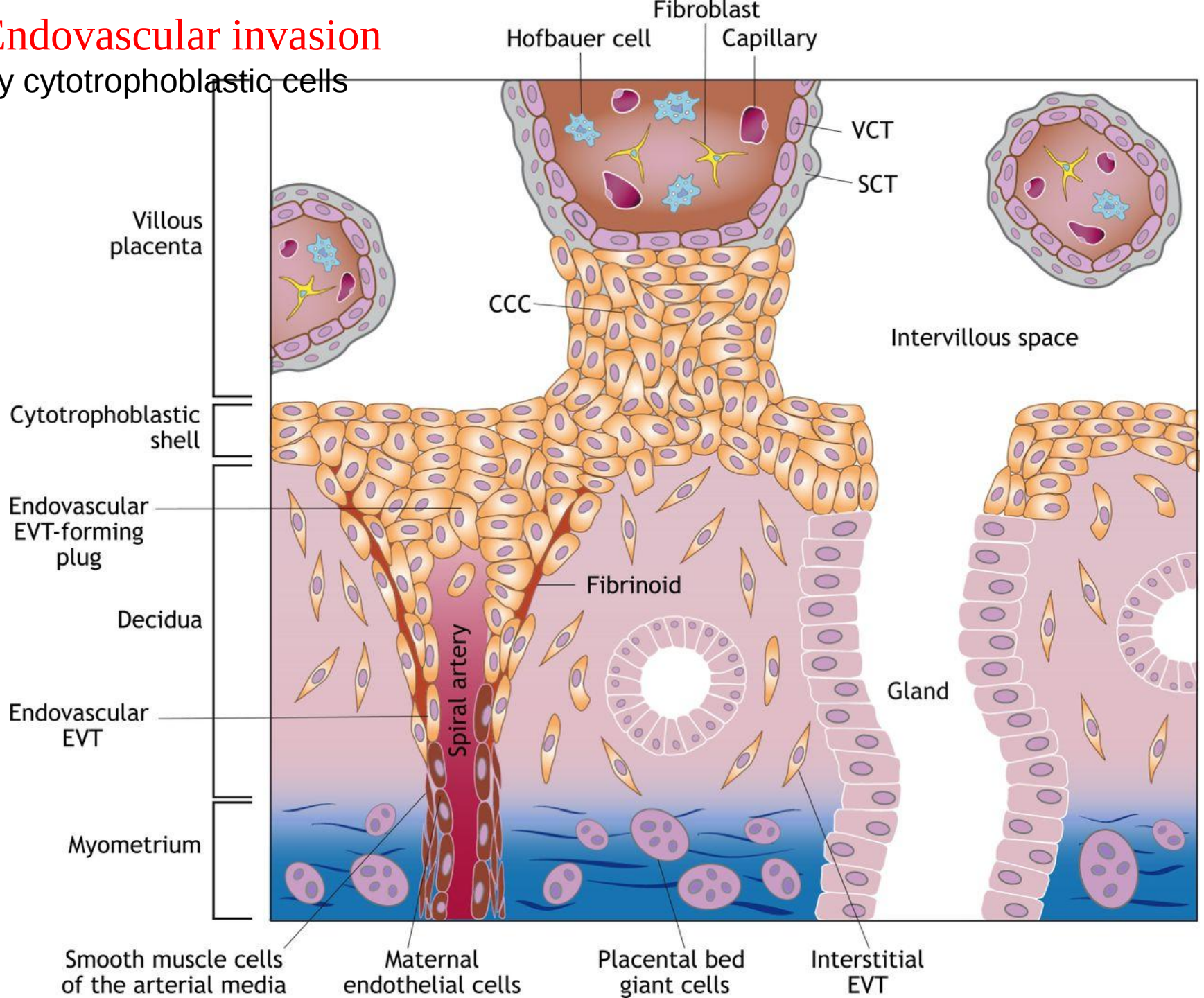


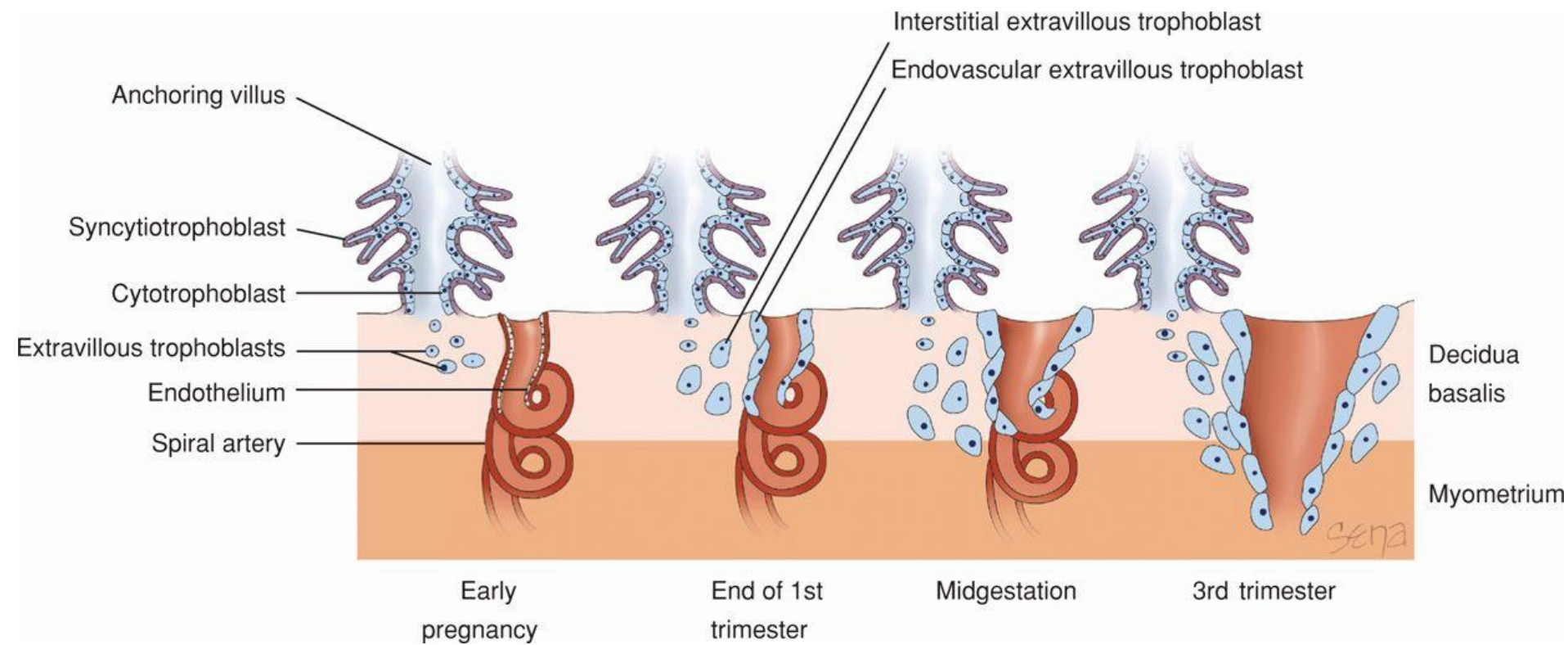


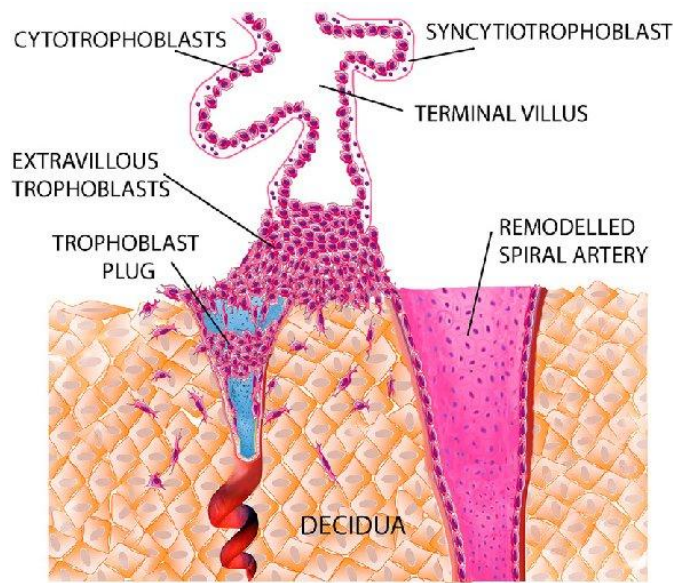


Endovascular invasion

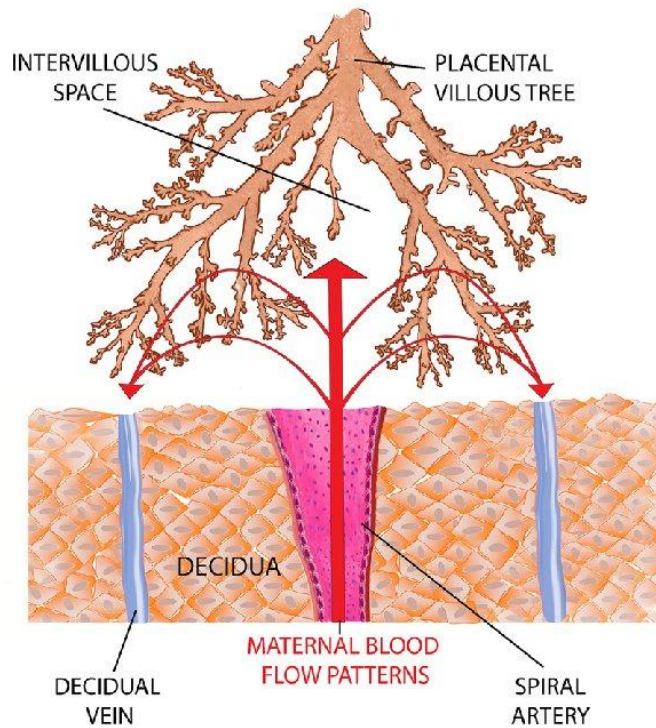
by cytotrophoblastic cells







(a)



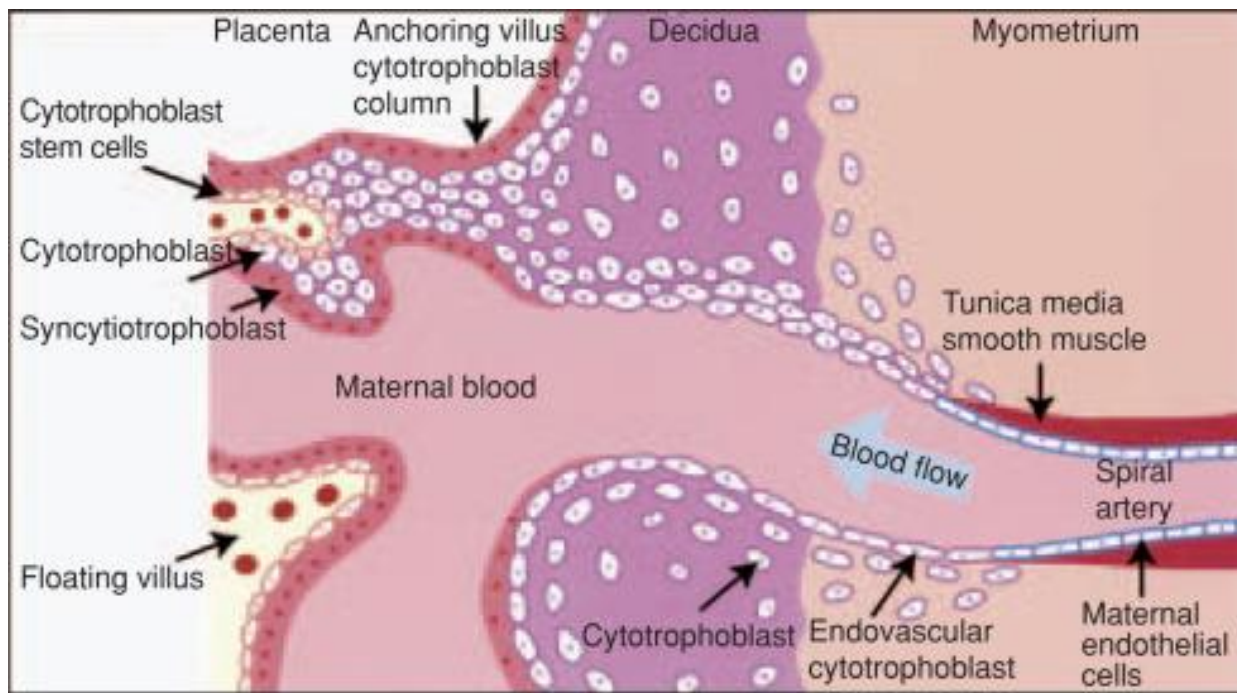
(b)

At the start of pregnancy SAs are small tortuous vessels and they are progressively remodeled by trophoblast to have large funnel-like openings.

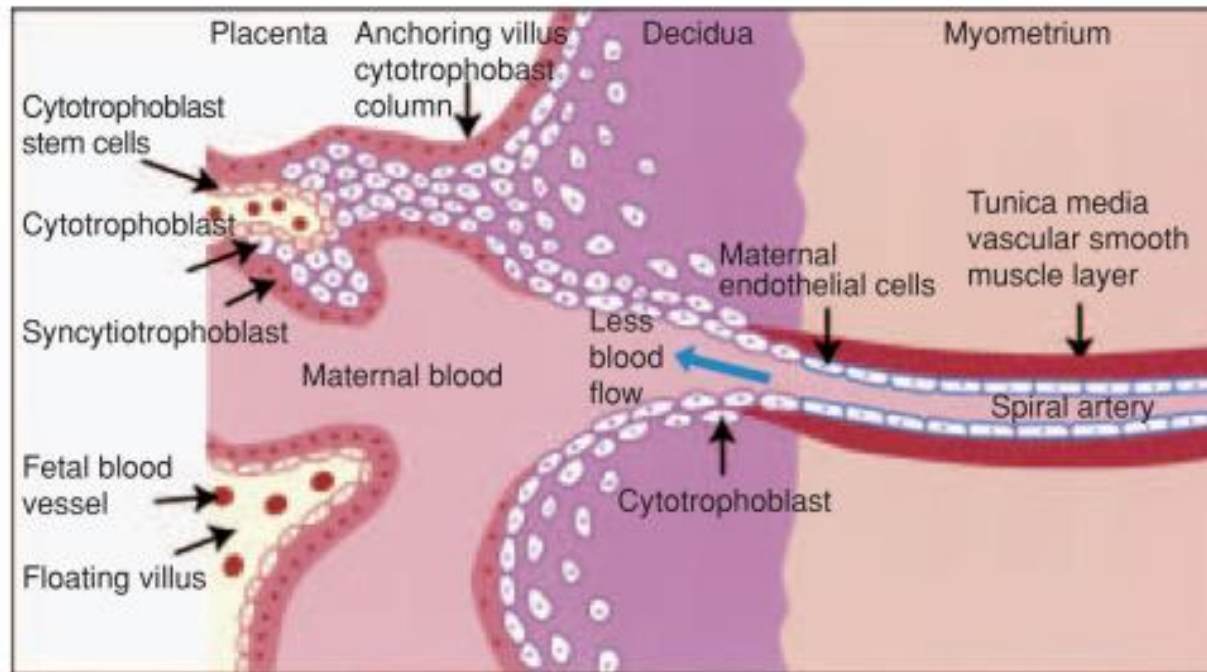
SA spiral artery

Flow from SAs enters the intervillous space and supplies placental tissue with nutrients. Inadequate SA remodeling has been theorized to induce an excessive blood flow velocity and pressure on the placental tissue.

Czopy trofoblastu blokują tętnice spiralne do początku drugiego trymestru (11-14 tygodni). Pod koniec I trymestru wewnątrz tętnicze komórki zaczynają być tracone

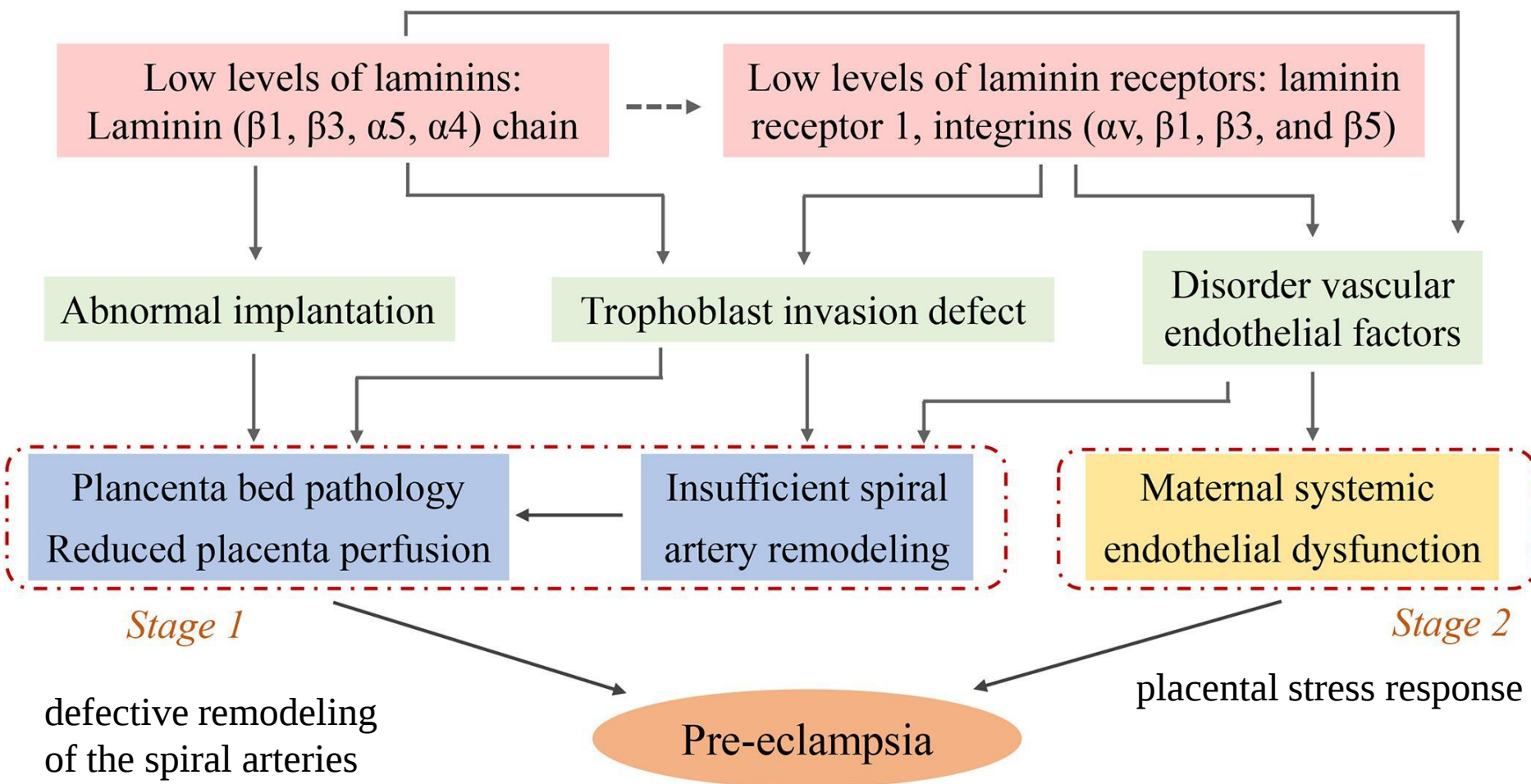


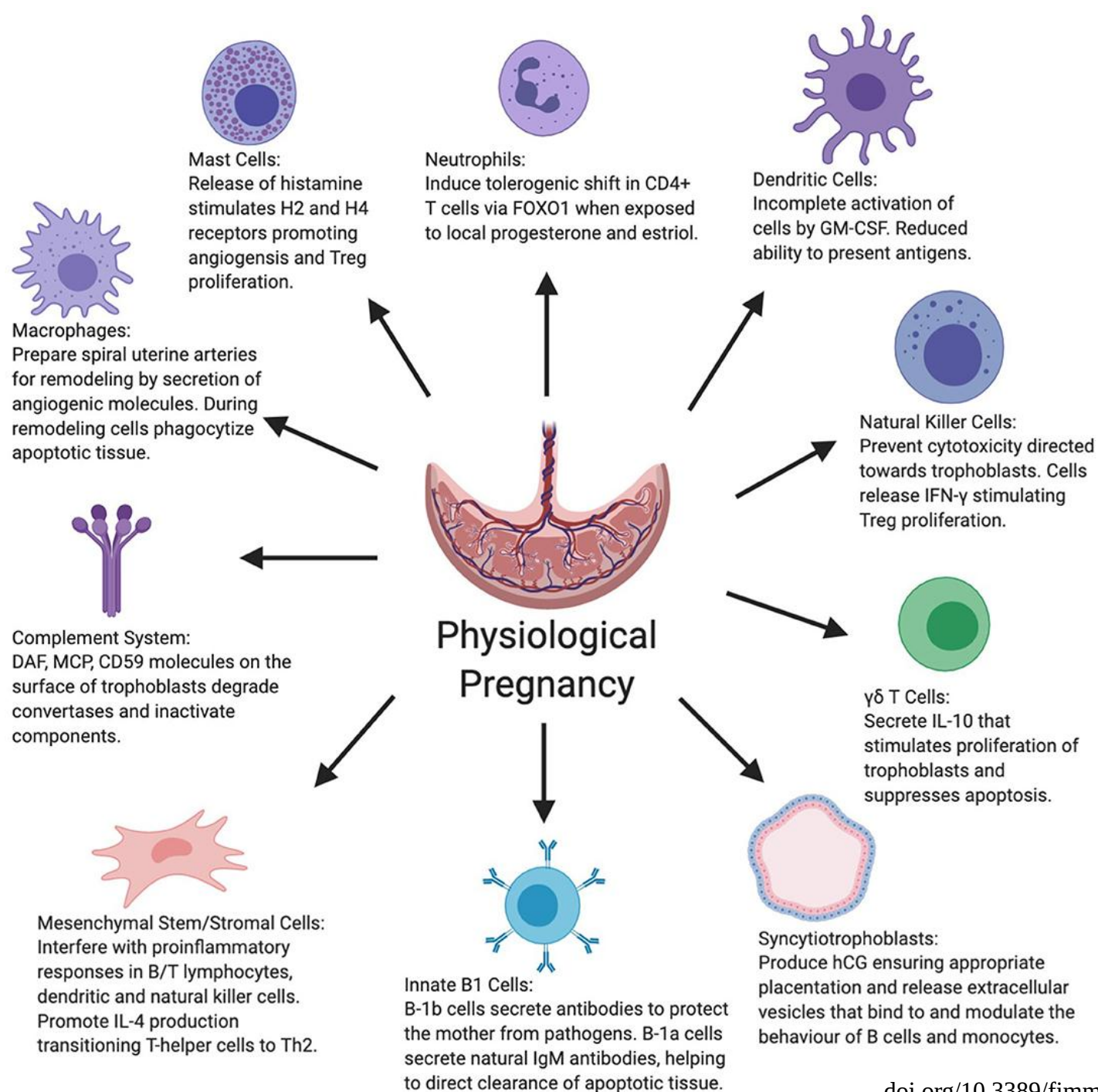
Stan
przedrzucawkowy—
 nadciśnienie
 indukowane
 ciążą z występującym
 równocześnie
 białkomoczem

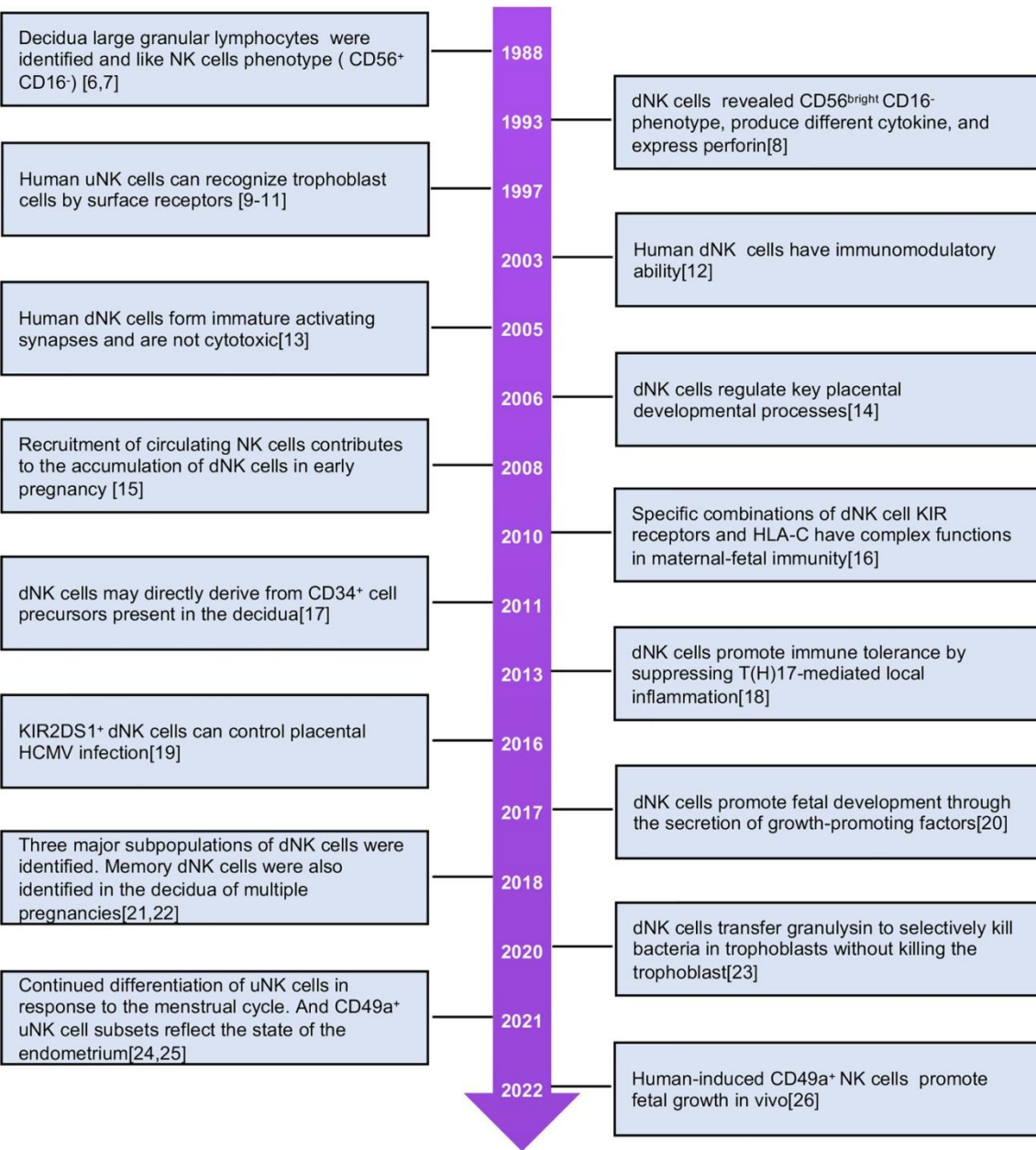


uogólniony skurcz naczyń
 krwionośnych

Po 20 tygodniu ciąży



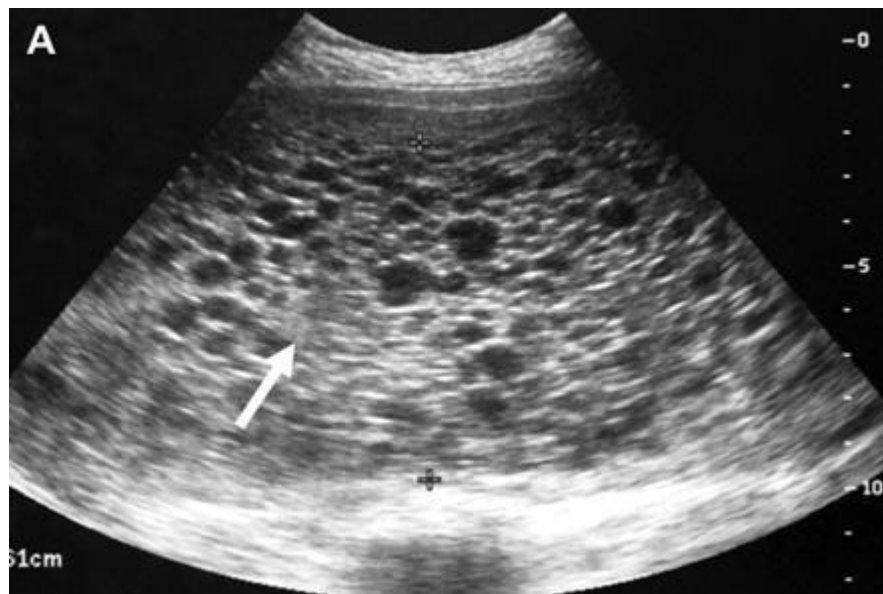




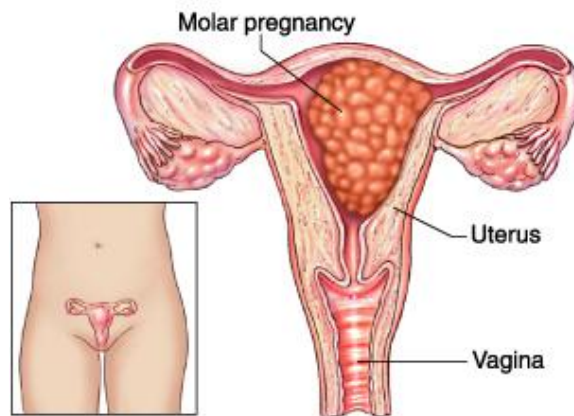
Komórki uNK mają odmienne właściwości tkankowo-specyficzne w porównaniu z ich odpowiednikami we krwi obwodowej i narządach limfatycznych.

Nieprawidłowe zmiany liczby komórek uNK i/lub upośledzenie funkcji mogą powodować powikłania ciąży, takie jak nawracające poronienia, stan przedrzucawkowy, a nawet bezpłodność.

Zašniad groniasty

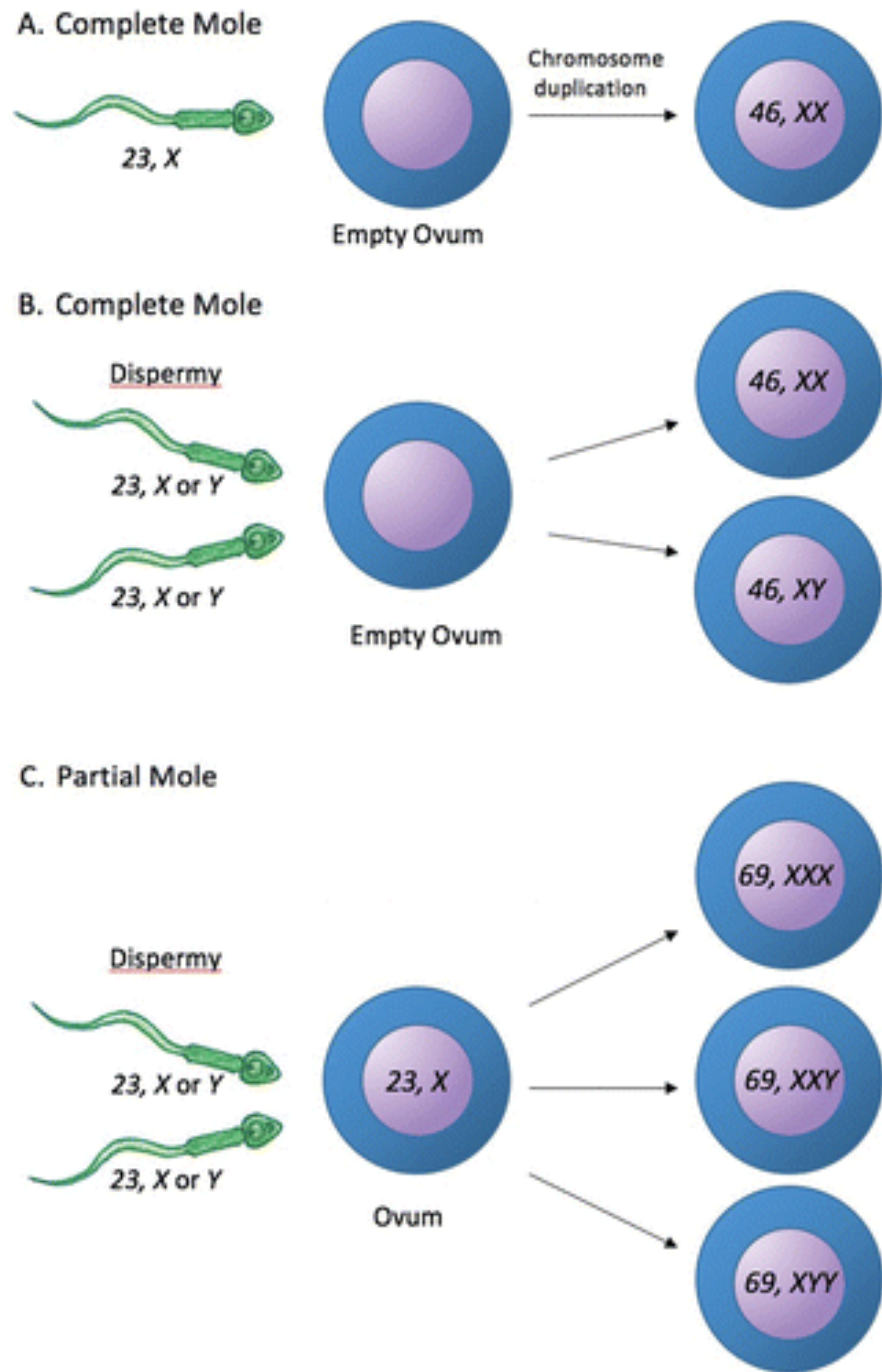


Hydatidiform mole



In a molar pregnancy there is unusual and rapid growth of part or all of the placenta. The placenta becomes larger than normal and contains a number of cysts (sacs of fluid). The first part of the name 'hydatidiform' comes from the Greek word 'hydatid' meaning droplet. These droplets appear to burrow into the wall of the uterus, hence the name mole.

Zaśniad może przejść w złośliwy nowotwór nabłonka kosmówki – kosmówczaka



**Fetal
surface**

Amnion

Umbilical cord

corion

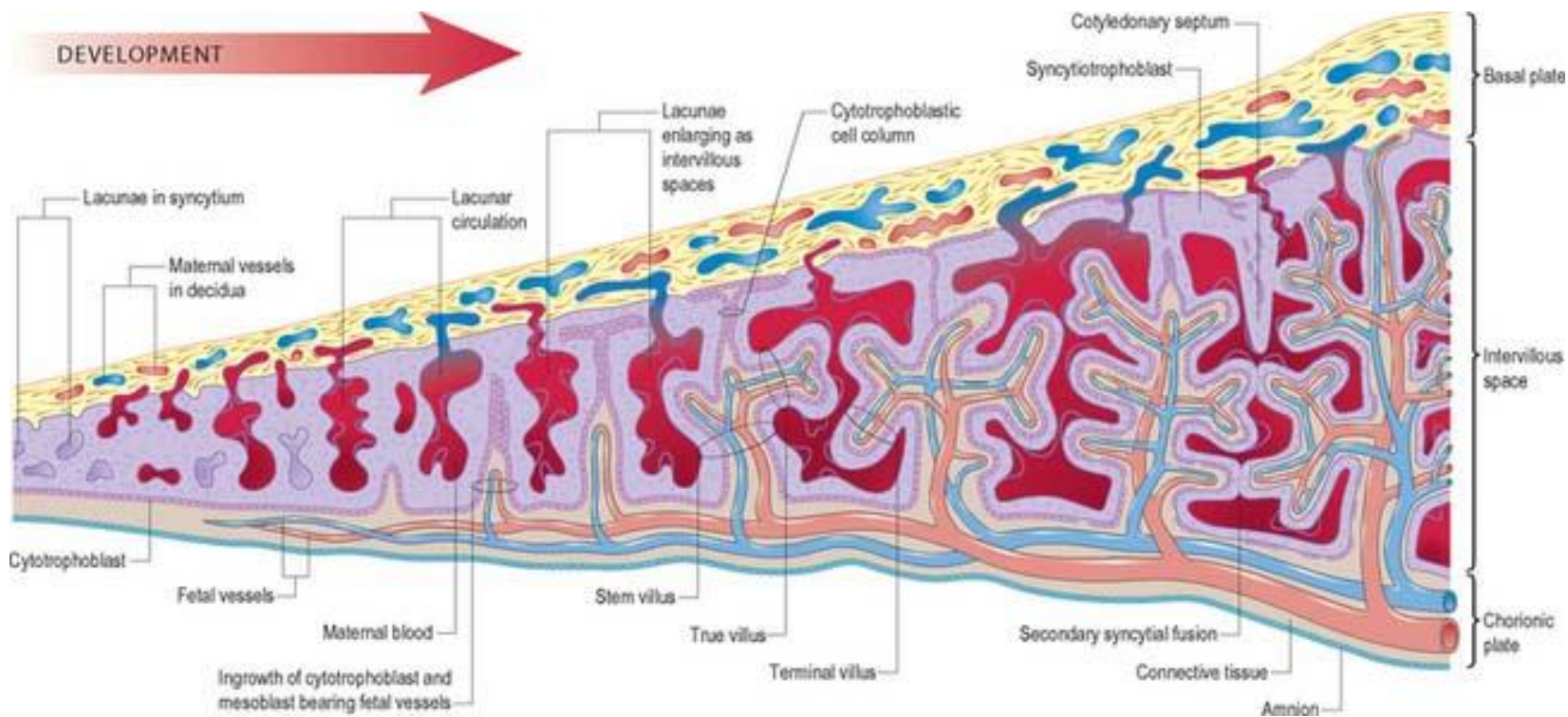
**Maternal
surface**

Cotyledons

Full-term



**Umbilical cord
attached to the
fetal surface of
placenta**



Uterine vessels

Uterine glands

Syncytiotrophoblast

Cytotrophoblast

Mesoderm

Intervillous space

**Lacunar
Intervillous
spaces**

Uterine glands

Uterine vessels

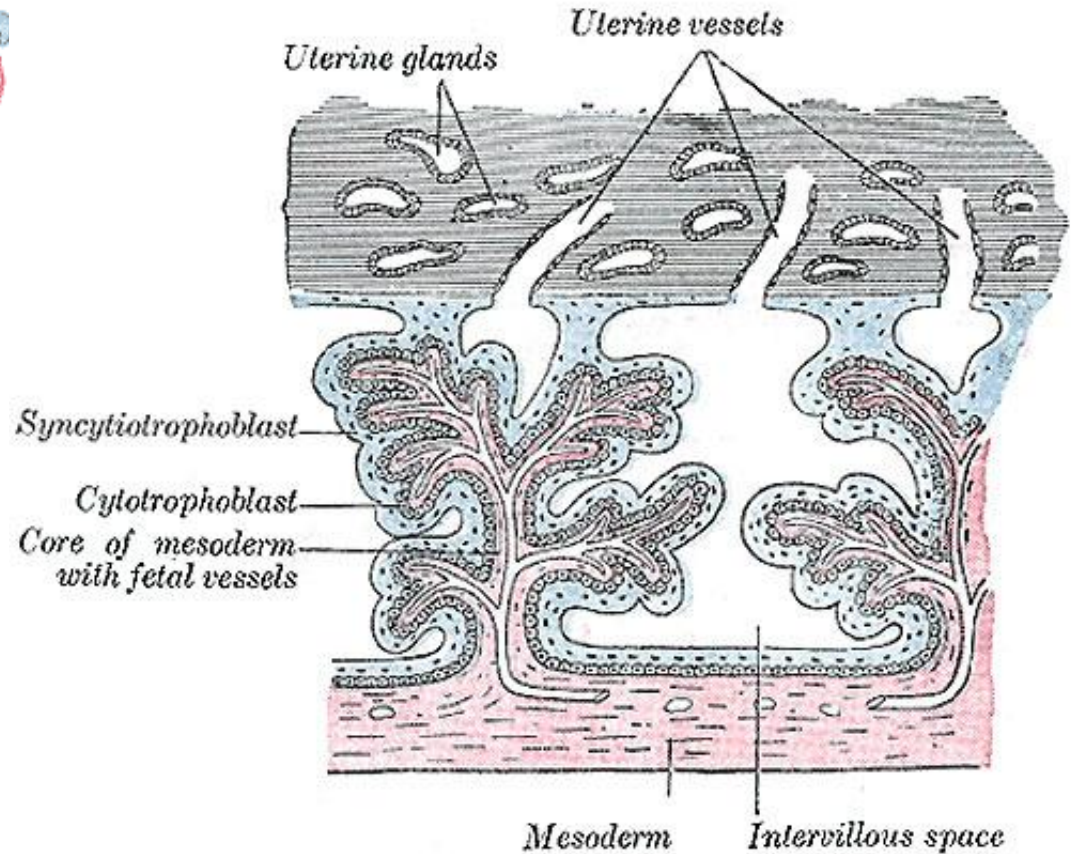
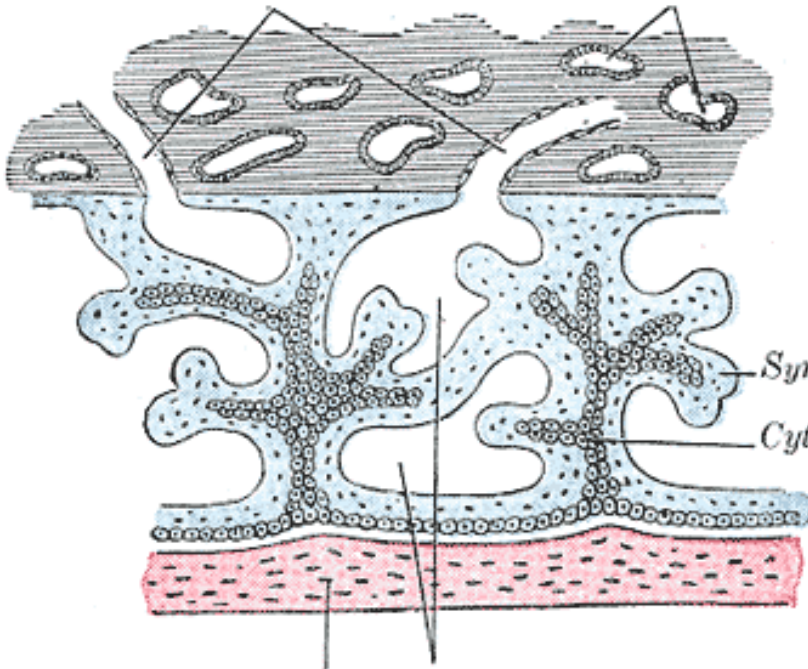
Syncytiotrophoblast

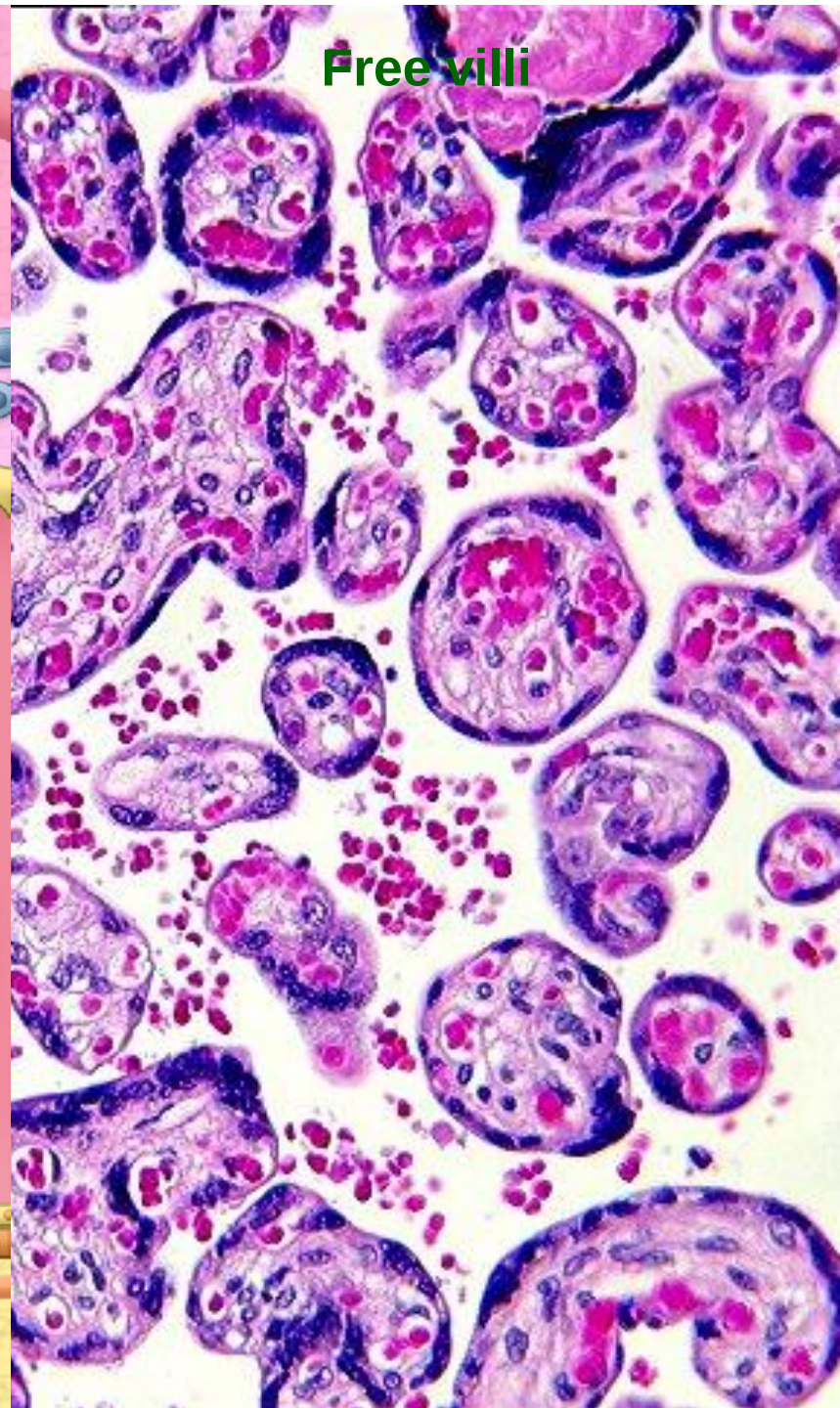
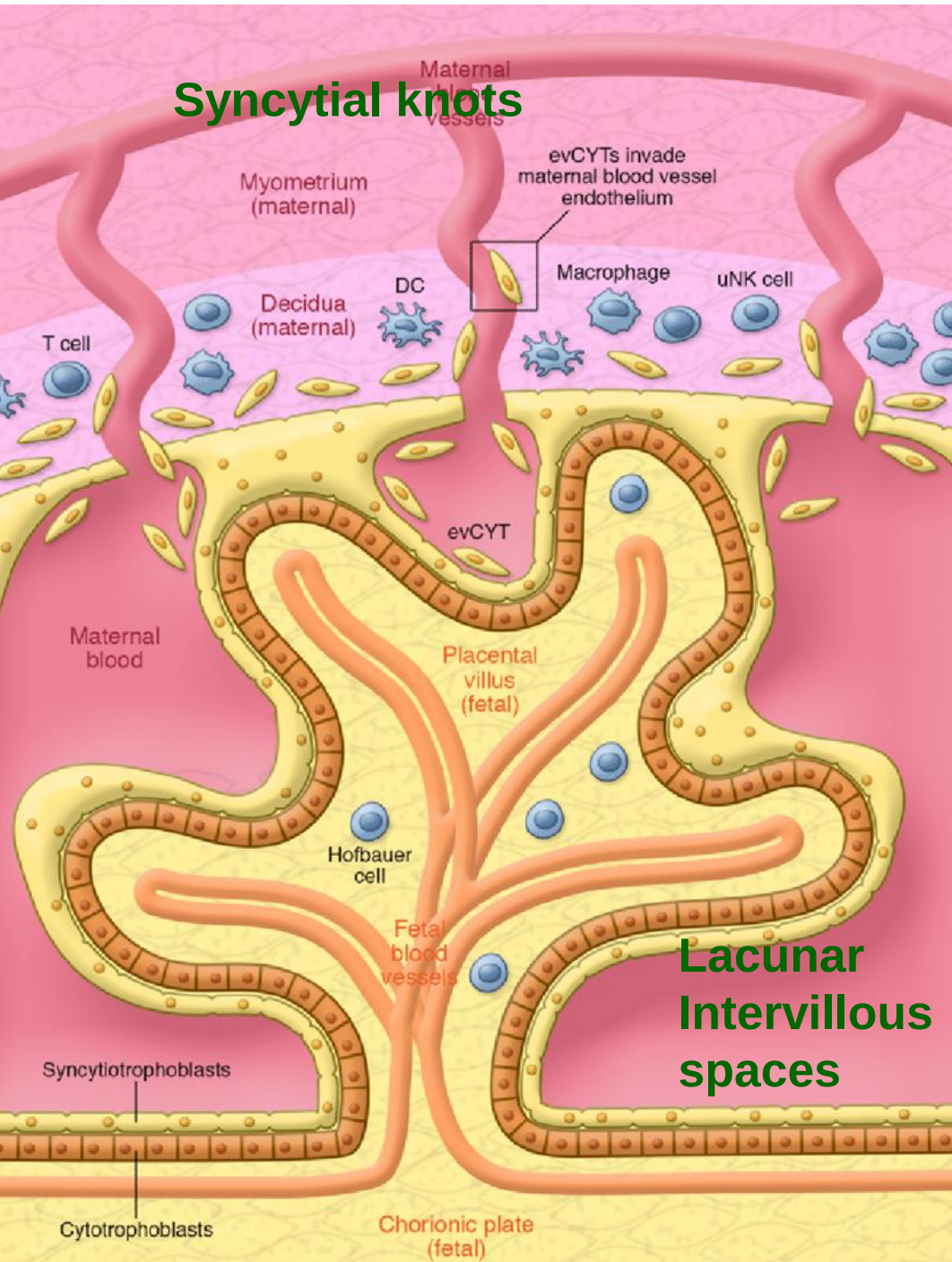
Cytotrophoblast

*Core of mesoderm
with fetal vessels*

Mesoderm

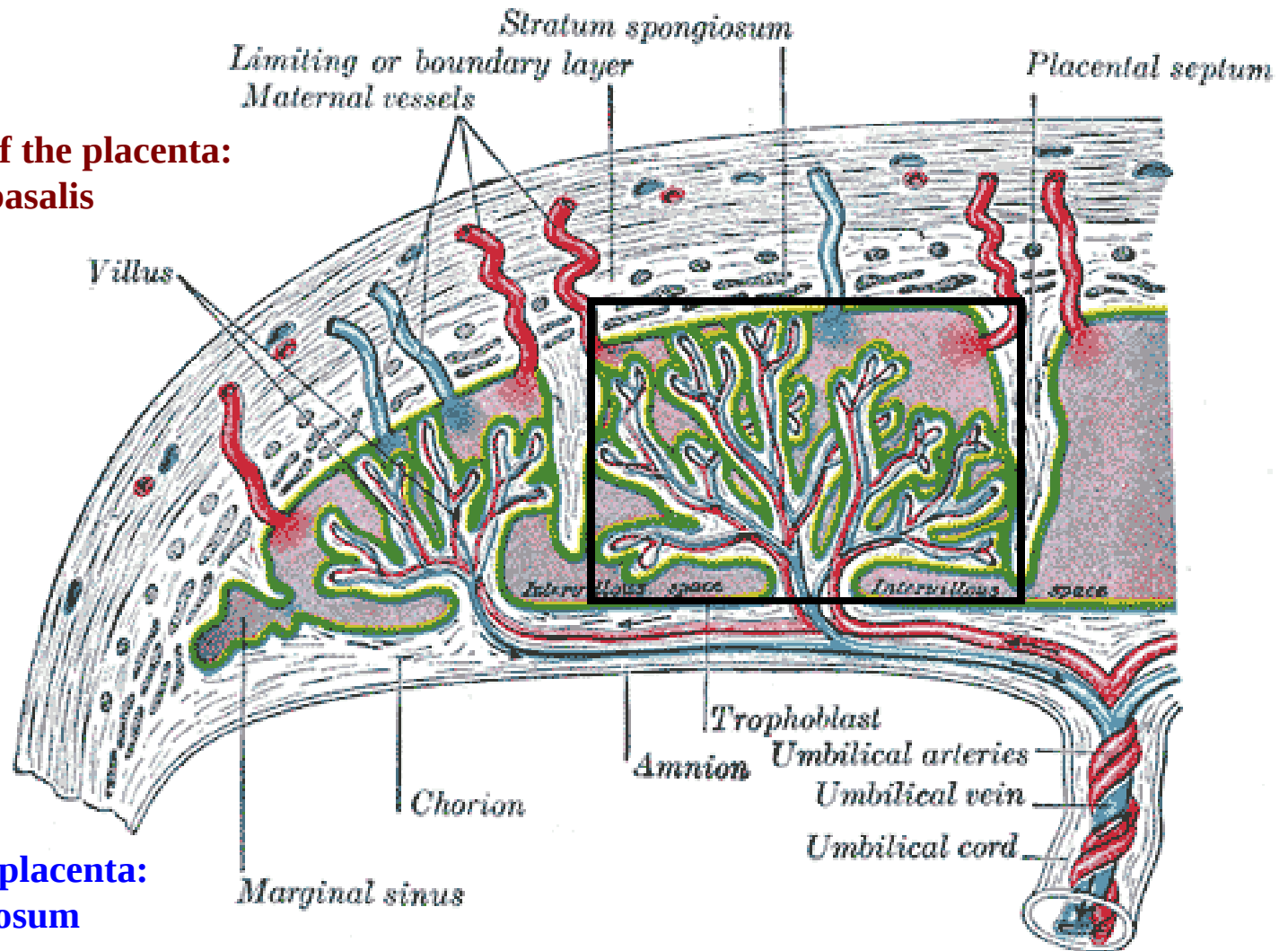
Intervillous space





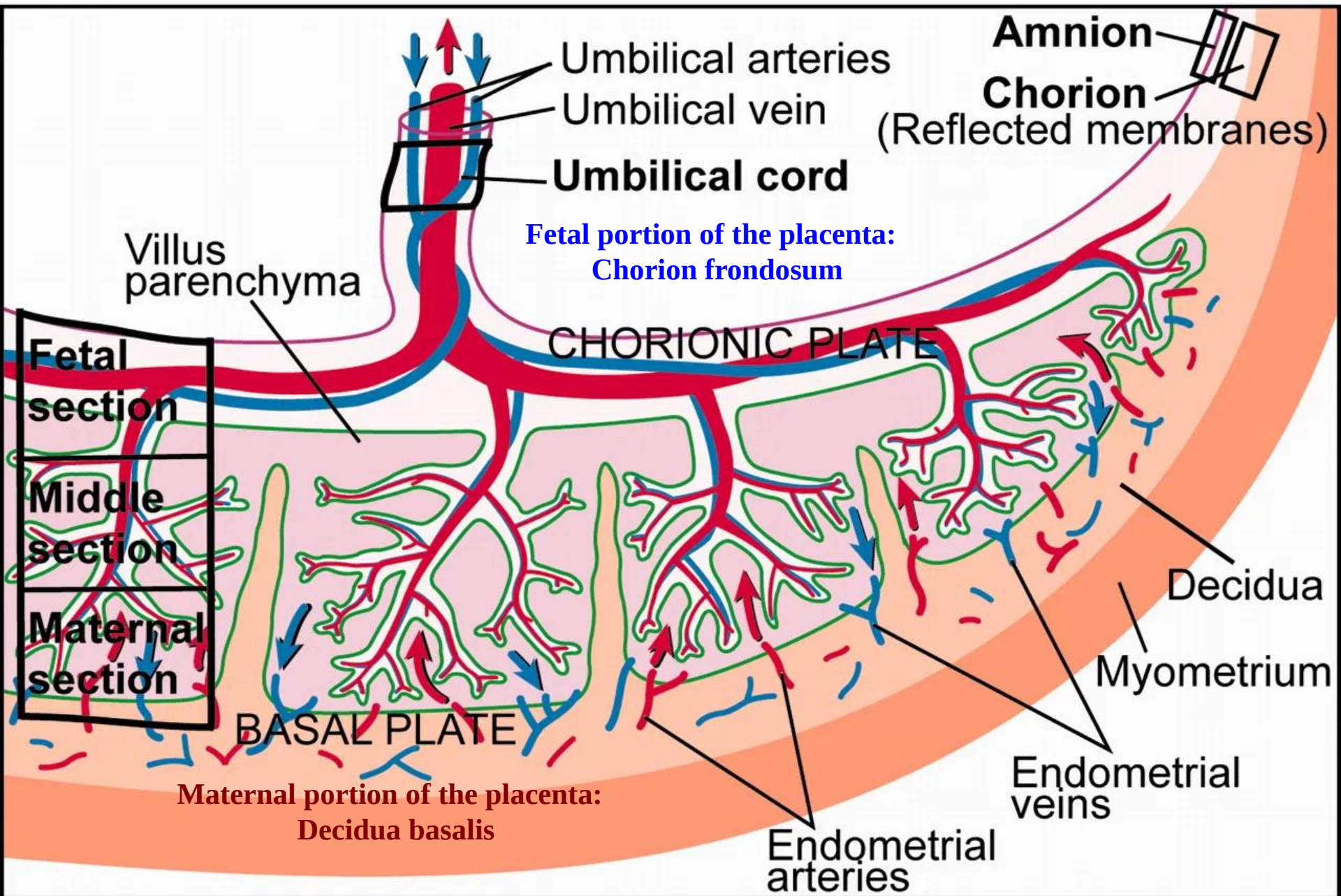
The human placenta is considered to be of the **hemochorial** type

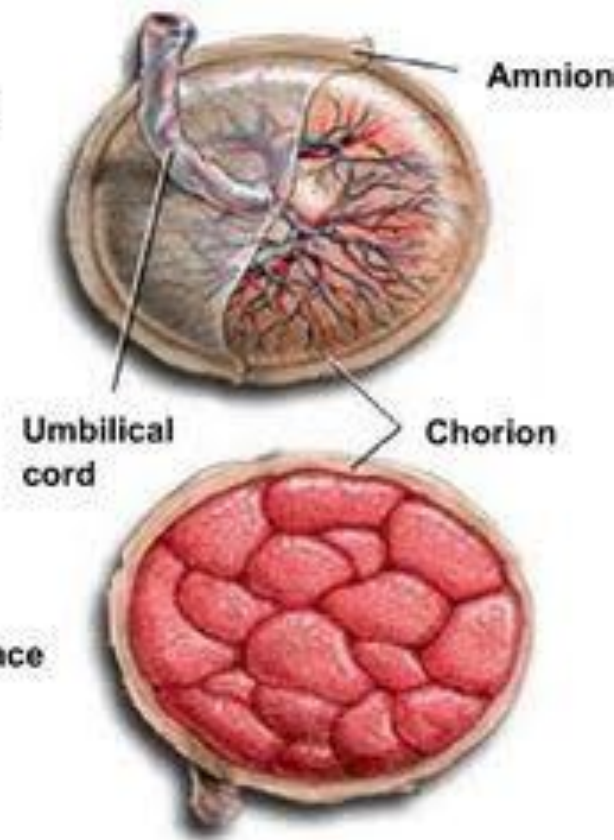
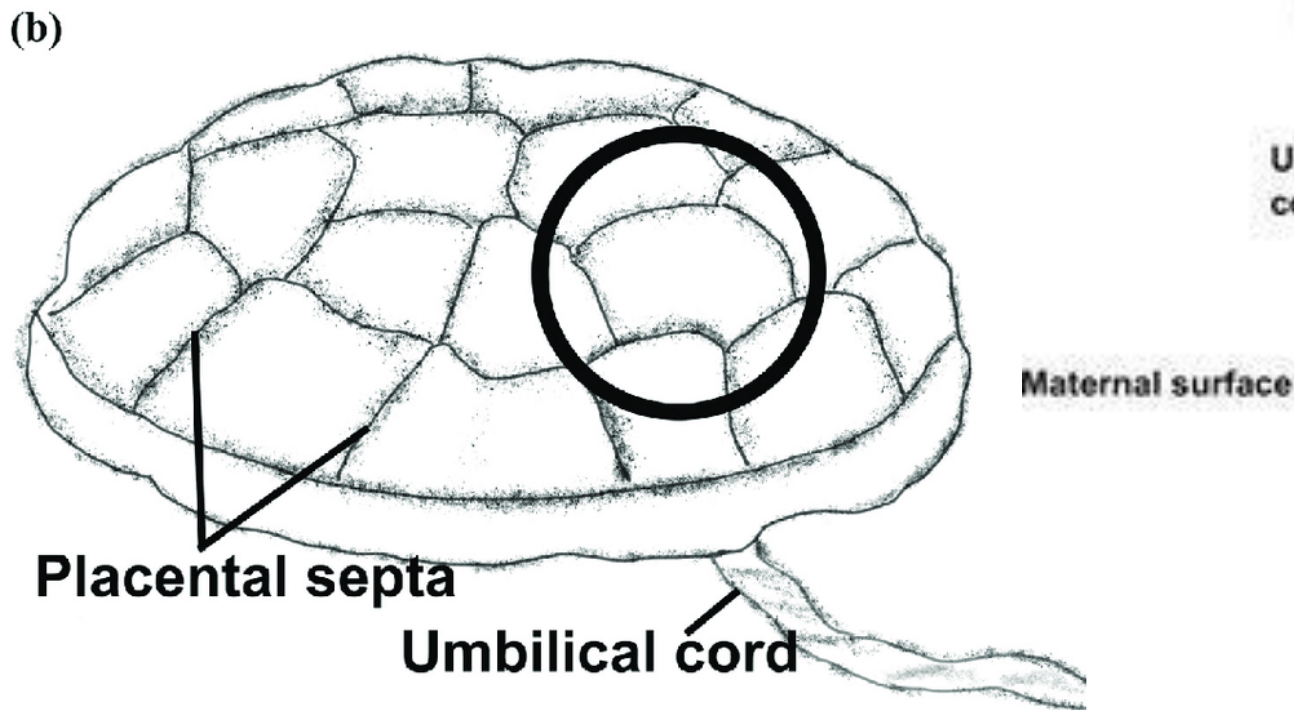
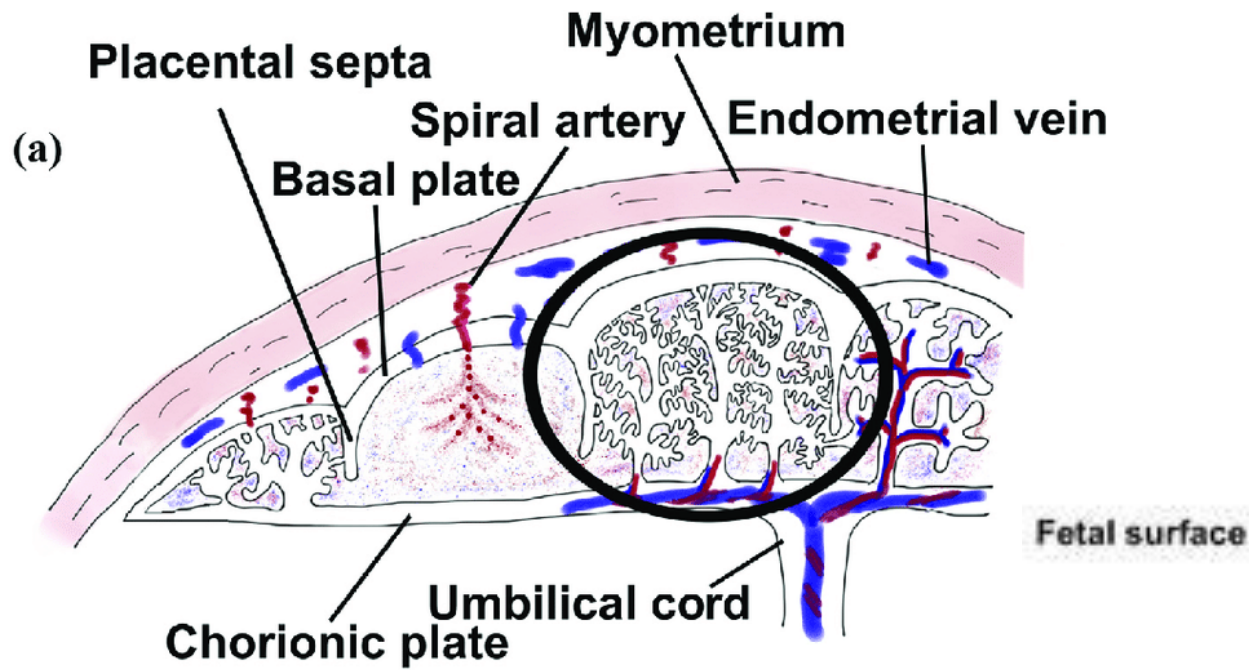
Maternal portion of the placenta:
Decidua basalis



Fetal portion of the placenta:
Chorion frondosum

Because the decidual septa do not reach the chorionic plate, contact between intervillous spaces in the various cotyledons is maintained.





FUNKCJE ŁOŻYSKA

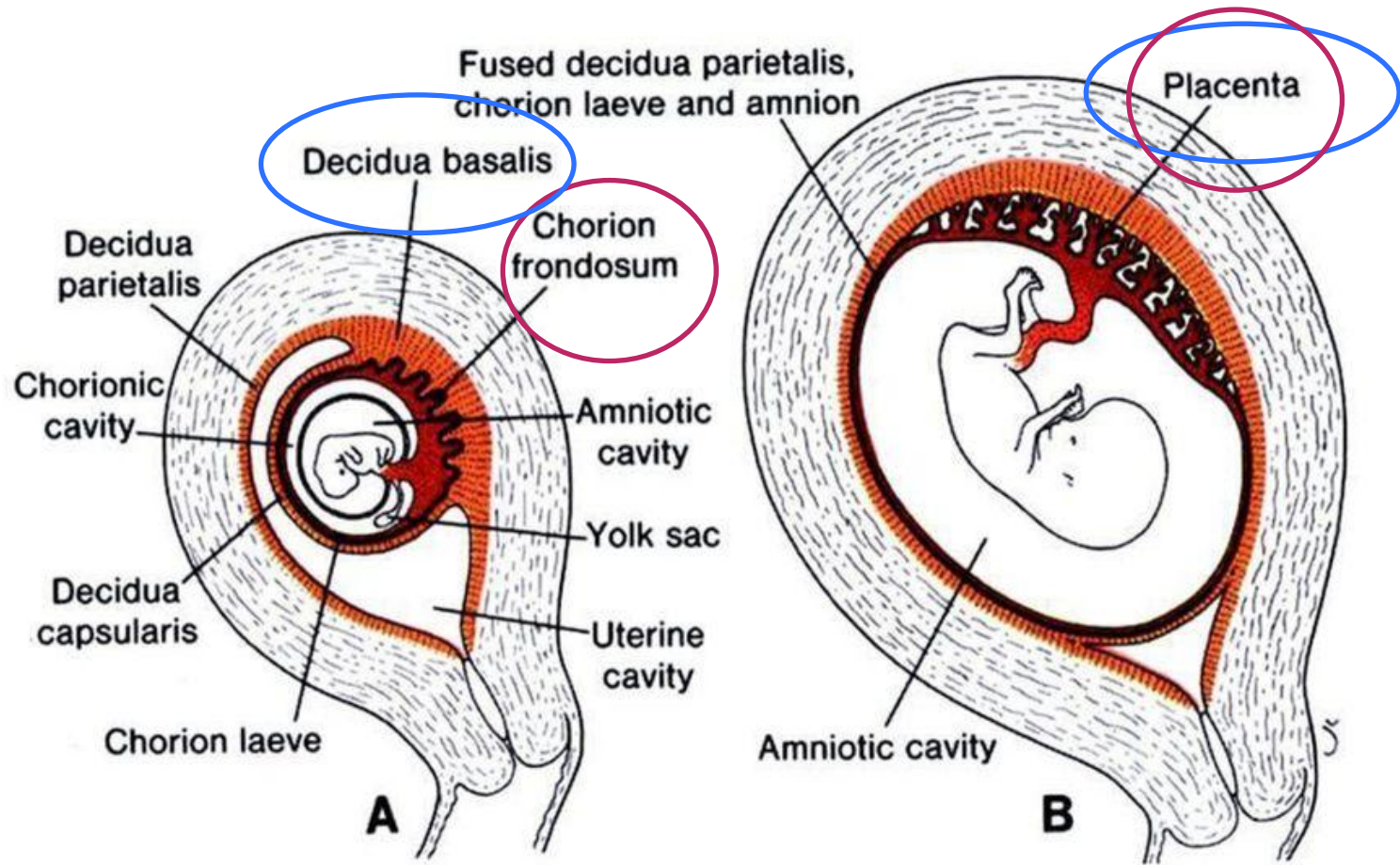
Utrzymuje płód w macicy.

Pośredniczy w wymianie fizjologicznej między płodem a matką: dostarcza płodowi substancje odżywcze (glukozę, aminokwasy, substancje mineralne, witaminy); dostarcza płodowi tlen; usuwa z krwi płodu szkodliwe metabolity, takie jak dwutlenek węgla czy mocznik.

Wytwarza hormony wpływające na prawidłowy przebieg i utrzymanie ciąży: gonadotropinę łożyskową, hCG; laktogen łożyskowy (somatomammotropinę kosmówkową), hCS; progesteron; relaksynę; estrogeny.

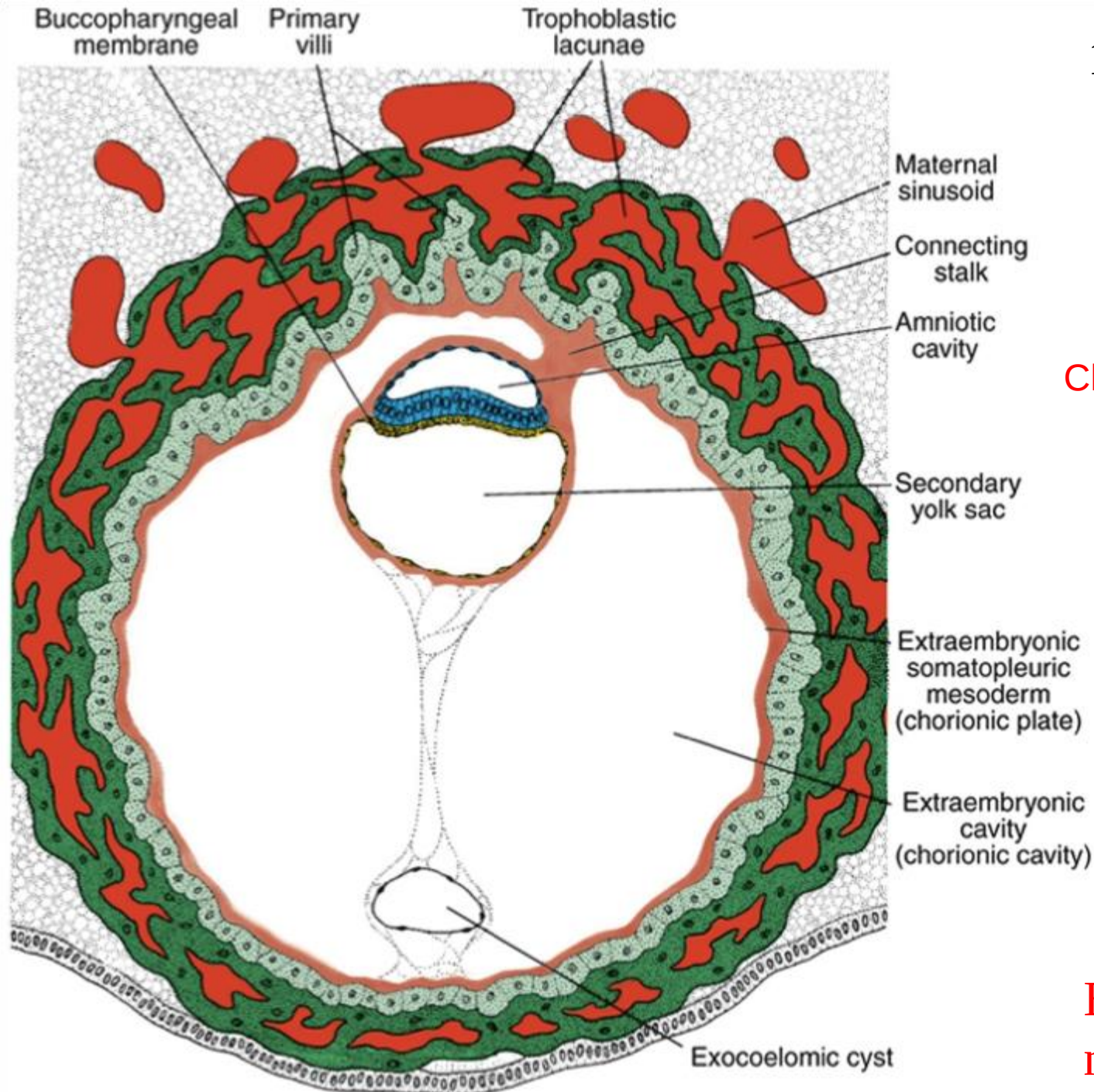
Zapewnia ochronę immunologiczną: tworzy barierę mechaniczną dla drobnoustrojów; dostarcza płodowi przeciwciał z krwi matki.

When the enlarging embryo finally completely fills the endometrial cavity during the third or fourth month of pregnancy, the **decidua capsularis fuses with the decidua parietalis** opposite it and obliterates the endometrial cavity.



Fusion of the amnion and chorion forms the **amniochorionic membrane**, Chorionic cavity obliterates, **amniochorionic membrane** rupture during labor

13-day



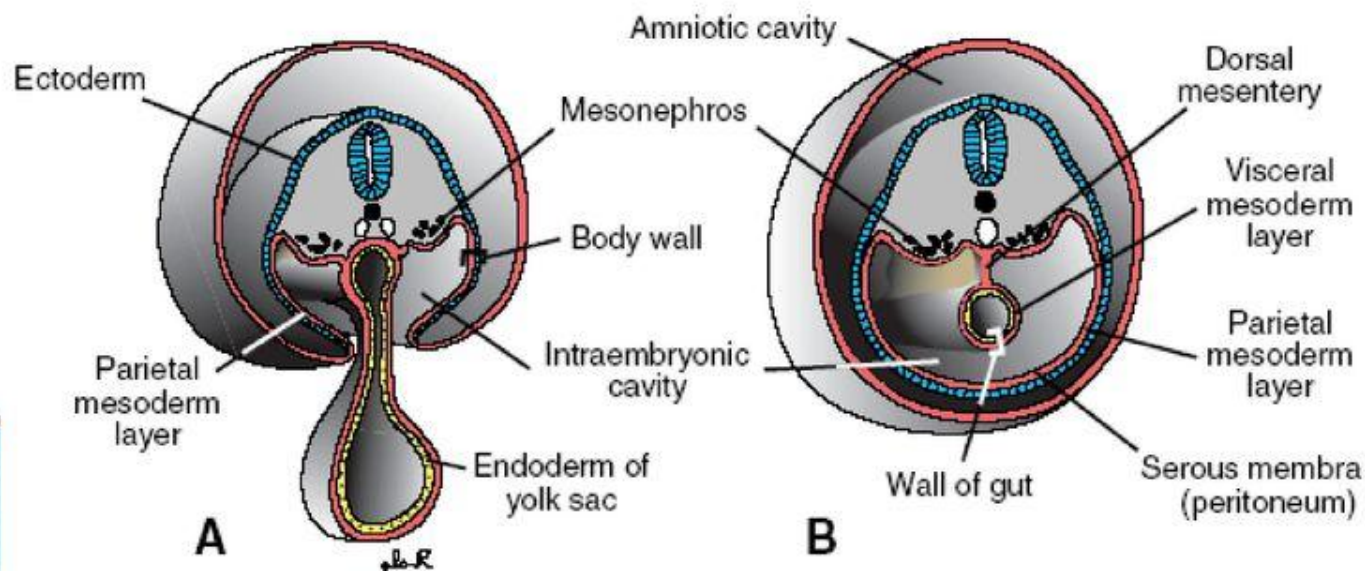
Chorion frondosum

Chorion laeve

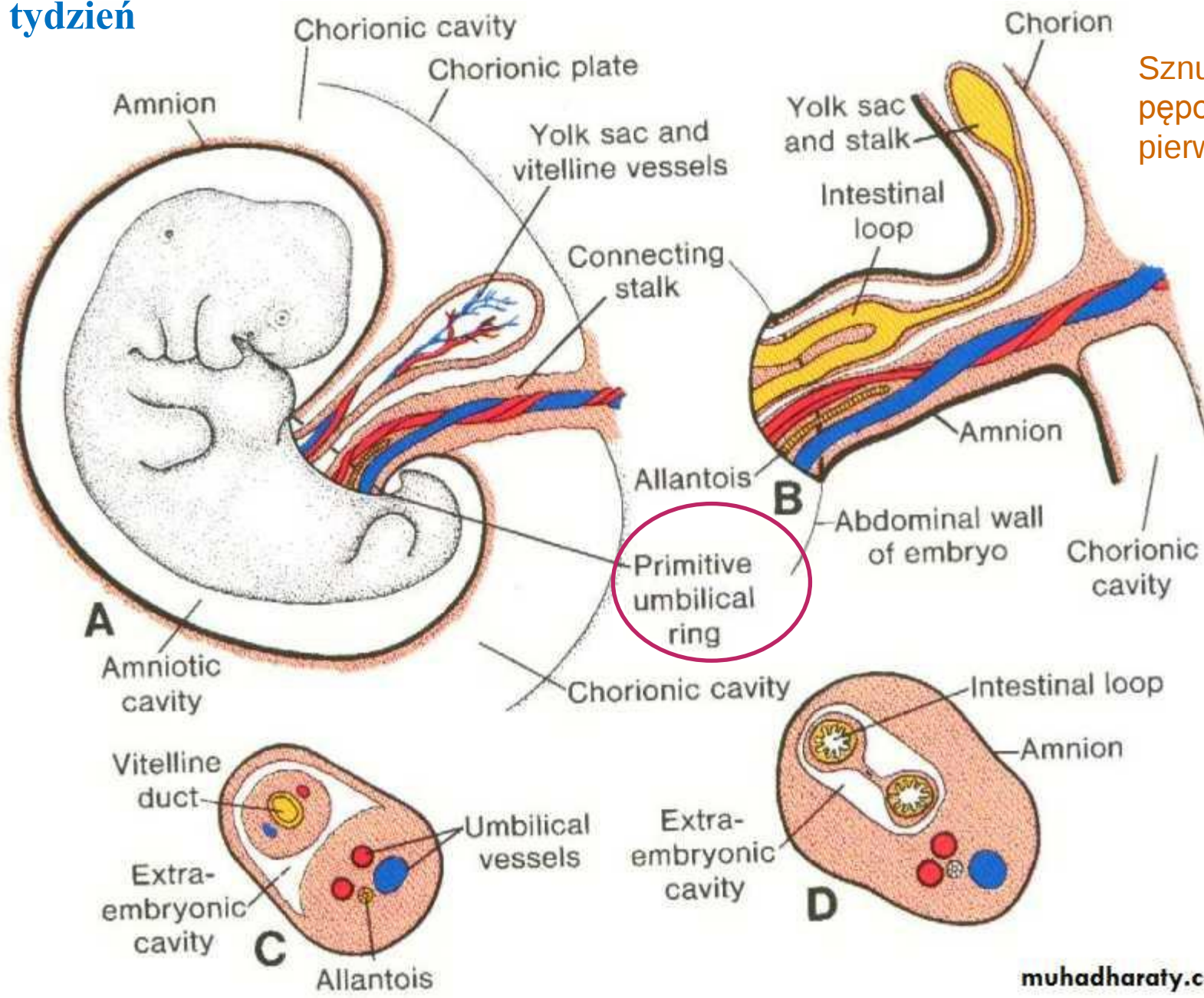
Bleeding
near 28th day

The umbilical cord and amnion:

- ▶ The **cephalocaudal and lateral** folding of the embryonic disk during the **2nd month** of development lead to the formation of a **ring** at the junction of the amnion and the ectoderm. This ring is called **the primitive umbilical ring** that contains the following:



5 tydzień

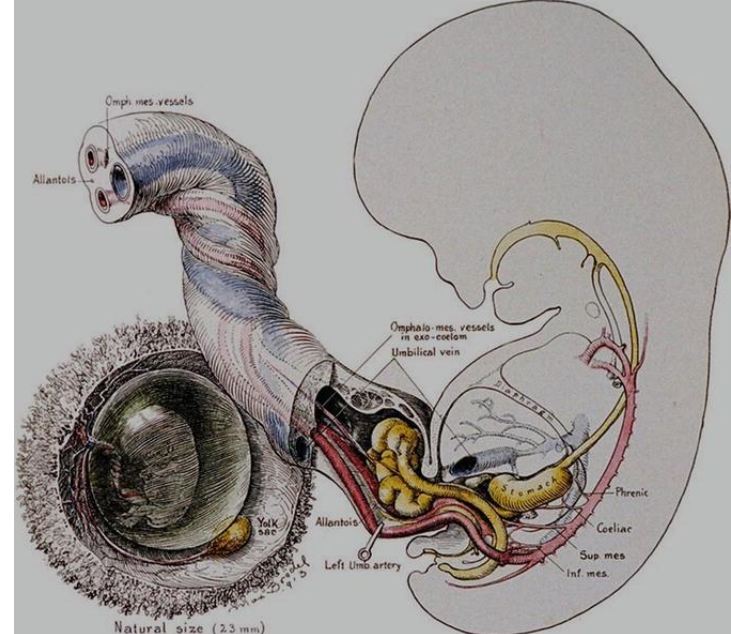
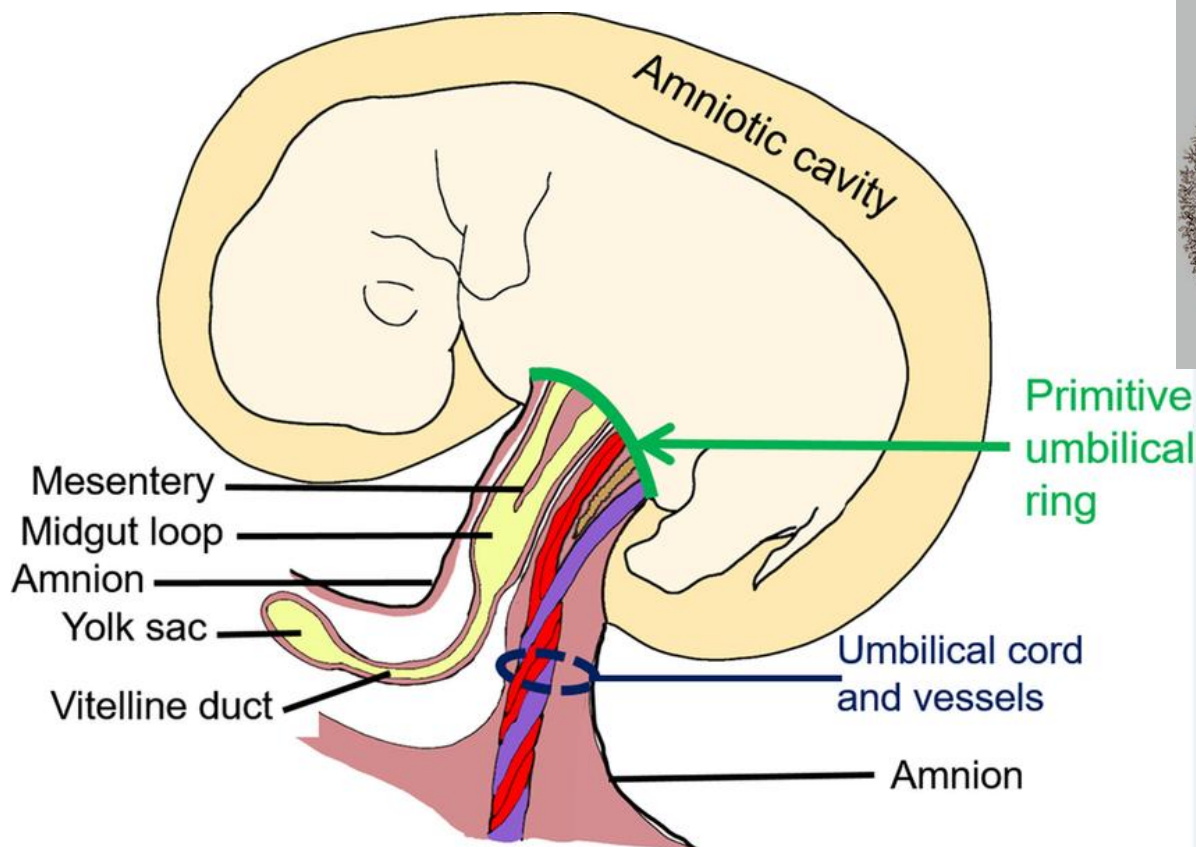


Sznur
pępowinowy
pierwotny

Primitive
umbilical
cord

Pierwotny pierścień pępkowy
-połączenie owodniowo-ektodermalne

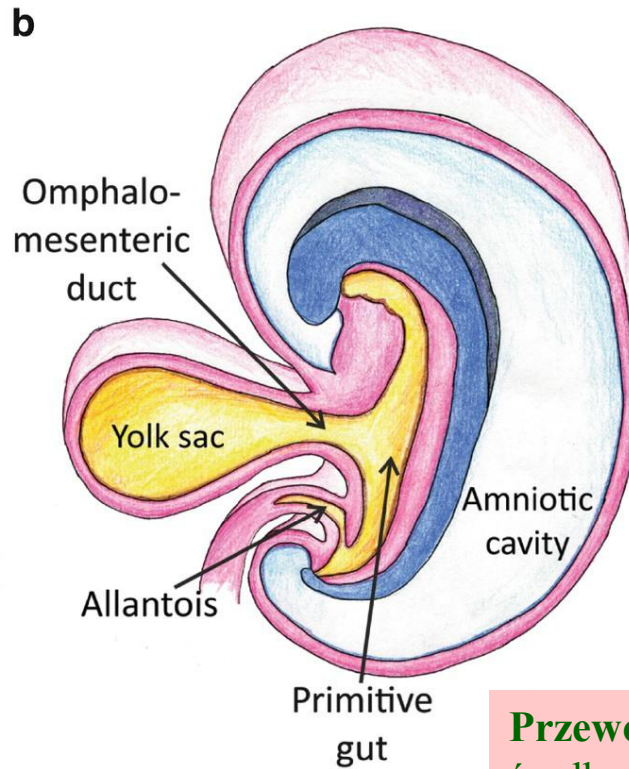
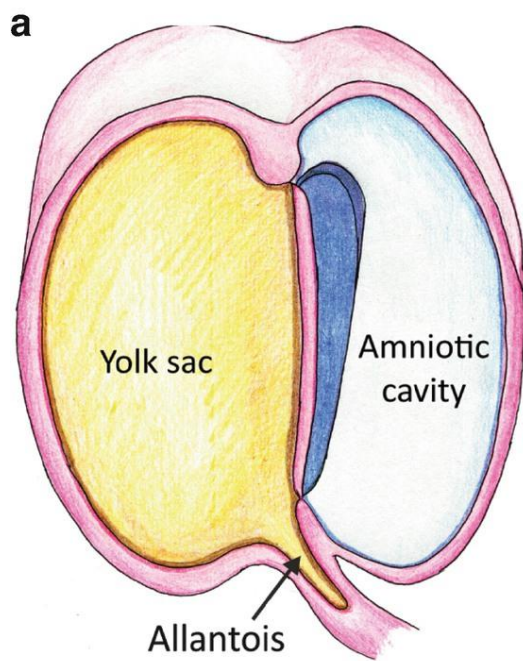
Sznur pępowinowy pierwotny



Fizjologiczna przepuklina jelitowa jest zjawiskiem naturalnym, występującym we wczesnej ciąży. Zwykle występuje od około 6-8 tygodnia aż do 12-13 tygodnia życia płodowego, po czym jelito powraca do jamy brzusznej.

Definitive Umbilical Cord

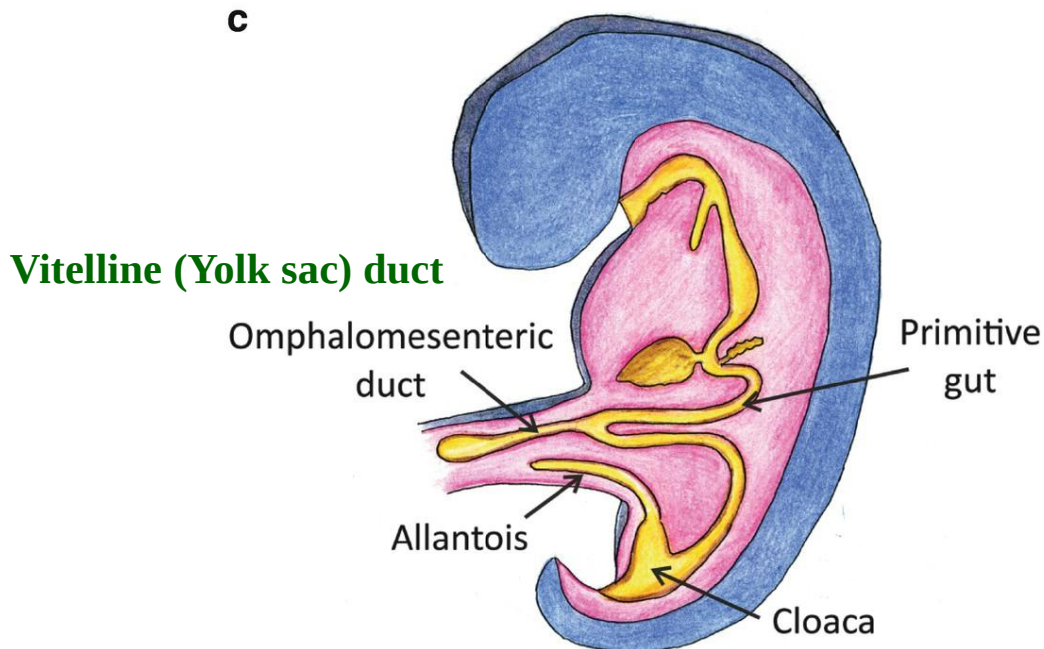
- **Return** of intestinal loop to abdominal cavity at 3rd month.
- **Obliteration** of extra-embryonic part of vitelline vessels and one umbilical vein with persistence of other vein and 2 umbilical arteries.
- **Degeneration** of vitelline duct and allantois
- **Transformation** of mesoderm of connecting stalk into wharton's jelly.



Stomodeum

(pierwotna/prymitywna jama ustna) jest oddzielona od jelita błoną ustno-gardłową

Przewód żółtkowy łączy jelito środkowe z pęcherzykiem żółtkowym

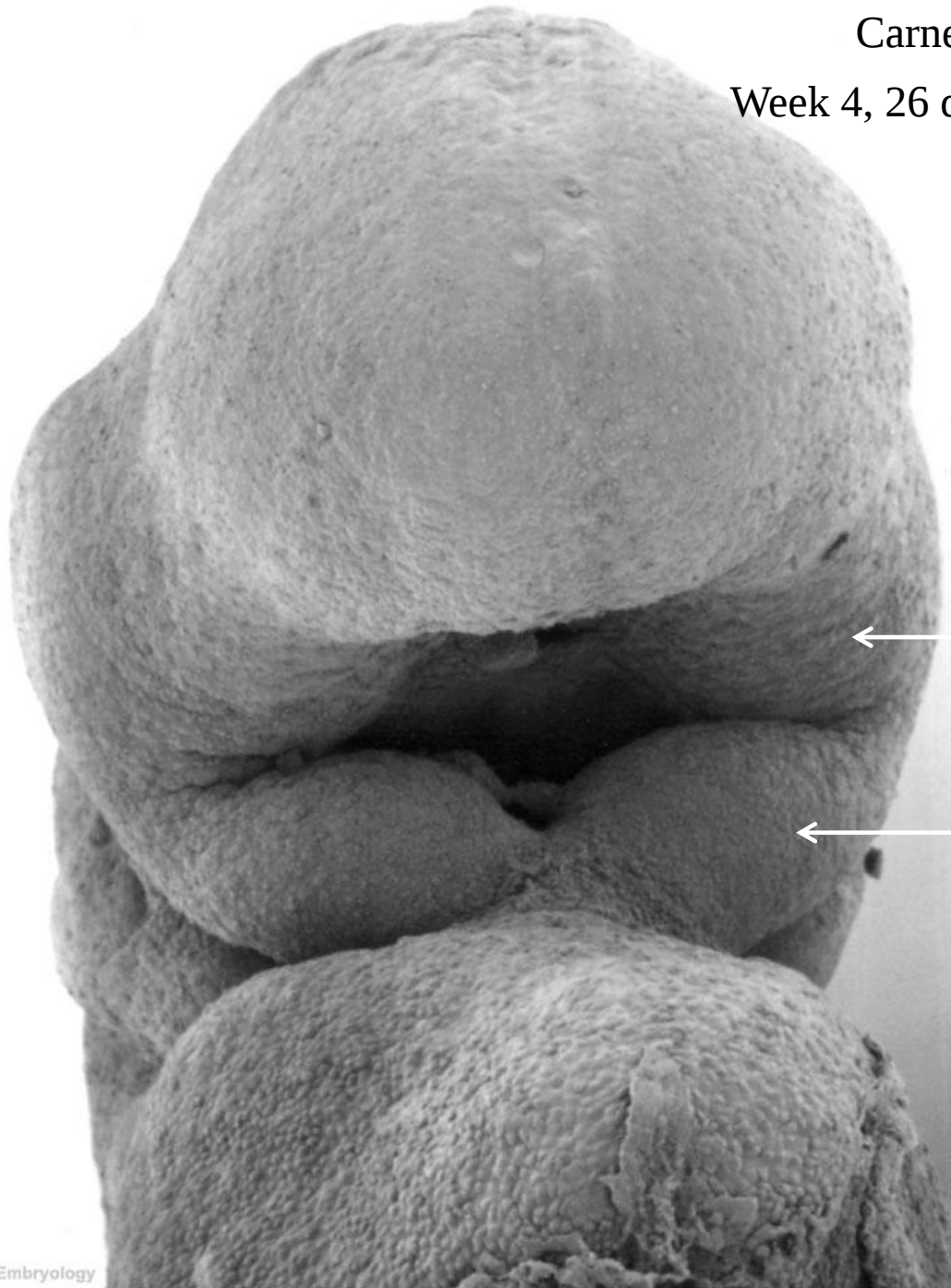


Błona stekowa zamyka jelito tylne . Górna część kanału odbytu – endoderma.
Dolna część odbytu, proktodeum (prostnica) – ektoderma.
Przerwanie błony stekowej – 7 tydzień rozwoju.

Brown

Carnegie Stage 12

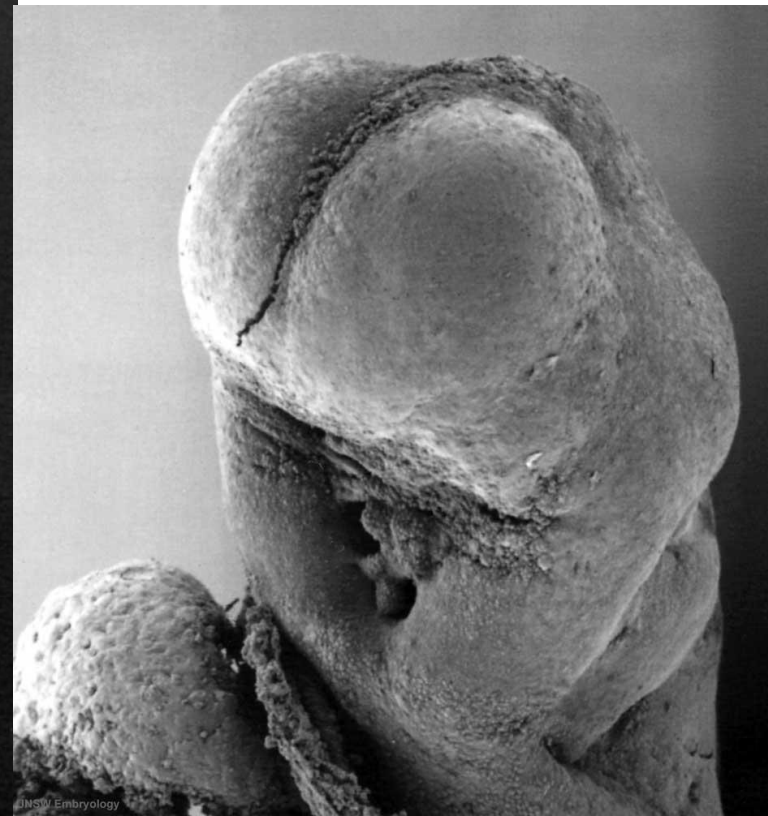
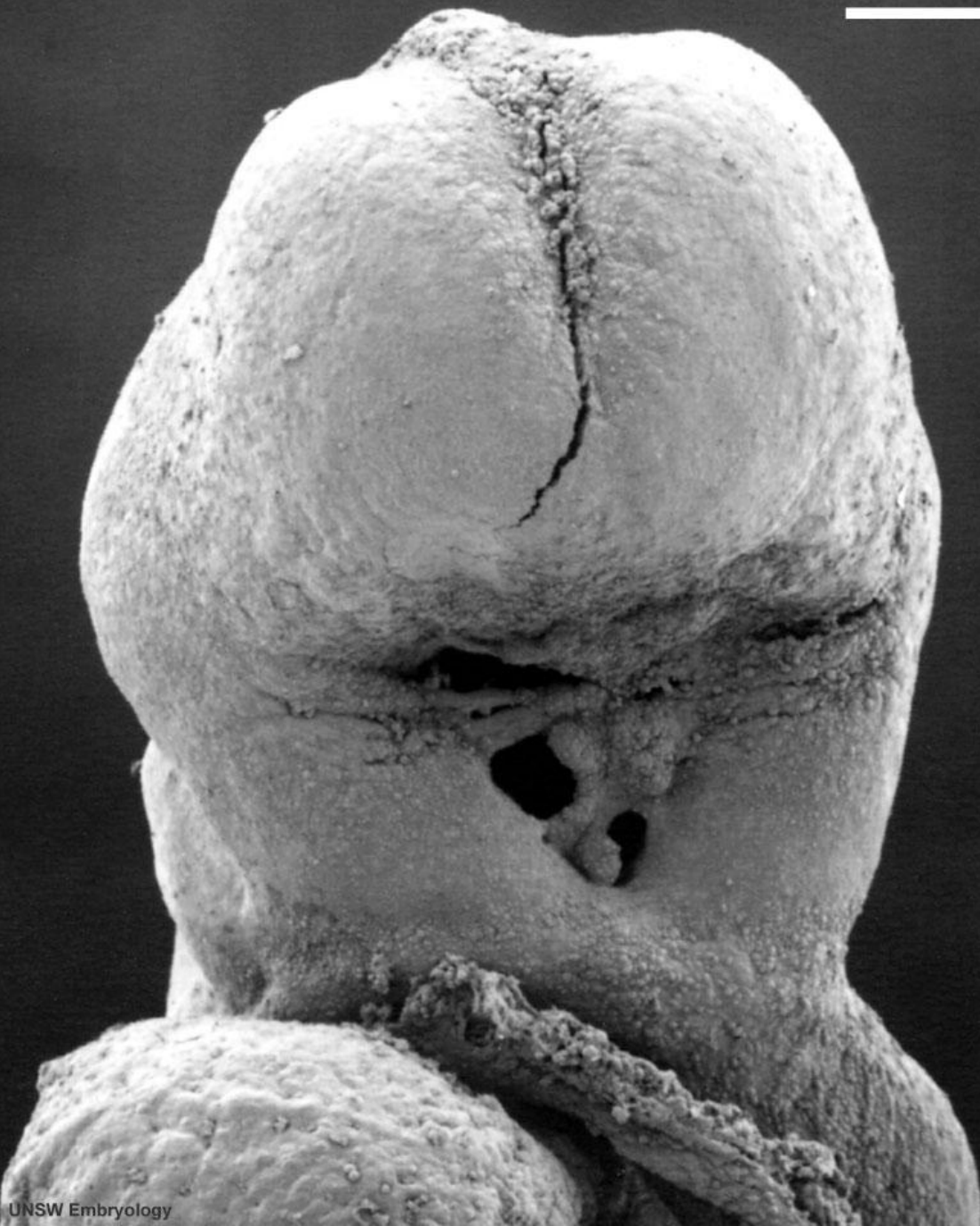
Week 4, 26 days, 5 mm, Somite Number 25

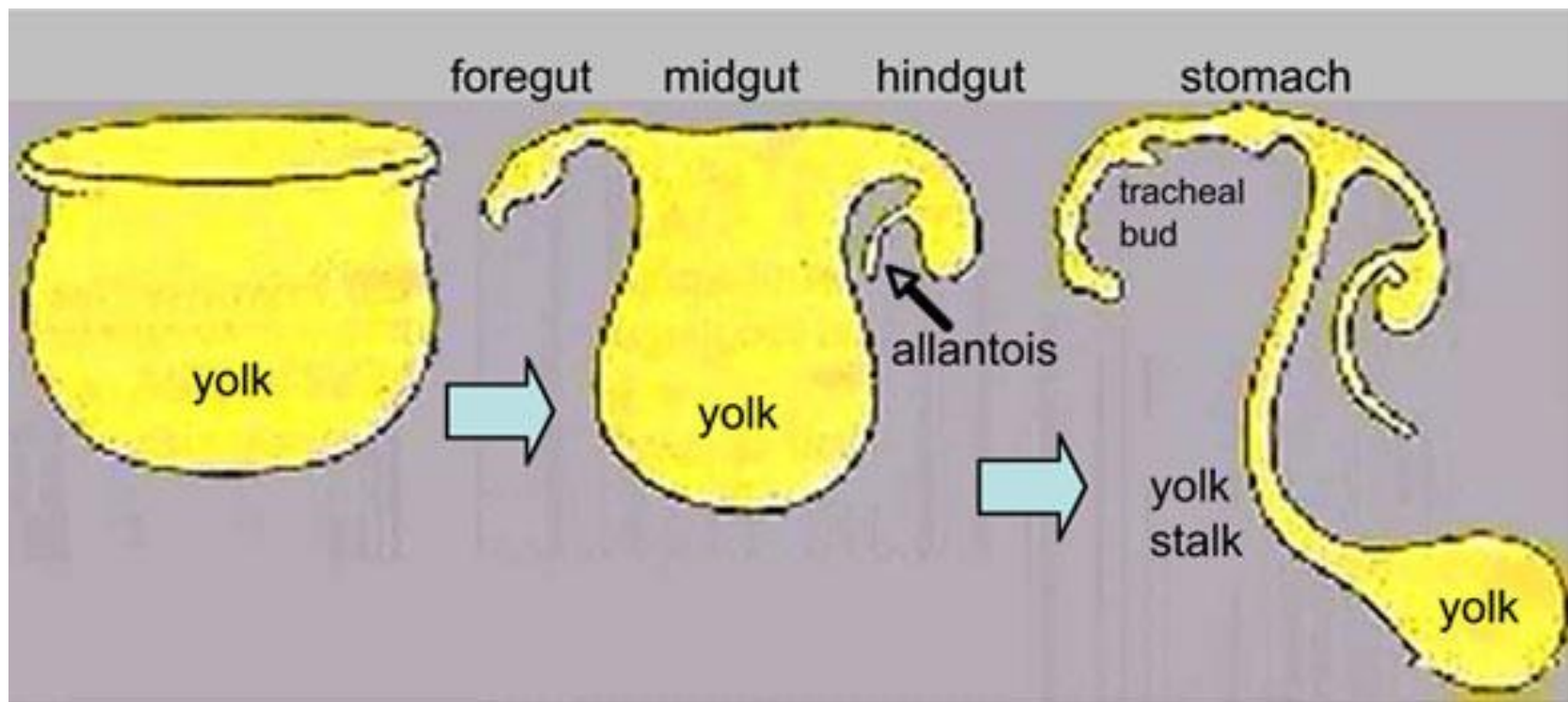


Część grzbietowa
I łuku gardłowego =
Wyniosłość szczękowa

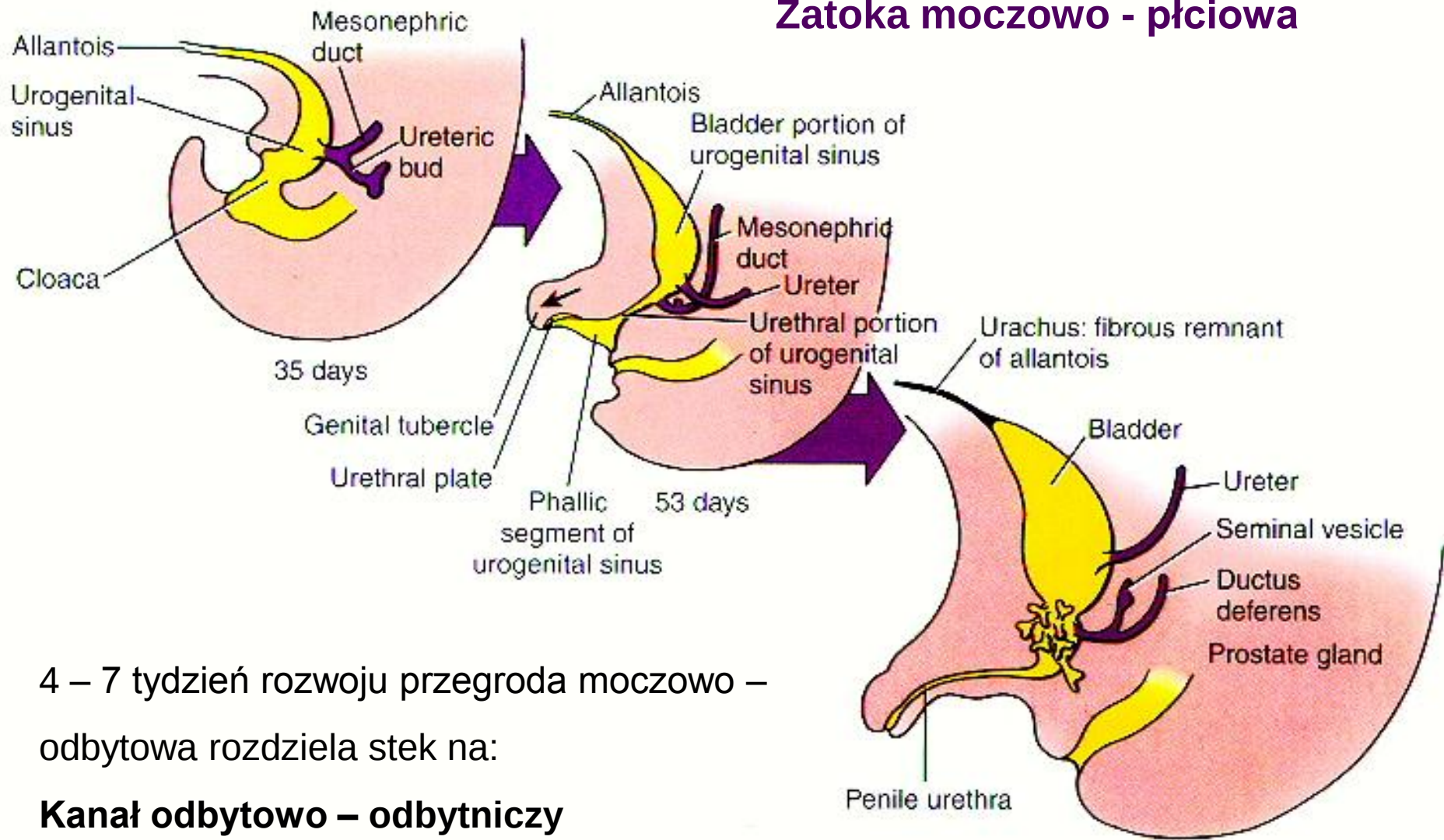
Część brzuszna
I łuku gardłowego =
Ł. żuchwowy

100 micron





Zatoka moczowo - płciowa



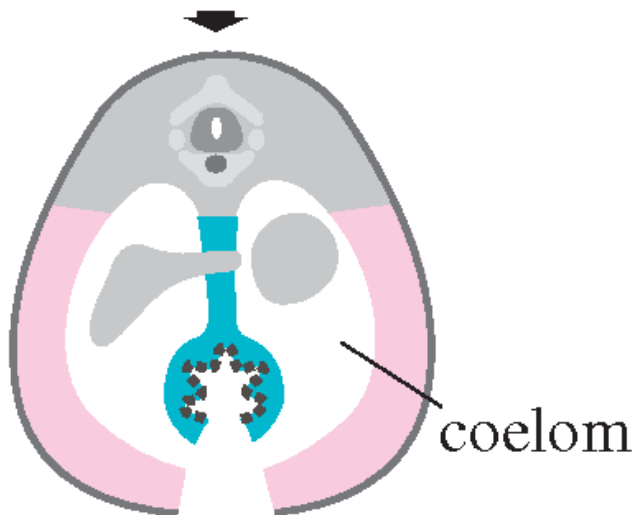
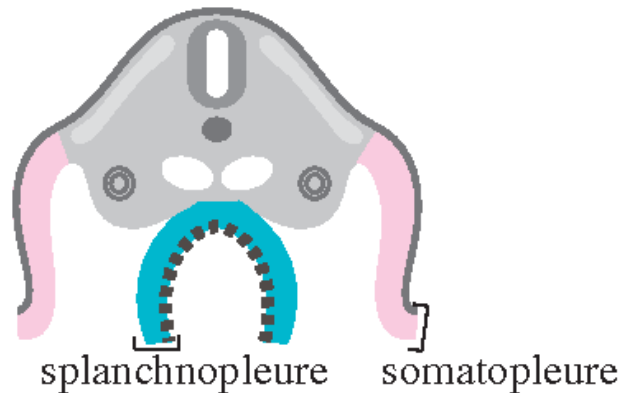
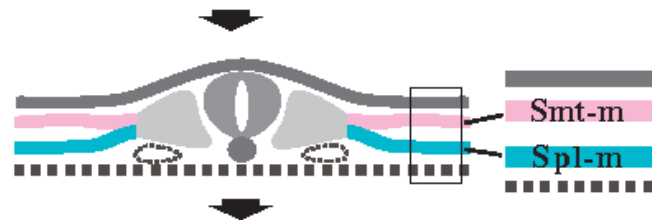
4 – 7 tydzień rozwoju przegroda moczowo –
odbytowa rozdziela stek na:

Kanał odbytowo – odbytniczy

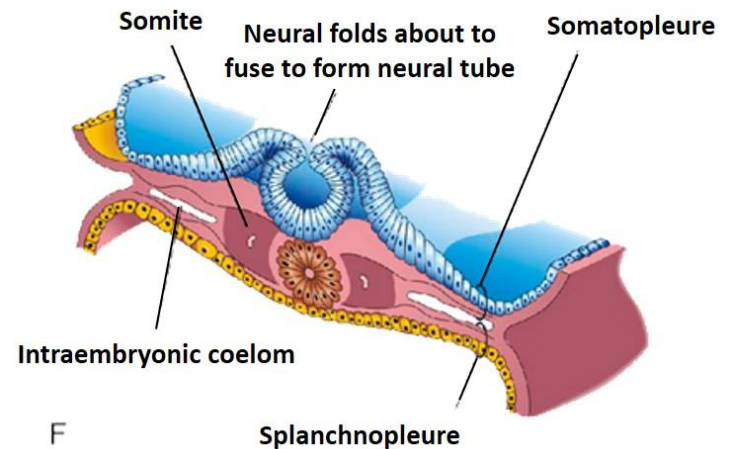
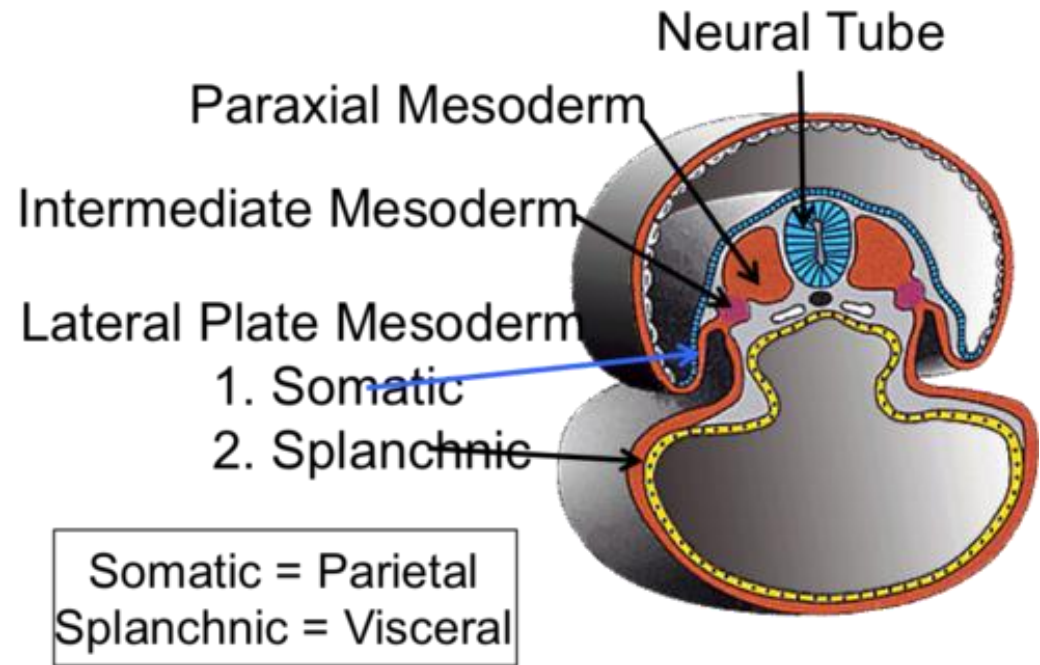
Pierwotna zatoka moczowo - płciowa

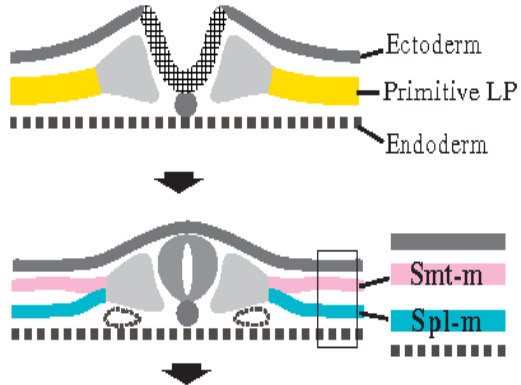
Błona stekowa rozdziela się na:

błonę moczowo – płciową i błonę odbytową



Błony surowicze powstają z mezodermy płytek bocznych





Somatopleura =

Warstwa ścienna mezodermy bocznych płytek
Ektoderma

Ścienna warstwa błon surowiczych

Krezka brzuszna tylko między ogonowym
końcem jelita przedniego a górną częścią
dwunastnicy – Mezoderma przegrody
poprzecznej.

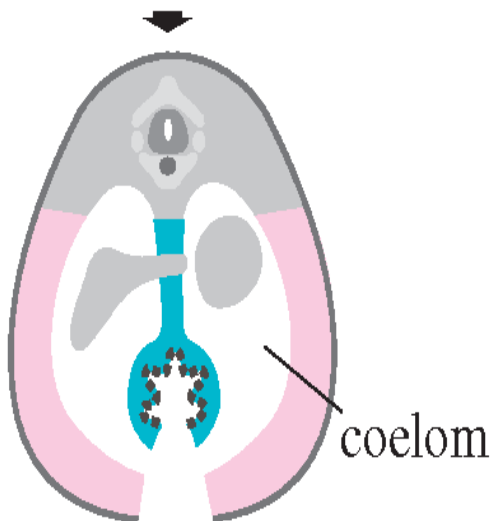
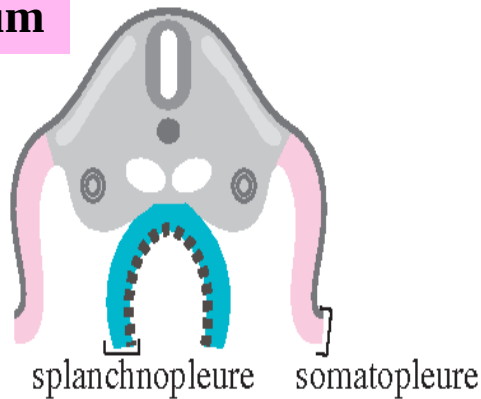
Splanchnopleura =

Warstwa trzewna mezodermy bocznych płytek
Endoderma

Trzewna warstwa błon surowiczych

Trzewne i ścienne warstwy
przechodzą jedne w drugie w
krezce grzbietowej.
Dwuwarstwowość krezki.

Komórki mezotelium



Pierwotna jama ciała

Koniec 4 tygodnia
(koniec 1 miesiąca)
Zamknięcie fałdów
poza pierścieniem
pępkowym