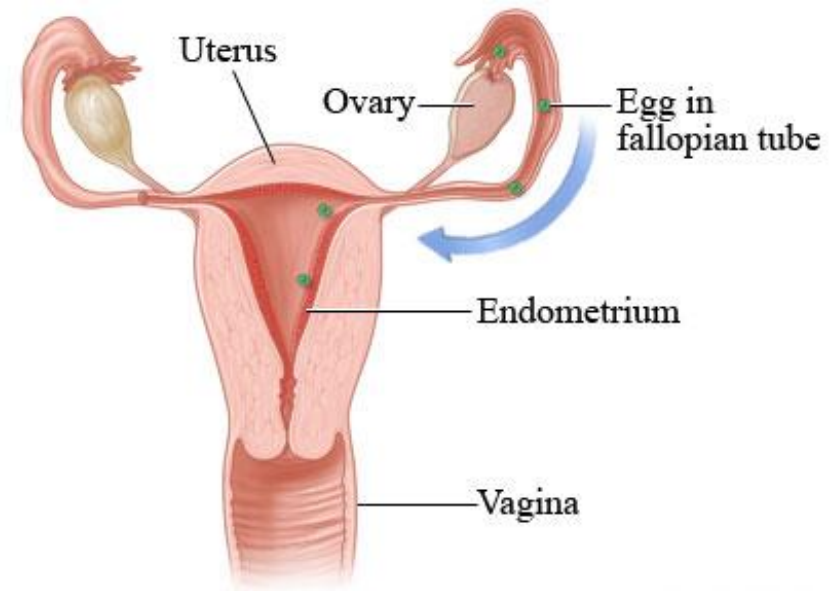


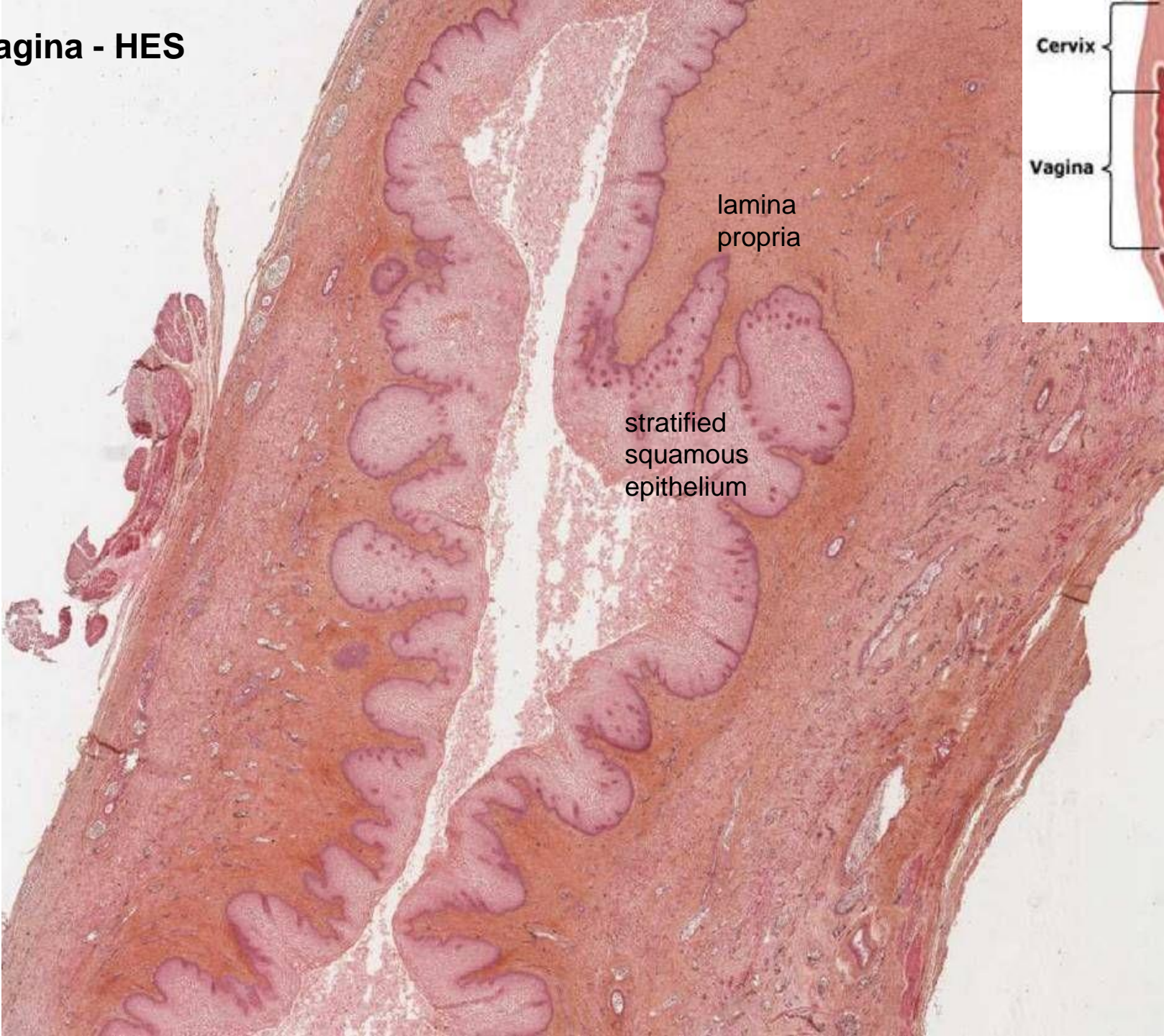


# FEMALE REPRODUCTIVE SYSTEM II

- **vagina** (vagina, kolpos)
- external genitalia (vulva)
  - labia maiora et **labia minora pudendi**
  - clitoris
  - vestibulum vaginae
  - vestibular glands
  - hymen
- accessory embryonic organs
  - **funiculus umbilicalis**
  - **placenta**

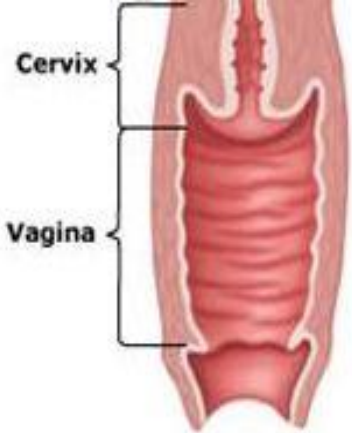


# Vagina - HES



lamina propria

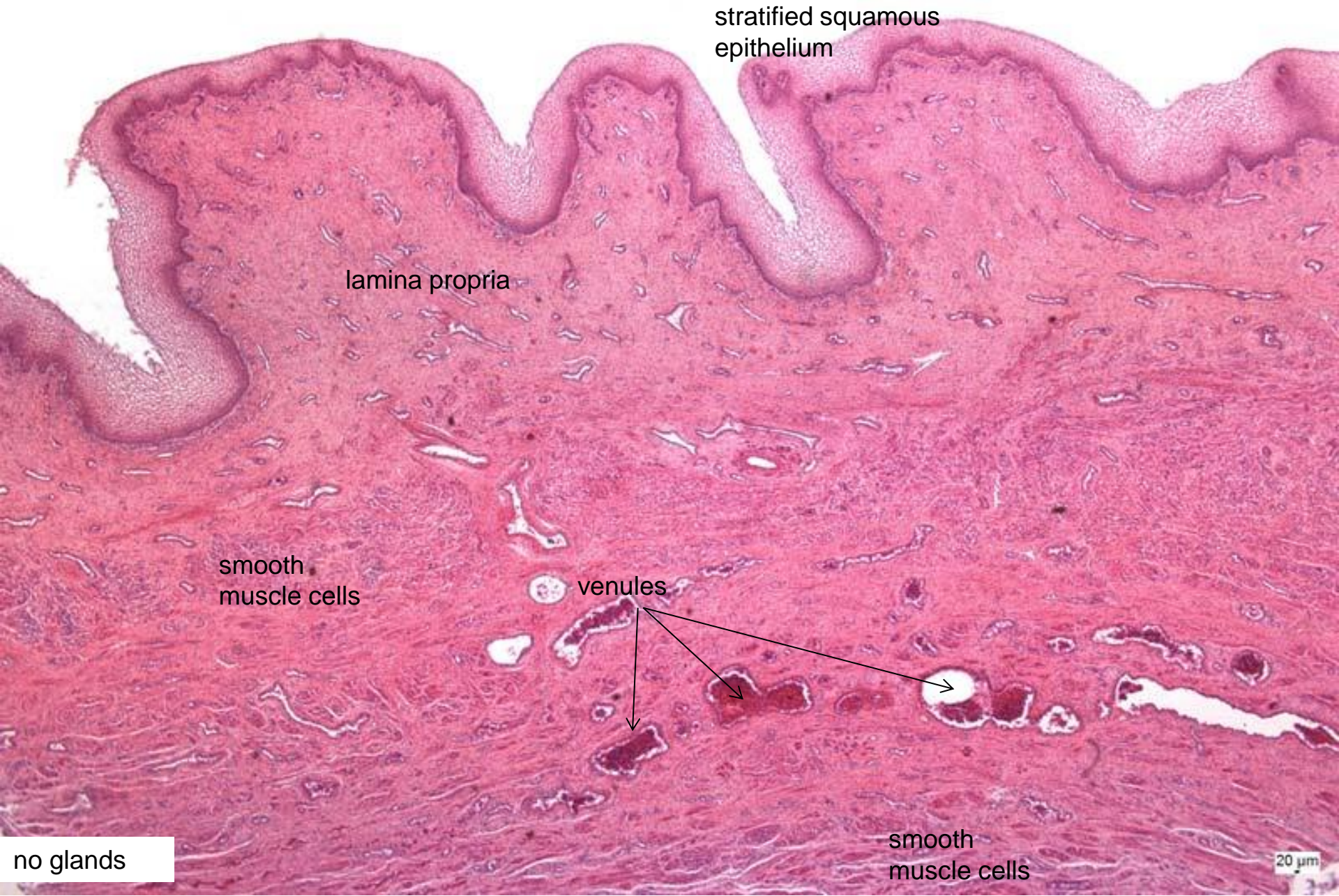
stratified squamous epithelium



Cervix

Vagina

# Vagina



stratified squamous  
epithelium

lamina propria

smooth  
muscle cells

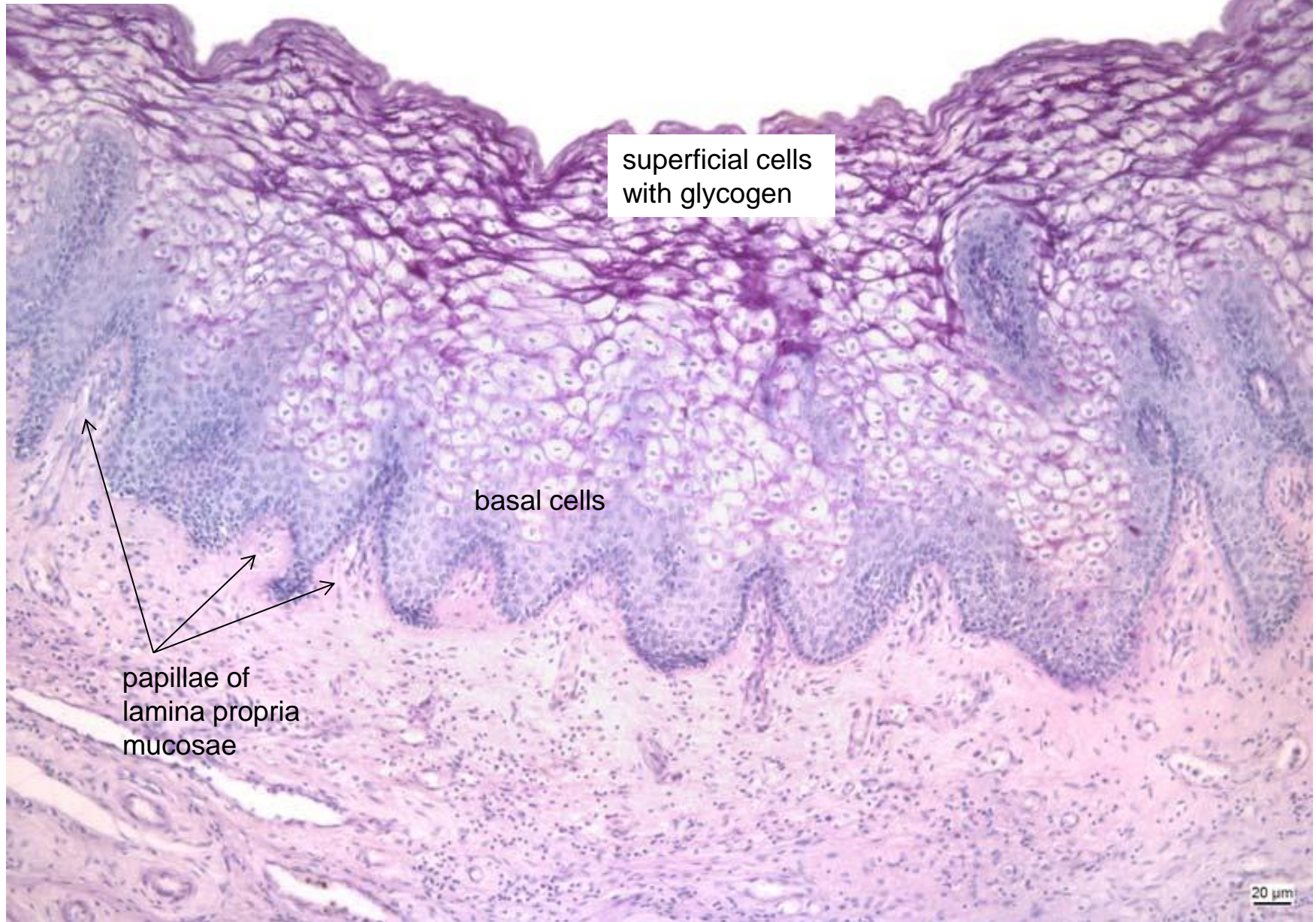
venules

smooth  
muscle cells

no glands

20 μm

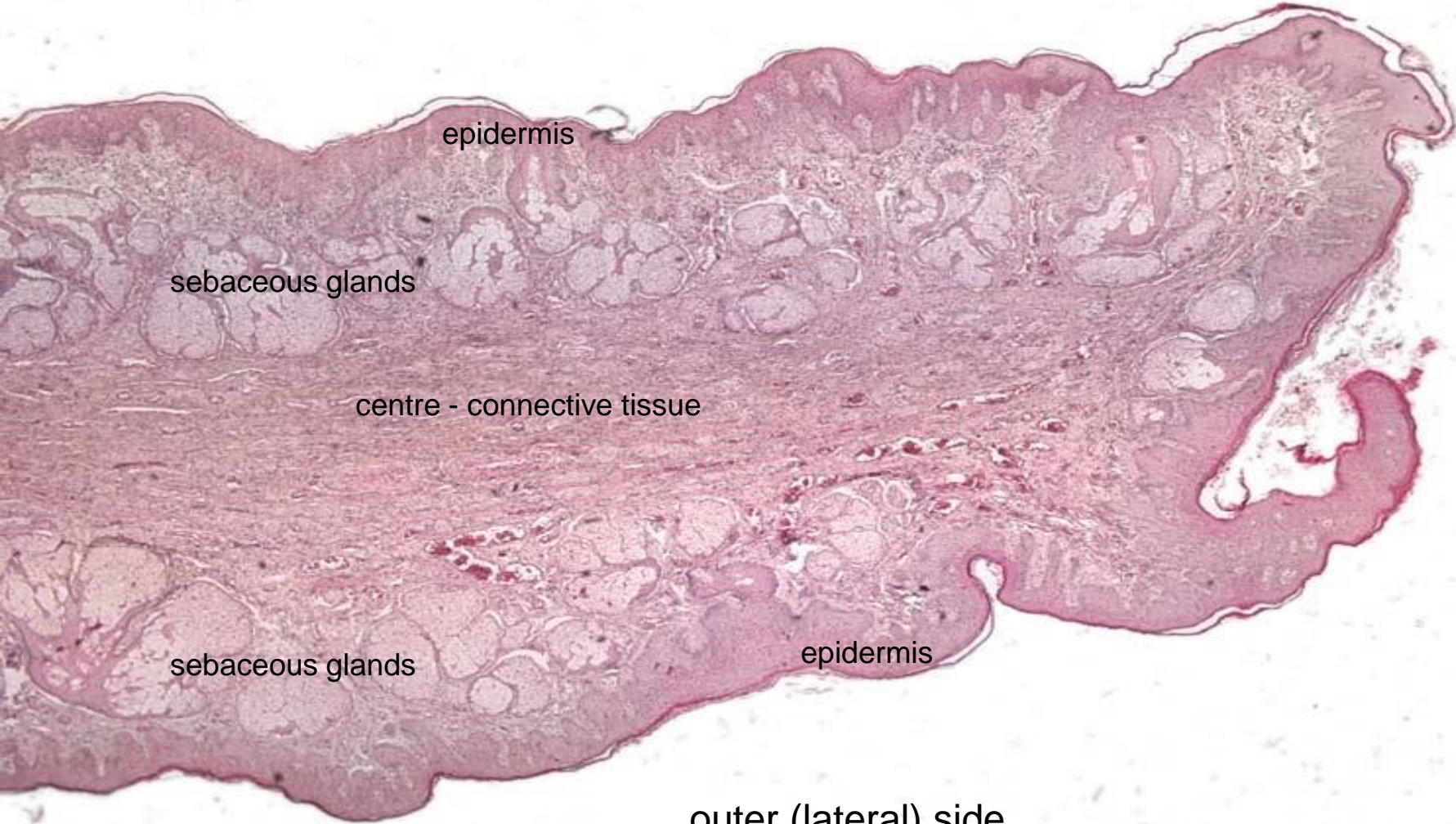
# Vagina – Best's carmine



epithelial cells – **glycogen** (+lactobacillus acidophilus) → **lactic acid** /pH 3.8-4/

**Labium minus (HE) – external genital organ**

inner (medial) side



epidermis

sebaceous glands

centre - connective tissue

sebaceous glands

epidermis

outer (lateral) side

# Labium minus



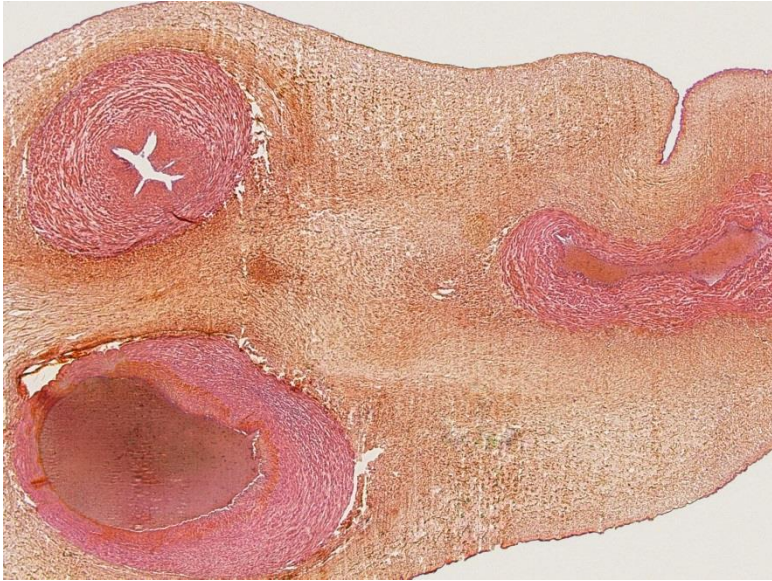
epidermis

duct opens directly into epidermis

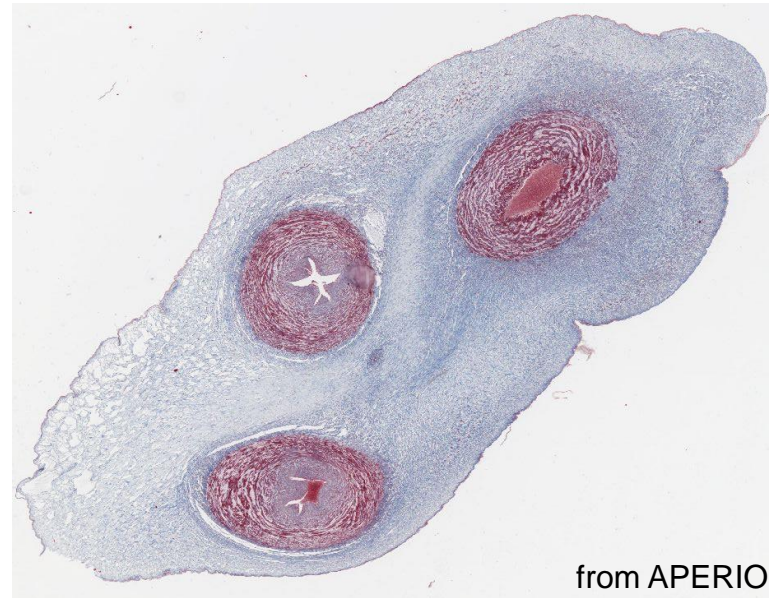
sebaceous glands

dermis

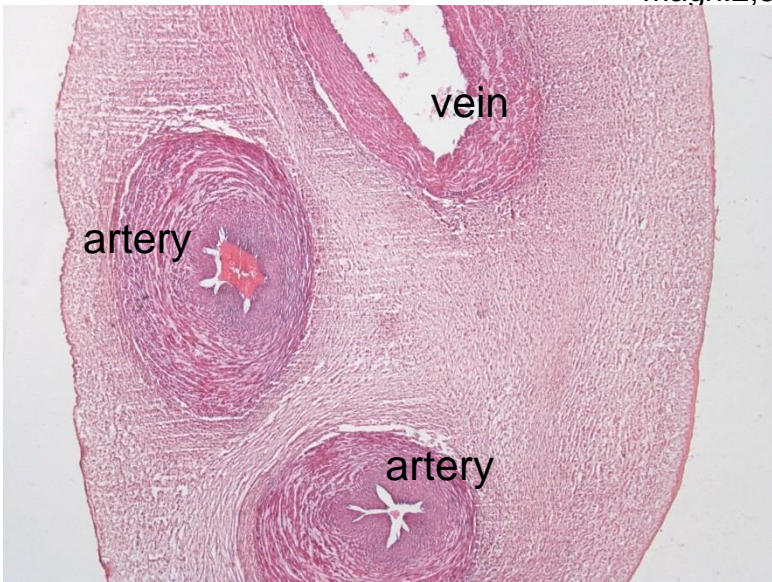
# Funiculus umbilicalis (HE, HES, AZAN)



magn:2,5



from APERIO

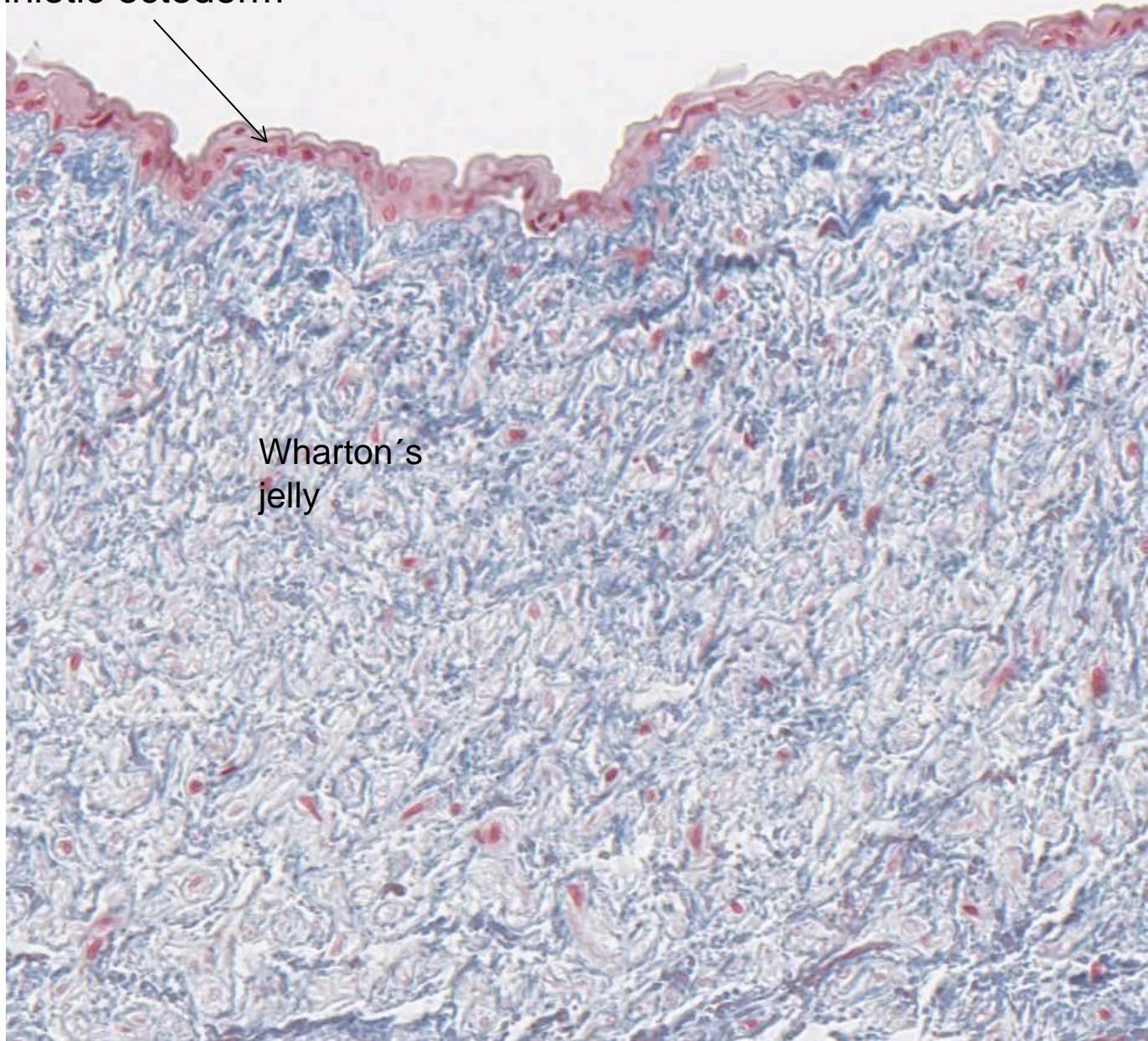


magn:2.5



40-50 cm

**Funiculus umbilicalis**  
(AZAN) – amniotic ectoderm



Wharton's  
jelly

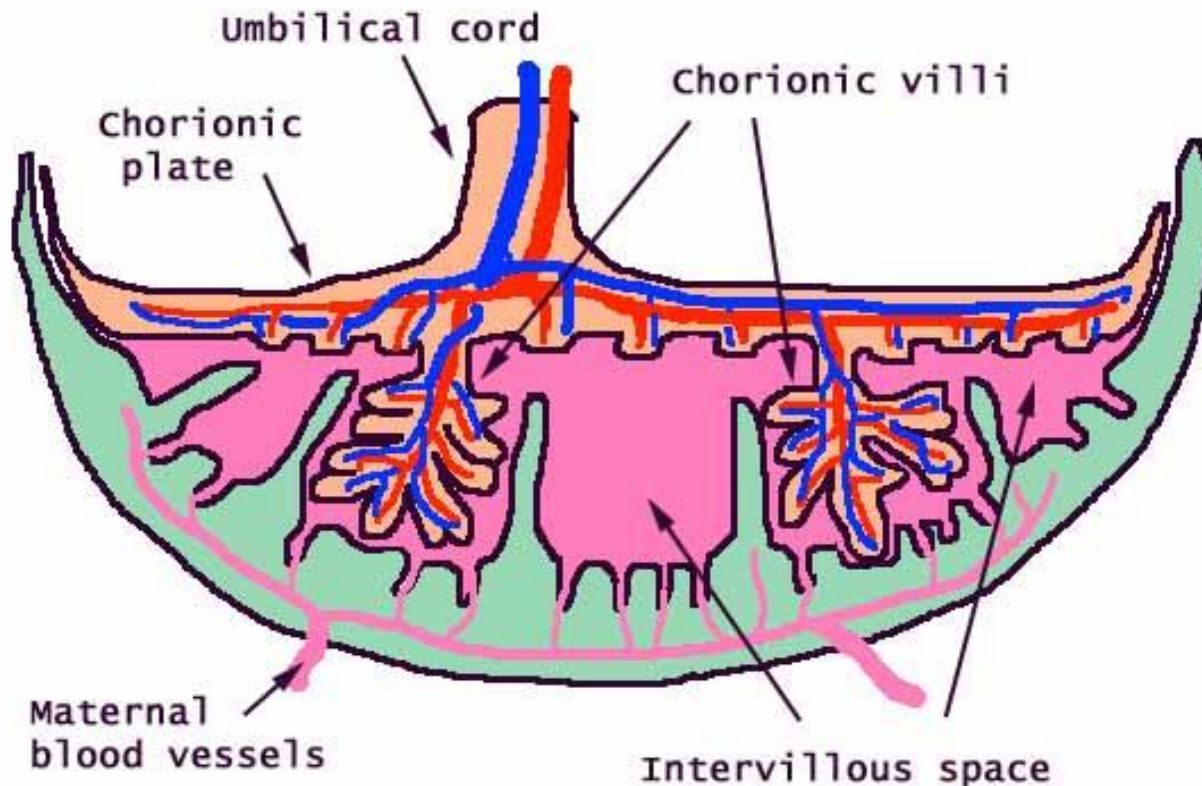
collagen fibers – blue, nuclei of fibroblasts - violet



# Placenta

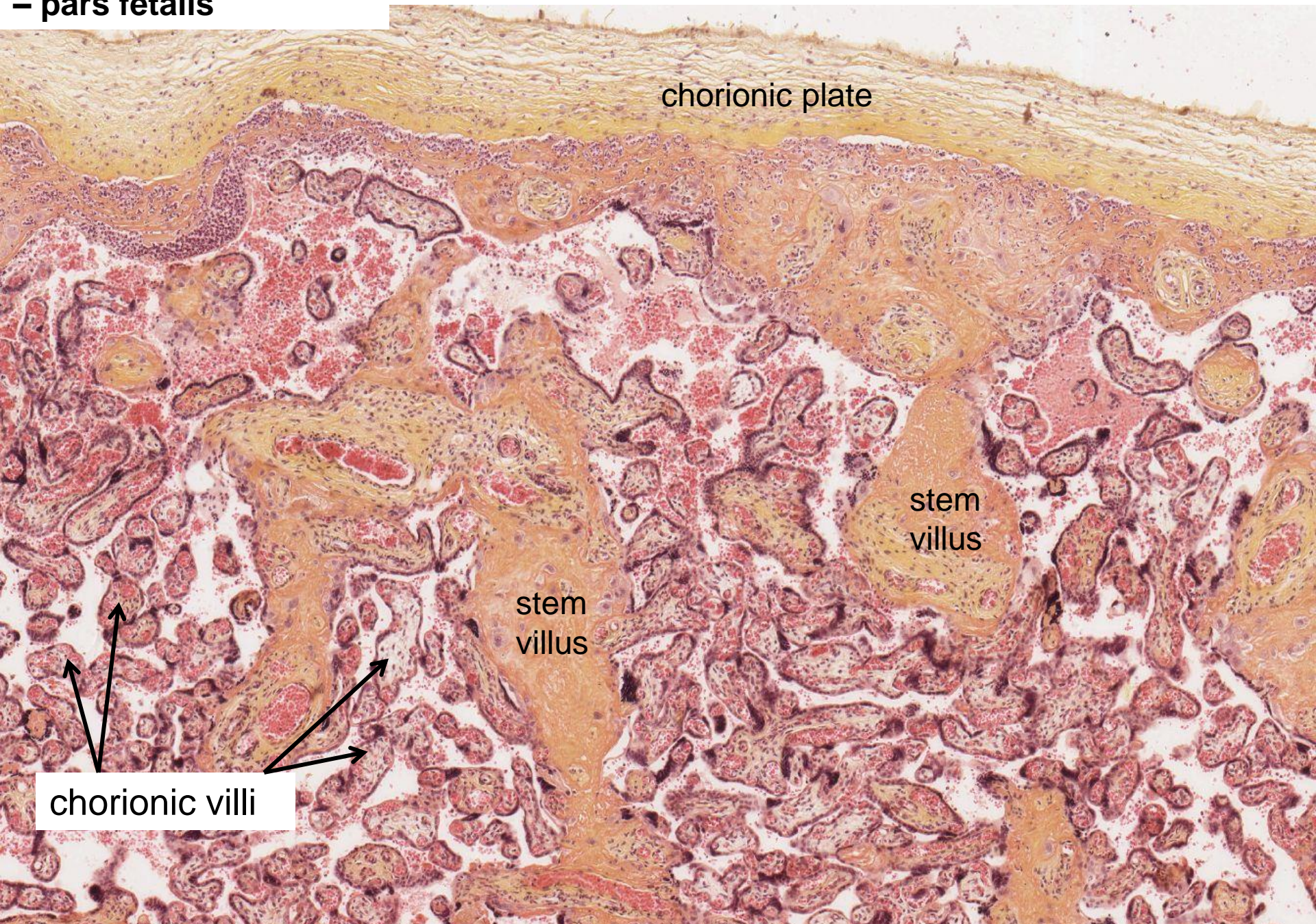
- Pars materna
  - **basal plate** with placental septa
- Pars fetalis
  - **chorionic plate** with chorionic **villi** /stem and free/

- **discoidalis**
- **olliformis**
- **hemochorialis**



s: 15-25 cm  
t: 2.5-4 cm  
w: 500-600 g  
25-30% of  
uterine cavity

**Human placenta (HES)**  
**– pars fetalis**



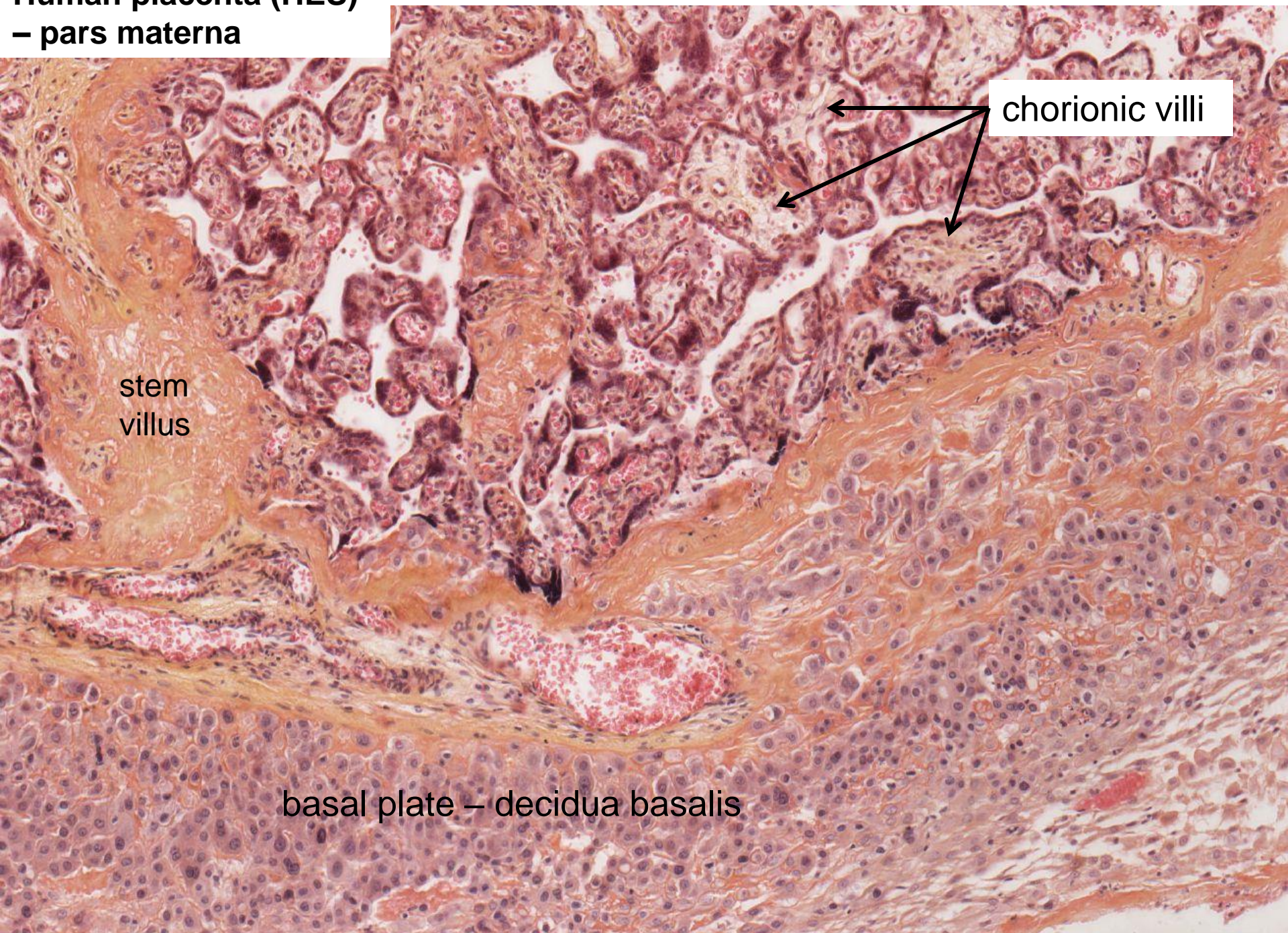
chorionic plate

stem  
villus

stem  
villus

chorionic villi

**Human placenta (HES)**  
**– pars materna**

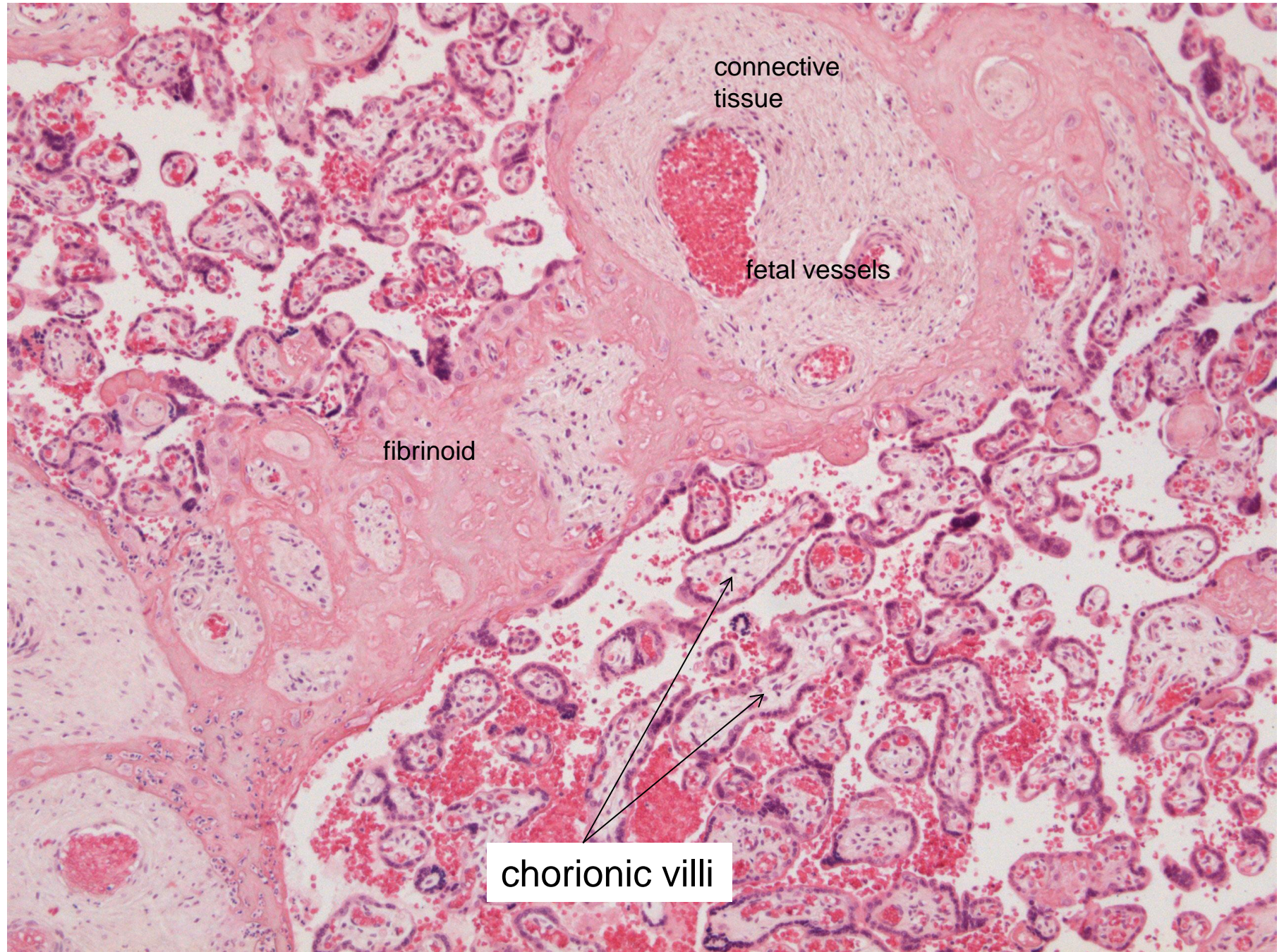


chorionic villi

stem villus

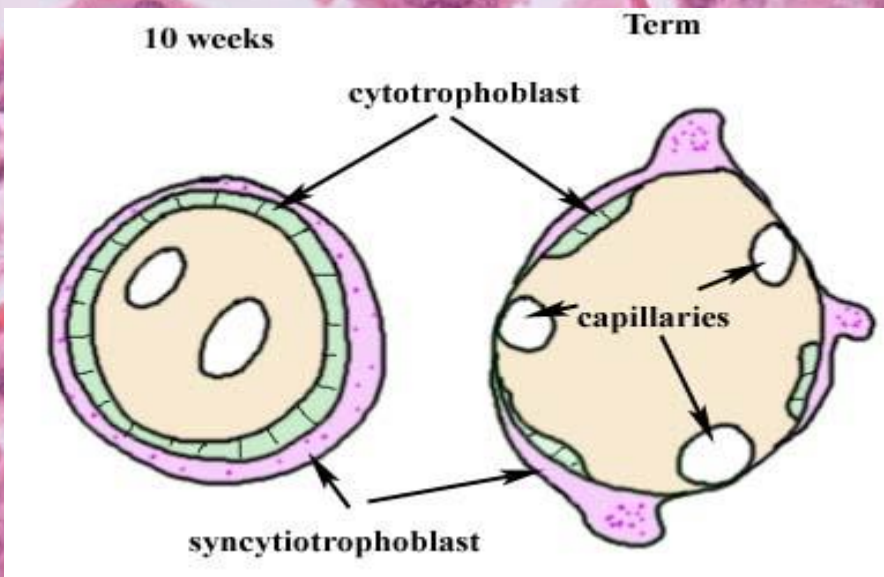
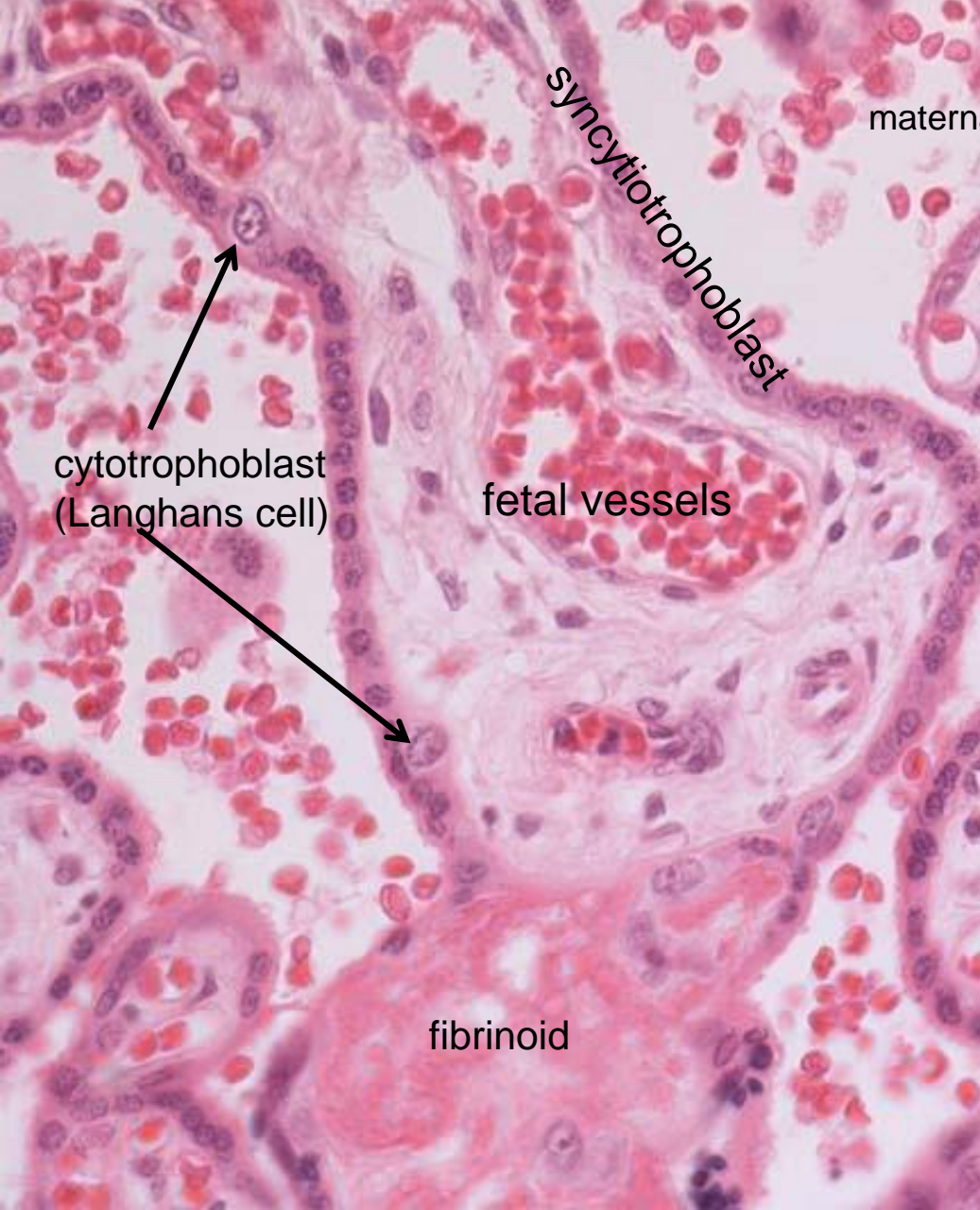
basal plate – decidua basalis

# Human placenta (HE)



# Human placenta (HE)

– placental barrier





# FEMALE REPRODUCTIVE SYSTEM II

## Slides:

49. Vagina – glycogen /Best's carmine/

50. Vagina

51. Labium minus

99. Funiculus umbilicalis /HE, HES, AZAN/

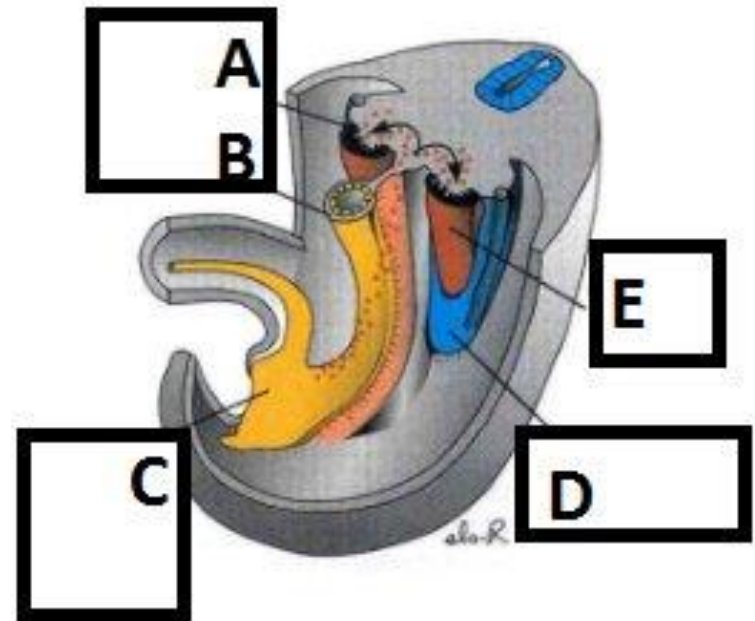
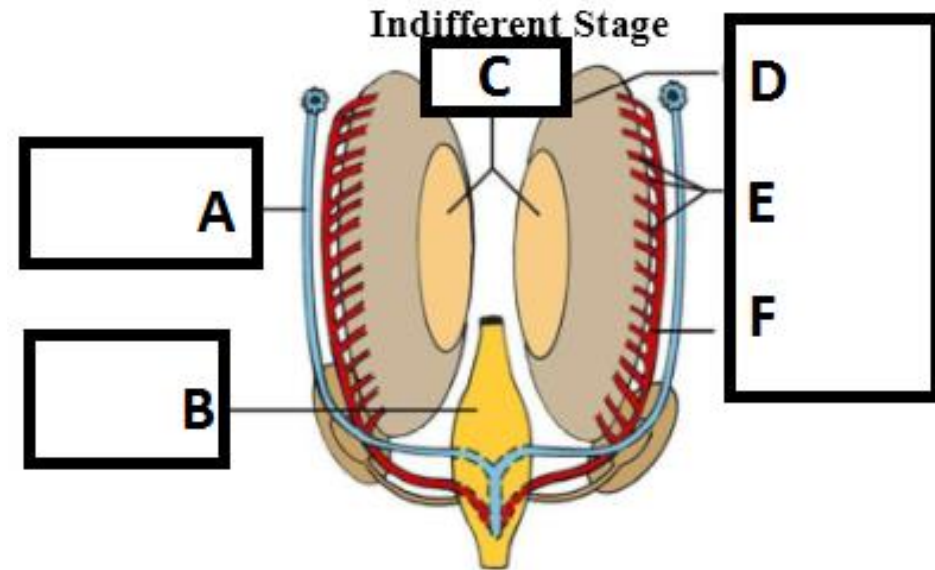
100. Placenta

## Embryological scheme

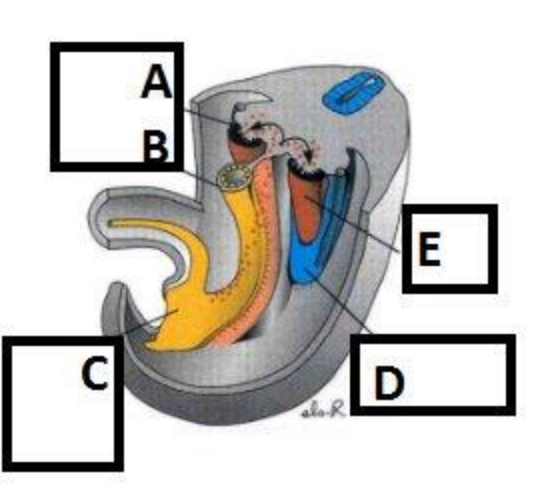
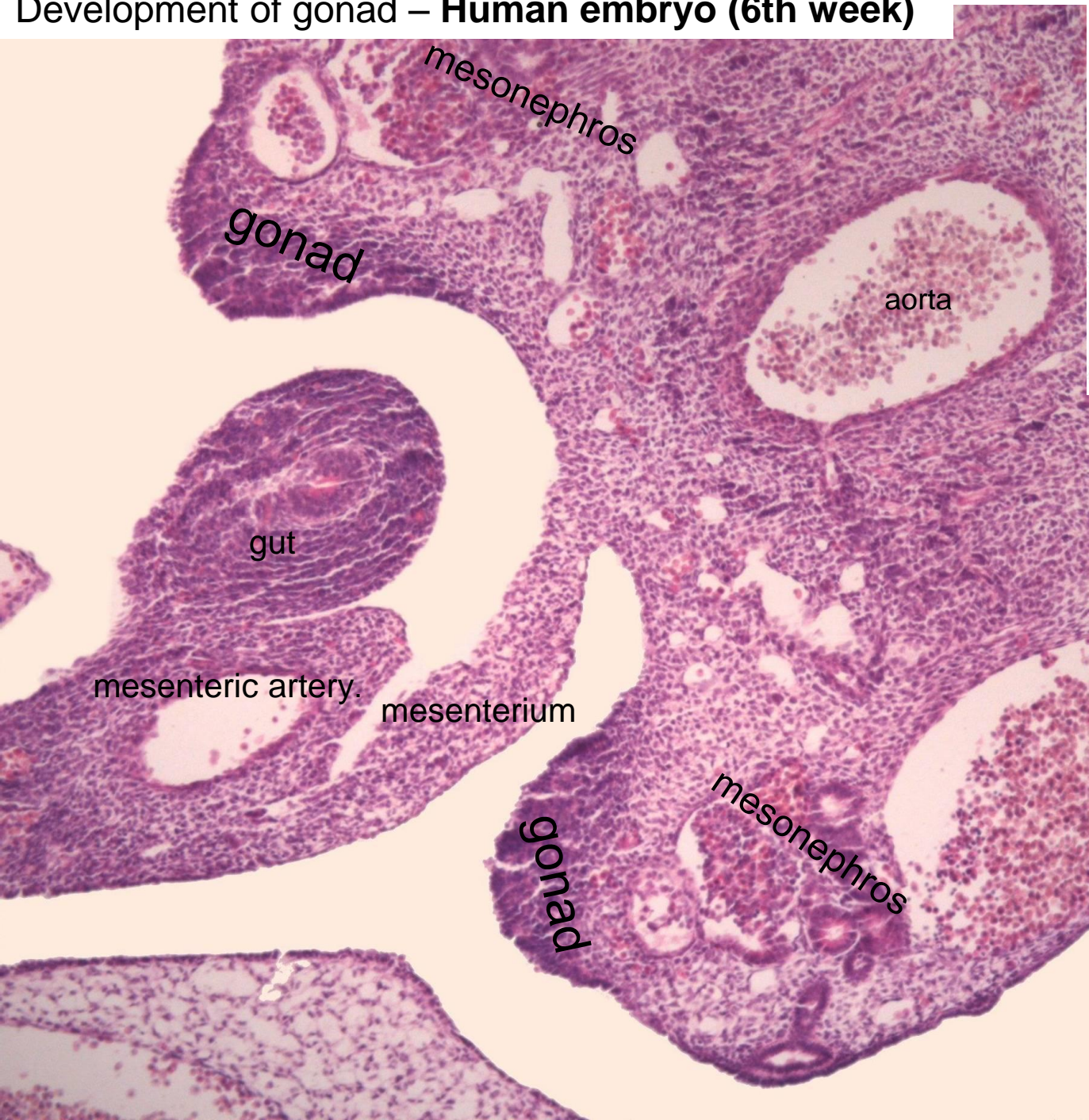
- indifferent gonad
- differentiation into testis
- differentiation into ovary

# Development of gonad

- **indifferent gonad** to 6th-7th week of development
  - germ cell (wall of yolk sac)
  - genital (gonadal) ridge – mesoderm
  - coelomic epithelium
    - mesoderm – primitive sex cords



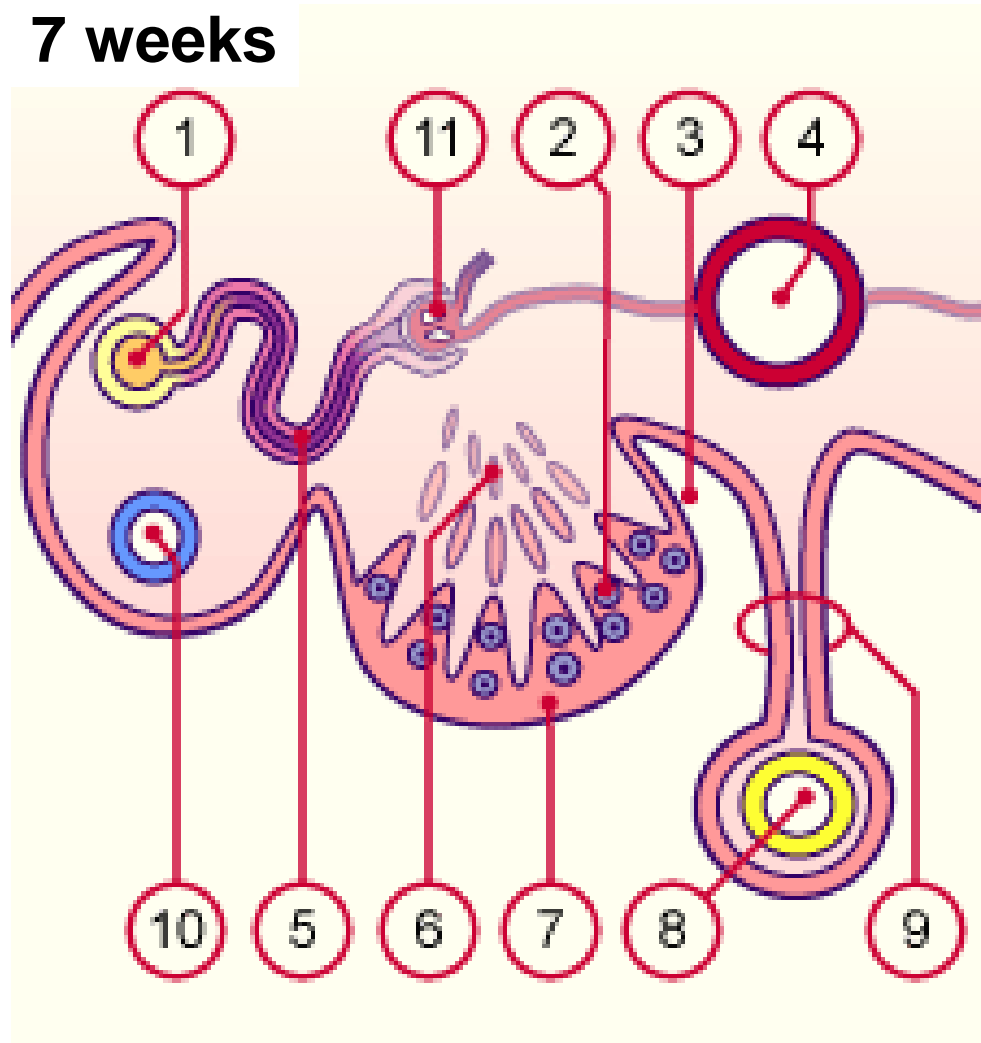
# Development of gonad – Human embryo (6th week)



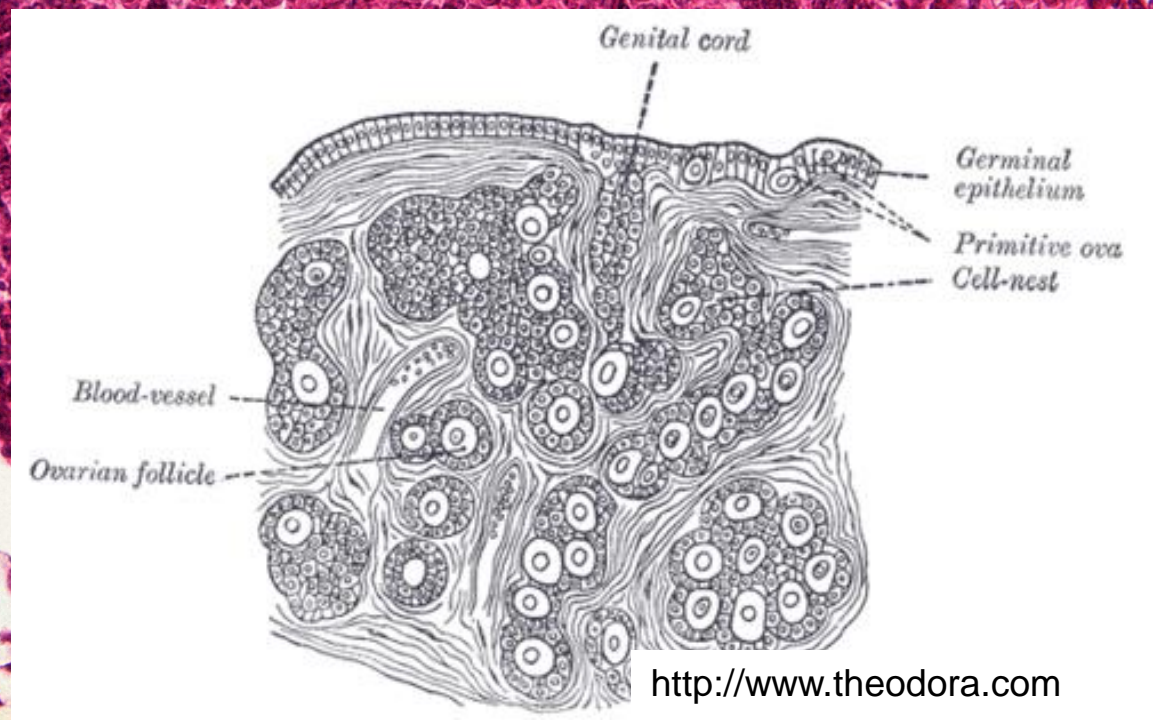
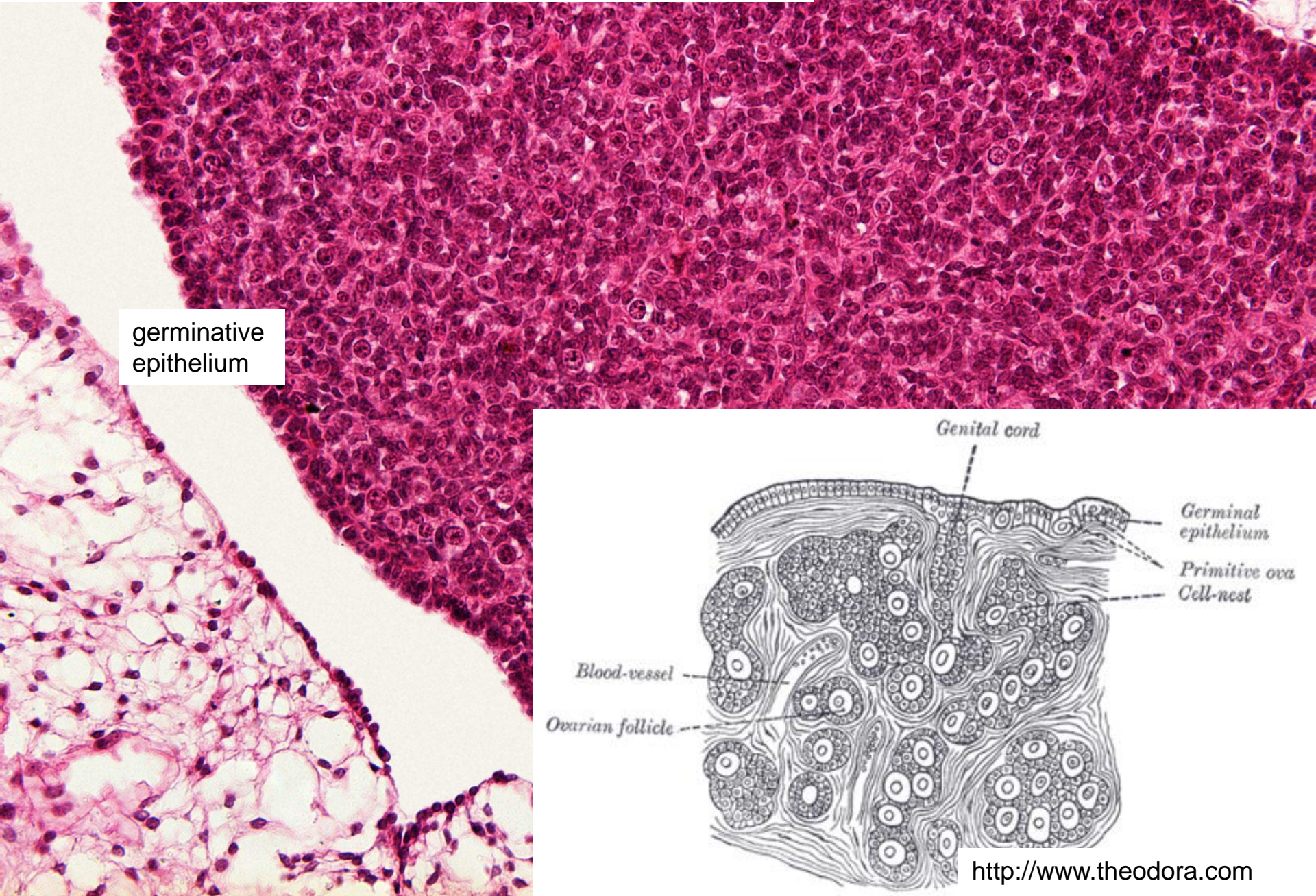


# Development of gonad - differentiation to ovary

- 2 generations of cords
  - medullary disappears
  - 7th week – cortical cords arise → form follicles, remain close to the surface
- germ cells → oogonia



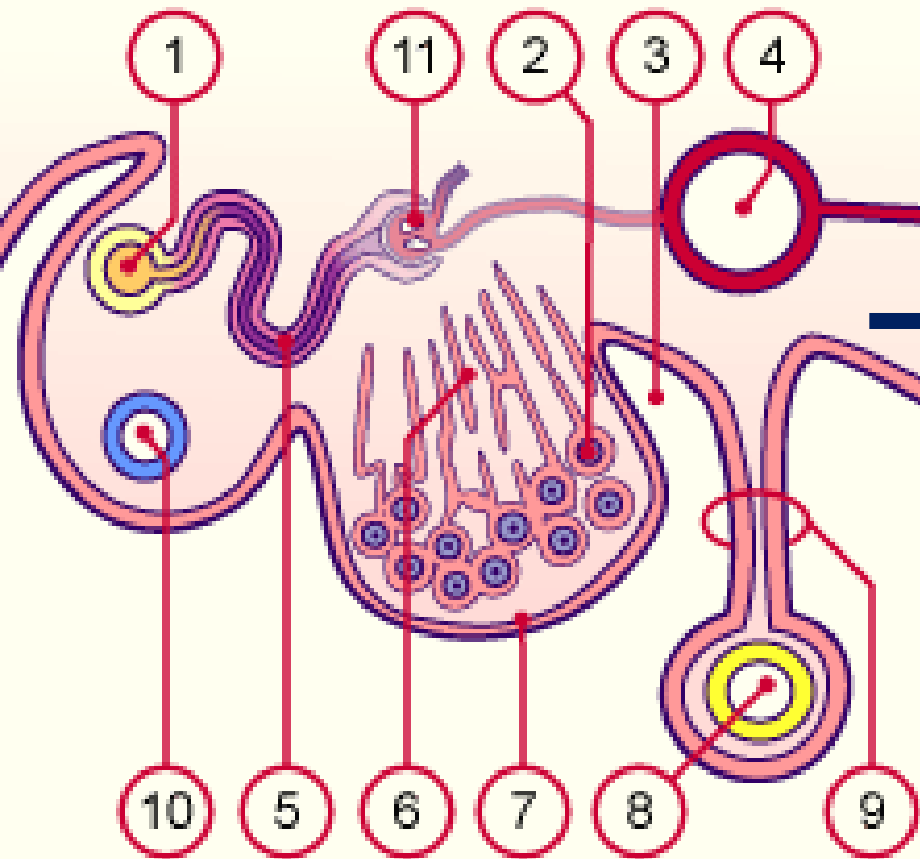
# Development of gonad – Human embryo (8th week) female



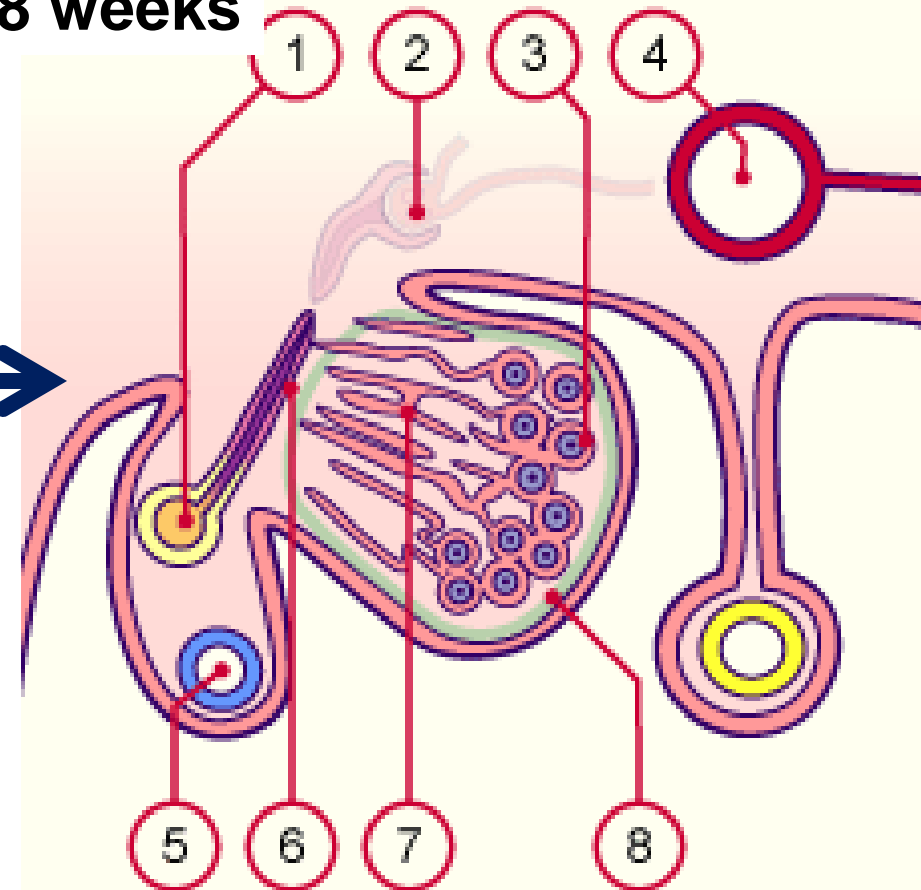
# Development of gonad - differentiation to testis

- 1 generation of genital cords, separating from the coelomic epithelium

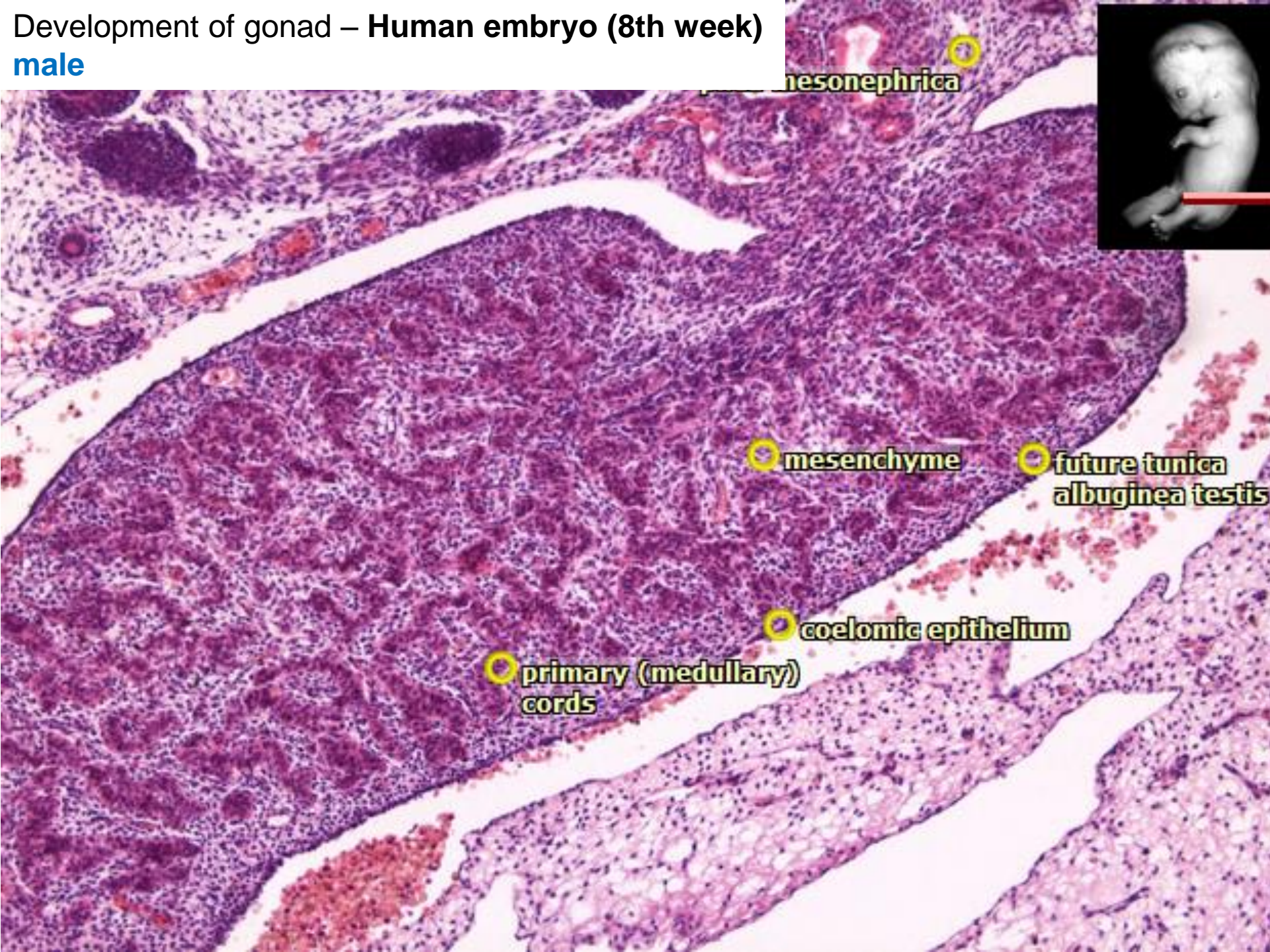
**7 weeks**



**8 weeks**



Development of gonad – Human embryo (8th week)  
male



mesonephrica

mesenchyme

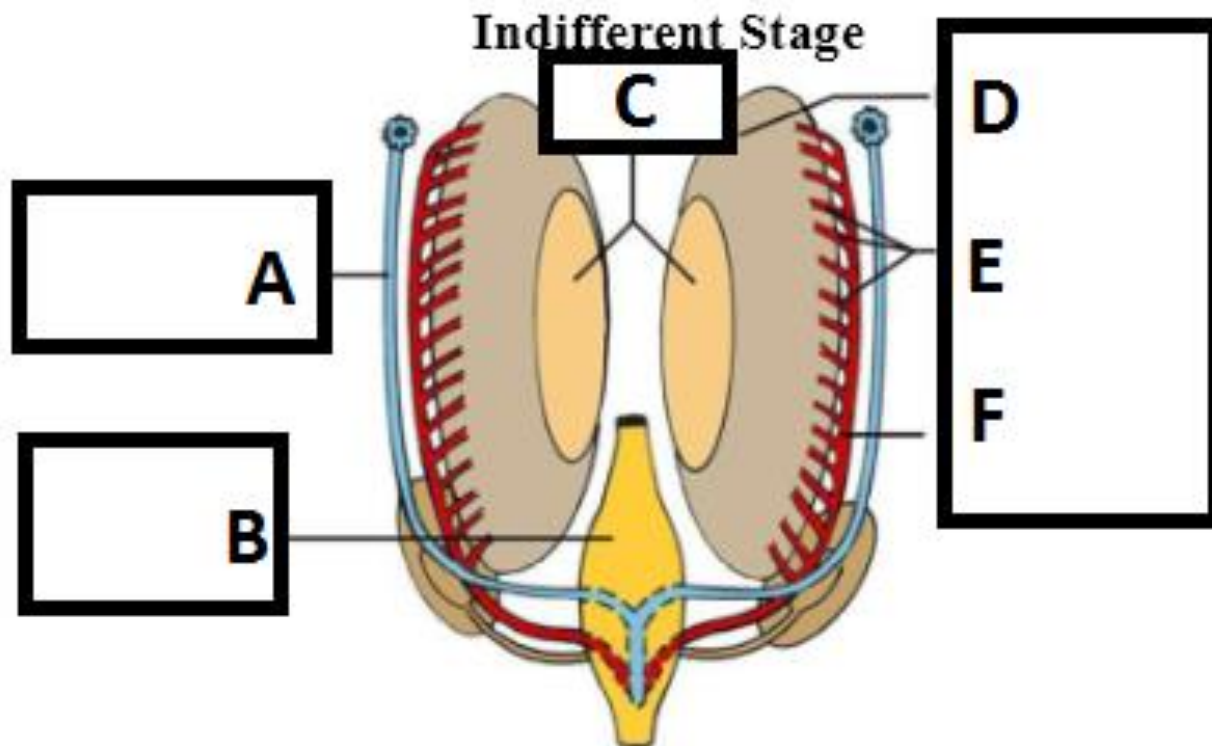
future tunica  
albuginea testis

coelomic epithelium

primary (medullary)  
cords

# Development of genital ducts

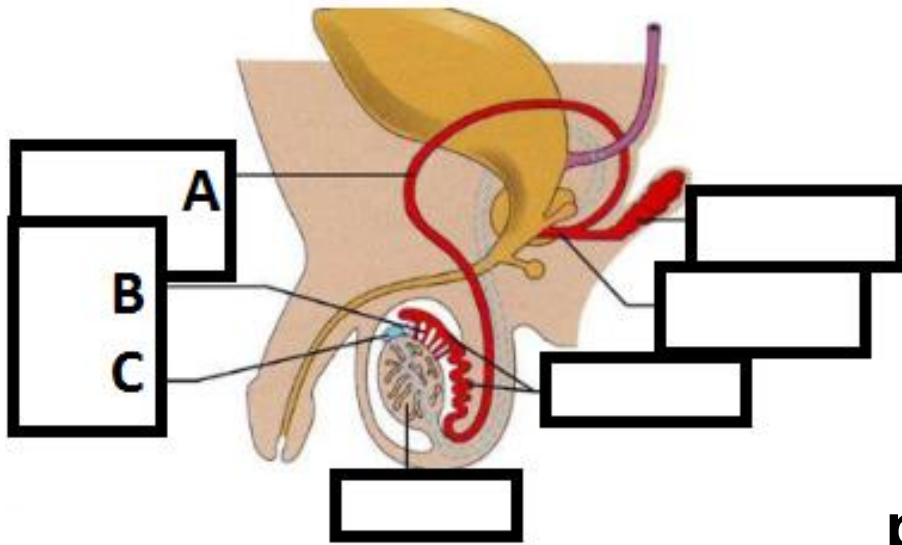
- **indifferent stage**
  - mesonephric duct (Wolffian)
  - paramesonephric duct (Müllerian) – longitudinal invagination of coelomic epithelium at the urogenital cord



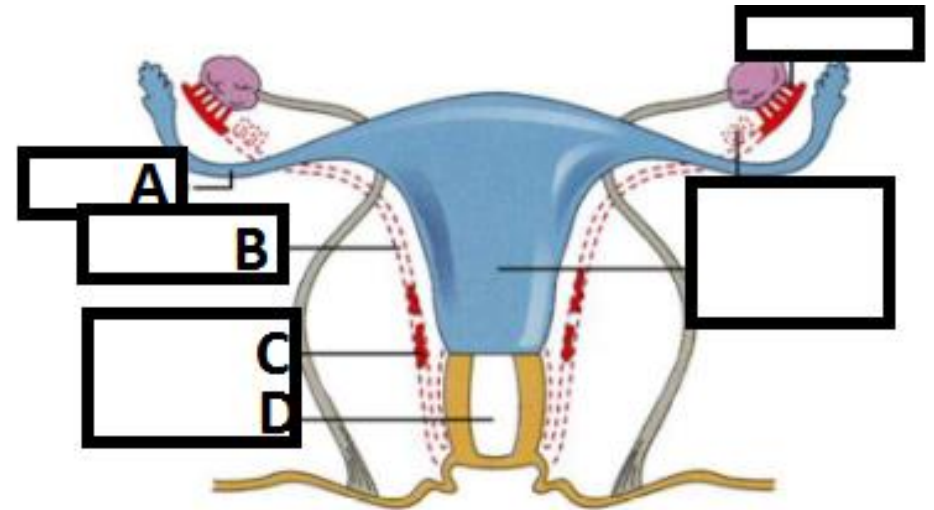
# Differentiation

towards **male** sex

towards **female** sex



**mesonephric duct – Wolff**

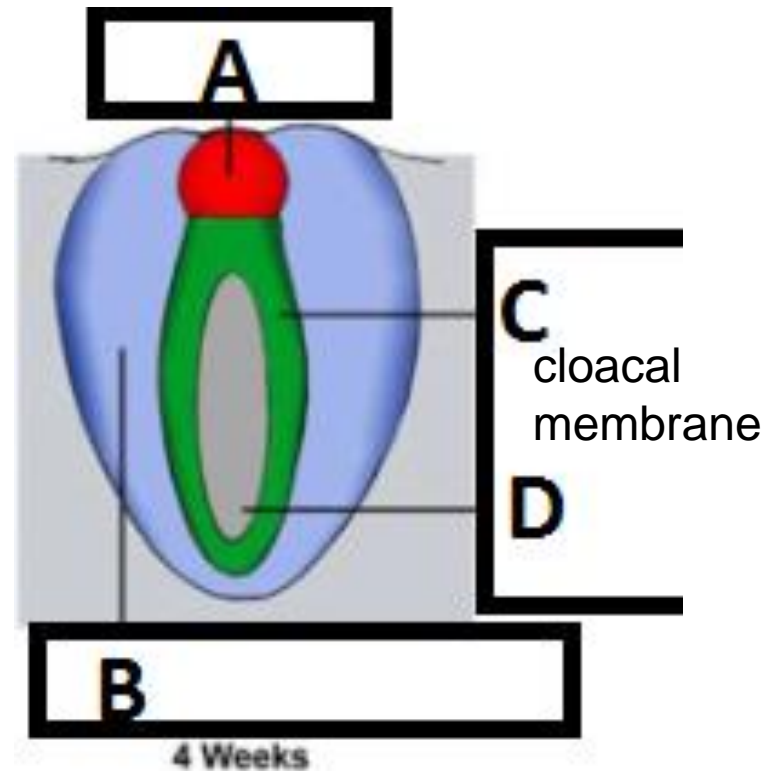


**paramesonephric duct - Müller**

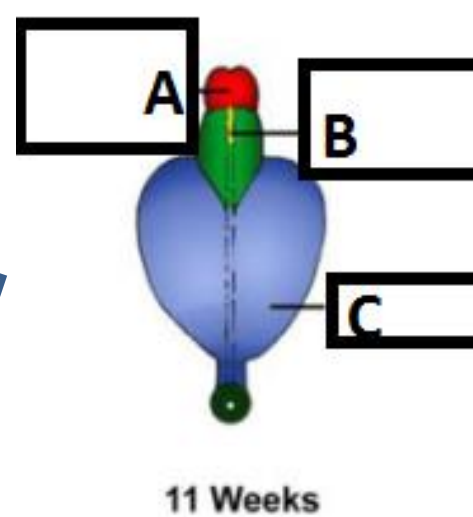
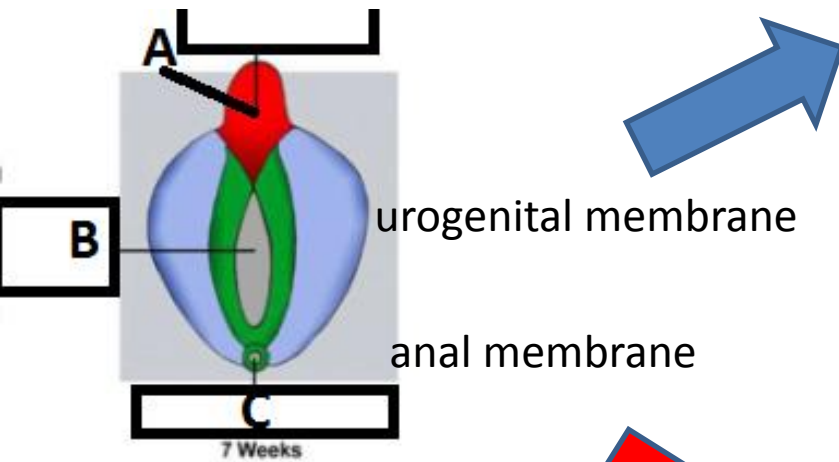
- vertical
- horizontal do not fuse → uterine tube
- vertical - both ducts fuse → **uterovaginal primordium** – uterus and cranial part of vagina

# Development of external genitalia

- indifferent stage
  - cloacal **folds** around the cloacal membrane
    - anteriorly **urethral** (urogenital) folds
    - posteriorly **anal folds**
  - genital **tubercle (phallus)**
  - genital **swellings**

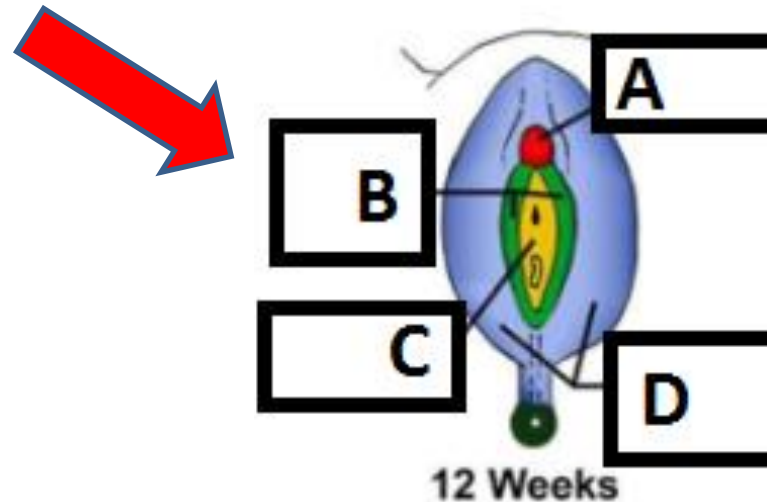


# Development of external genitalia - differentiation



## MALE

- genital tubercle → penis
- urogenital folds fuse → pars spongiosa urethrae m.
- genital swellings fuse → scrotum



## FEMALE

- genital tubercle → clitoris
- urethral (urogenital) folds → labia minora
- genital swellings (tori genitales) → labia maiora



Development of external genitalia – **Human embryo (8th week)**  
**female**

