

Male reproductive system

Testes

Male germ cells

Sertoli cells

Leydig cells

Accessory ducts: the seminiferous tubules, rete testis, vasa efferentia , epididymis, vas deferens, ejaculatory duct.

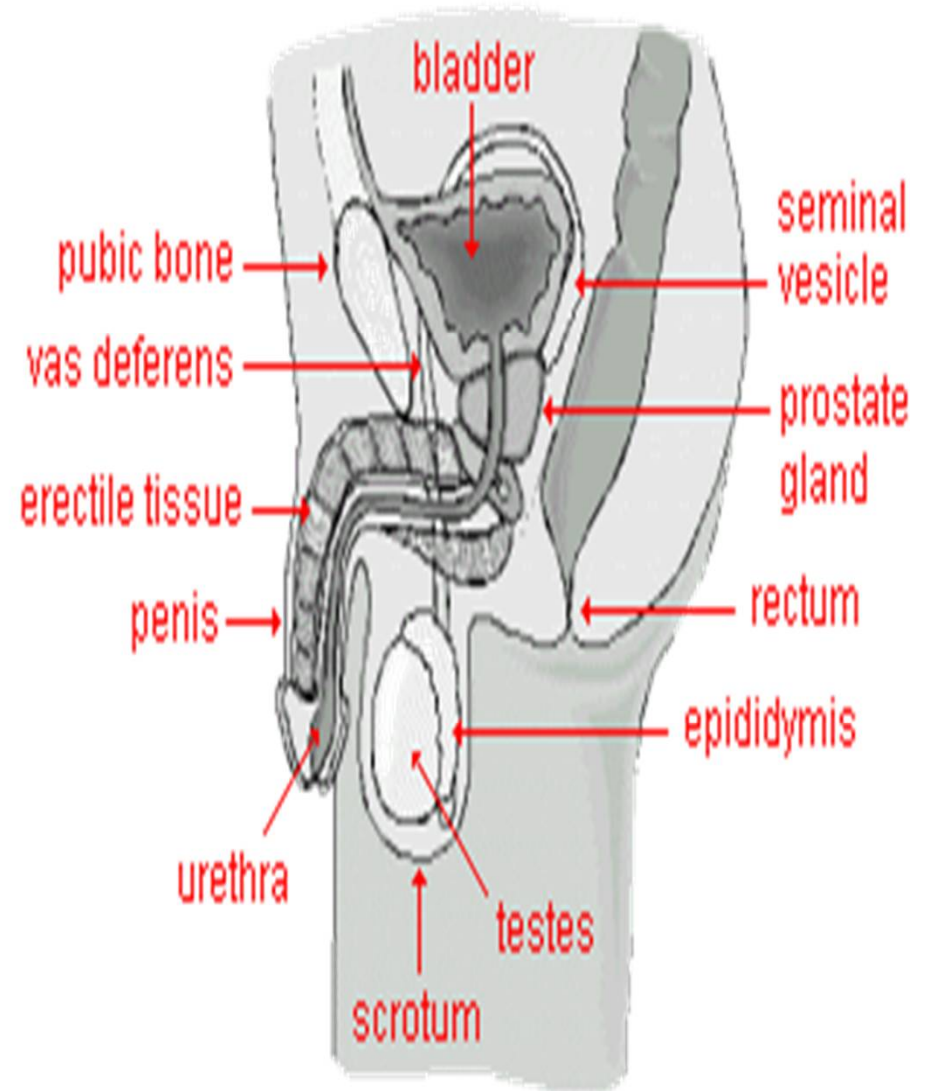
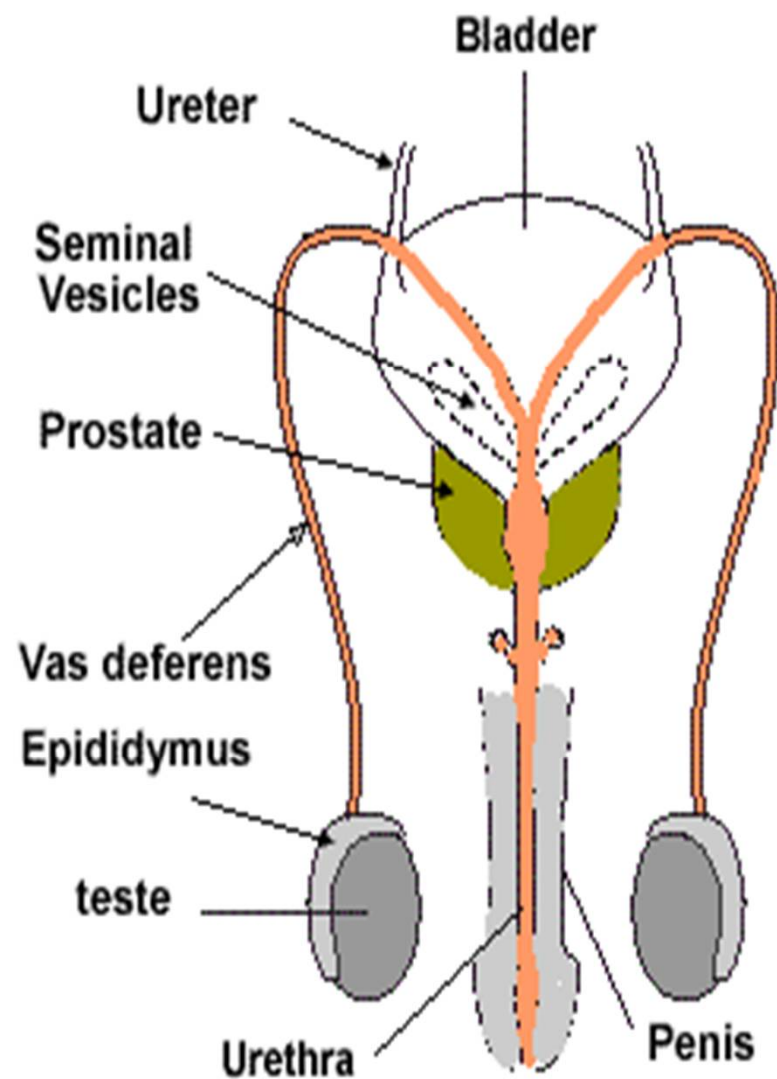
Penis

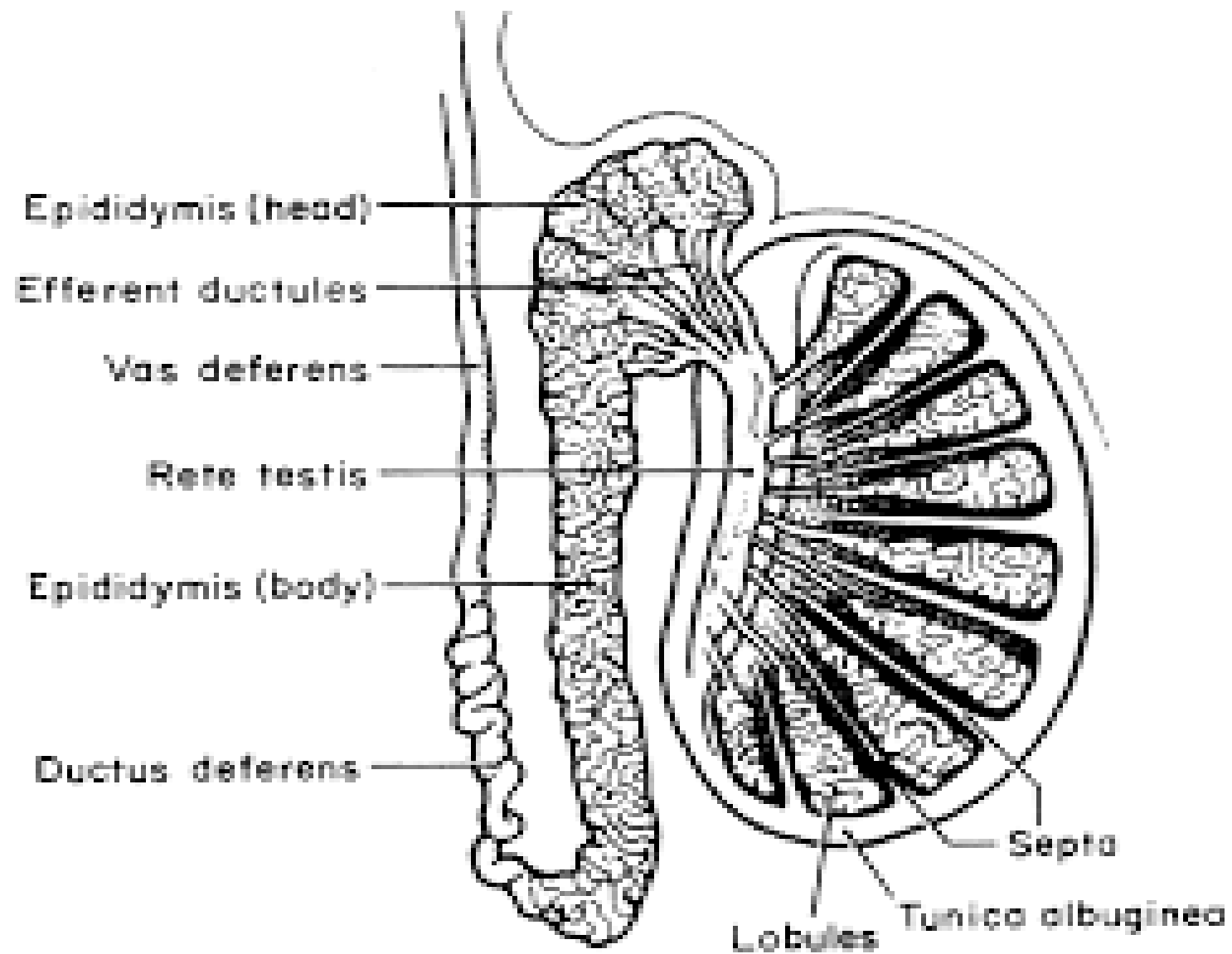
Testes

- Located outside the abdominal cavity within a pouch called scrotum
- Each testis has about 250 testicular lobules.
- Each lobule contains one to three highly coiled seminiferous tubules in which sperms are produced.
- Each seminiferous tubule is lined by male germ cells and sertoli cells.
- The regions outside the seminiferous tubules is called interstitial cells or leydig cells.

The male accessory glands

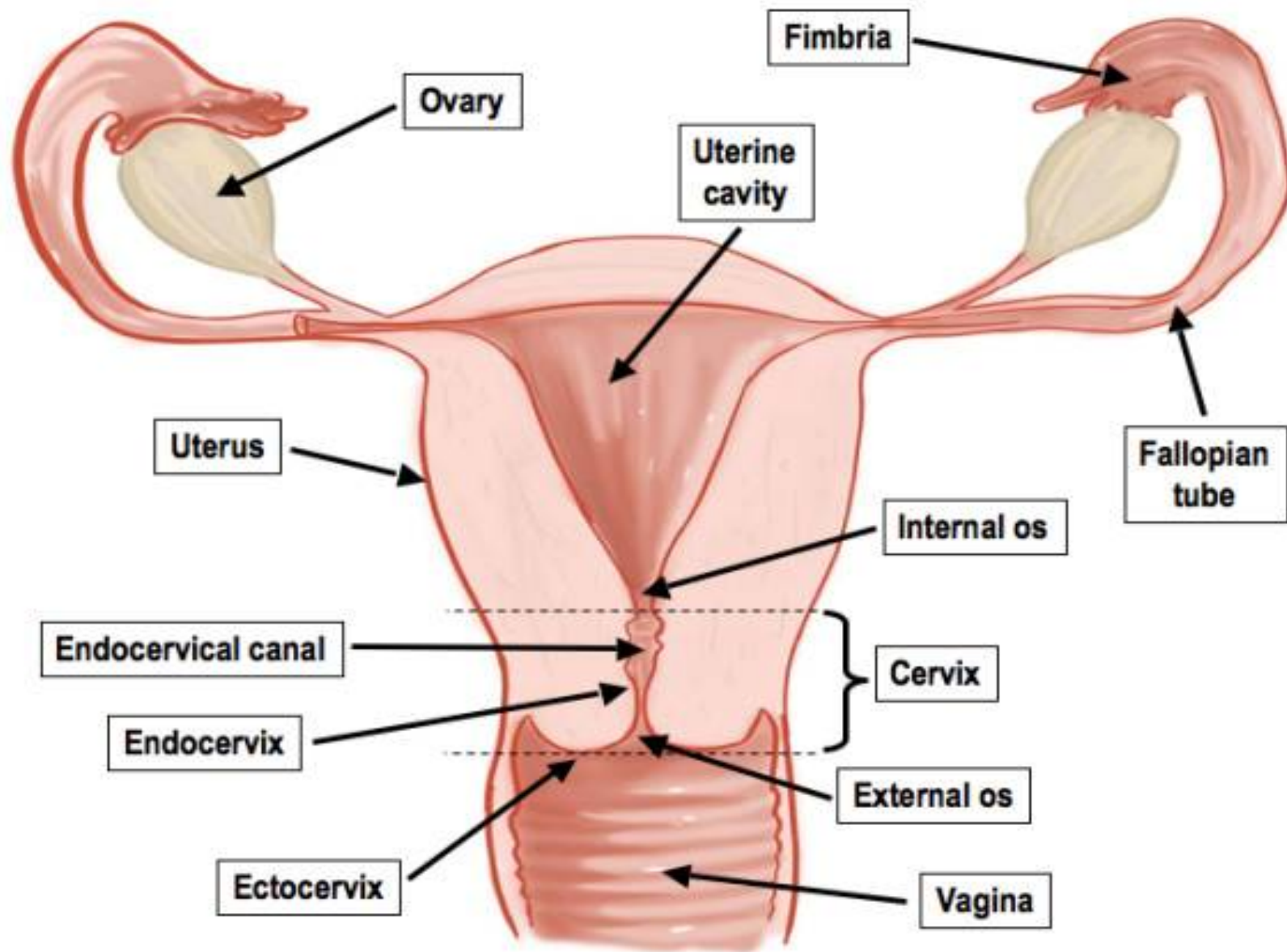
- **Seminal vesicles** add secretions to the sperm in the ejaculatory duct. These secretions provide energy for the sperm and a neutralizing chemical that reduces vaginal acidity.
- **Prostate gland:** Its secretions help neutralize vaginal acidity and make sperm motile.
- **Bulbourethral glands** secrete a clear fluid that neutralizes the acidity of remaining urine in the urethra.





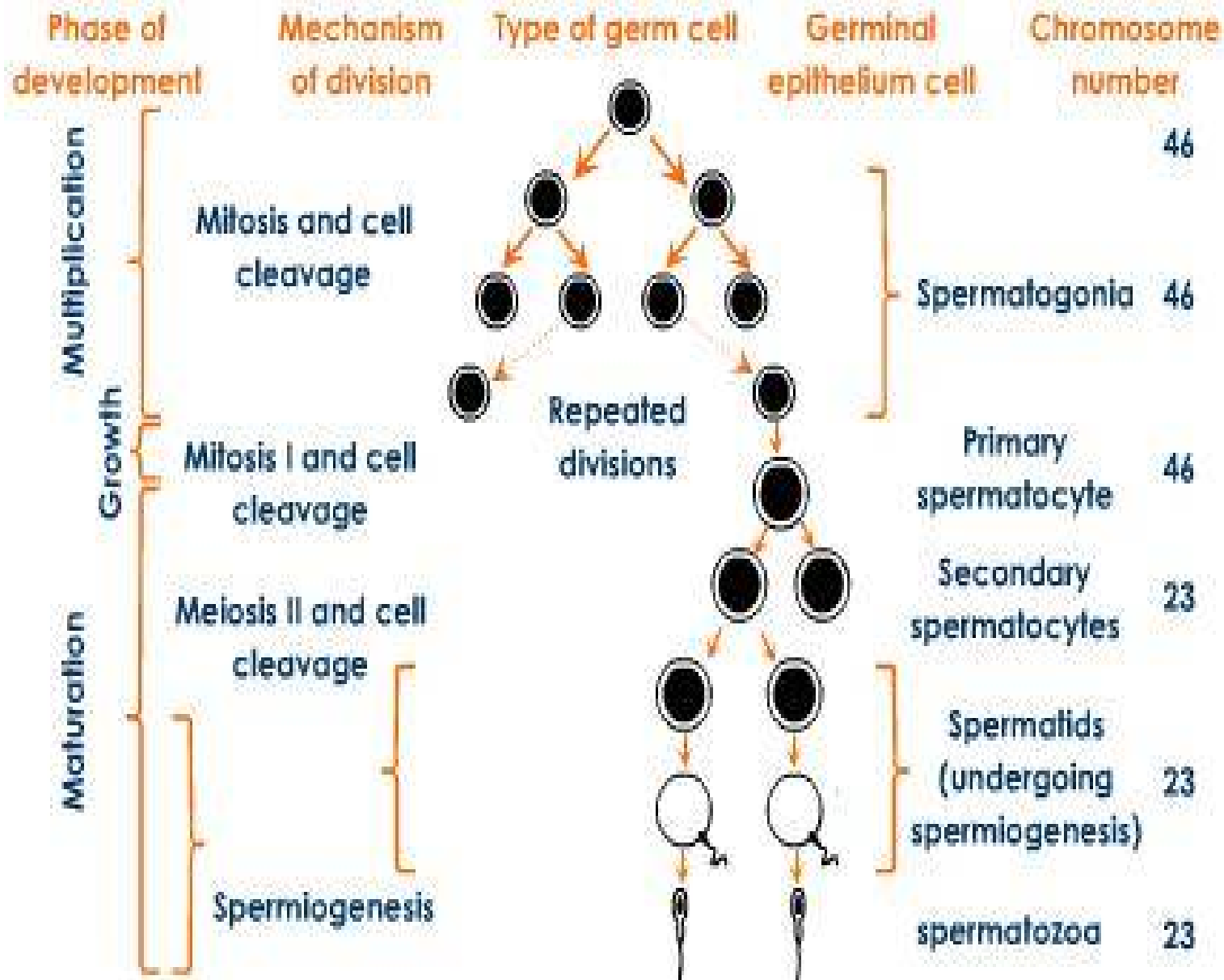
Female reproductive system

- **Ovaries:** Produce the female gamete and several steroid hormones, located one on each side of the lower abdomen, connected to the pelvic wall and uterus by ligaments, covered by a thin epithelium which encloses the ovarian stroma which is divided into two zones – a peripheral cortex and an inner medulla.
- **Fallopian tubes:** infundibulum, a wider ampulla, isthmus.
- **Uterus:** also called womb, supported by ligaments attached to the pelvic wall, the uterus opens into vagina through cervix, the cavity of cervix called cervical canal and the vagina form the birth canal.
- **Wall of the uterus:** Perimetrium, Myometrium, Endometrium



Mammary glands

- Each gland contains glandular tissue and variable amount of fat.
- The glandular tissue of each breast is divided into 15-20 mammary lobes containing clusters of cells called alveoli which secrete milk.
- The alveoli open into mammary tubules.
- The tubules of each lobe join to form a mammary duct.
- Several mammary ducts join to form a mammary ampulla which is connected to lactiferous duct.



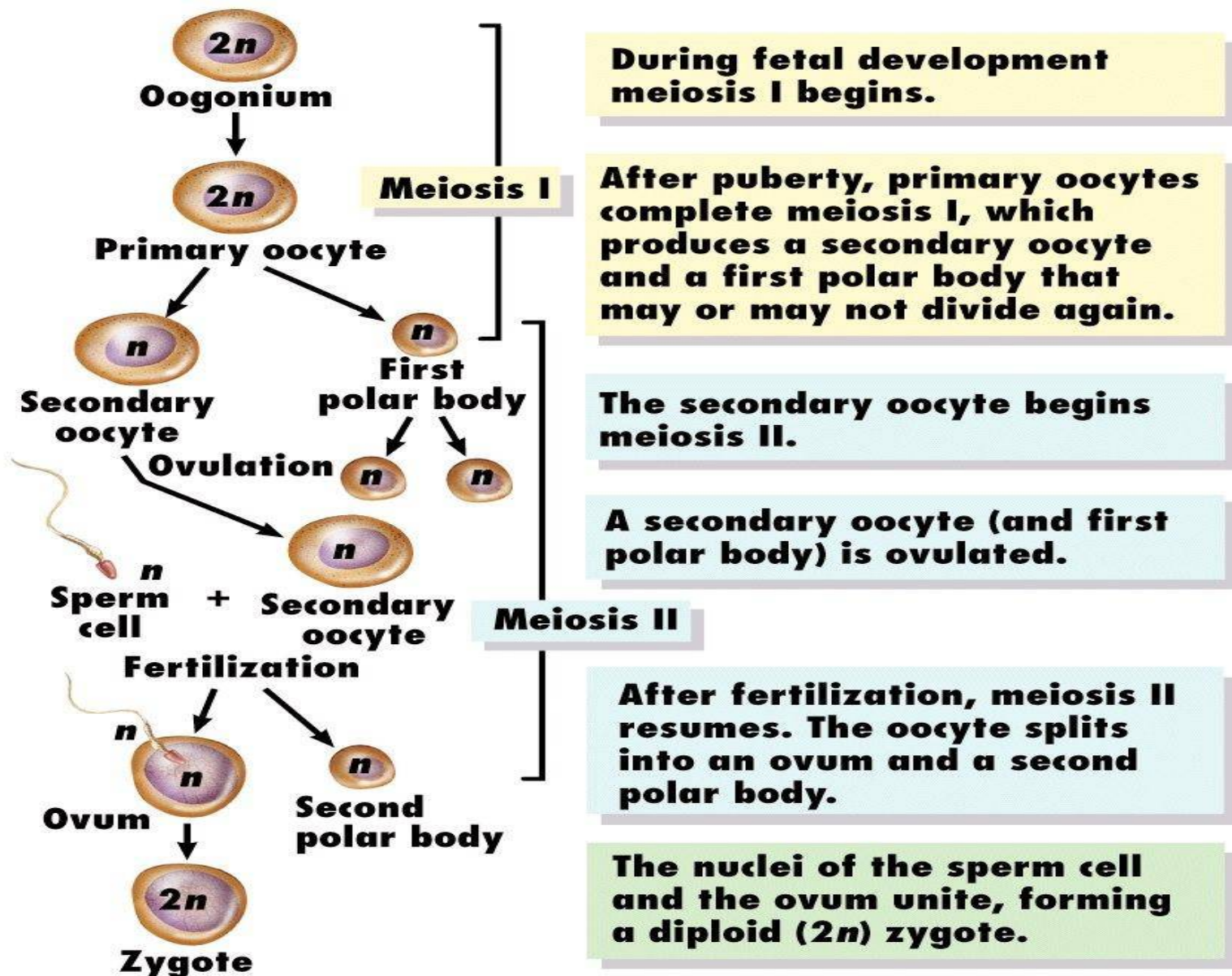
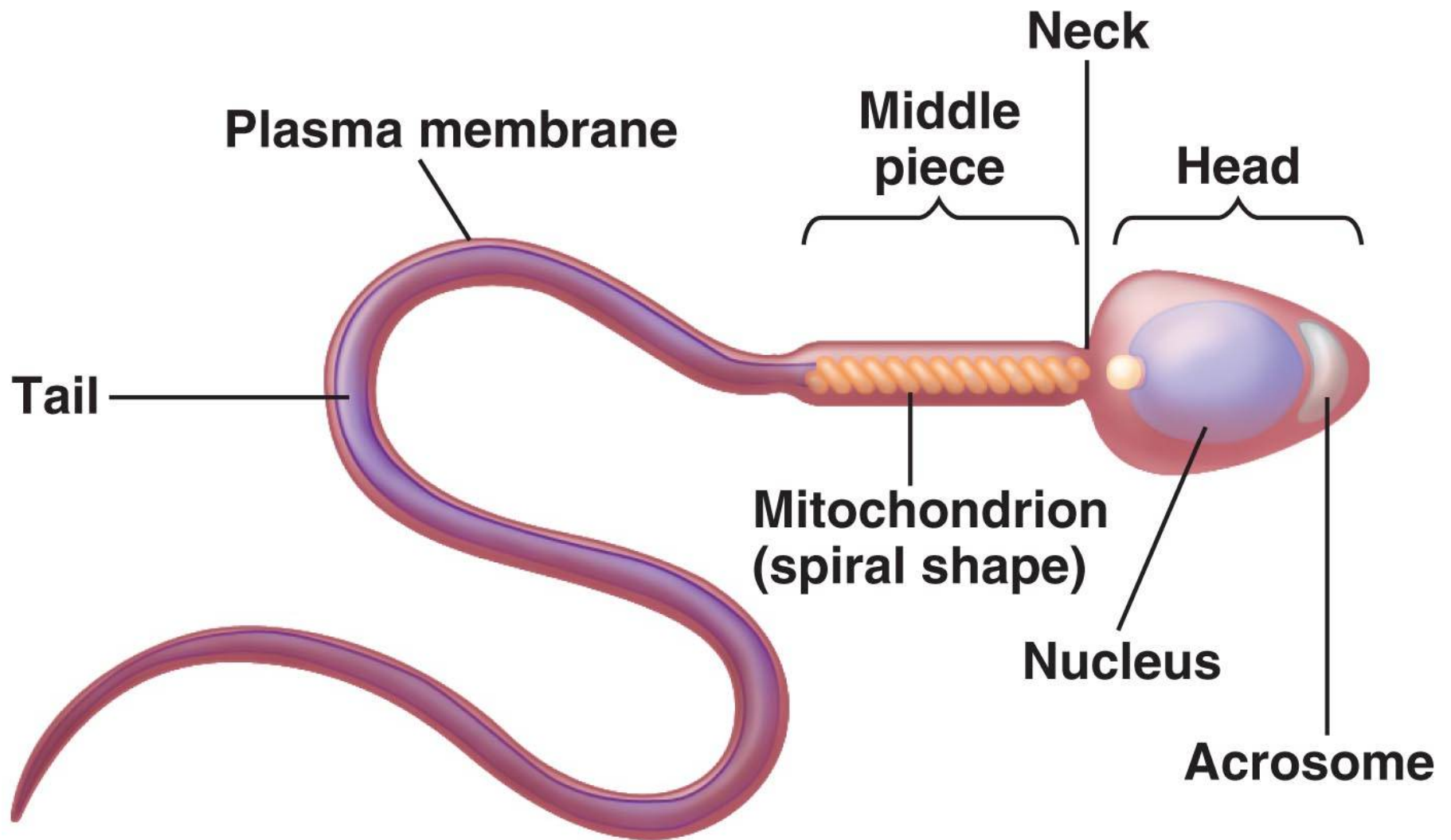
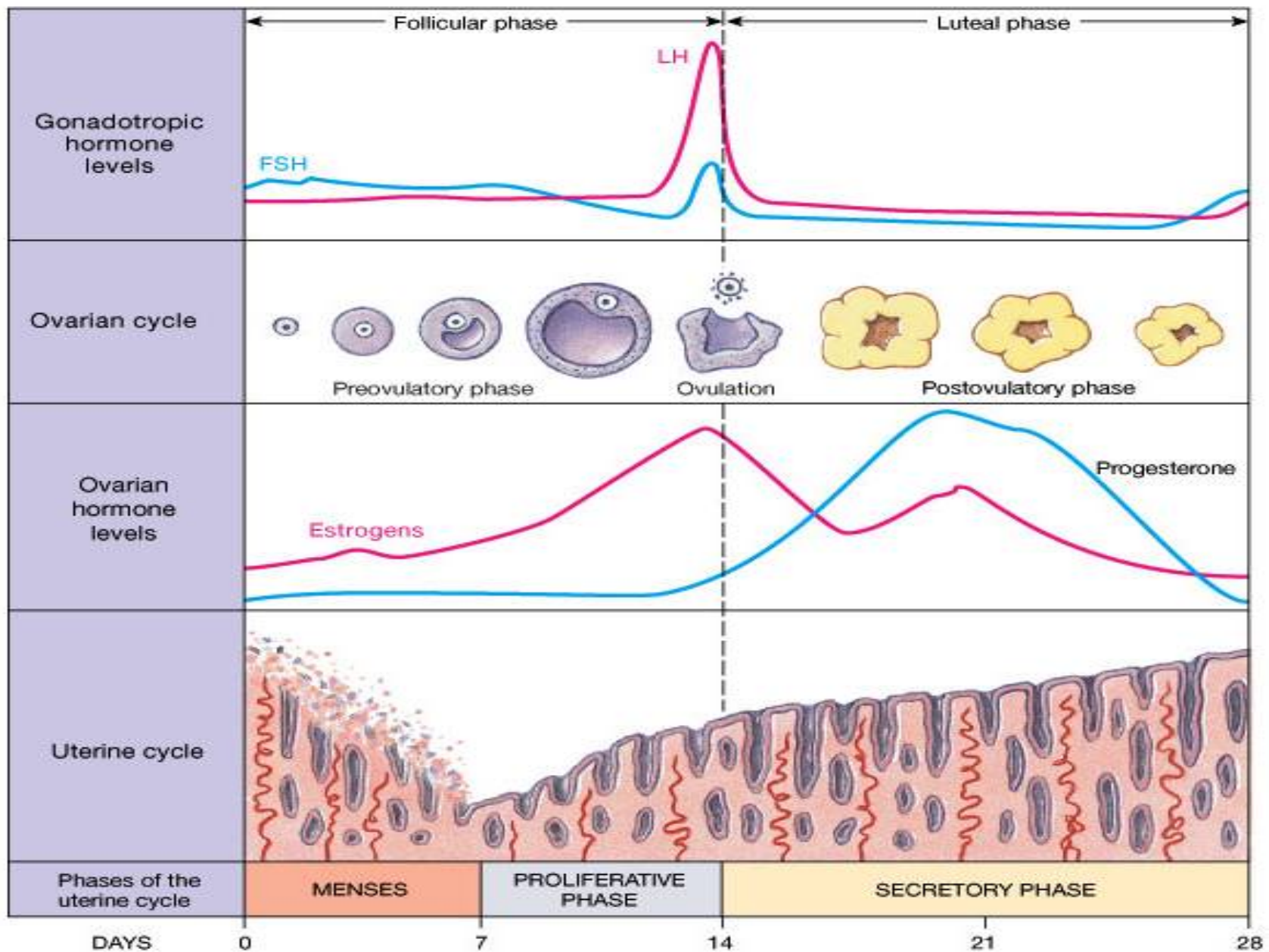
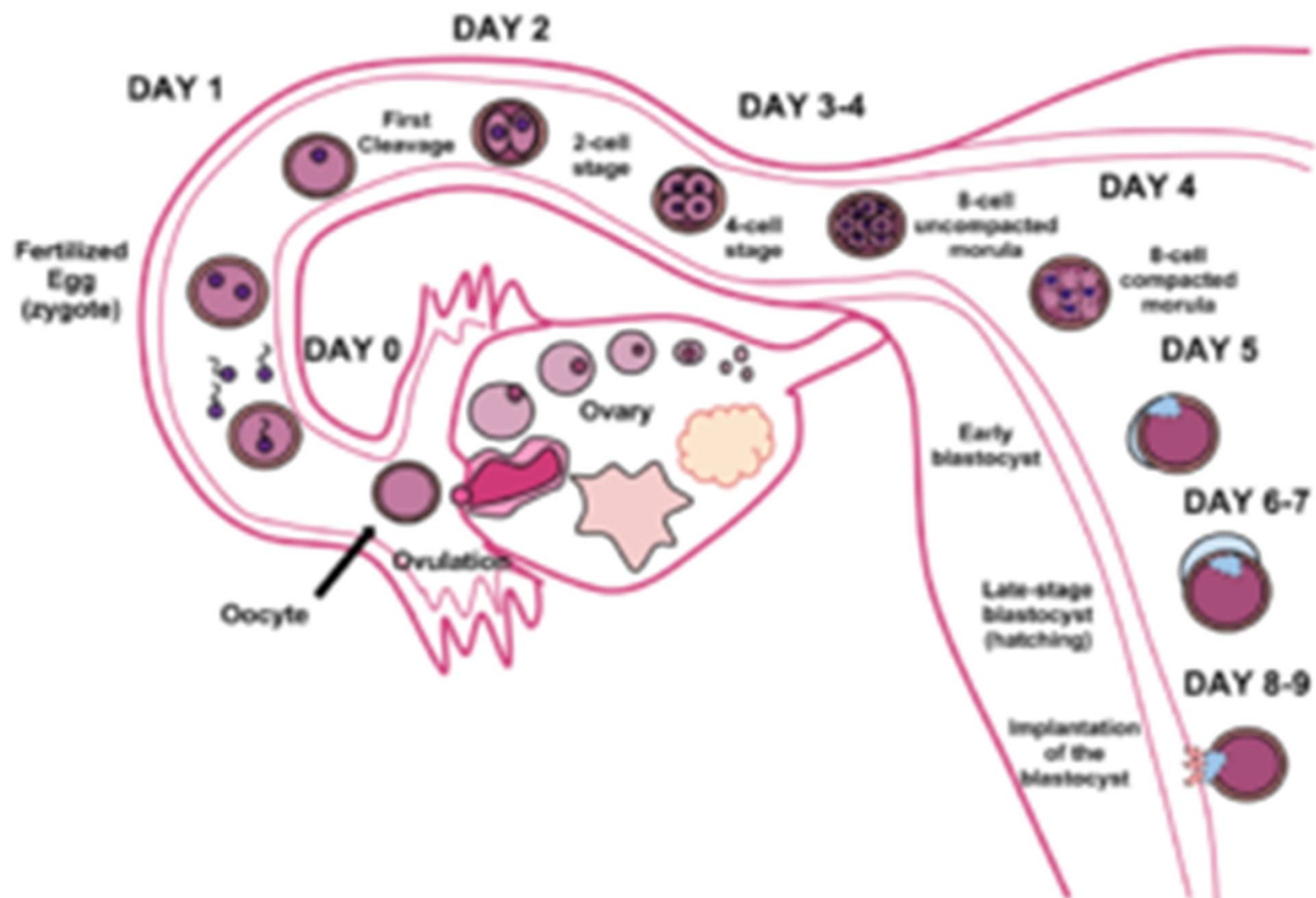


Figure 28-15 Principles of Anatomy and Physiology, 11/e
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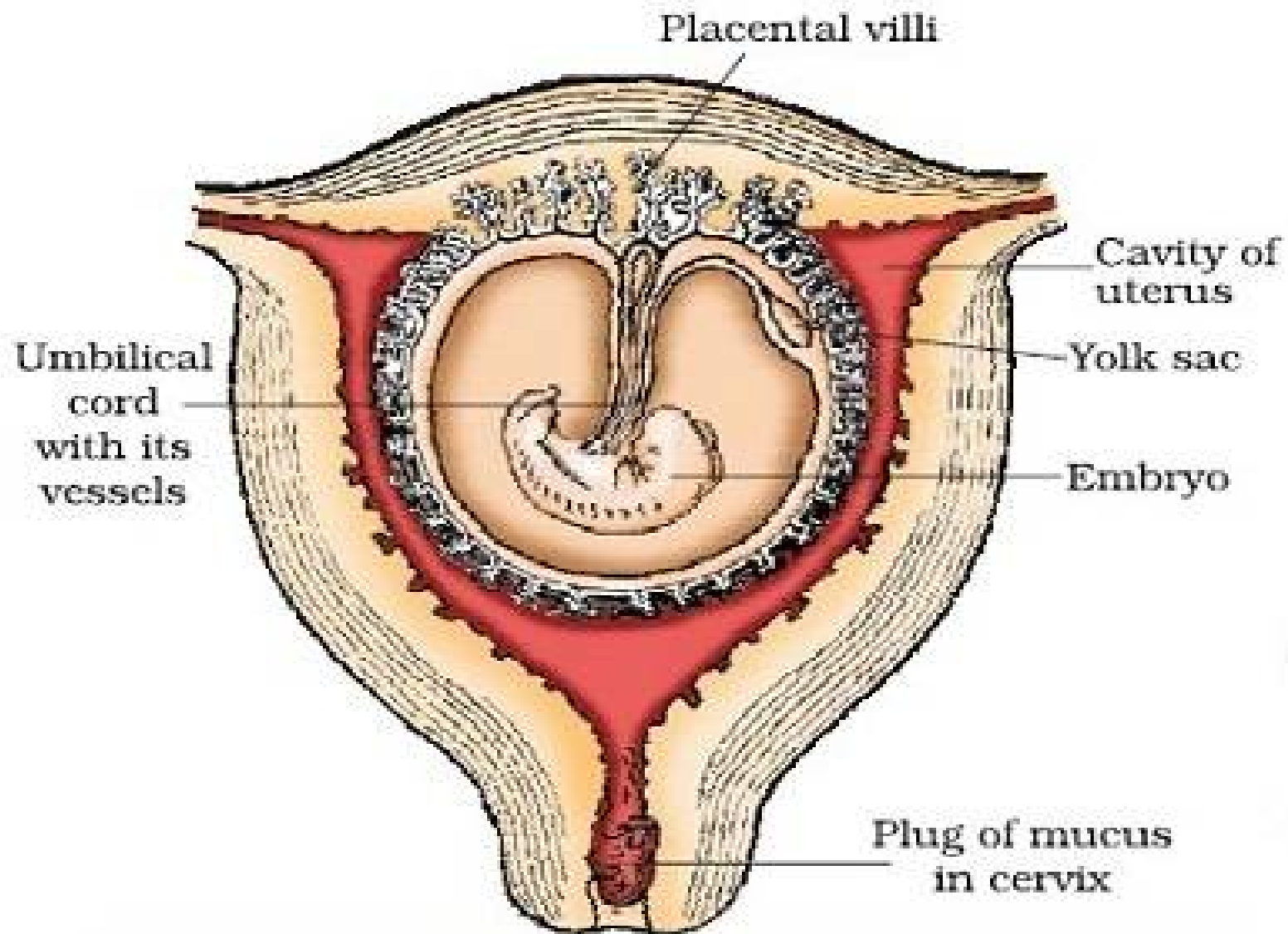


Figure 12. The human foetus within the uterus

Placenta

- Human chorionic gonadotropin
- Human placental lactogen
- Estrogens
- Progestogens

Germ layers

- **Ectoderm** forms tissues associated with outer layers: skin, hair, sweat glands, epithelium. The brain and nervous system also develop from the ectoderm.
- **Mesoderm** forms structures associated with movement and support: body muscles, cartilage, bone, blood, and all other connective tissues. Reproductive system organs and kidneys form from mesoderm.
- **Endoderm** forms tissues and organs associated with the digestive and respiratory systems. Many endocrine structures, such as the thyroid and parathyroid glands, are formed by the endoderm. The liver, pancreas, and gall bladder arise from endoderm.

Embryonic development

- After one month of pregnancy, embryo heart is formed.
- By the end of second month of pregnancy, the foetus develops limbs and digits.
- By the end of third month, most of the major organ systems are formed.
- The first movements of the foetus and appearance of hair on head are usually observed during the fifth month.
- By the end of sixth months, the body is covered with fine hair, eye-lids separate and eyelashes are formed.
- By the end of nine months the foetus is fully developed and is ready for delivery.

- **Gestation period:** the average duration of human pregnancy(9 months)
- **Parturition:** vigorous contraction of the uterus at the end of pregnancy causes expulsion of the foetus. This process of delivery of foetus is called parturition.
- **Foetal ejection reflex:** these are mild uterine contractions induced by signals originated from the fully developed foetus and the placenta.
- **Oxytocin:** it acts on the uterine muscles and causes stronger uterine contractions.
- **Lactation:** mammary glands undergo differentiation during pregnancy and start producing milk towards the end of pregnancy. This process is called lactation.
- **Colostrum:** it is the milk produced during the initial few days of lactation. It contains several antibodies absolutely essential to develop resistance for the new born babies.