

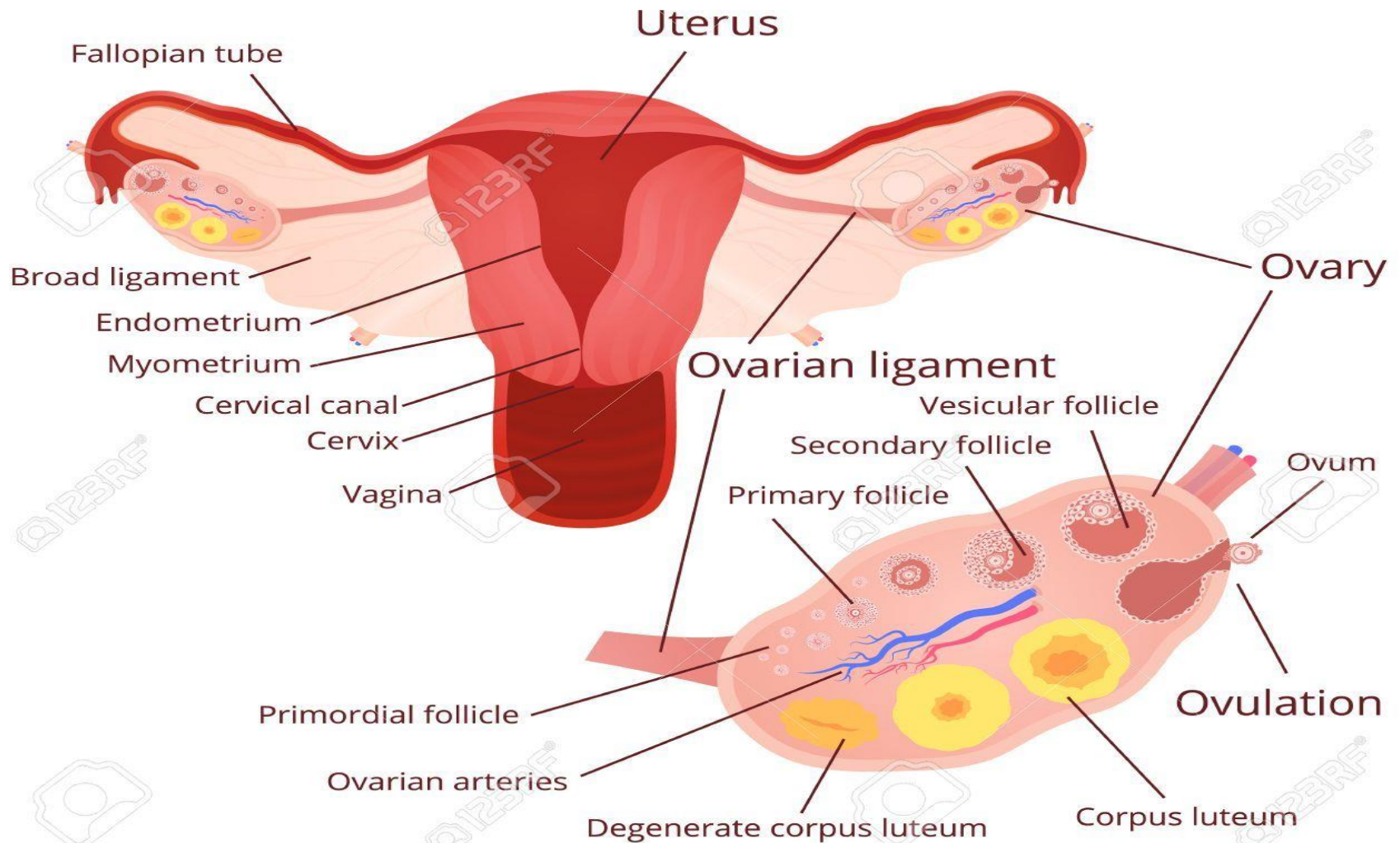


Female reproductive system

Msc . Sarah Kamil

Dr. Dhua Mahdi

FEMALE Reproductive System



ovary :

- primary sex organ that produces egg cells in a process called oogenesis , and also produces female sex hormones such as estrogens and progesterone.
- developed near the kidneys during fetal development ,and toward the end of pregnancy descend into the pelvic cavity .
- consists of ovarian cortex where the ovarian cycle occurs , and ovarian medulla where scar tissues and connective tissue are located.
- enclosed by a layer of cubical cells called germinal epithelium.
- bound to the uterine tubes and uterus by ovarian ligaments .

Uterine tube (or fallopian tube):

- consists of fimbriae , finger – like appendages that collect the ovum from the ovary during ovulation.
- Infundibulum channels the ovum from the fimbriae into the uterine tube .
- Ampulla is the curvature of the uterine tube where most fertilization occurs .
- inner wall of uterine tube is made of ciliated mucosa , where the cilia propel the ovum toward the uterus .

Uterus

- a pear – shaped cavity formed by the union of the two uterine tubes .
- composed of 3 layers of tissue – perimetrium (fibrous connective tissue) , myometrium (smooth muscle), and endometrium (epithelial and connective tissues).
- after fertilization , embryo adheres to the endometrial layer for further development – an event called implantation .
- to prepare for implantation and development , endometrium is stimulated by estrogens to thicken and becomes vascularized – a process called the menstrual cycle .
- myometrium ,under the stimulation of oxytocin, contracts during labor to expel the fetus into the vagina .
- the base of uterus is closed by a narrow passageway called cervix to prevent the entry of foreign substances

Vagina:

- an elastic channel inferior to the cervix that serves as the "birth canal" during parturition.
- Also serves as the copulatory receptacle , where it receives the penis during sexual intercourse.
- In addition to the acids secretion from cervix , it also conveys uterine secretions (i.e. menstrual flow).

Oogenesis

- In the ovarian cortex ,a process called oogenesis (formation of egg) occurs to develop a mature ovum . Before birth , several million cells called primordial oocytes exist in the ovaries – most of them spontaneously degenerate .
- At birth , only 1 million primordial oocytes are left ; and by puberty (age 10-11) ,only 400,000 remain in the ovaries .
- From puberty to menopause , some of these primordial oocytes (containing 46 chromosomes) undergo DNA replication and become primary oocytes (with 46 pairs of chromosomes) .

- Primary oocytes will then undergo "crossing - over" to shuffle their genes, and meiosis I will occur to divide the cells into secondary oocytes (containing 46 unique chromosomes) and the first polar bodies (also containing 46 unique chromosomes ; but will be degenerated) .

- oogenesis now is arrested where Events of oogenesis the ovary discharges a mature secondary oocyte into the uterine tube (in a process called ovulation) .

Hormonal control of ♀ reproductive function

- Hormones from the hypothalamus , Ant. Pituitary gland and ovaries, play important roles in the control of sex cell maturation , and development and maintenance of female secondary sex characteristics .

Female sex hormones :

- A female body remains reproductively immature until about 10 years of age when gonadotropin secretion increases .
- The most important female sex hormones are estrogen and progesterone.
- Estrogen is responsible for the development and maintenance of most female secondary sex characteristics .
- Progesterone causes change in the uterus .

Hormonal control of ♀ secondary sex characteristic

- The hypothalamus releases GnRH , which stimulates the Ant. Pituitary gland.
- The Ant. pituitary gland secretes FSH and LH .
- FSH stimulates the maturation of a follicle .
- Granulosa cells of the follicle produce and secrete estrogen; LH stimulates certain cells to secrete estrogen precursor molecules .
- Estrogen is responsible for the development and maintenance of most female secondary sex characteristics .
- Concentration of Androgens affect other secondary sex characteristics, including skeletal growth and growth of hair .
- Progesterone, secreted by the ovaries , affect cyclical changes in the uterus and mammary glands .

Major events in menstrual cycle

1. The Ant. pituitary gland secretes FSH and LH .
2. FSH stimulates maturation of a follicle .Granulose cells of the follicle produce and secrete estrogen . Estrogen maintains 2ndry sex traits & causes the uterine lining to thicken .
3. The Ant. pituitary gland releases a surge of LH, which stimulates ovulation . Follicular and thecal cells become corpus luteum cells which secrete estrogen and progesterone.
 - a. Estrogen continues to stimulate uterine wall development .