

**Faculty Name: Dr. Kumari Sushma Saroj**

**Department: Zoology**

**College: Dr. L. K. V. D College, Tajpur, Samastipur**

**Class: B.Sc Part –II (Hons.)**

**Paper: IV Group: A**

**Topic: Histology of the Female reproductive system**

### **Histology of the Female Reproductive System**

#### **Ovaries:**

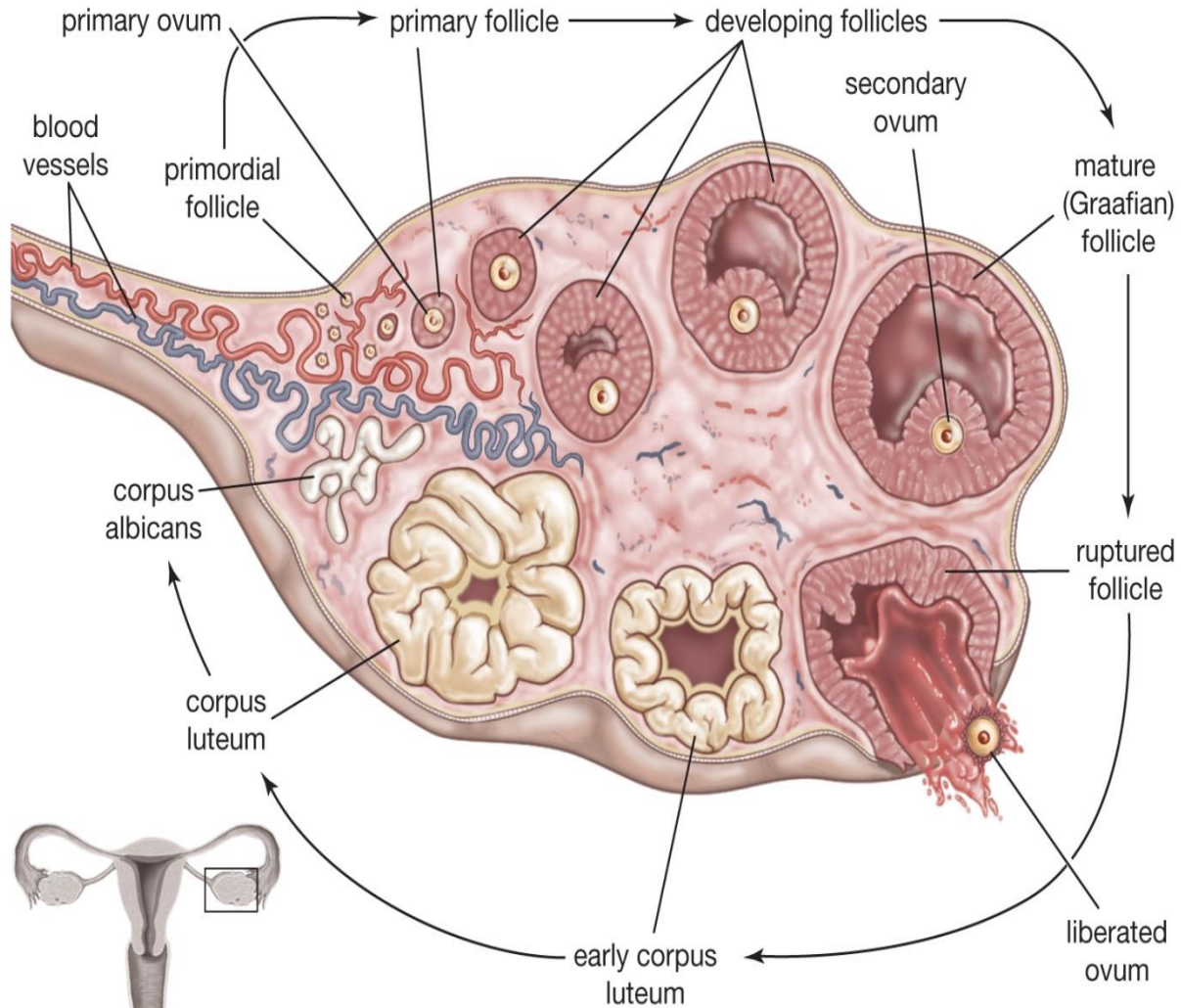
The primary female reproductive organs or gonads. The ovaries are located in shallow depressions, called ovarian fossae, one on each side of the uterus, in the lateral walls of the pelvic cavity.

#### **Histology of the ovary :**

- The Germinal epithelium is a layer of simple epithelium that covers the surface of the ovary.
- The tunica albuginea is a whitish capsule of dense irregular connective tissue located immediately deep to the germinal epithelium.
- The ovarian cortex is a region just deep to the tunica albuginea. It consists of ovarian follicles surrounded by dense irregular connective tissue that contains scattered smooth muscle cells.
- The ovarian medulla is deep to the cortex and contains blood vessels, lymphatic vessels, and nerves.
- Ovarian follicles consist of oocytes in various stages of development, plus the cells surrounding them. When the surrounding cell forms a single layer,

they are called follicular cells; later in development, when they form several layers, they are referred to as granulosa cells.

- A mature (Graafian) follicle is a large, fluid-filled follicle that is ready to rupture and expel its secondary oocytes, a process known as ovulation.
- A corpus luteum (also called yellow body due to lutein protein) contains the remnants of a mature follicle after ovulation. The corpus luteum produces progesterone, estrogens, relaxin, and inhibin until it degenerates into fibrous scar tissue called the corpus albicans.



**Fig:-**A section of ovary showing the stage of the development of ovarian follicle

**Dr. Kumari Sushma Saroj, Dept. of Zoology, Dr. L.K.V.D. College, Tajpur, Samastipur**

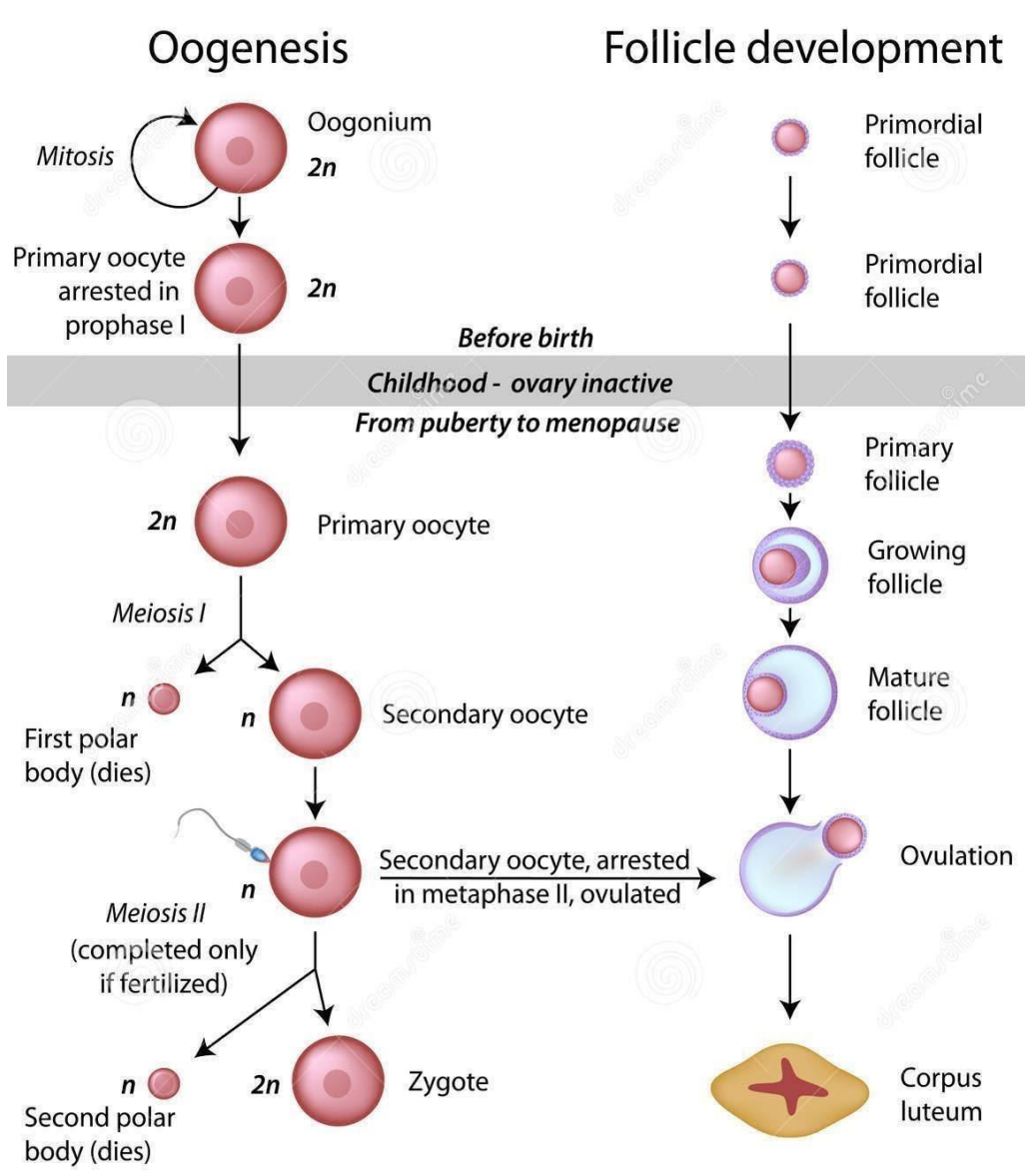
**Oogenesis and follicular development:**

- The formation of female gametes (egg) in the ovaries is formed oogenesis.
- Oogenesis begins in female before they are even born.
- During early fetal development, Primordial (Primitives) germ cells migrate from the yolk sac to the ovaries. These germ cells differentiate within the ovary into oogonia.
- After several mitotic division oogonia undergo meiosis and developed into primary oocytes.
- Primary oocytes remains arrested after diplotene of prophase I until the female becomes sexually mature.
- At this point a small number of primary oocytes periodically mature, under the influence of hormone, completing meiosis-i to produce secondary oocytes and first Polar body .
- The secondary oocytes maturation is arrested at metaphase-ii and completes meiosis -ii only after Fertilization.
- Secondary oocytes eventually undergo meiosis-ii to produce mature eggs (ova) and second Polar bodies.
- All of the Polar bodies eventually degenerate.

**Hormones:**

Follicle- stimulating hormone, Luteinizing hormone, estrogen, and progesterone have major roles in regulating the functions of the female reproductive system. At puberty, when the ovaries and uterus are mature enough to respond to hormonal stimulation, certain stimuli cause the

hypothalamus to start secreting gonadotropin-releasing hormone. This hormone enters the blood and goes to the anterior pituitary



gland where it stimulates the secretion of follicle-stimulating hormone and luteinizing hormone. These hormones, in turn affect the ovaries and uterus and the

monthly cycles begin .A woman's reproductive cycles last from menarche to menopause.

The monthly ovarian cycle begins with the follicle development during the follicular phase, continues with ovulation during the ovulatory phase, and concludes with the development and regression of the corpus luteum during the luteal phase. The uterine cycle takes place simultaneously with the ovarian cycle. The uterine cycle begins with menstruation during the menstrual phase, continues with repair of the endometrium during the proliferative phase, and ends with the growth of glands and blood vessels during the secretory phase.

Menopause occurs when a woman's reproductive cycles stop. This period is marked by decreased levels of ovarian hormones and increased levels of pituitary follicle-stimulating hormone and luteinizing hormone. The changing hormone levels are responsible for the symptoms associated with menopause.