

# "Oogenesis"

- Primary germ cells are formed by some germinal epithelium cells of ovary.
- Oogenesis is completed in three phases like spermatogenesis.
- The Oogenesis is completed in following three successive stages -
  - i) Period of Multiplication
  - ii) Period of Growth
  - iii) Period of Maturation.

## → Period of Multiplication:-

- The primordial germinal cells divide repeatedly by Mitosis (cell division) forming Oogonia, which is Diploid in nature.

## → Period of Growth:-

- Each Oogonium multiply by the Mitotic cell division and form the primary Oocyte.
- It is also Diploid in nature.

## → Period of Maturation:-

- During this period each primary Oocyte divides first by Meiotic cell division, forming cells with haploid chromosome number.
- These two cells are unequal in size. The larger one is called Secondary Oocyte and the smaller is the first polar body (Polarocyte).
- This is either destroyed or divides two form first and third polar body.

- The haploid Secondary Oocyte and first polar body pass through the second meiotic division.
- Due to the second Meiotic division, the secondary Oocyte form a mature egg and a Secondary polar body.
- By the Second Meiotic division the first polar body also divides into two secondary polar body (polocyte).
- These polocyte ooze out from the egg and degenerate.
- While the haploid egg cell becomes ready for the fertilization.
- In human the ovum is released from the ovary in the Secondary Oocyte stage.
- The maturation of Secondary Oocyte is completed in the fallopian tube usually after the spermatozoon has entered the secondary Oocytes for fertilization.

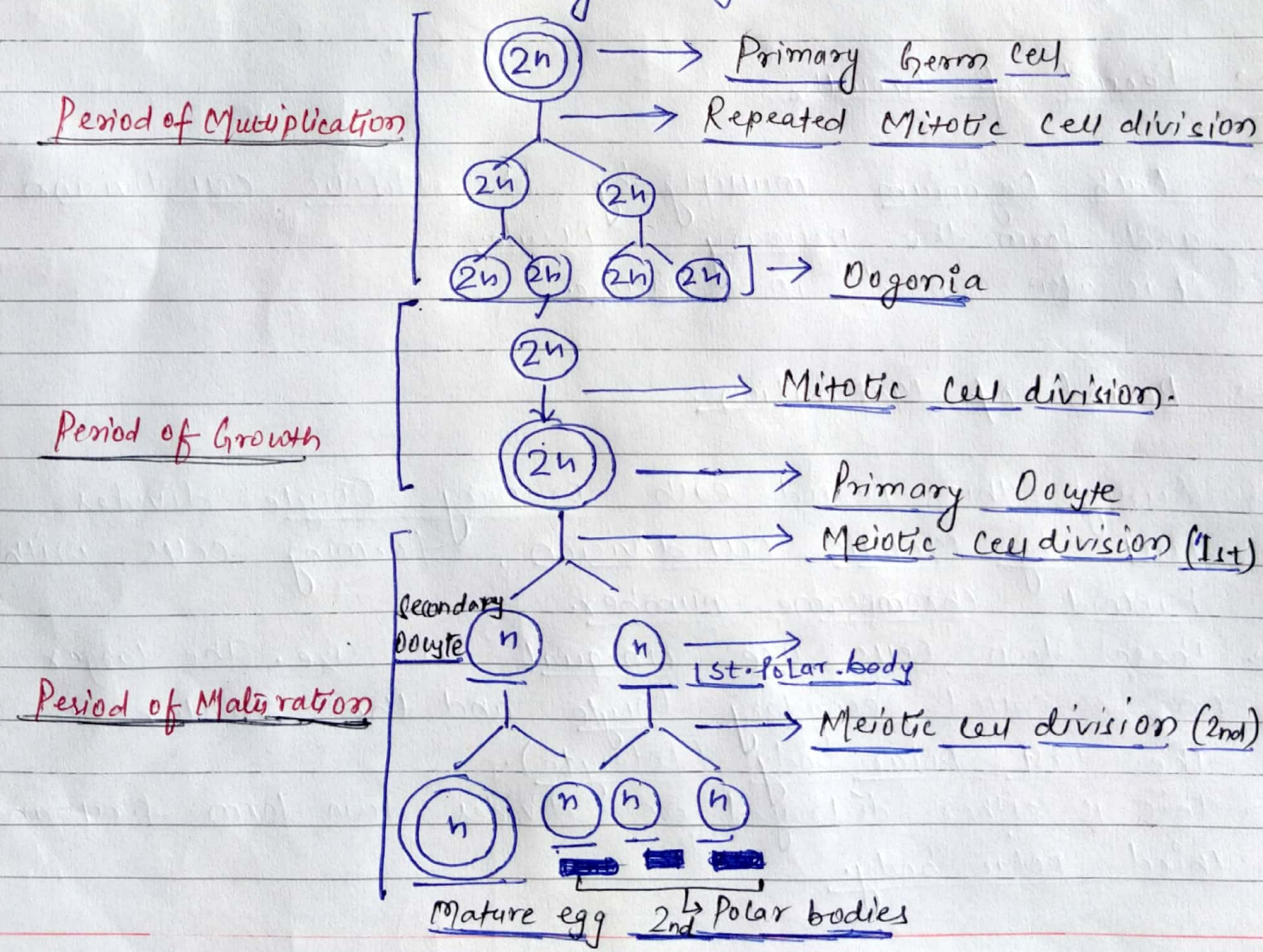


Fig:-> Flow chart of Oogenesis

## → Hormonal Control of Oogenesis:

- Oogenesis occurs under the control of different hormones. Such as,
- Gonadotropin releasing hormone (GnRH) is secreted by the Hypothalamus, which stimulates the Anterior lobe of Pituitary gland to secrete Luteinising hormone (LH) and Follicle stimulating hormone (FSH).
- FSH stimulates the growth of the Ovarian follicle and also increases the development of Oocyte (Egg) within the follicle to complete Meiosis first to form secondary Oocyte.
- FSH also stimulates the formation of Estrogens.
- LH stimulates the Corpus luteum to secrete progesterone.
- High levels of estrogens inhibit the release of GnRH, providing feedback control of hormone level.
- This is exactly parallel to the control of Testosterone hormone in Males.

## → Significance of Oogenesis:

- One Oogonium produces one Ovum and three polar body.
- Polar bodies have small amount of Cytoplasm. It helps to retain sufficient amount of cytoplasm in the Ovum which is essential for the development of early Embryo.
- Formation of polar body maintain half the number of Chromosome in the Ovum.
- It causes Variation.
- Oogenesis occurs in various organisms. So, it supports the evidence of basic relationship of the organisms.