Ovulation الإباضة

Ovulation is a rupture of a mature graffian follicle and expulsion of the ovum outside the follicle. The ovulation process occurs due to the effect of neural, hormonal, and chemical factors. After the release of the ovum, there is a collapse of the follicular wall and accumulation of blood within the cavity, this structure called **corpus hemorrhagicum** convert then to **corpus luteum** under the effect of LH. Ovulation occurs at any area of the ovary in all species except in the mare that occurs from the ovulation fossa.

The ovulation may be **spontaneous** as in cow, ewe, goat, women, or **induced** as in she-camel, cat, rabbit, and rodents.

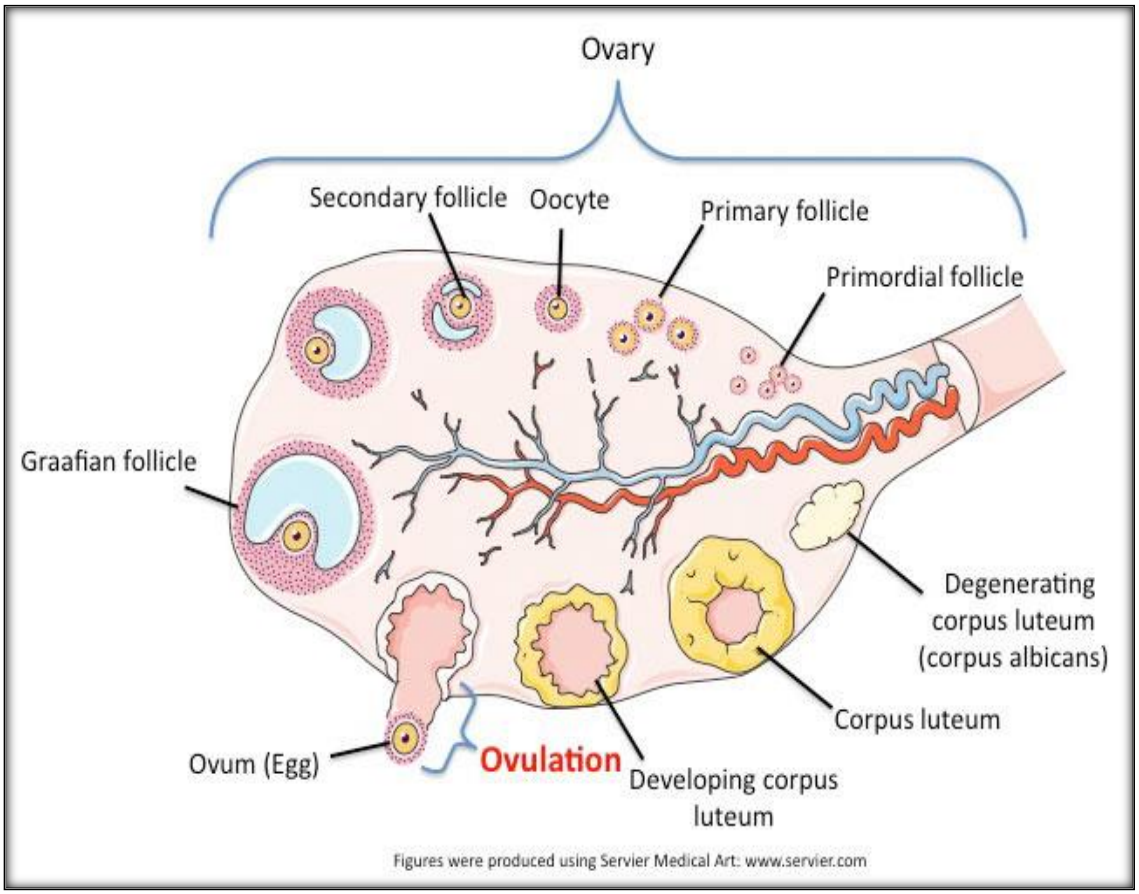

Figure 1 Process of Ovulation

Types of ovulation:

1. **Spontaneous ovulation:** occur in cow, buffalo, mare, ewe, goat, and bitch, the ovulation and maturation of corpus luteum occur with or without mating.
2. **Induced (Reflexive) ovulation:**

a. **Rodents:** the ovulation occur with or without mating, but the corpus luteum does not maturate until stimulates the cervix by the male penis.

b. **Shecamel, rabbits, and queen cats**: the ovulation does not occur until mating occurs and stimulates the cervix by the male penis.

luteal phase

Luteal Phase (metestrus + diestrus): the period from ovulation until CL regression, longer compared to the follicular phase (~ 80% of the length of the estrous cycle). Growth and maturation of the corpora lutea (CL; the dominant ovarian structures). A rise in blood progesterone from the CL.

Three major events of the luteal phase:

1. **Development of the luteal structure (corpus hemorrhagicum):** when the follicle ruptures at ovulation, blood vessels break resulting in a structure with a red appearance called corpus hemorrhagicum. Corpora hemorrhagica may be observed from the time of ovulation until about day 3 of the estrous cycle.
2. **Growth and maturation of the luteal structure (corpus luteum):** between days 3 to 5, the CL begins to increase in size and increases in mass until the middle of the cycle. The maximal size of the CL will match with the maximal production of progesterone (approximately during the middle of the estrous

cycle).

3. **Regression and degradation of the luteal structure:** during the end of the luteal phase, luteolysis occurs and the CL regresses. The lysed CL will become a **corpus albicans (**as a white scar-like structure).

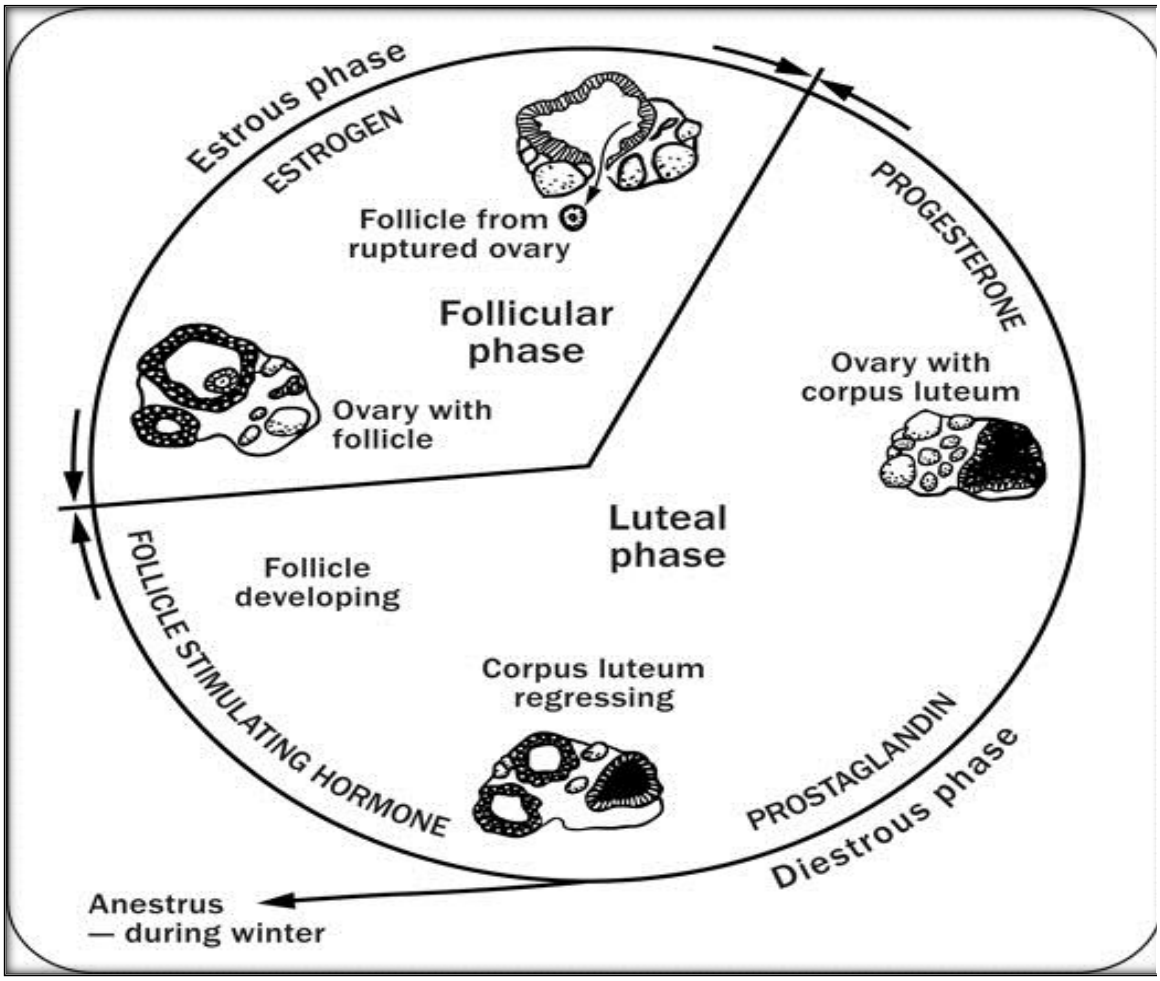

Figure 2 Follicular and luteal phase

Effects of progesterone

Progesterone from the CL goes into the systemic circulation and affects:

1. **The hypothalamus:** under progesterone influence, GnRH is secreted in a low-frequency high amplitude fashion, as are FSH and LH. This allows follicles to develop during the luteal phase, but these follicles do not reach pre-ovulatory size until progesterone declines.

2. **The endometrium:** secretions from these glands help support the development of the early embryo.

3. **The mammary gland:** by causing final alveolar development before parturition for the following lactation.

Female fertility and venereal diseases

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