

Ovarian cycle and Corpus Luteum

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Ovarian cycle and Ovulation

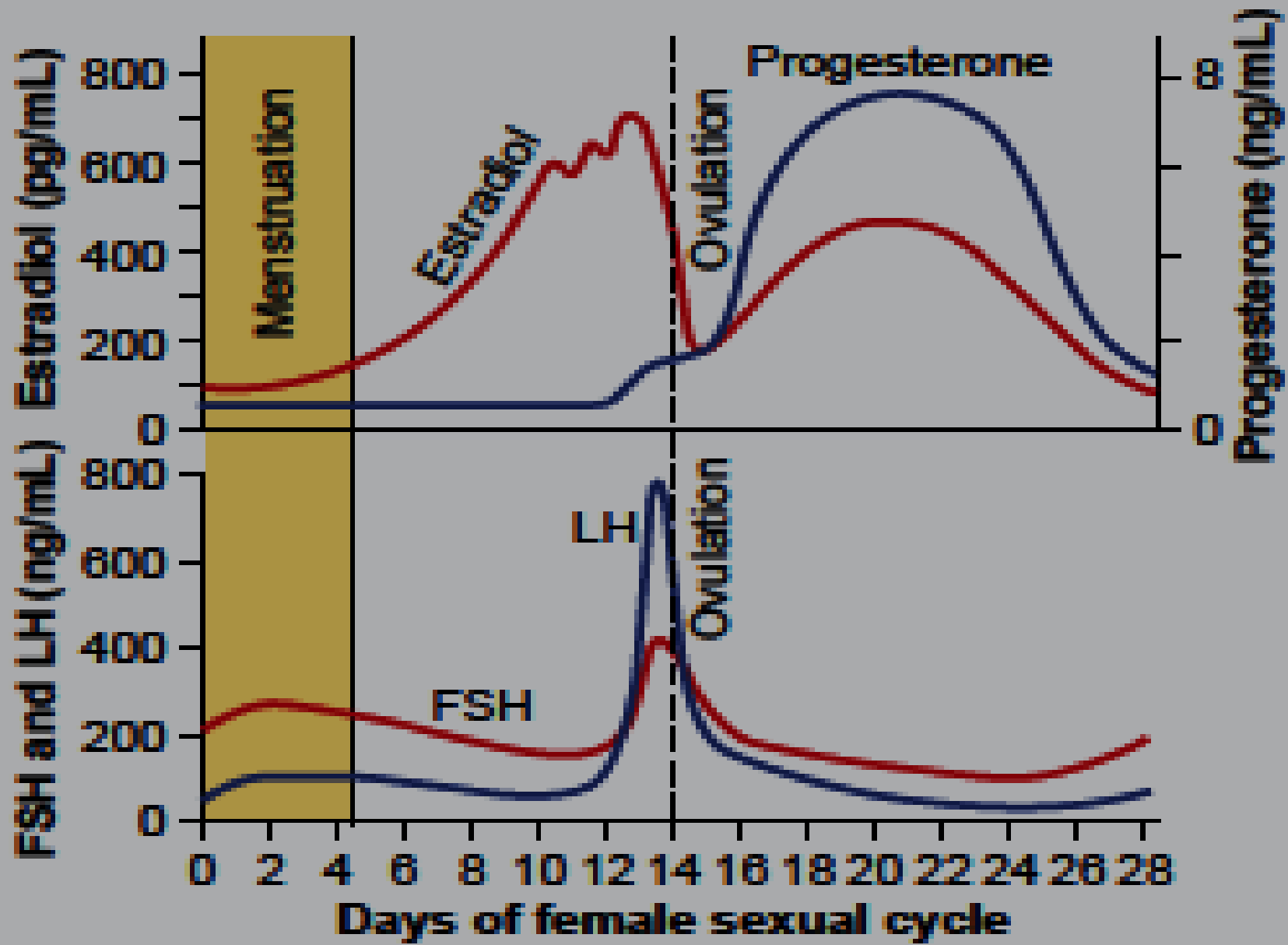
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Introduction

- Ovulation occurs on 14 day post menstruation in a woman who has normal 28 day cycle.
- Shortly before ovulation, protruding outer wall of follicle swells rapidly with formation of small area of protrusion called stigma.
- In next 30 minutes, fluid oozes through the stigma.
- Next the stigma ruptures widely allowing a more viscous fluid, which occupied the central portion of the follicle to evaginate outward.
- The viscous fluid carries with it the ovum surrounded by a mass of several thousands small granulosa cells called Corona Radiata.

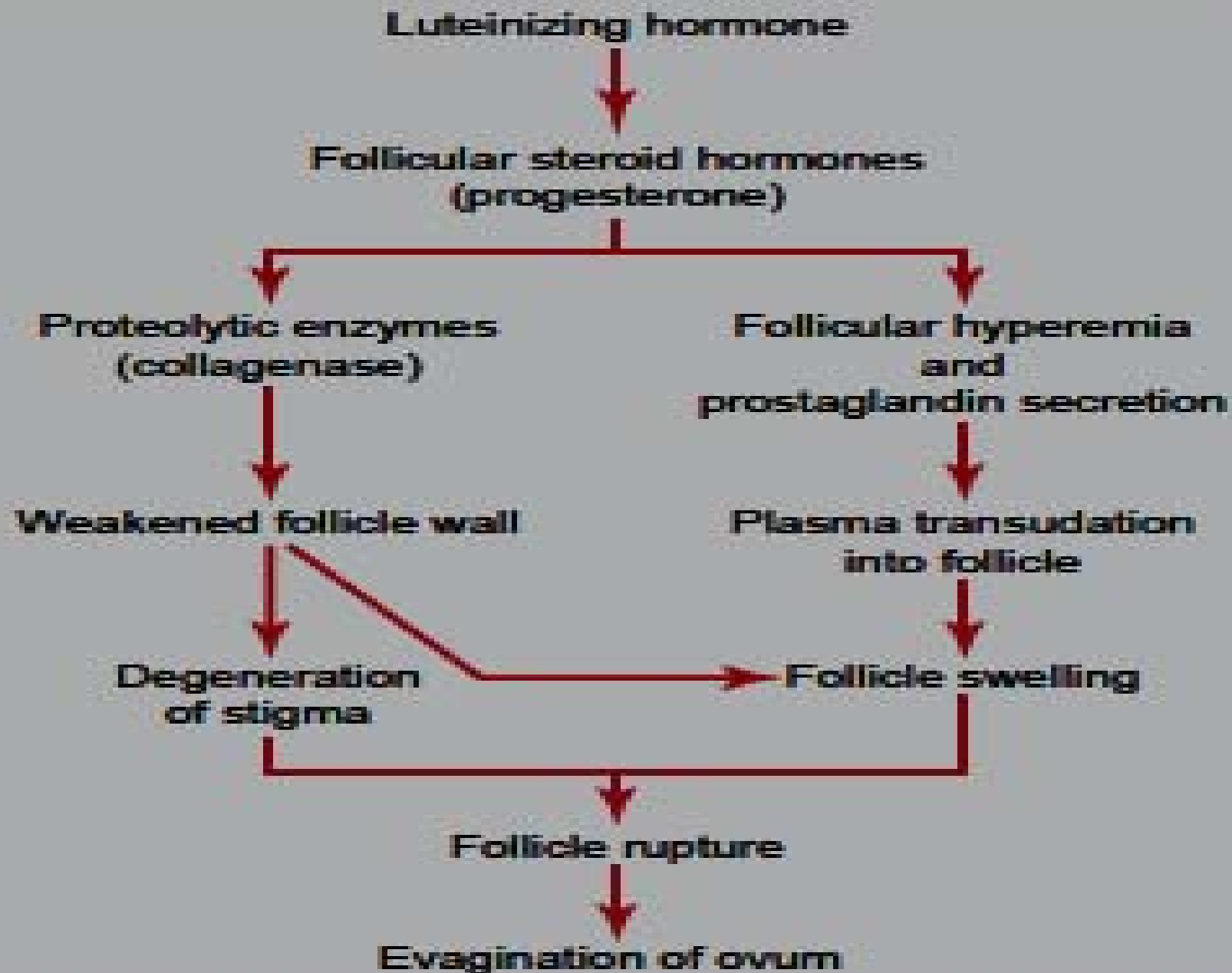
LH is essential for ovulation

- LH is necessary for follicular growth /ovulation.
- 2 days before ovulation there is increased secretion of LH. Also FSH increases.
- Both act synergistically to cause rapid swelling of the follicle during last few days of ovulation.
- LH has specific effects on granulosa and theca cells converting them to progesterone secreting cells.- Rate of estrogen secretion falls about one day before ovulation and progesterone secretion increases.
- In environment of 1. Rapid growth, 2. diminished estrogen, 3. beginning of secretion of progesterone,- Ovulation occurs.



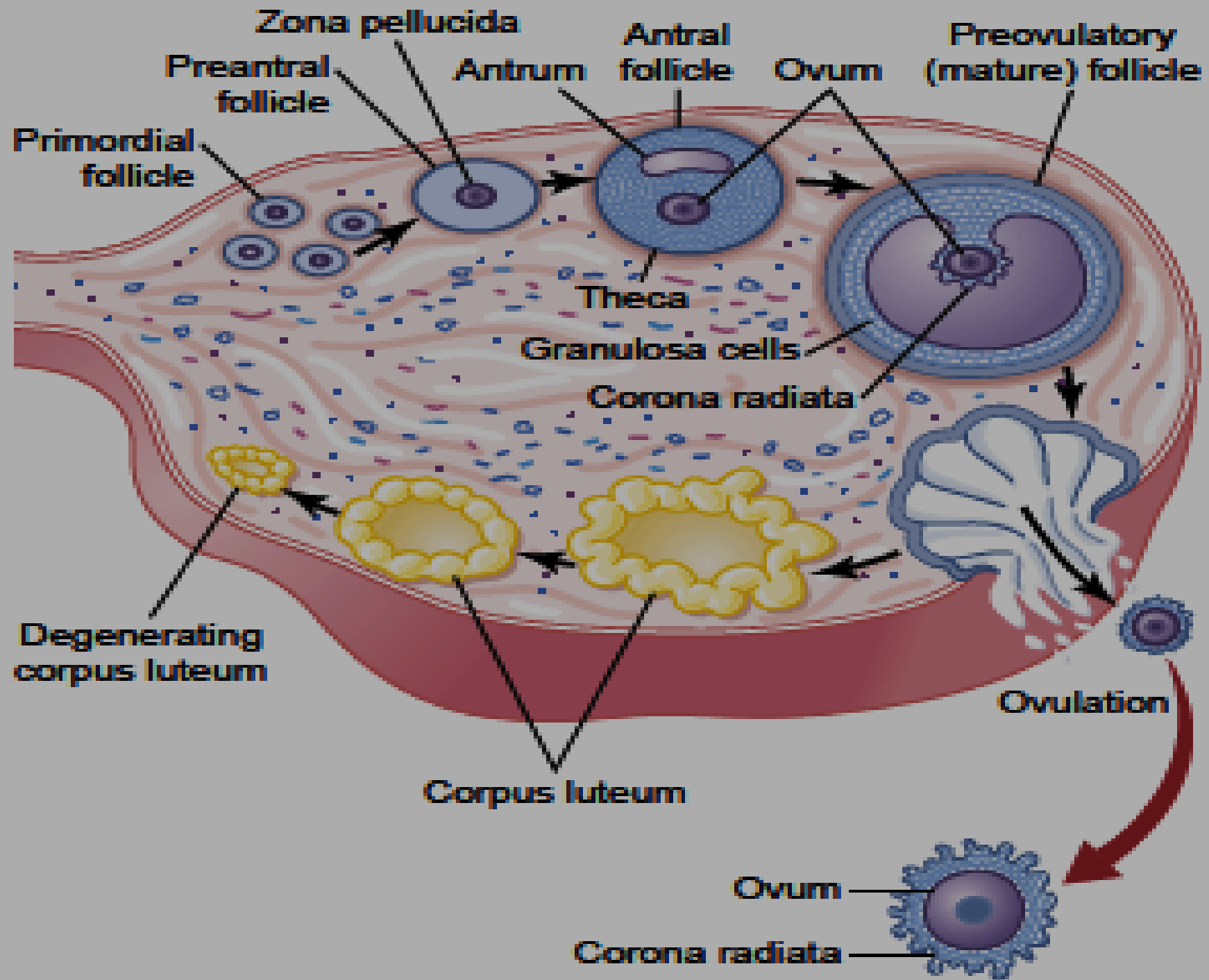
Initiation of Ovulation

- During LH surge, large qty of LH secreted by APG.
- This causes rapid secretion of follicular steroid hormones, and progesterone for the first time.
- Within few hours, two events occur:
 - a) Theca externa, begins to release proteolytic enzymes, cause dissolution of follicular capsular wall – weakening of which results in swelling of follicle and degeneration of stigma.
 - b) Rapid growth of new blood vessels in follicular wall and prostaglandins are secreted .
- These two effects cause plasma transudation-further swelling.
- Finally combined follicle swelling/simultaneous degeneration of stigma cause follicle rupture with discharge of ovum.



Corpus Luteum

- First few hrs after expulsion of ovum , remaining granulosa/theca cells change into lutein cells.
- Enlarge 2-3 times, filled with lipid inclusions.
- Process is called luteinization and the mass of cells is called corpus luteum.
- Well developed vascular supply grows into CL.
- Granulosa cells form large qty of progesterone and estrogen/Theca cells form androgens.
- CL grows upto 1.5 cms, 7-8 days after ovulation.
- Involutesc by 12 days after ovulation.
- Then becomes Corpus Albicans in next few weeks.
- Replaced by connective tissue, gets absorbed over months.

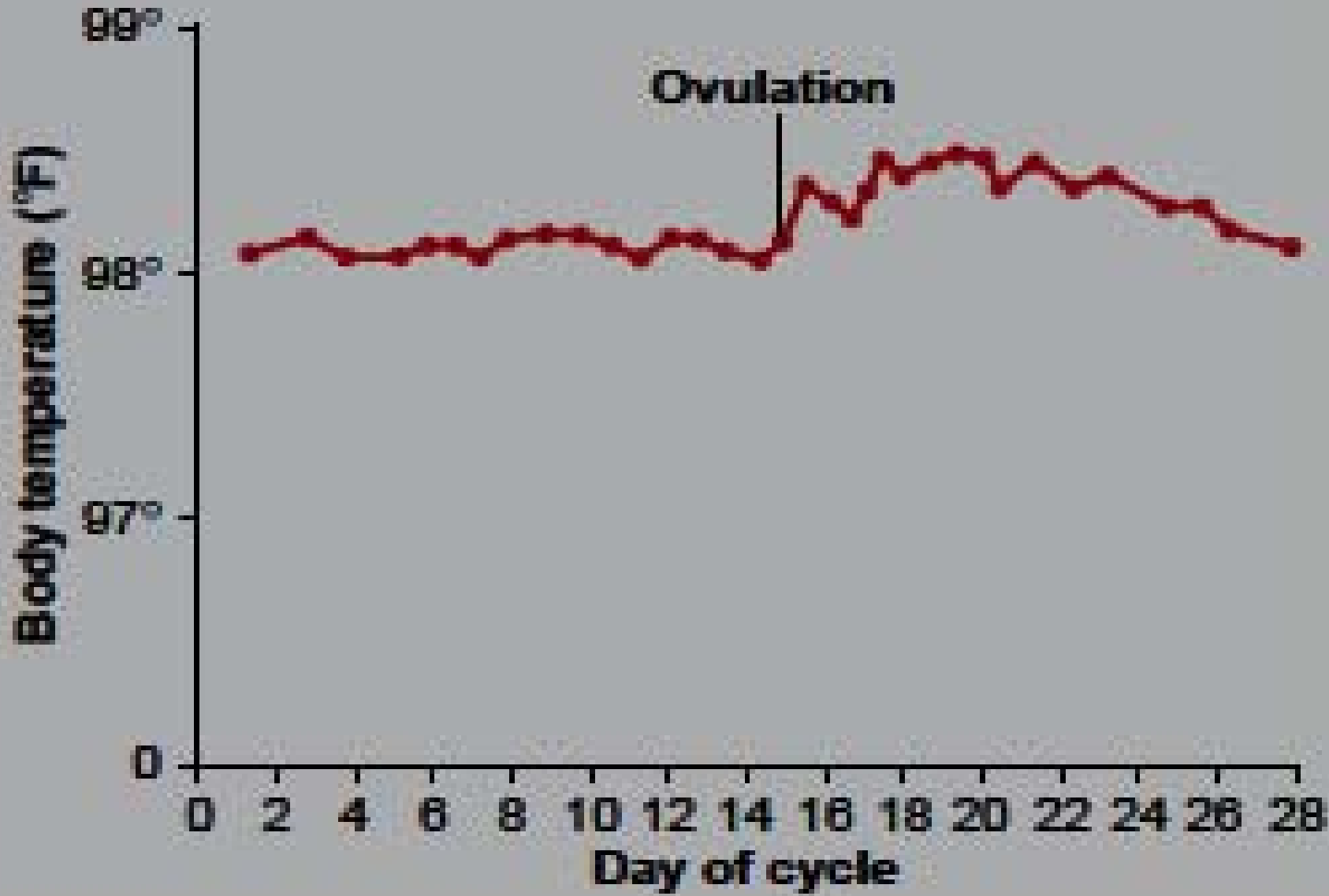


Secretions by Corpus Luteum

- Corpus Luteum is a highly secretory organ.
- Secretes large amount of estrogen/progesterone.
- Once LH surge acts upon granulosa/theca cells and causes leuteinization, then newly formed lutein cells get programmed to Proliferate/enlarge/secrete and finally degenerate.
- Above occurs in just 12 days after ovulation.
- Human chorionic gonadotrophin secreted by the placenta has exactly same property of LH.
- This hormone can act on corpus luteum to prolong its life, usually maintaining it for at least the first two to four months of pregnancy.

Indicators of Ovulation.

- It becomes important to know when during the menstrual cycle, ovulation occurs.
- A convenient and reliable indicator of time of ovulation is a change in basal body temperature.
- The rise starts 1-2 days after ovulation.
- It is measured by digital thermometers with wide gradations, and either rectal/oral temperature taken in morning before getting out of the bed.
- Cause of temperature change is progesterone secretion, since progesterone is thermogenic.



Thank You