




Estrous Cycle And Its Stages

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- Rhythmic sexual behavior patterns develop in female animals on attainment of puberty.
 - This behavior change i.e. sexual receptivity is called **estrus**, a Greek term which means mad-desire.
 - The combination of physiological events which begin at one estrus period and end at the next is termed as **estrous cycle**.
 - Day of estrus is considered as day zero of the cycle.

Estrous cycle

Follicular phase

Luteal phase

Proestrus


Estrus

Metestrus

Diestrus


Proestrus

- Immediately precedes estrus phase.
- Characterized by follicular growth, regression of CL and increased production of estrogen.
- Estrogen increases blood supply of genital tract, thus, produces edema of genitalia.
- Uterus enlarges very slightly, endometrium becomes congested and oedematous, increased glandular secretory activity.

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- Vaginal mucosa becomes hyperaemic.
 - In bitches, number of cell layers in epithelium increase and superficial layers become cornified.
 - Also, vulval edema, hyperaemia and proestruual bleeding.

Estrus

- Period of acceptance of male.
- Onset and end are defined and can be accurately measured, thus, used as reference points for determining the cycle length.
- The uterine, cervical and vaginal glands secrete increased amounts of mucus; the vaginal epithelium and endometrium become hyperaemic and congested; the cervix is relaxed.

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- Ovulation occurs in all species except in cows (12 hours after end of estrus).
 - Behavioural signs of estrus:
 - Restlessness
 - Loss of appetite
 - Bellowing
 - Frequent micturition
 - Mounting behaviour (Standing heat)
 - Decreased milk production
 - Mucus discharge (clear, stringy)

Metestrus

- Follows cessation of estrus.
- Granulosa cells of ovulated follicle give rise to lutein cells.
- Formation of corpus luteum.
- Scanty discharge, blood tinged (Metestrual bleeding).
- If fertilization occurs, mucus secretion from uterine glands increases.

Diestrus

- Phase of CL and progesterone dominance.
- Development of mammary gland and uterine myometrium.
- Uterine glands produce thick, viscid fluid (uterine milk) for nourishing zygote.
- CL regresses after 15-16 days, if fertilization fails.

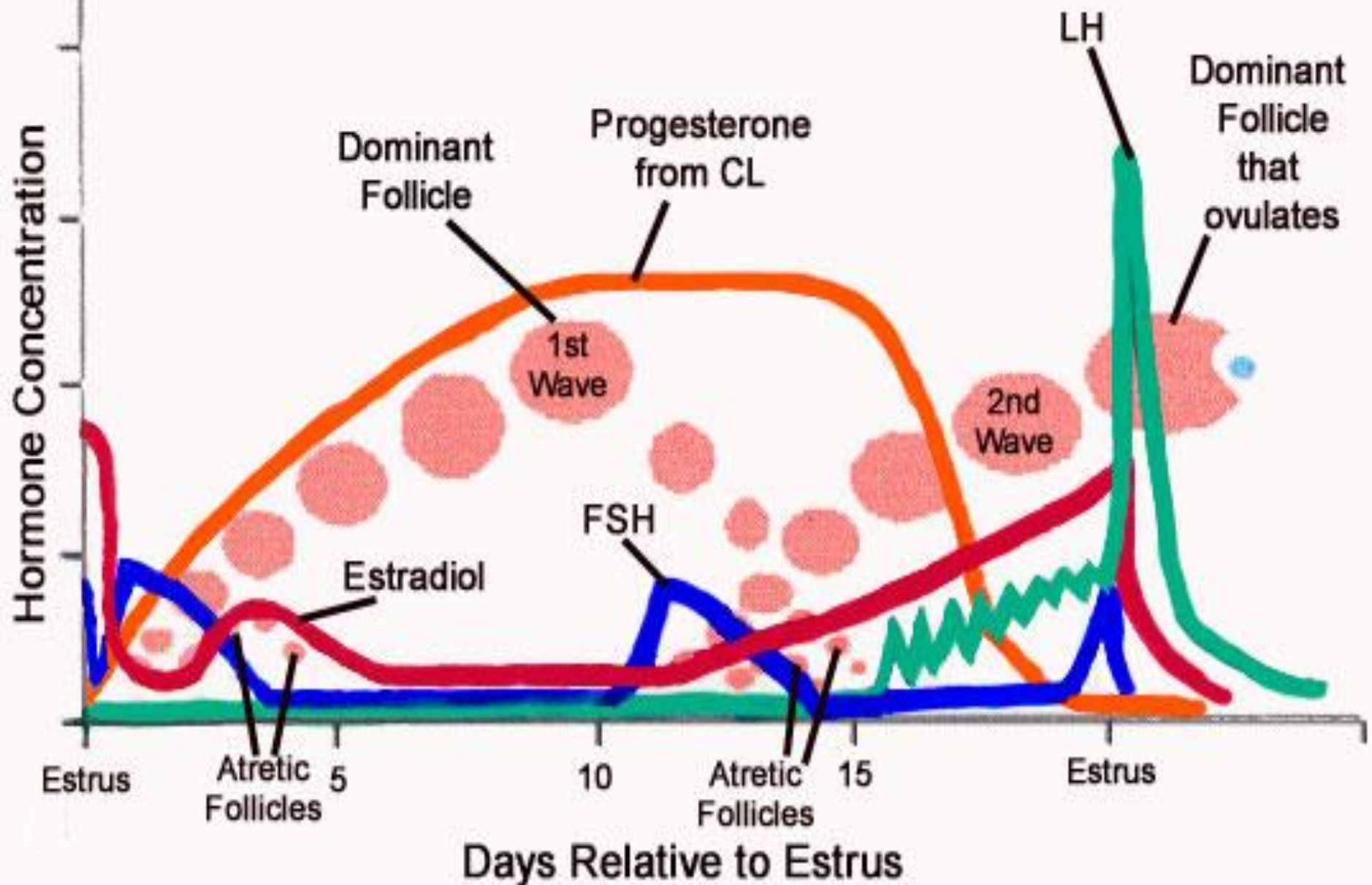
Anestrus

- Prolonged period of sexual rest, genital tract quiescence.
- Minimal follicular development.
- CL regressed and non-functional.
- Scanty and tenacious secretions.
- Constricted cervix and pale vaginal mucosa.

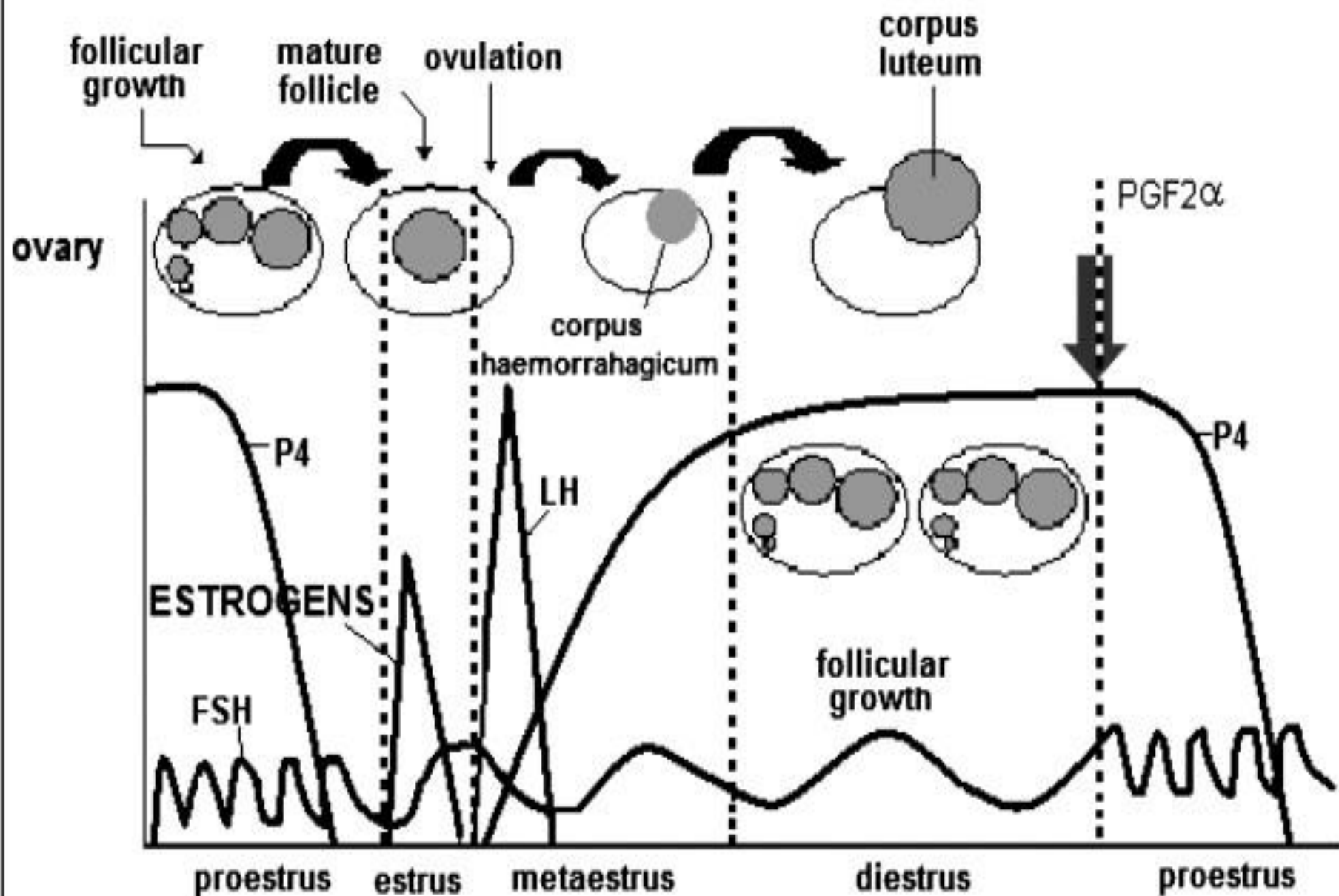
Estrus- cycle, estrus and time of ovulation in some of the domestic animals

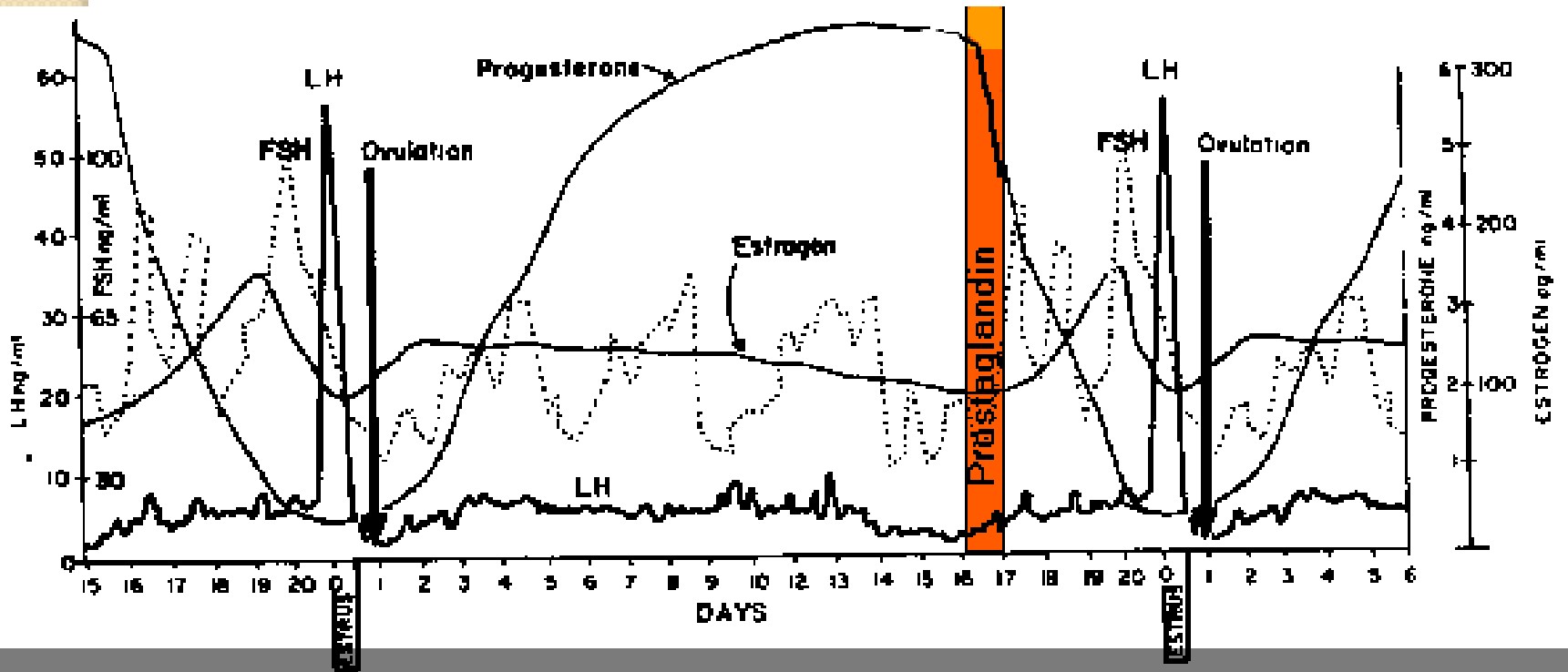
Species	Length of Estrous Cycle (days)	Duration of Estrus	Time of ovulation
Cow	21-22	18-19 hrs	10-11 hours after the end of estrus
Mare	19-25	4-8 hrs	1-2 days before the end of estrus
Ewe	16-17	24-36 hrs	24-30 hours from the beginning of estrus
Goat	21	32-40 hrs	30-36 hours from the beginning of estrus
Sow	19-20	48-72 hrs	35-45 hours from the beginning of estrus
Bitch	Size dependent	7-9 days	1-2 days after onset of estrus
Queen	16	5-6 days	Induced 14-36 hours after coitus

The Estrous Cycle in Cattle



Endocrine regulation of the bovine estrous cycle





**Thank
You**

