

Graphing the Estrus Cycle

In this activity you will graph the hormone levels of the estrus cycle to better understand what is happening during this process.

- 1) Create an X and Y axis on a piece of graph paper (landscape), labeling the X axis days.
- 2) Mark out approximately 30 days on the X axis.
- 3) We want to show the end of one cycle, a complete cycle, and the beginning of another. To do this, begin with Day 0 on the 5th day of your graph and label the days in a 21 day cycle.
- 4) Ovulation Occurs on Day 0.
- 5) LH is released beginning on Day 16 and peaking at ovulation, but is metabolized out of the body by Day 6. Use blue to represent LH levels in the body.
- 6) By Day 5, the LH has stimulated the ruptured follicle to produce the Corpus Luteum and very high levels of progesterone are present which will be maintained until about day 13. Use pink to represent progesterone levels.
- 7) During the period of estrus (Day 17 through Day 1) progesterone levels are very low.
- 8) During this period of low progesterone, estrogen levels are very high. Beginning on Day 17 estrogen increases and hits its peak at Day 21/0, then reduces to its low point by Day 3. Use orange to represent estrogen levels.
- 9) FSH levels begin to increase on Day 1, make 2 moderately high points during Day 3 and Day 13, and a low point on Day 9, and is metabolized out by Day 17. Use green to represent FSH levels in the body.
- 10) Draw a vertical, yellow line up from Day 0 to represent ovulation.
- 11) Label your days in these groups:
 - Day 17 – Day 1 is estrus
 - Day 1 – Day 5 is metestrus
 - Day 5 – Day 13 is diestrus
 - Day 13 – Day 17 is proestrus

Using your graph, answer the questions on the next page.

Reproductive Cycle Questions

- 1) If I wanted to keep a mare out of heat, what hormone would I give her?
 - a. Progesterone

- 2) If I wanted her to come into heat, what hormone could I give her? What hormone could I inhibit?
 - a. FSH/Estrogen

- 3) If I wanted to develop an ovulation test that revealed when a mare was ABOUT to ovulate, for which hormone would I test?
 - a. Drop in progesterone, rise in estrogen/FSH

- 4) By looking at your chart, hypothesize why diestrus is a state of assumed pregnancy.
 - a. Because progesterone (pregnancy hormone) is high during this time

- 5) If I wanted to develop a pregnancy test for cattle, what hormone could I test for? How often would I need to test the animal to ensure positive pregnancy? Is this a practical way to test for pregnancy?
 - a. Progesterone, every 8 days and at least 3 times, hard on animal to run through shoot that often, but could be done.
**Side Note: That is why we test for the hormone that the fetus releases to suppress mother's immune system, or check for signs of heat.

