Puberty:

What are the four things puberty is dependent upon?

1. Body size and "fatness"

A. Repro is considered non-vital and is the 1st process to go without proper nutrition

2. Genetics

    a. kisspeptin

3. Social cues

    a. enhanced onset of puberty when female are housed together or exposed to a male

4. Environmental changes
    a. Seasonal breeders

What neurohormone signals for GnRH to be released? How does it work?

Kisspeptin- blood fatty acids, leptin, and blood glucose stimulate kisspeptin neurons to interact with GnRH neurons to release GnRH

Expression of kisspeptin increases release of GnRH

- Essential for activating GnRH release, without kisspeptin puberty will not be attained

How does puberty occur? (overnight or months)

A slow progression over long periods of time

What determines if a female has reached puberty?

- Age at 1st estrus(standing heat)
    - Shows outward expression of sexual behavior especially in the presence of a male
- Age at 1st ovulation
    - Manual or visual validation is required by palpation of the ovary
- Age at which pregnancy can be supported without deleterious effects
    - Female must cross "metabolic threshold" before attaining pregnancy

What determines if a male has reached puberty?

- Behavior expression
    - Mounting and erection
- Age at 1st ejaculation
    - Coordinate development of nerves, specific muscles and glands
- Age when spermatozoa appear
- Age when threshold of spermatozoa is reached
    - Minimum # of spermatozoa to achieve pregnancy

How does GnRH drive puberty attainment? How is it different before and after puberty?

1. Ability to make enough GnRH
2. Secrete GnRH at the correct frequency

Prepubertal- low frequency GnRH pulses, insufficient stimulation of surge center, increased sensitivity to testosterone/estrogen

Postpubertal- higher frequency GnRH pulses, above threshold concentrations to stimulate surge center, decreased sensitivity

What is the difference between positive and negative feedback?

- Positive: action of hormone continues with stimulus

- Negative: action of hormone stops due to decrease in stimulus