

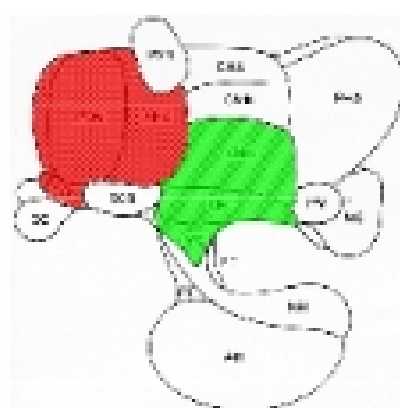
# Animal Science 434

## Lecture 8: The Onset of Puberty

# Development of Hypothalamus and GnRH Release Centers

**Males and Females are Different!!!**

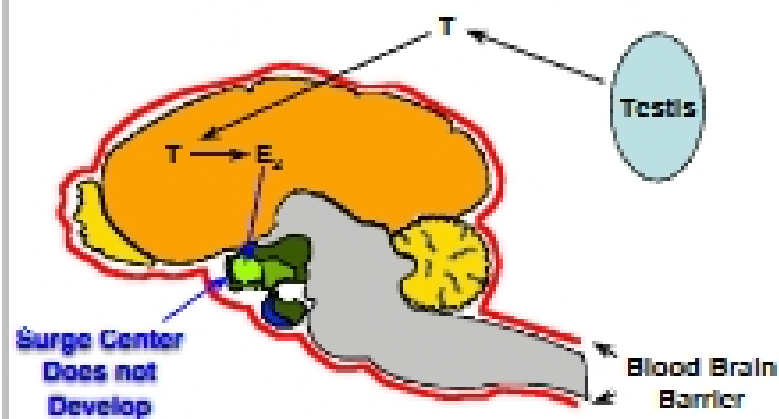
### Hypothalamus GnRH Control Centers in the Female



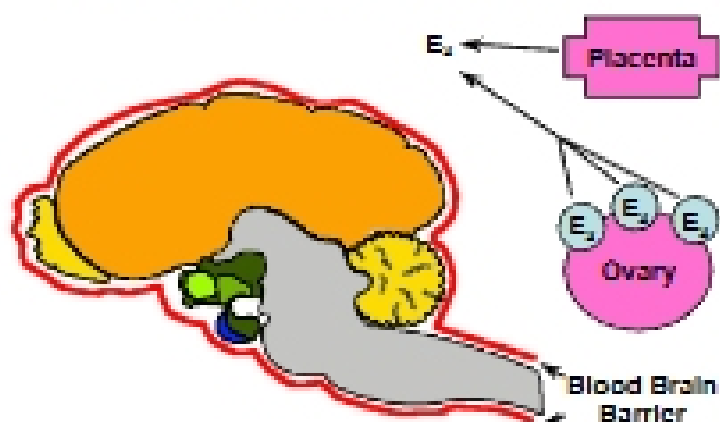
■ GnRH surge control centers  
■ GnRH tonic control centers

Why does the male only have tonic control centers develop?

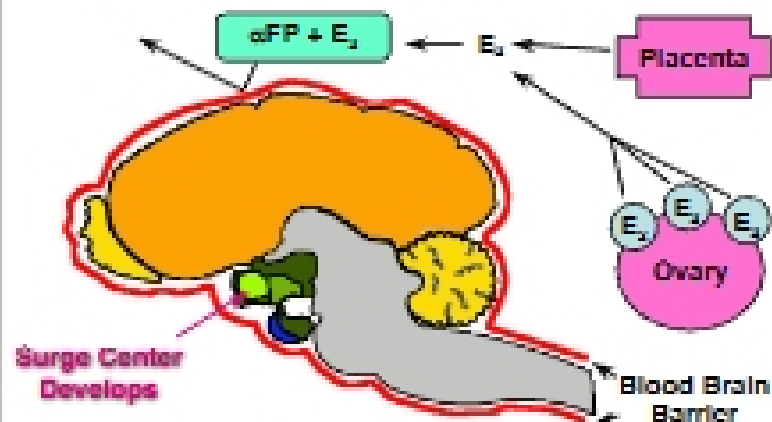
### Male Brain Development

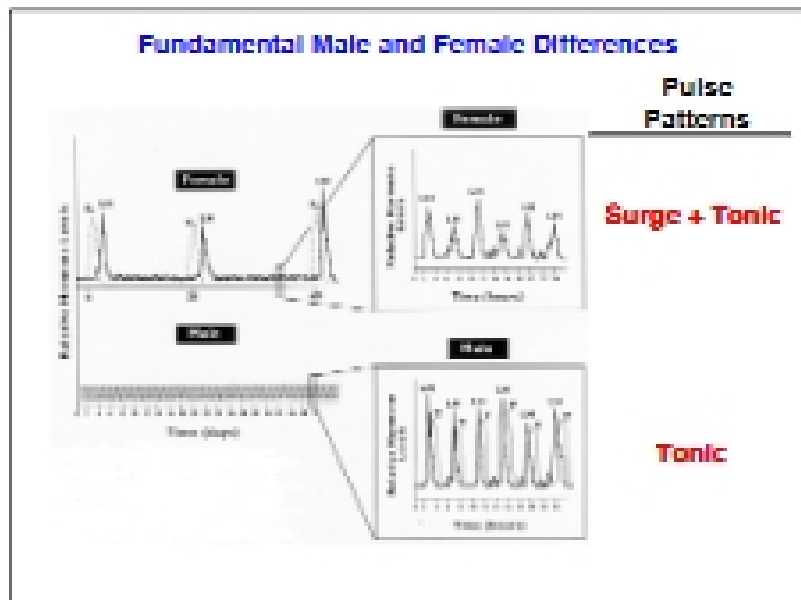


### Female Brain Development



### Female Brain Development





**Puberty**

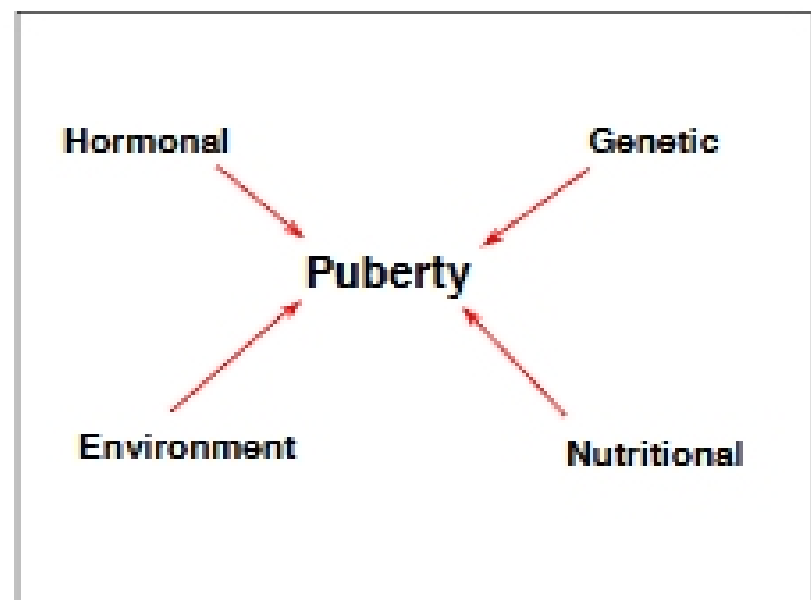
The ability to accomplish reproduction successfully.

- Puberty in the Female**
- Age at first estrus (heat)
  - Age at first ovulation
  - Age at which the female can support pregnancy

- Puberty in the Male**
- Age when behavioral traits are expressed
  - Age at first ejaculation
  - Age when sperm first appear in the ejaculate
  - Age when sperm first appear in the urine
  - Age when the ejaculate contains a threshold number of sperm

**Average Age of Puberty (Range)**

Species	Male	Female
Bovine	11 mo (7-18)	11 mo (9-24)
Ovine	7 mo (6-9)	7 mo (4-14)
Porcine	7 mo (5-8)	6 mo (5-7)
Equine	14 mo (10-24)	18 mo (12-19)
Human	13 yr	12 yr
Canine	9 mo (5 - 12)	12 mo (6 - 24)
Feline	9 mo (8 - 10)	8 mo (4 - 12)



## Hormonal

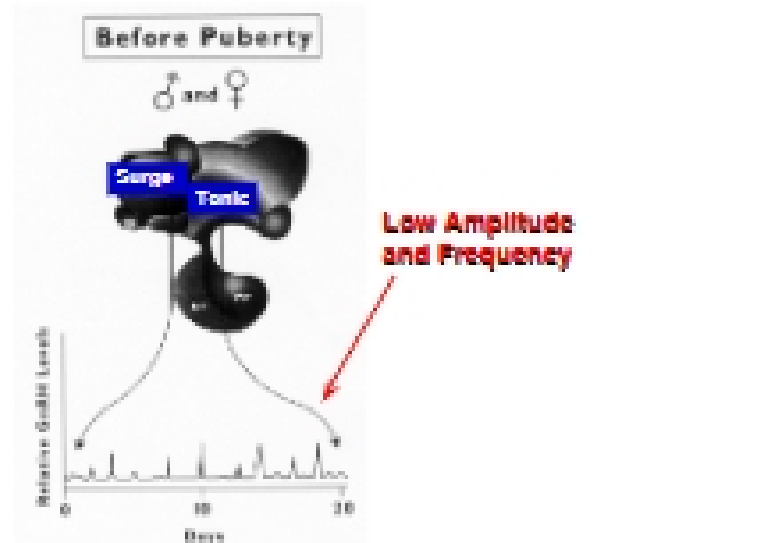
### Role of GnRH Pulses

### GnRH Pulses Determine Puberty

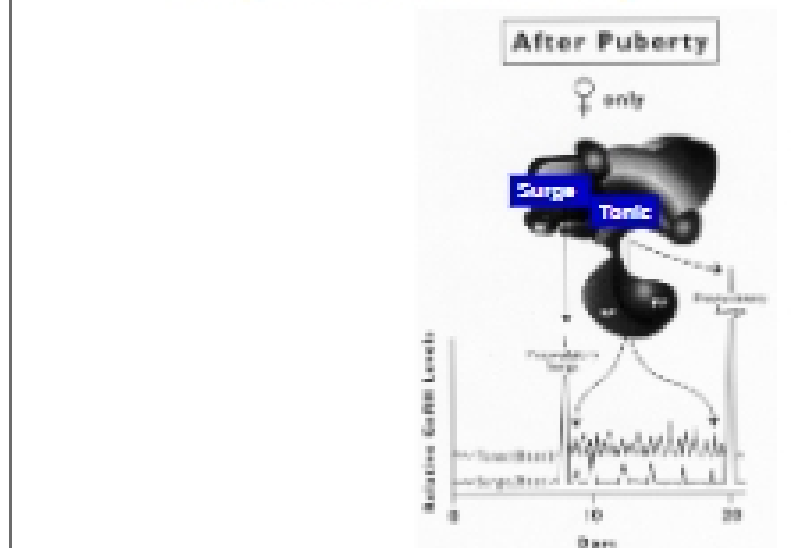
- Prepubertal period
  - ⊗ minimal GnRH release
  - ⊗ FSH and LH low
  - ⊗ minimal to no folliculogenesis or spermatogenesis
- Puberty
  - ⊗ increase in the pulse frequency and amplitude of GnRH release
  - ⊗ increase in FSH and LH pulses
  - ⊗ folliculogenesis and spermatogenesis occur

### Hormonal Changes in the Female

Changes in GnRH Secretion With Puberty



Changes in GnRH Secretion With Puberty



Changes in GnRH Secretion With Puberty

