

Animal Science 434

Reproductive Cycles in the Female

Terminology

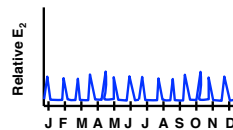
- Estrus is a noun.
 - The cow is displaying estrus.
- Estrous is an adjective.
 - The length of the estrous cycle is 21 days.
- Oestrus and Oestrous
 - British and European spellings
- Estrus and Heat are synonymous

Terminology (cont.)

- Anestrus
 - When the female is not having repeated estrous cycles.

Types of Cyclicity

Polyestrus



- Queen
- Cow
- Sow

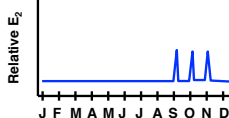
Types of Cyclicity



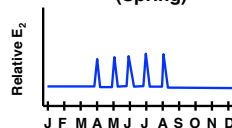
Seasonally Polyestrus



Short day breeders
(Fall)



Long day breeders
(Spring)



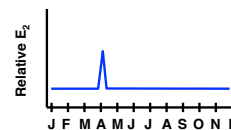
Type of Cyclicity

Monoestrus

Dog

Wolf

Bear



Average Reproductive Cycles

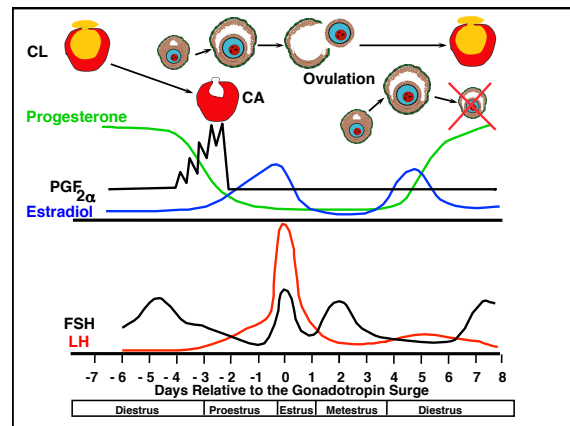
Species	Length of Estrous Cycle	Length of Estrus	Ovulation	Length of Pregnancy
cow	21 days polyestrus	18 hr	11 hr after end estrus	282 days
ewe	17 days seasonal (fall)	29 hr	near end estrus	148 days
sow	21 days polyestrus	48-72 hr	35-45 hr after start estrus	115 days
mare	21 days seasonal (spring) polyestrus	4-8 days	3-6 day of estrus (1-2 days before end of estrus)	335 days

Average Reproductive Cycles

Species	Length of Estrous Cycle	Length of Estrus	Ovulation	Length of Pregnancy
Bitch	6 months	9 days	4 - 24 days after start of	63 days
Queen	17 days	9 days	Induced	63 days

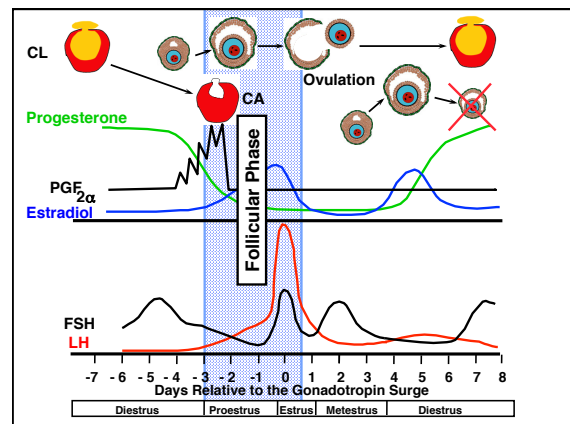
Variation in Cycle Types

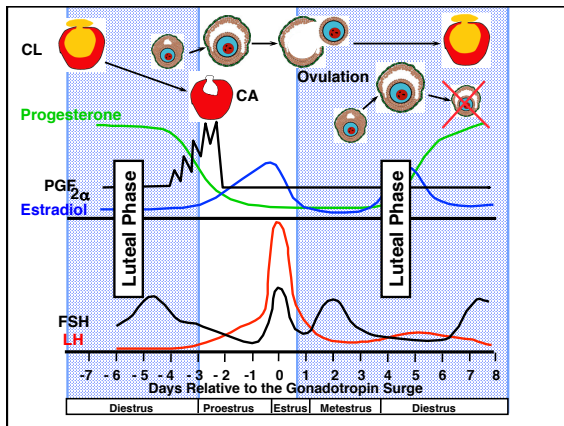
Example	Type of Cycle	Follicular Development	Ovulation & CL Formation	CL Function
Cow, ewe, sow, mare	Long	Spontaneous	Spontaneous	Spontaneous
rats, mice, hamsters	Short (4 days)	Spontaneous	Spontaneous	Induced (prolactin)
rabbit, cat, mink, ferret, otter, alpaca	Induced	Spontaneous	Induced (LH surge)	Induced



Phases of the Estrous Cycle

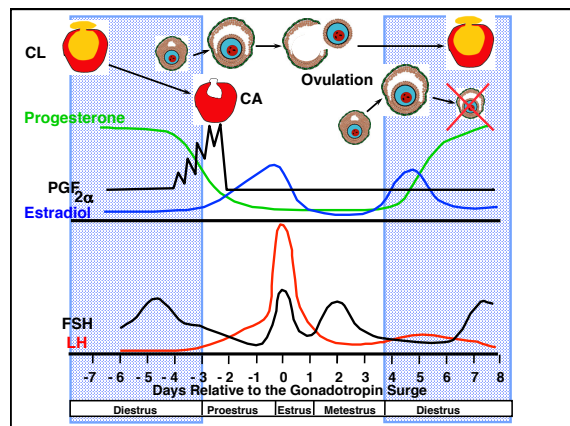
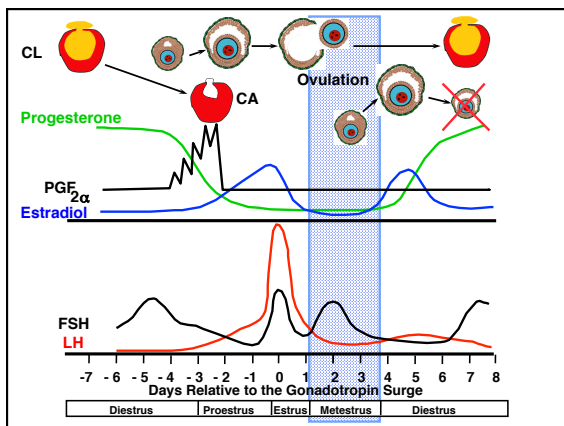
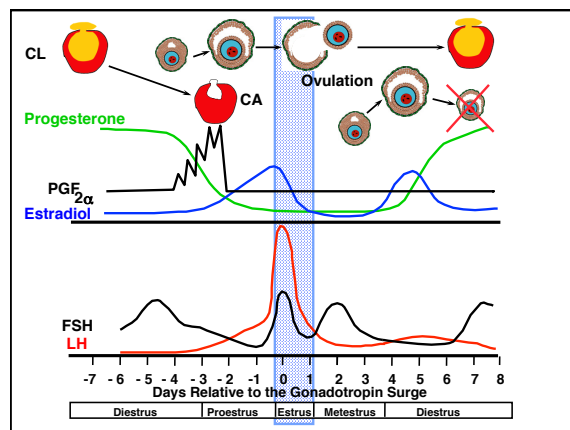
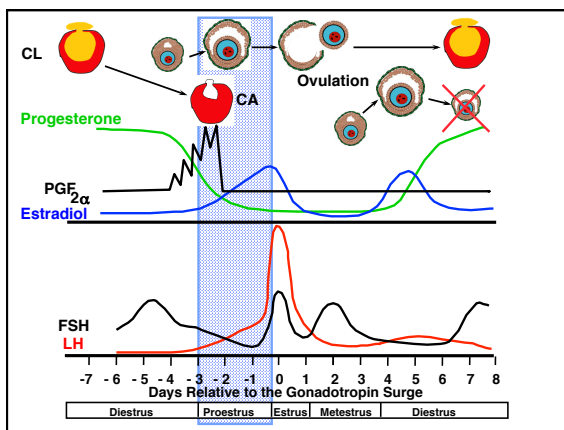
- Follicular Phase
- Luteal Phase

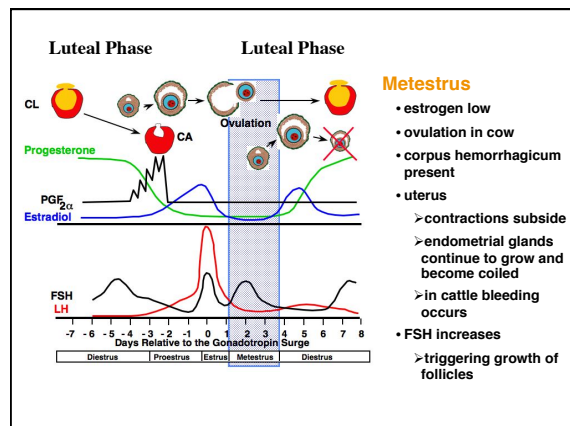
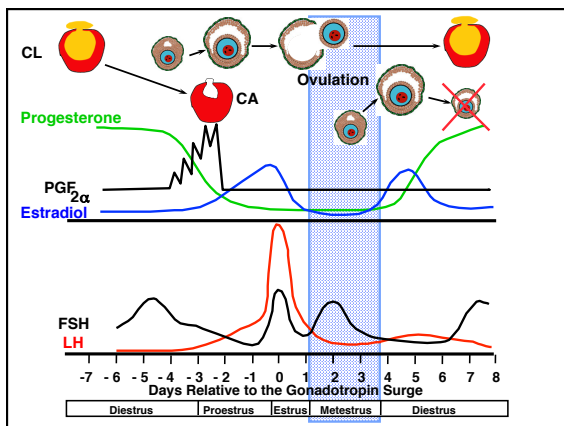
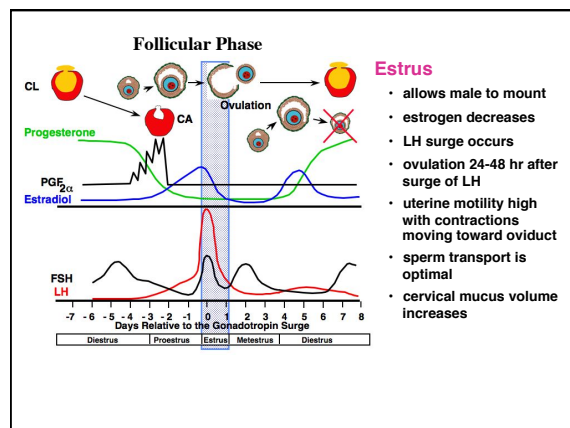
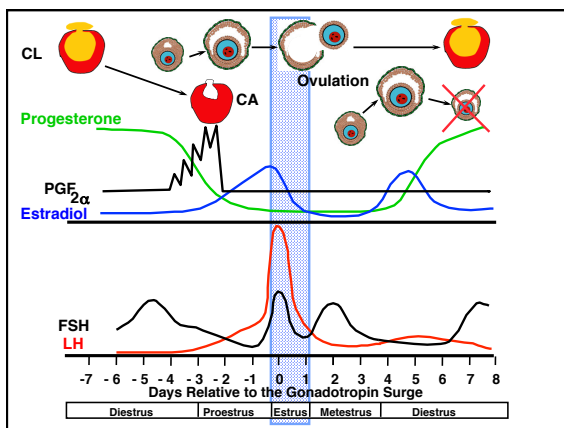
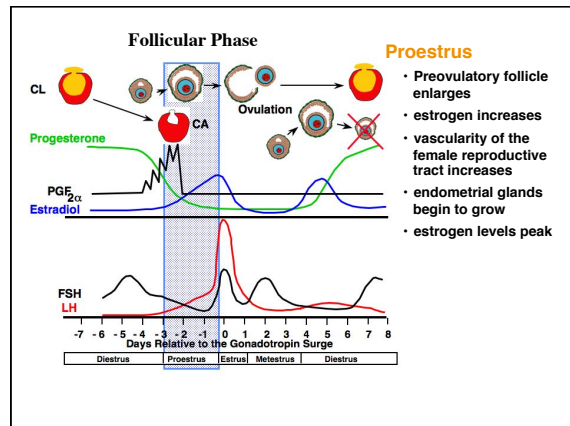
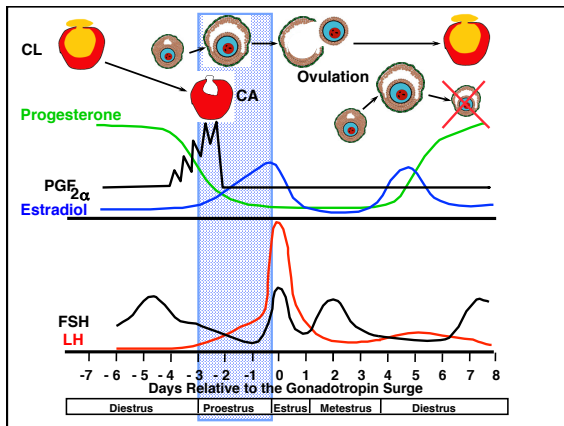


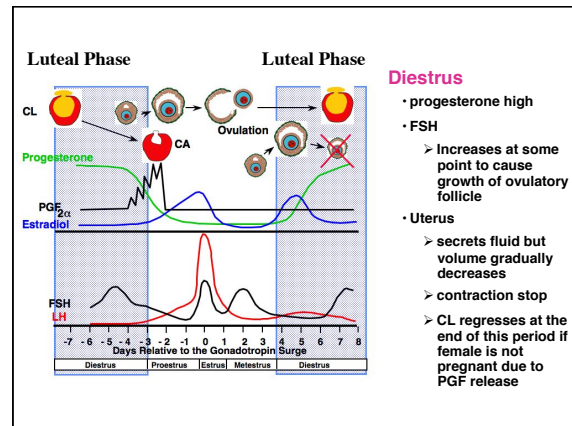
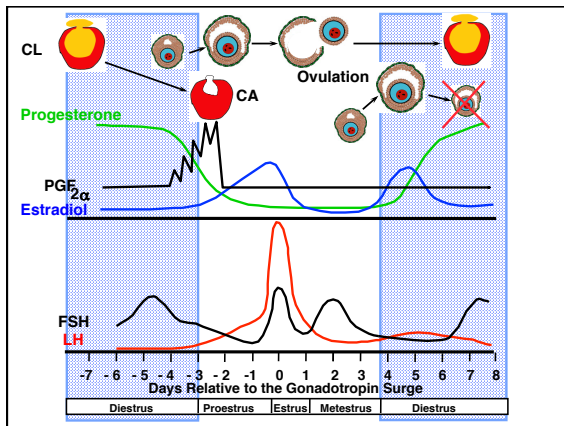


Stages of the Estrous Cycle

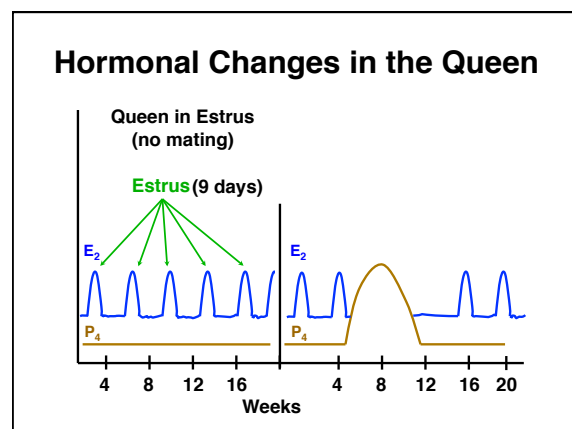
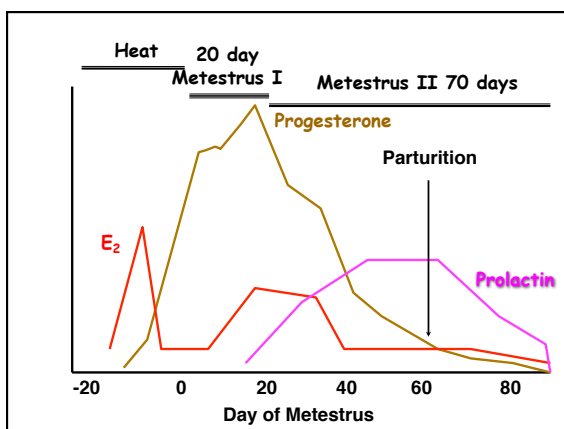
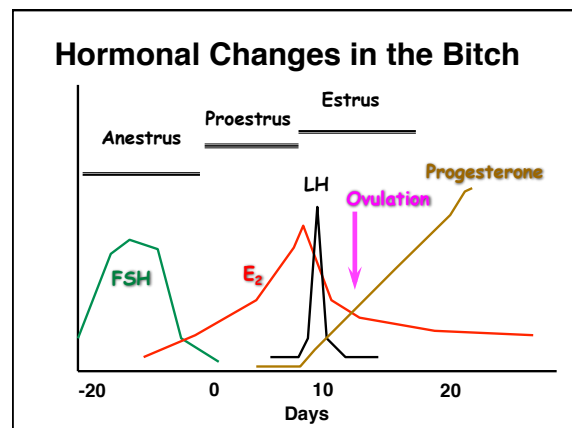
- Proestrus
- Estrus
- Metestrus
- Diestrus



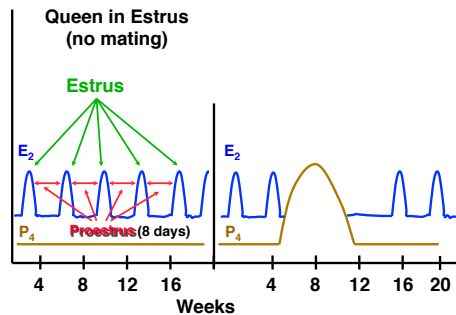




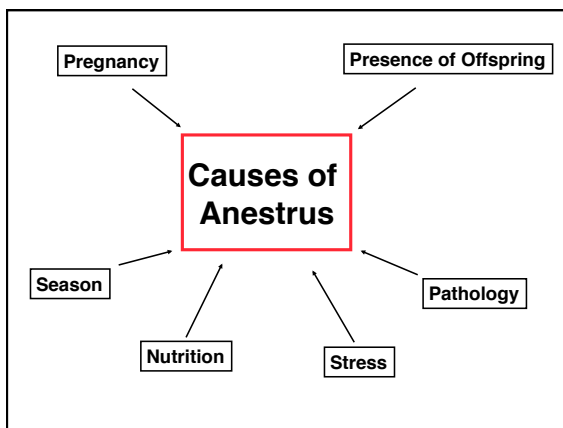
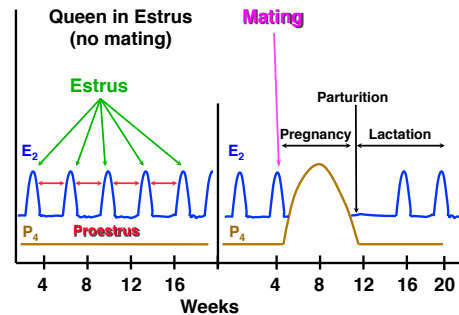
Characteristics of Estrous Cycles				
	Cow	Ewe	Sow	Mare
Estrous cycle (days)	21	17	21	21
Proestrus (days)	3-4	2-3	3-4	2-3
Estrus	12-18 hr	24-36 hr	48-72 hr	4-8 days
Metestrus (days)	3-4	2-3	2-3	2-3
Diestrus (days)	10-14	10-12	11-13	10-12



Hormonal Changes in the Queen



Hormonal Changes in the Queen



Gestational Anestrus



Gestational Anestrus

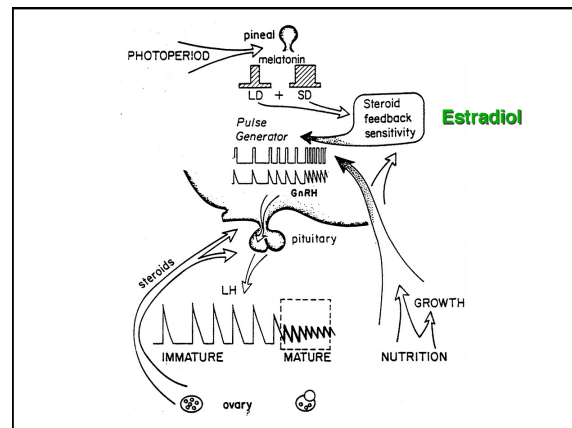
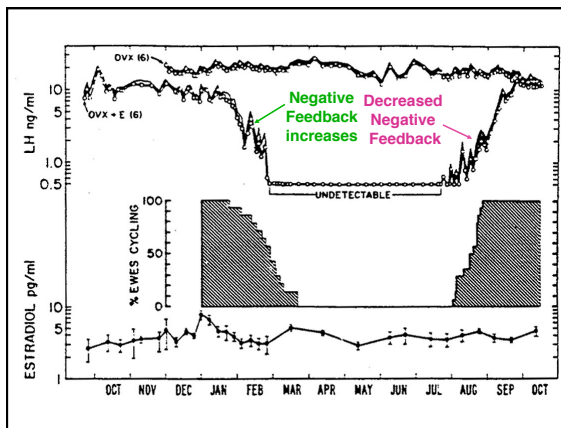
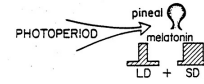
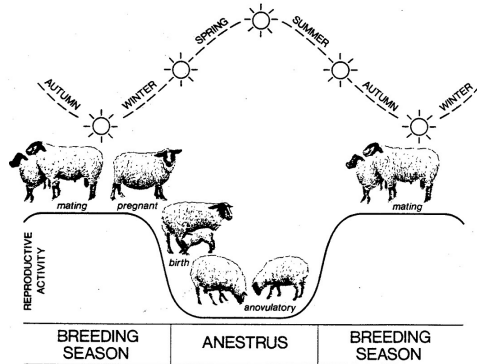
- Progesterone during pregnancy
 - negative feedback
- After parturition anestrus continues
 - progesterone exposure during pregnancy
 - hypothalamus
 - Lacks estradiol positive feedback
- allows time for uterine involution

Seasonal Anestrus



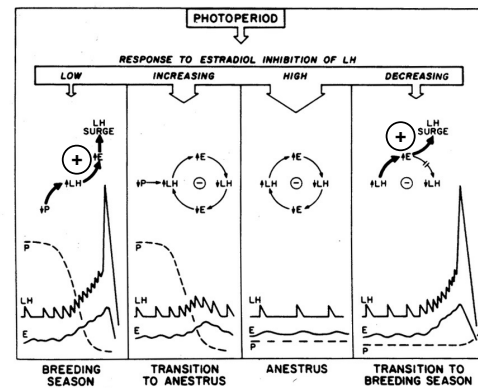
Horses are long day breeders!

Sheep are short day breeders!

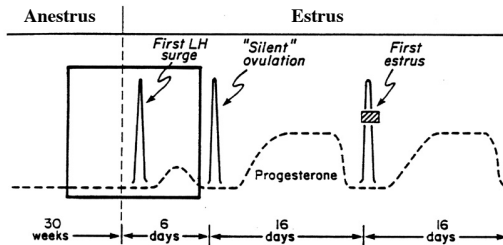


Seasonal Anestrus

- just like entering puberty
- silent ovulation



Silent Ovulation

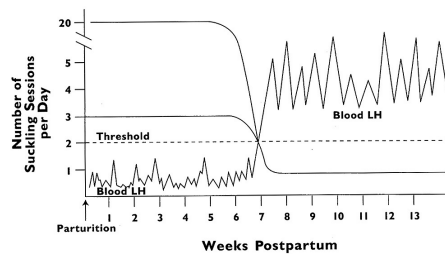


Brain (hypothalamus) must be primed with Progesterone To Express Estrus in Response to Estrogen

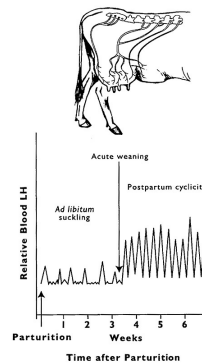
Lactational Anestrus



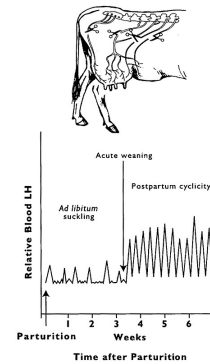
Suckling Effect on LH



Intact cow



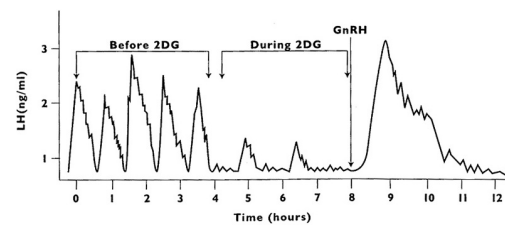
Mammary denervated cow



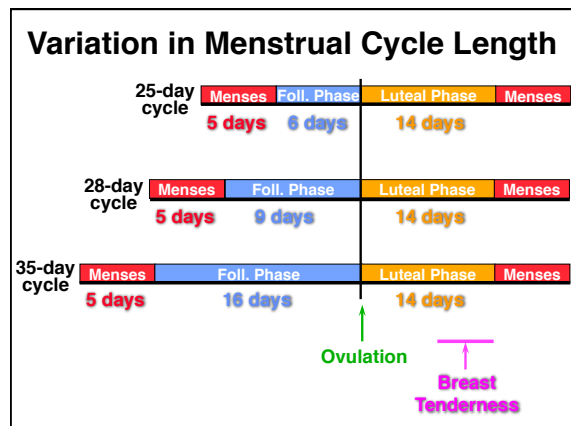
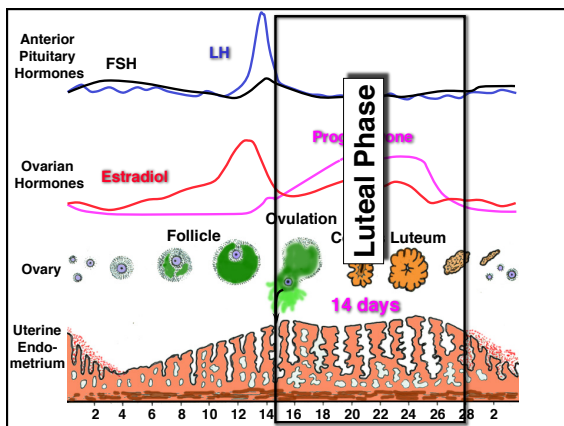
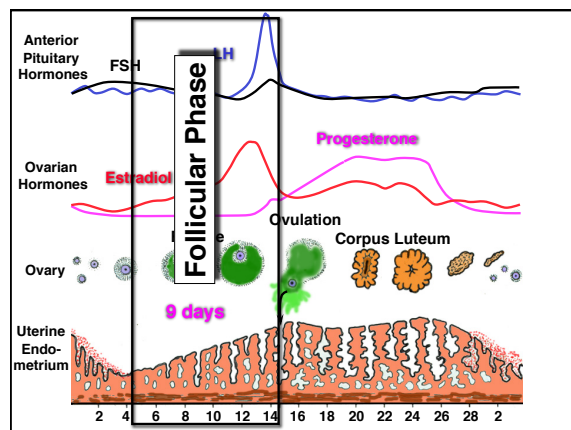
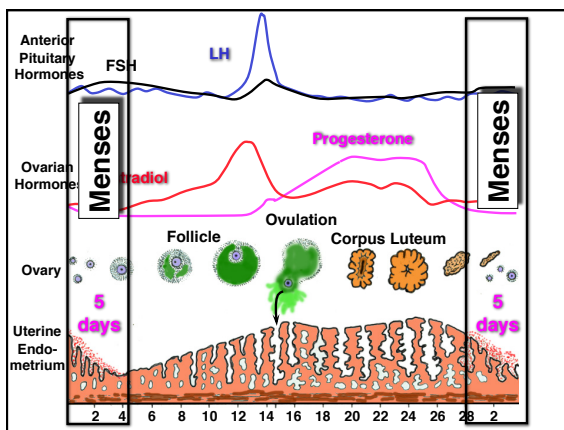
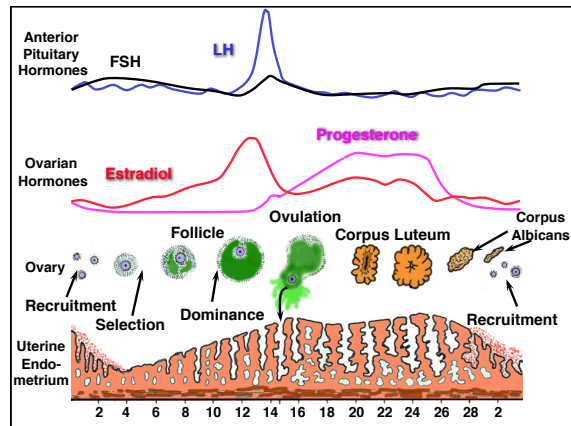
Lactational Anestrus

- Suckling
- Other offspring factors
 - visual encounter
 - olfactory encounter
 - auditory encounter
- Prolactin
 - inhibits GnRH release
 - major infertility problem in women who are not lactating

Nutritional Anestrus



Menstrual Cycle



Menstrual Cycle Length

• AGE

➤ Length

- ❑ 15 - 19 year olds → 35 days
- ❑ 30 year olds → 30 days
- ❑ 35 year olds → 28 days

➤ Variation

- ❑ More in teenagers
- ❑ Less in women in peak reproductive years

Influence of Lactation on Postpartum Menstrual Cycles (US and UK, 1987)

• Not Lactating

- 50% cycling by 8 months
- 90% cycling by 12 months

• Lactating (for 24 months)

- 30% cycling by 12 months
- 70% cycling by 24 months

Concept Tutor

MENSTRUAL CYCLES

Define
Examples
Connect
Check

MENSTRUAL CYCLES

The interval in a primate from the beginning of one menstrual flow (menses) to the beginning of the next menstrual flow. These cycles continue from puberty through menopause with interruptions during pregnancy and lactation. Normal human menstrual cycles have the following attributes:

- 28 days in length
- menses last 5 days
- follicular phase lasts 9 days
- luteal phase lasts 14 days



Primates Have Menstrual Cycles

Close Window

Rest are extra slides not normally used

