

Manipulating Ovulation and Estrous Synchronization

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Why Cycle Control?

1. Group females for parturition:
 - a) Decrease labor, calving period
Reduce calving season
 - b) More uniform weaning weights.
2. Reduce or eliminate estrus detection.
3. Needed for artificial insemination:

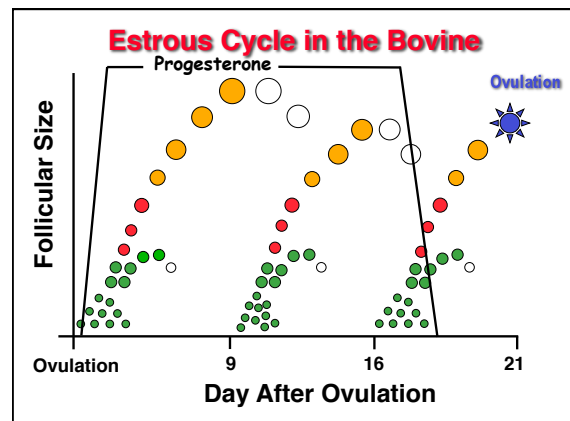
Manipulating Ovulation

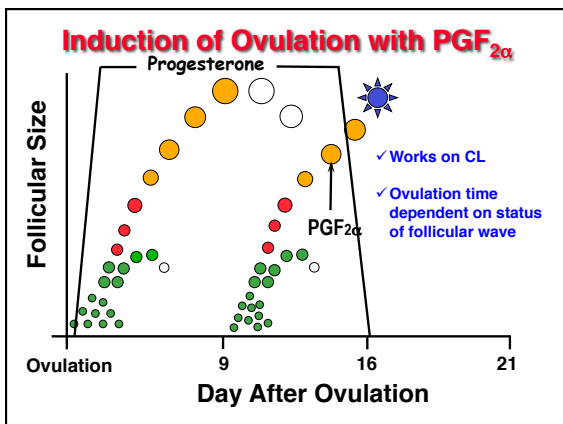
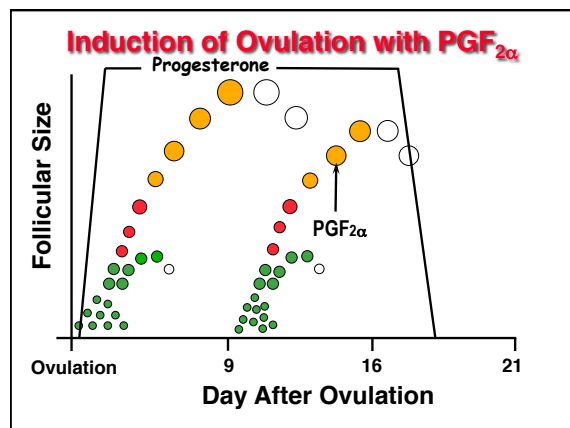
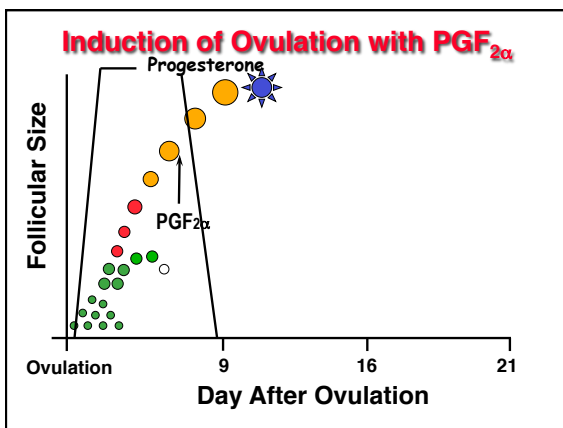
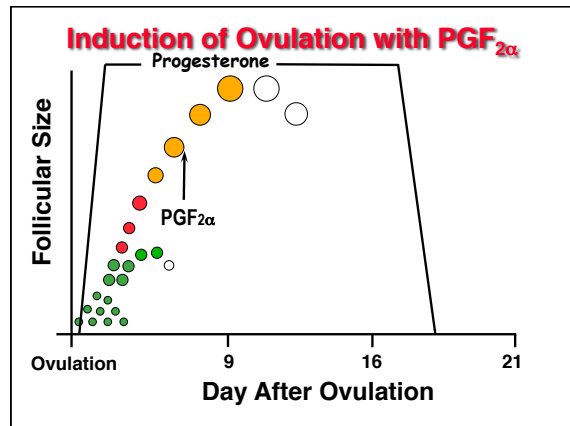
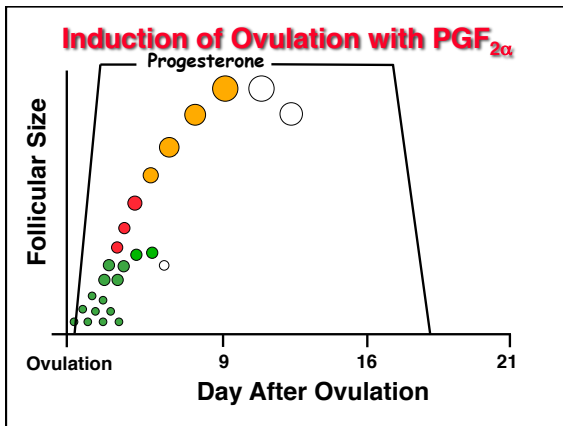
- Hormonal induction of ovulation
 - $\text{PGF}_{2\alpha}$
 - GnRH
 - Progestins
- Superovulation
 - FSH
 - eCG

Cattle

Principle of $\text{PGF}_{2\alpha}$ Use

- Regress active corpus luteum
 - Only effective on a day 5 - 17 CL
 - Not effective on days:
 - ✓ 1 - 4 (CL not responsive)
 - ✓ 18 - 21 (CL already regressed)
 - ✓ Represents 1/3 of estrous cycle





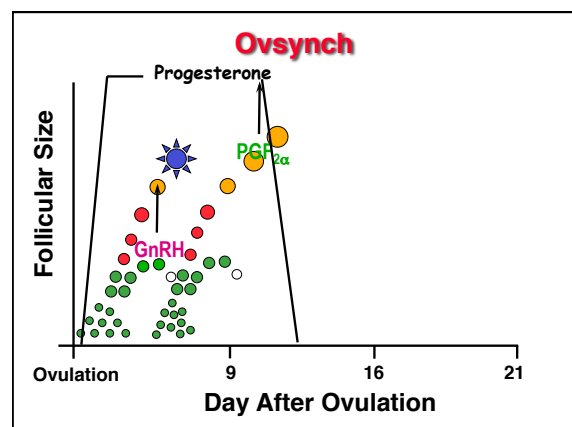
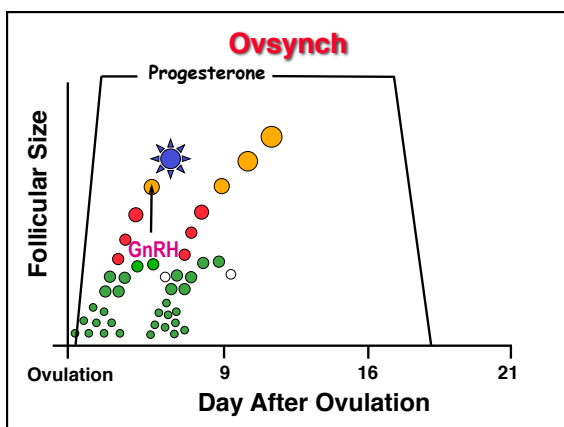
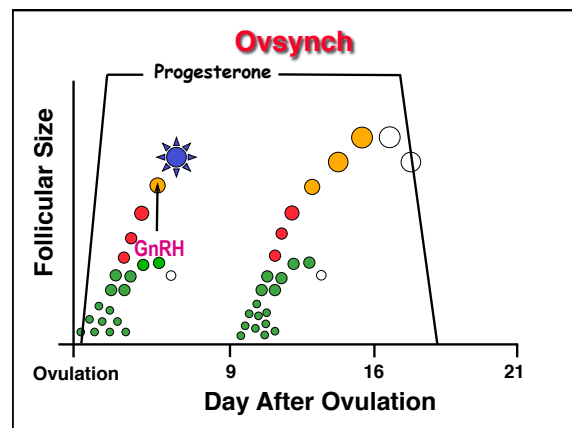
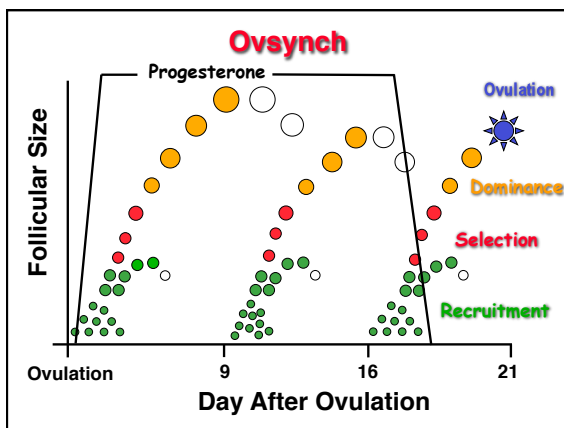
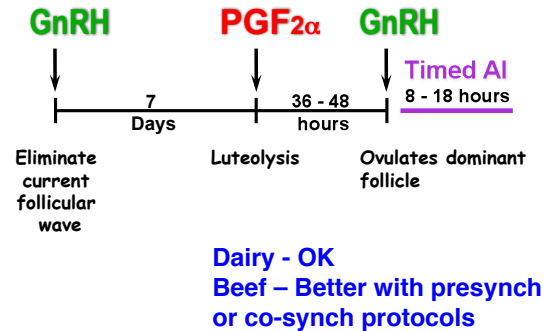
Principle of GnRH Use

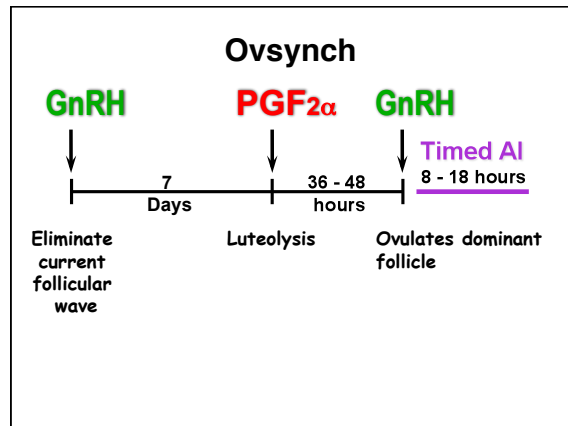
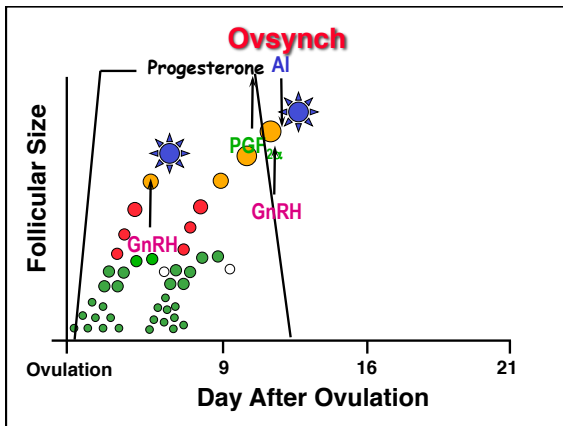
- Luteinize or Ovulate a dominant follicle
 - Terminates the current follicular wave
 - ✓ Inhibin and Estradiol decrease
 - ✓ FSH increases to “recruit” a new follicular wave
 - No effect on old CL if present
 - A dominant follicle must be present
 - Generally followed by PGF_{2α} to regress CL formed or old CL

Principle of GnRH Use

- Induce ovulation of a dominant follicle
 - Used for timed AI
 - No CL present
 - Dominant follicle must be present

Ovsynch





Ovsynch Problems

- Works best on animals that are near day 7 of the cycle at 1st GnRH
 - Presynch
 - PG, 14 days, PG, 10 days, Ovsynch
 - G, 7 days, PG, 3 days, G, 7 days, Ovsynch (double Ovsynch)
 - G, 7 days, PG, 11 days, Ovsynch
 - G, 7 days, Ovsynch (GGPG)
 - PG, 3 days, G, 7 days, Ovsynch (PG-3-G)

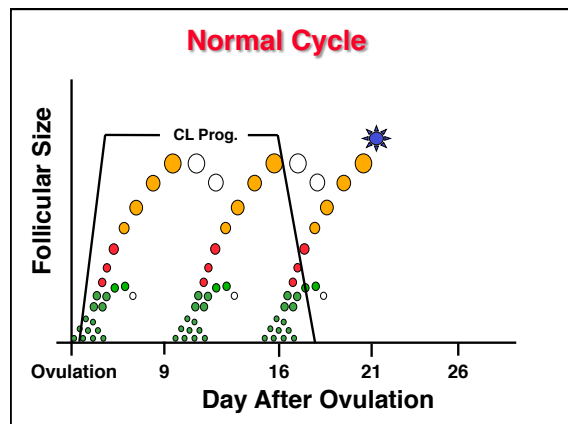
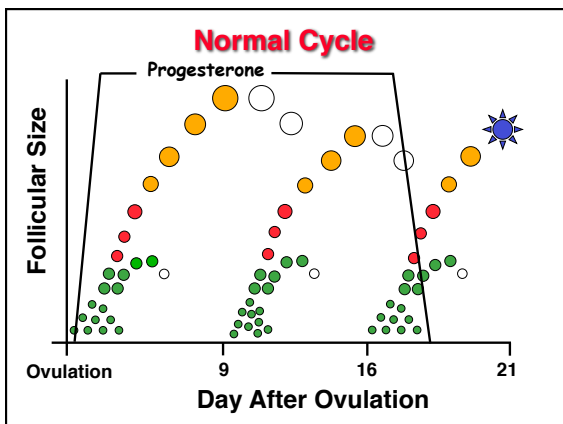
Use of Progestogens

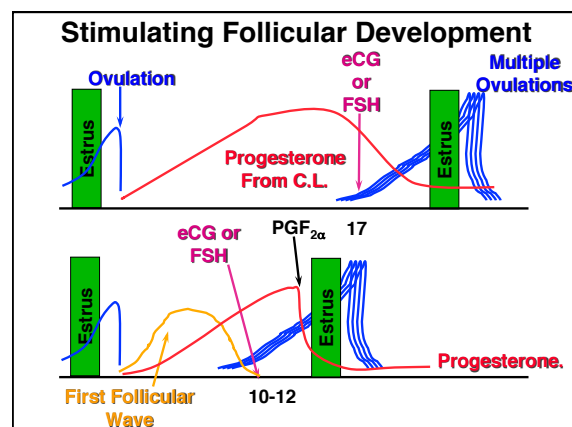
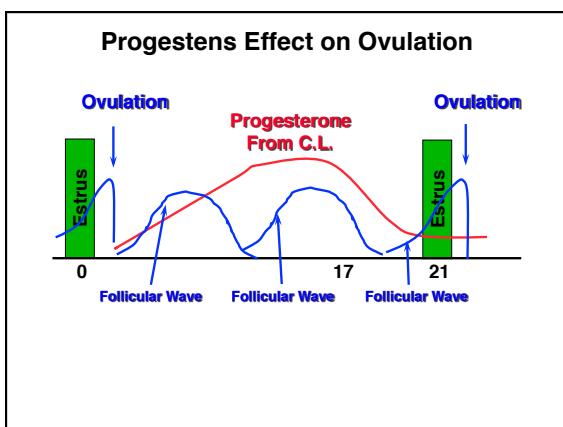
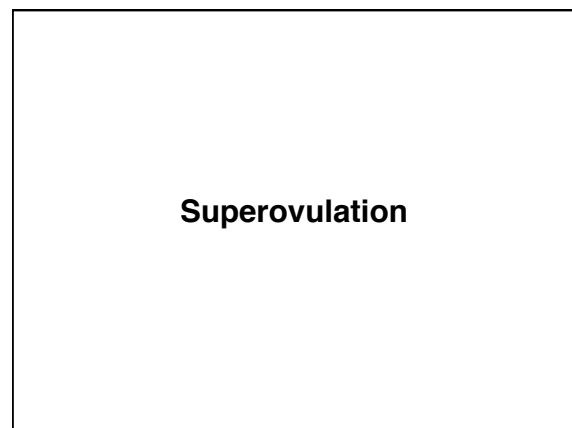
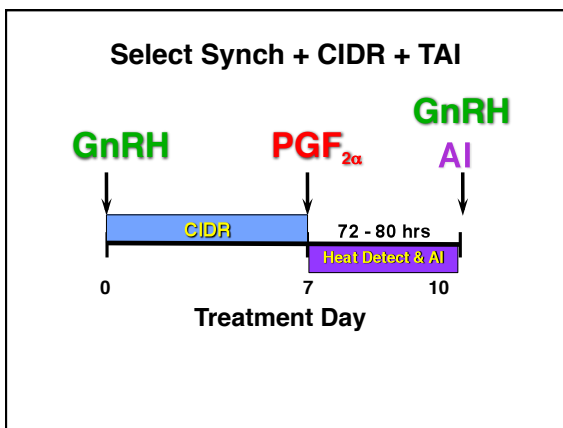
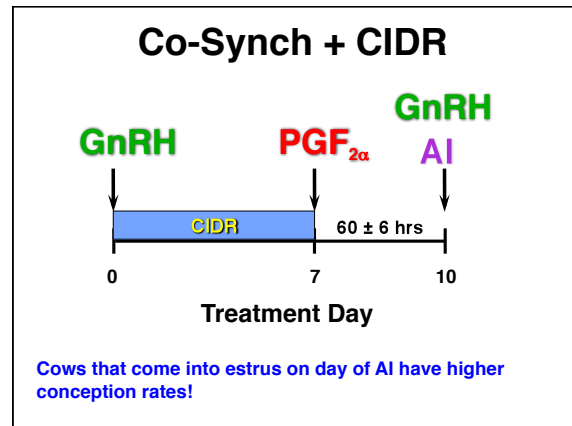
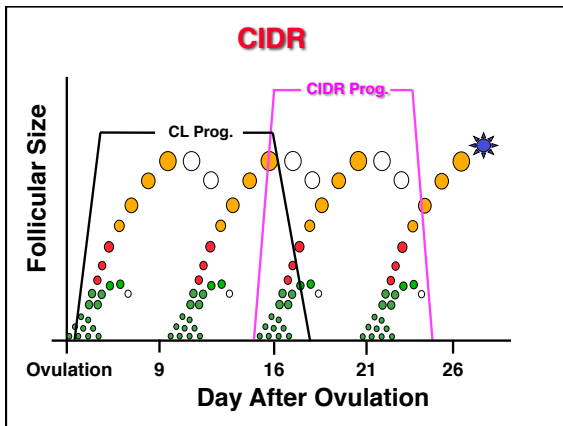
Principle

- Provides progesterone
- **Simulates** a CL
- Prevents ovulation
- Has no effect on the animal's CL (ie. normal lifespan)
 - **Does not regress the CL!!!!**
- Remove after animal's CL regresses
 - **Current or next follicular wave will ovulate!!!!**
 - **Occurs 2 – 5 days latter**
 - **May use PGF_{2α} to regress animal's CL**

Administration

- Injection, Feed (MGA), Implant, Control Internal Drug Release (CIDR)





Sheep

- **Progestin**
 - CIDR
 - In season - works alone
 - Out of season - requires eCG
- **Prostaglandin**
 - Only works in season
- **Lights** - decrease day length
- **Melatonin** - give orally or IM

Swine

- **Prostaglandin**
 - Not of practical
 - Only effect days 12 - 17
- **Progestins - Altrenogest (Matrix)**
 - MGA causes ovarian cysts
 - Regumate (oral) for 18 days
 - Cost is \$5 - \$10/day
- **Wean Piglets**
- **Puberty Induction** - PG600 (eCG + HCG)

Equine

- **Prostaglandin**
 - Mare CL more sensitive than cow's
 - Only effective in season
- **HCG** – ovulation induction, >35 mm follicle
- **Progestins**
 - Altrenogest (Regumate)
 - Only effective in season
 - Reduce estrus behavior in competition animals
- **Light**
 - 16 hrs day light for 60 - 90 days.