



Synchronization of Estrus and ovulation



VOG-601

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Estrus Synchronization

Administration of exogenous hormones



Manipulation of females estrous cycle



Estrus (heat) at the same time



AI/Breeding at same time.

- Many **estrous synchronization** protocols have been developed that use a combination of different drugs.

Commercial available hormones

**GnRH (Buserelin acetate) → Receptal Vet,
Gynarich (each ml contains 4mcg)**

2.5 ml (10mcg)



Prostaglandins (PGF₂α)

- **Synthetic (Cloprostenol sodium)** = Pragma, Cyclix, Vetmate, Clostenol, Estrumate etc.
- 2 ml vials (500 mcg)
- **Natural** = Lutalyse (Dinoprost tromethamine)
- 5 ml vials (each ml contains 25 mg)



Estrogens

- Progynone Depot (Estradiol valerate, 1 ml Ampoules, 10 mg)
- Pregheat (Estradiol benzoate 2 ml vials, 1 mg)



Progesterone

- **CIDR = Controlled Internal Drug Release**
- **PRID = Progesterone Releasing Intravaginal Device.**
- silicone-coated nylon core impregnated with progesterone

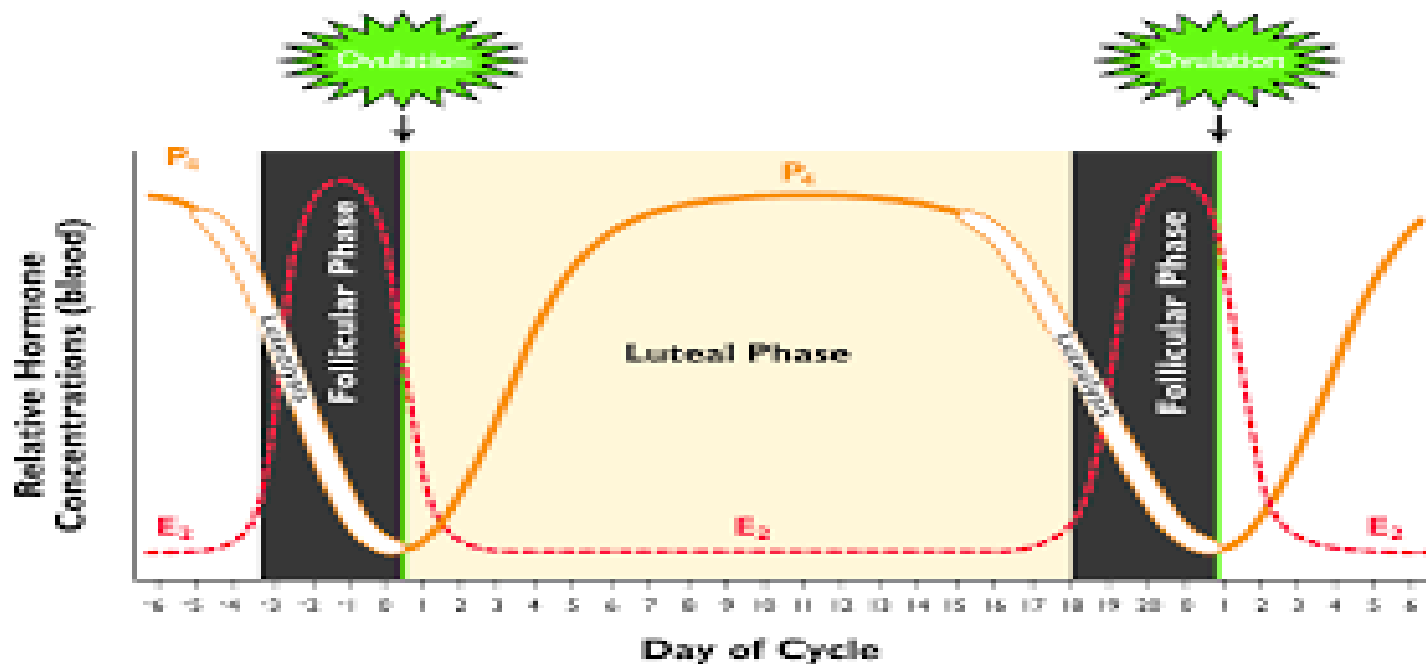


Methods of synchronization

Two basic methods of estrus synchronization-

A. Extending the luteal phase

B. Shortening the luteal phase



A. Extending the luteal phase

- Long term administration of **progestogen** → withdrawal of progestogen → CL regression → Estrus.
- Negative feedback on LH secretion after CL regression.
- On progestogen withdrawal, follicular growth, estrus and ovulation occurs within 2 to 8 days.

- Several methods of administration of progestogen are commercially available.
- E.g. Orally active progestogens (Altrenogest), Pessaries, Ear implants and **Intravaginal devices (CIDR, PRID)**.
- **CIDR = Controlled Internal Drug Release**
- **PRID = Progesterone Releasing Intravaginal Device.**

B. Shortening the luteal phase

- By Using PGF2 α

1. **One shot method:** Inject PGF2 α , heat detect and breed within 7 days.

2. Two shot method:

a. Option 1:

- Inject PGF2 α , heat detect and breed within 7 days,
- inject again on day 11-14, heat detect and breed within 7 days

b. Option 2: inject PGF2 α , then again on day 11-14, heat detect and breed

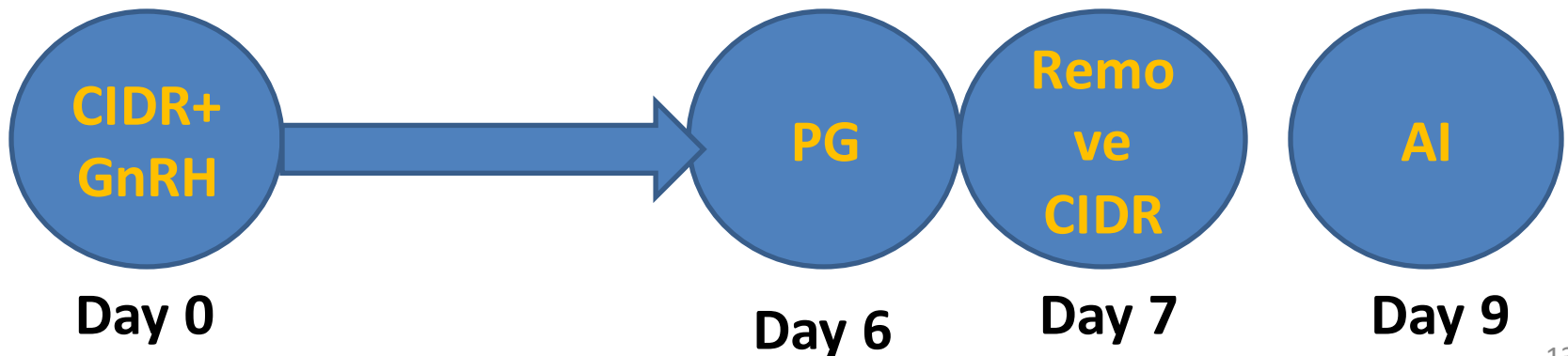
CIDR

- CIDRs (**C**ontrolled **I**nternal **D**rug **R**elease) are an intravaginal progesterone insert.
 - The progesterone is released at a controlled rate into the bloodstream after insertion.



CIDR

- Insert CIDR and inject with GnRH on day 0
- Day 6 inject with PGF2 α
- Remove CIDR on day 7 and begin heat detection
- Should breed 48 hrs after removal of CIDR



How CIDR Works


- CIDRs are coated with progesterone.
- Progesterone will prevent the animal from going into heat (**Act as Artificial CL**).
- CIDR removed → progesterone level decrease → Estrus and ovulation.

Ovsynch Protocol

Ovsynch[®]

Traditional Method

 **GnRH** – Day 0

 **PGF_{2α}** – Day 7

 **GnRH** – Day 9

 **Timed A.I.** – up to 24 hours after second GnRH

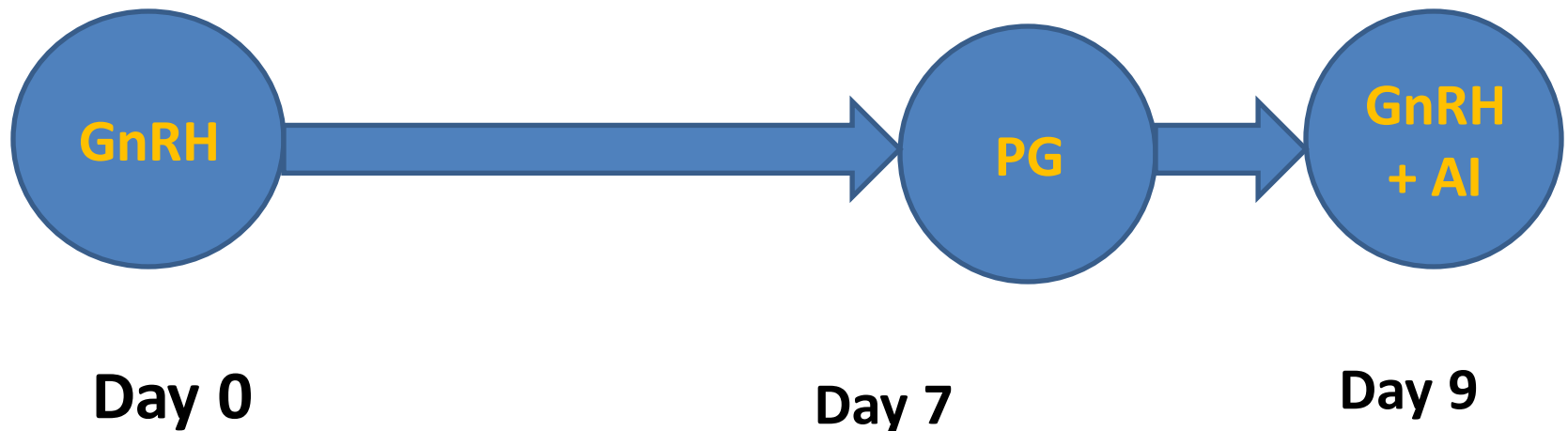
0 M Inject GnRH	1 T	2 W	3 Th	4 F	5 S	6 S
7 M Inject PGF _{2α}	8 T	9 W Inject GnRH	10 Th Timed A.I.	11 F	12 S	13 S

Ovsynch Protocol..

- Ovsynch occurs in three stages
 - ❖ **Day 0** : GnRH injection to create a new follicle, Ovulate dominant follicles and leutinize follicles
 - ❖ **Day 7** : PGF_{2α} injection to end the current estrus cycle and regress the corpus luteum
 - ❖ **Day 9** : Second GnRH injection to cause the new follicle to ovulate and release the egg
 - **All cows will ovulate 24-32 hours after the second GnRH injection**
 - ❖ **Day 10** : AI

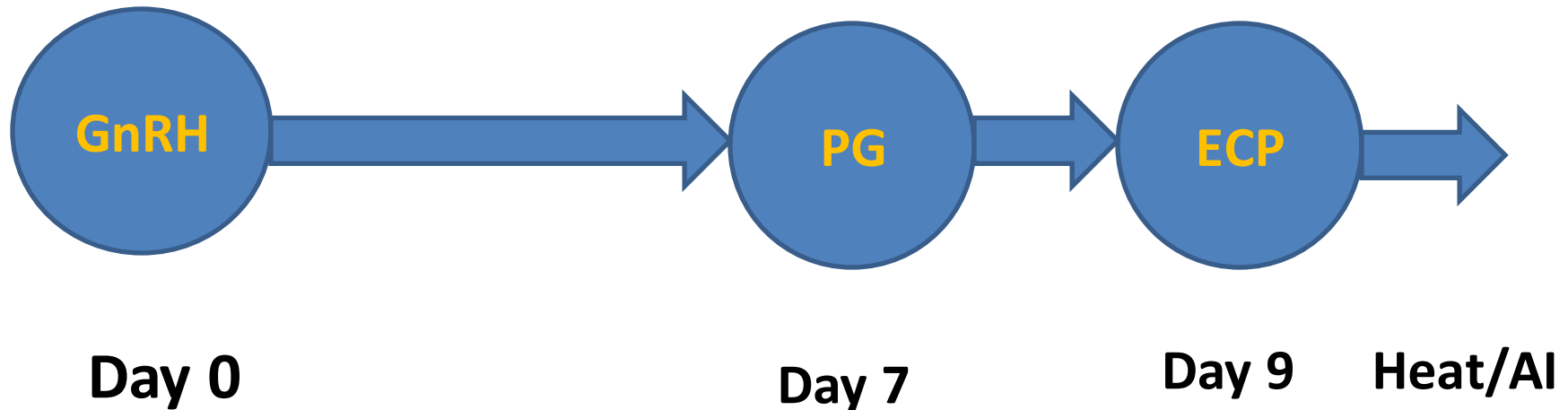
Modified Ovsynch (cosynch Protocol)

- AI or breeding simultaneously with second injection of GnRH.
- Reduces time spend on heat detection.



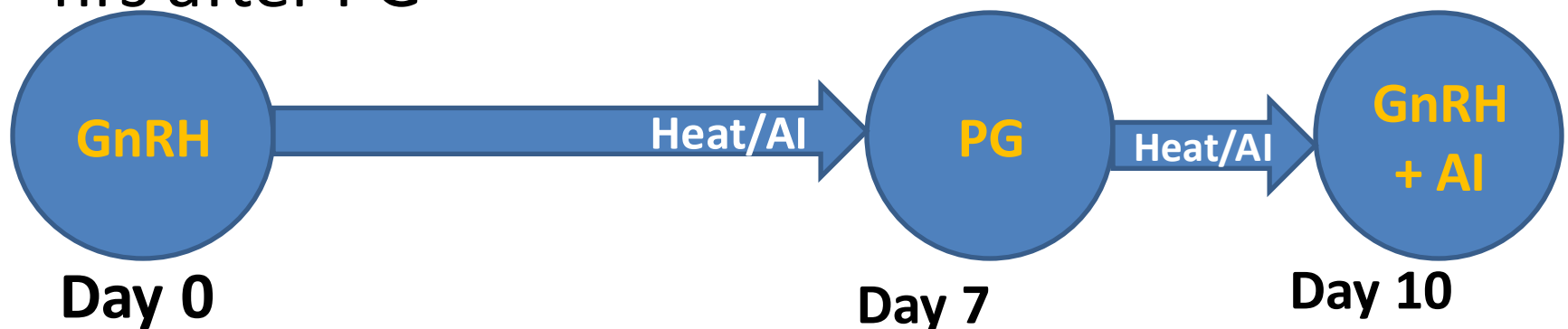
Heat synch Protocol

- Uses less expensive estradiol cypionate (ECP) in place of 2nd GnRH injection of Ovsynch.
- AI 48 hrs. after estradiol injection or 72 hrs of PGF2 α injection.



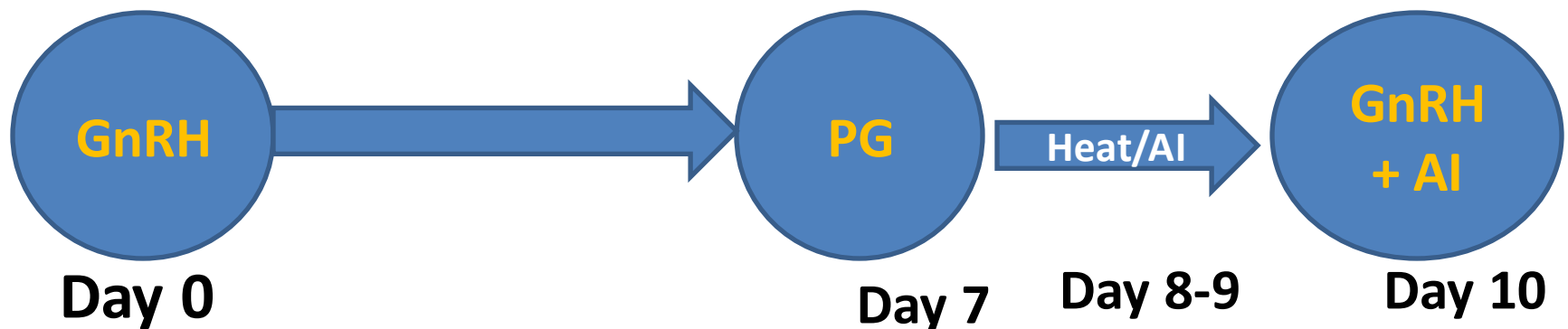
Select synch Protocol

- Heat detection 24-48 hrs. before PG injection.
- Exclude PG for animals in heat on day 6 or 7.
- Heat detection and AI at 48 to 60 hrs. after PG.
- GnRH and timed AI of non responders at 72 hrs after PG



Hybrid synch Protocol

- Heat detection and AI after PG.
- GnRH and AI of non responders at 54-80 hrs after PG





THANK YOU