

Immunomodulation for Fecundity enhancement/Immunocontrol

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Prolific sheep/Goats

- Garole - Avishan
- Black Bengal goats



Reproductive performance of prolific breeds - ranges between different flocks, populations and years

<u>Breed</u>	<u>Country</u>	Age at first oestrus (months)	Age at first lambing (months)	Lambing interval (months)	<u>Litter size</u>	
					First lambing	Later lambings
Barbados Blackbelly	Barbados		14–22	6–9	2–2.3	
Barbados Blackbelly	Elsewhere	5–8		6.5–9	1.5–2.0	
White Virgin Island			13–14	6–8	1–2	
Priangan	Indonesia	6–12		6–9	1.4–2.1	
East Javanese Fat-tailed	Indonesia	6–12		6–9	1.6	
D'man	Morocco		12–18	6–7	1.6–2.0	1.8–2.7
Hu-yang	China		13–16	6–8	2	
Svanka	U.S.S.R.			6+	2–4	
Chios	Greece		13+	6–12		2.3
Finnish Landrace	Finland	7–8		7–12	1.9	2.7
Finnish Landrace	Elsewhere	5–10		7–10	1.5–2.2	2–3.2
Romanov	U.S.S.R.	7–18			2.1–2.7	
Romanov ⁽¹⁾	France	6–8				2.6–3.3

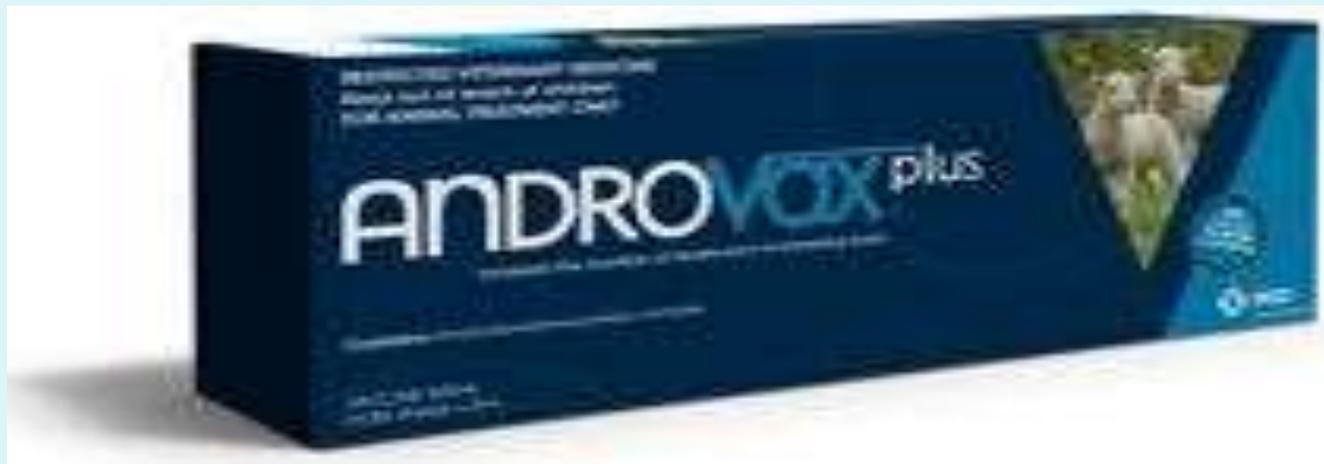
SHEEP/Goat

- Flushing
- Immunoneutralization of androstendione
- Inhibin Immunogens



- Feeding the ewe so she is gaining weight about 2 weeks before breeding is called **flushing**. **Flushing** may increase lambing percentage by increasing the number of eggs that the ewe ovulates. **Flushing** works best on thin ewes (BCS < 2.0). ... Mature ewes respond better to **flushing** than yearlings.
- No benefit is seen in animals with excessive Body Condition Scores (BCSs) or during the height of the normal breeding season. Overly thin animals also do not respond to flushing. Does and ewes that are maintained in very good condition on relatively high levels of nutrition throughout the year are less likely to respond to flushing.
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- Androvax - MSD
- Ovastim- Virbac
- Fecundin- Coopers Animal Health Now withdrawn



Not recommended for Merino ewes

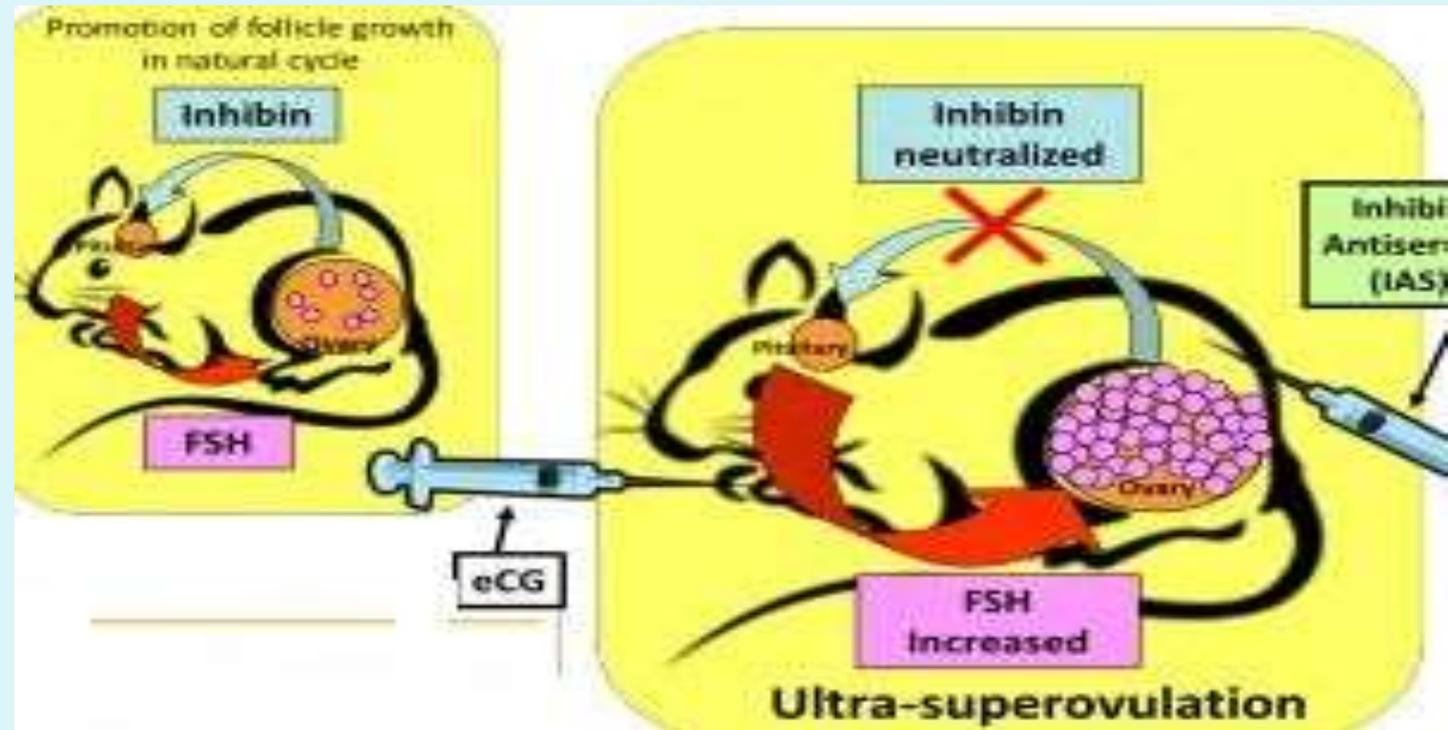
Vaccination 5 and 2 weeks before mating

Repeated annually 2 weeks before mating

Reduces estrogen and Increases FSH thus increasing ovulatory rates and fecundity

Inhibin Neutralization

- Inhibin conjugates
- Inhibin anti-serum



Reproduction control vaccines

- Immuno-contraception
 - Prevent all sexual behavior and fertility
 - Antibodies against GnRH- so called GnRH vaccines useful for domestic animals
- Immuno-neutering
 - Do not prevent sexual behavior yet prevent fertilization
 - They are oocyte antigens react with zona pellucida of many species and prevent fertilization useful for wild species

GnRH Vaccines

- Cattle
- Vaxstrate – Northern Australia 2 doses are required launched in 1980 withdrawn in 1996 because of being reactogenic
- Bopriva –Pfizer Prevents estrus for 191 days
- 2 vaccines 3-7 weeks apart prevents estrus and ovulation for 3 months Useful for Alpine/Feedlot cattle and Bulls



THE BENEFITS OF BOPRIVA.

Bopriva may result in improvements in the following behaviours:

- Fighting
- Sexual mounting
- Damage to infrastructure
- Pawing, digging and pasture damage
- Bellowing
- Dominance and territorial behaviour



Female horses

- Equity – commercialized in 2001 in Australia
- IUDs
- Marble balls A study was reported in which **marbles** were inserted into the **uterus of mares** for suppression of estrus. In the study, 35-mm ('shooter size') **glass marbles** were sterilized in an autoclave and subsequently a single **marble** was **placed** into the **uterus** of each of 12 **mares**.



Gonacon

- Used for Deer, bison, wild
- Horses and camels
- Approved for use in some countries



Boars

- Improvac
- To prevent the boar taint
- 2 doses 4 and 8 weeks before
- Slaughter reduces skatole and
- androstenedione

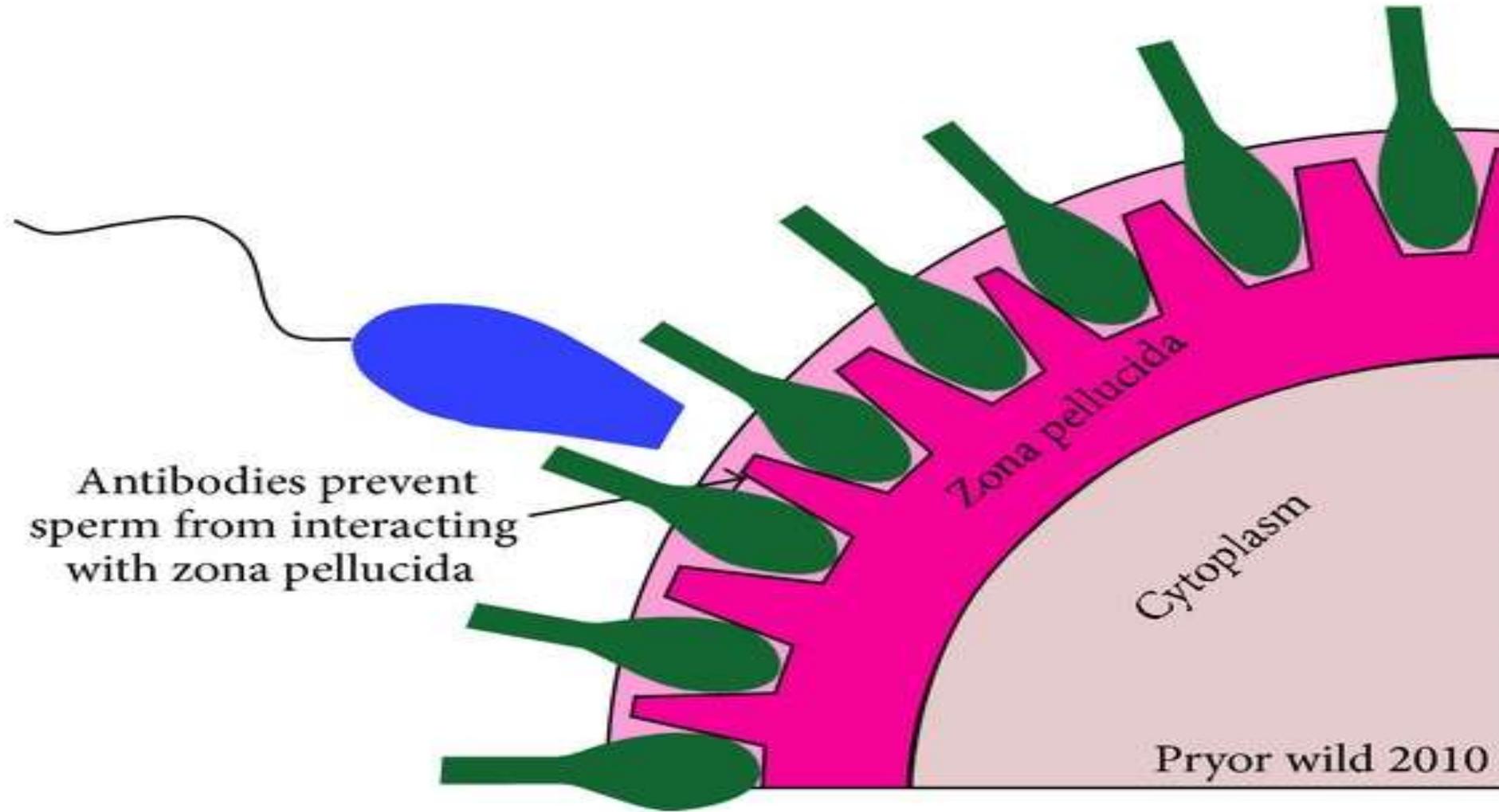


Porcine zona pellucida vaccine

- Spay Vac
 - Immunocontraception
 - Vaccine
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- Surface antigens block the entry of sperms in a oocyte



Sperm is not permitted to enter and fertilize the egg



Dogs

- 30 million stray dogs worldwide
- 20,000 people die of rabies annually
- 35% of worlds human deaths because of rabies are in India
- Kill more than terror attacks

Canine Gonadotropic releasing factor immunotherapeutic

- Immunocastration in male dogs
- Therapy of BPH
- Repeat every 4 weeks
- Neutresol –zinc gluconate solution injected intra-testicular causes atrophy of testes and permanent infertility
- Adverse reactions –testicular swelling, ulceration



Bitches

- Oral synthetic progestins-regular dosing required
- GnRH agonist implants –Suprelorin
- Need replacement every 6 months



GnRH agonist Nafarelin



- Gonazon is injected subcutaneously, in the region of the umbilicus. The implant may be administered to bitches from the age of four months (blocking reproductive function for an average of 12 months) to 6 years (blocking reproductive function for an average of 11 months).

GnRH antagonists

- A **GnRH antagonist** binds to and blocks **GnRH** receptors on the pituitary gland, and the suppression effect is instant. Common preparations of **GnRH antagonists** include cetrorelix (Cetrotide[®]) and ganirelix (Orgalutran[®]), which are both administered as subcutaneous injections.





- The above lectures are also explained in video lectures at my YouTube Channel Govind Narayan Purohit
- Kindly share the videos and subscribe to my channel if you like them
- Thanks