

Heat detection & Artificial insemination in the dog

Ragnar Thomassen

DVM, PhD, Diplomat of ECAR

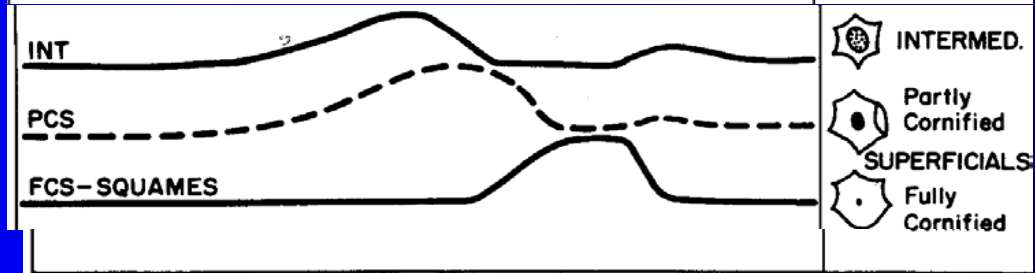
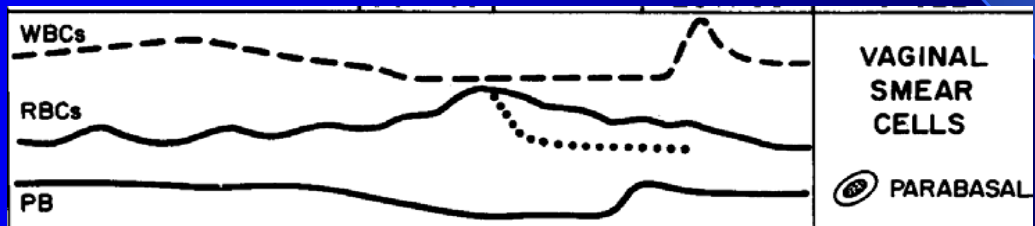
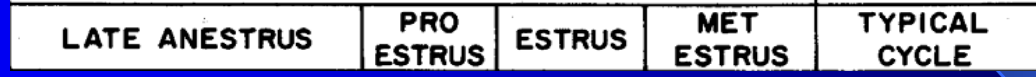
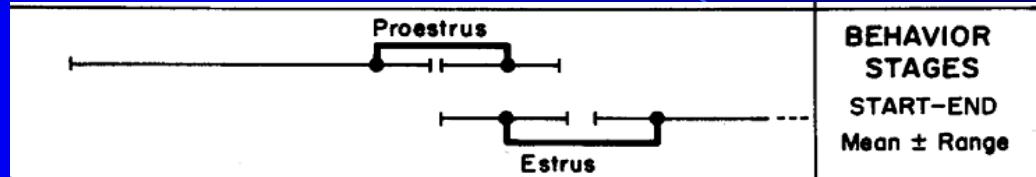
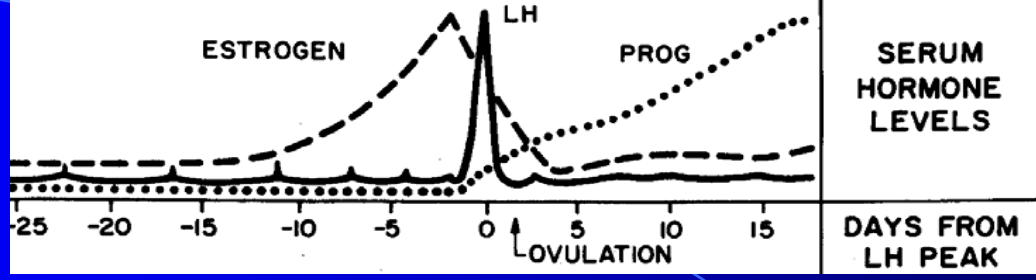
Norwegian School of Veterinary Science

Canine Reproduction

- The bitch is monoestrus
- Luteal phase that ends in a prolonged period of anestrus
- Release of FSH, LH
- Follicular growth – with production of oestrogens
- Clinical proestrus with bleeding and oedema in the vulva

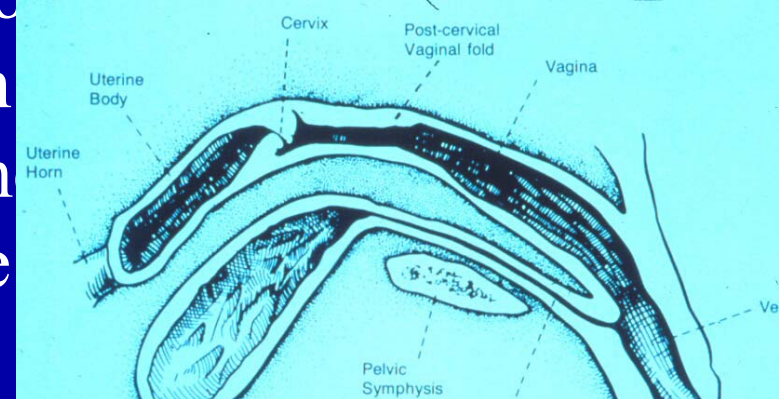
- **Proestrus:** 9 days (3-20)
Fresh bloody discharge, swollen firm vulva, playful behaviour
- **Oestrus:** 9 days (1-10)
Lighter discharge, softening of the vulva
- **Metoestrus:** 2-4 days
Characteristic smell, darker discharge, less oedema in the vulva

- Ovulation 2 days after the LH-peek
- Primary oocytes
- Maturation for 2-3 days
- Fertilizing of ovum 4-5 days after LH-peek
Oocytes may be fertile for another 1-2 days



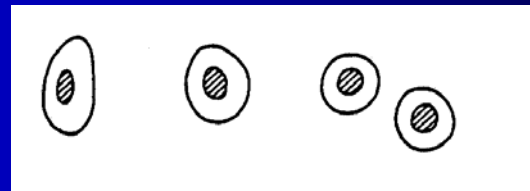
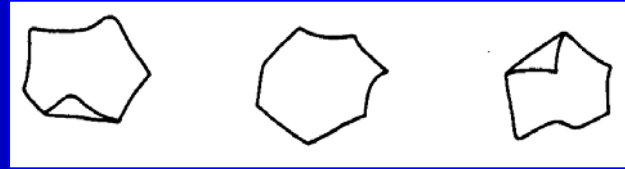
Practical approach

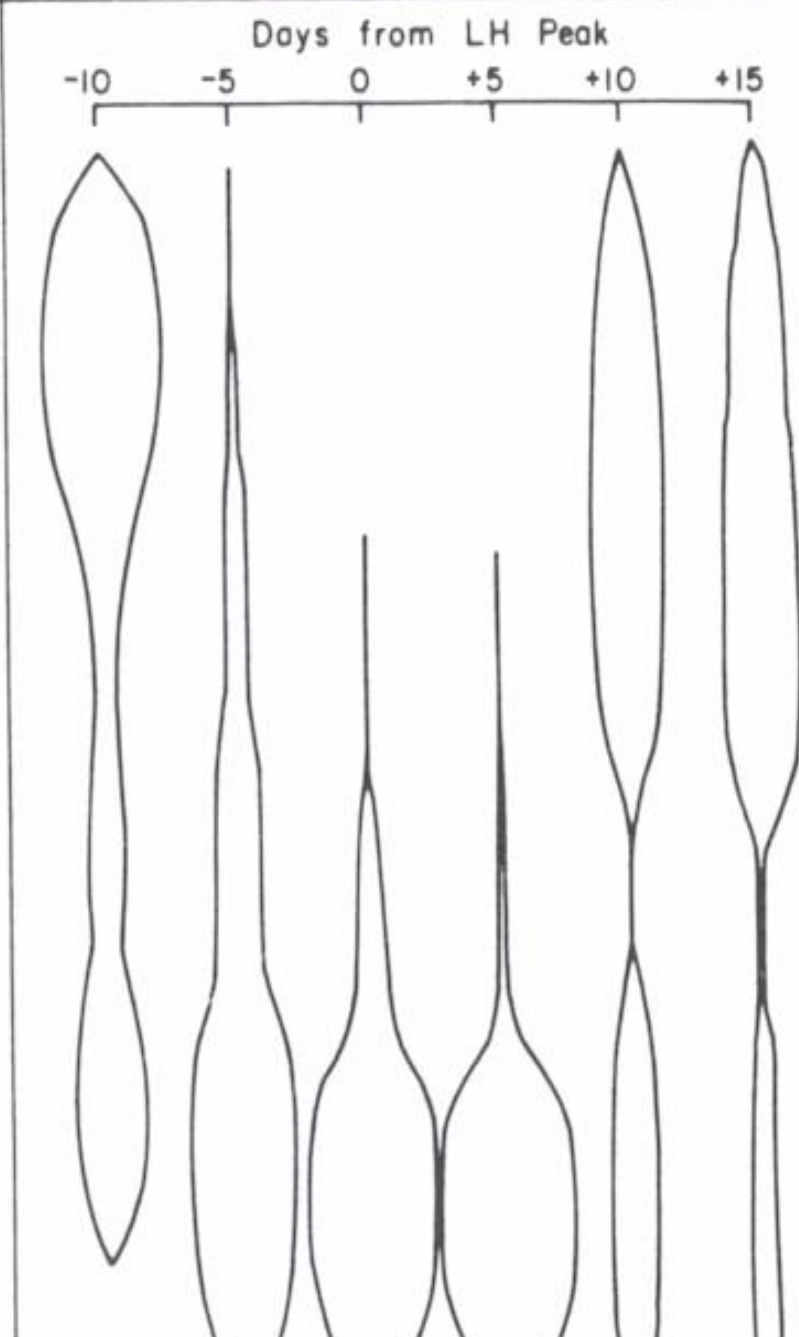
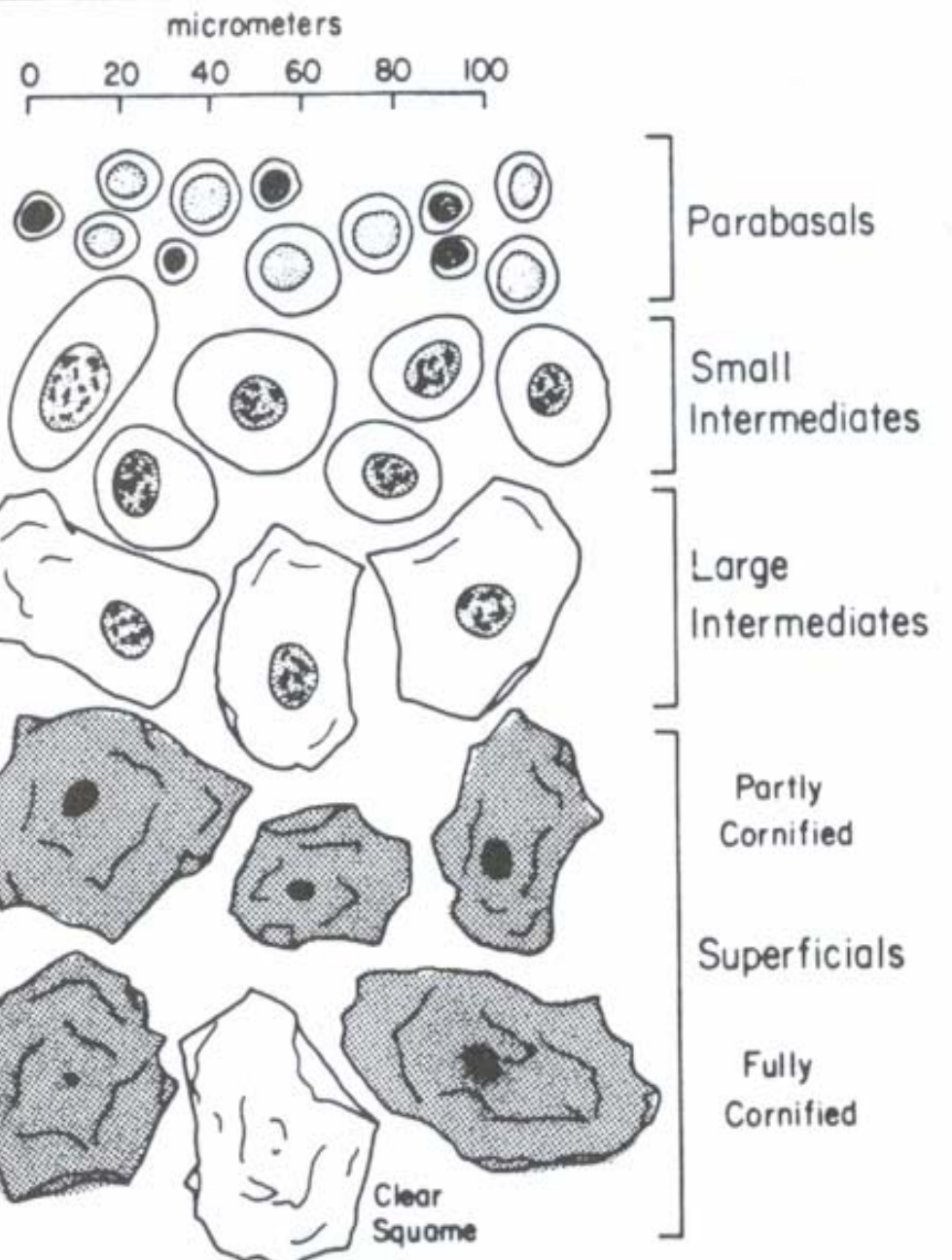
- Evaluation of the vaginal discharge, oedema of vulva & tail flagging
- Anamnestic investigation: For how long has the owner seen vaginal discharge? Appearance of the discharge? Experience from earlier heat periods, - mating etc
- Vaginal smear
- Blood sample for pro measurements

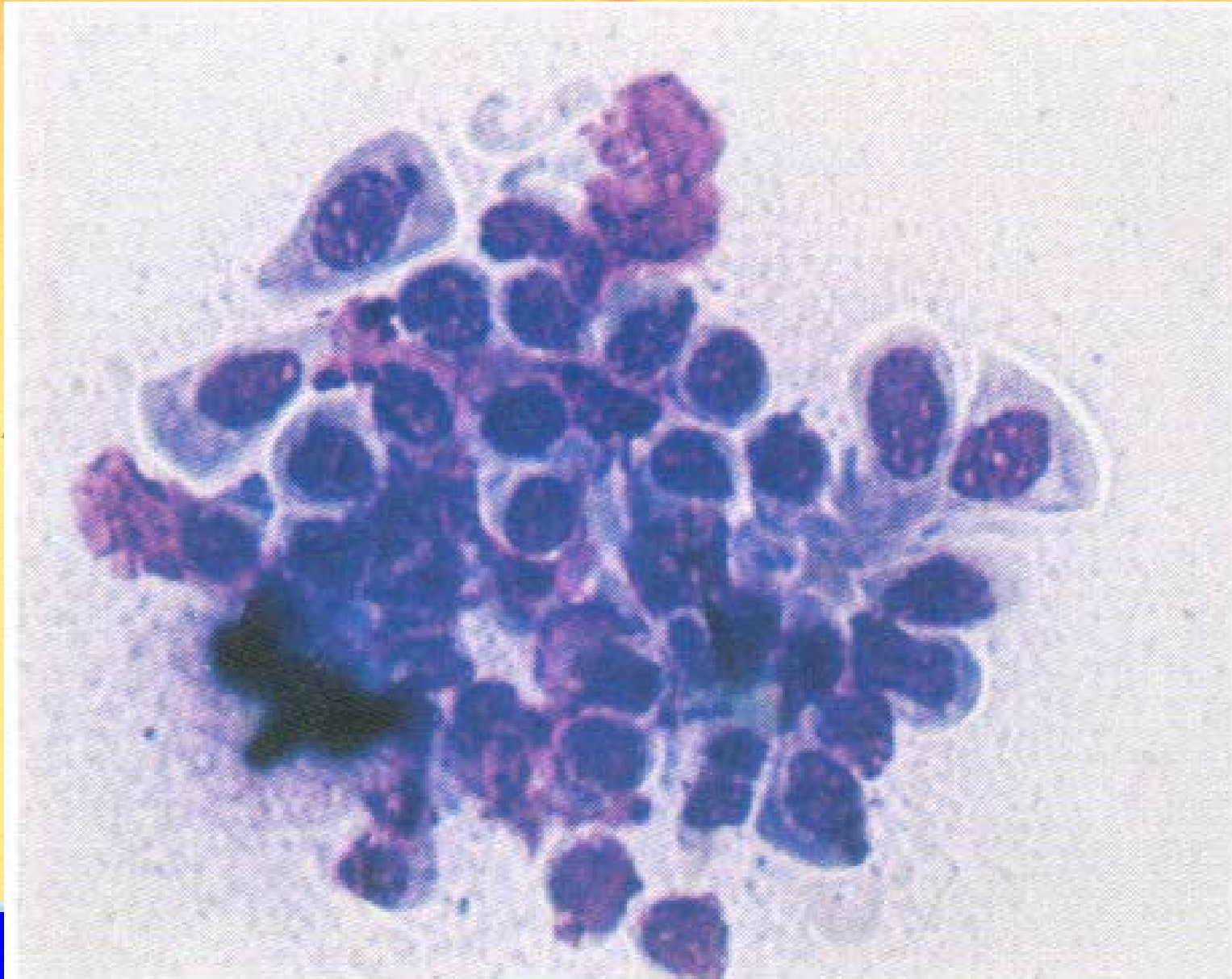


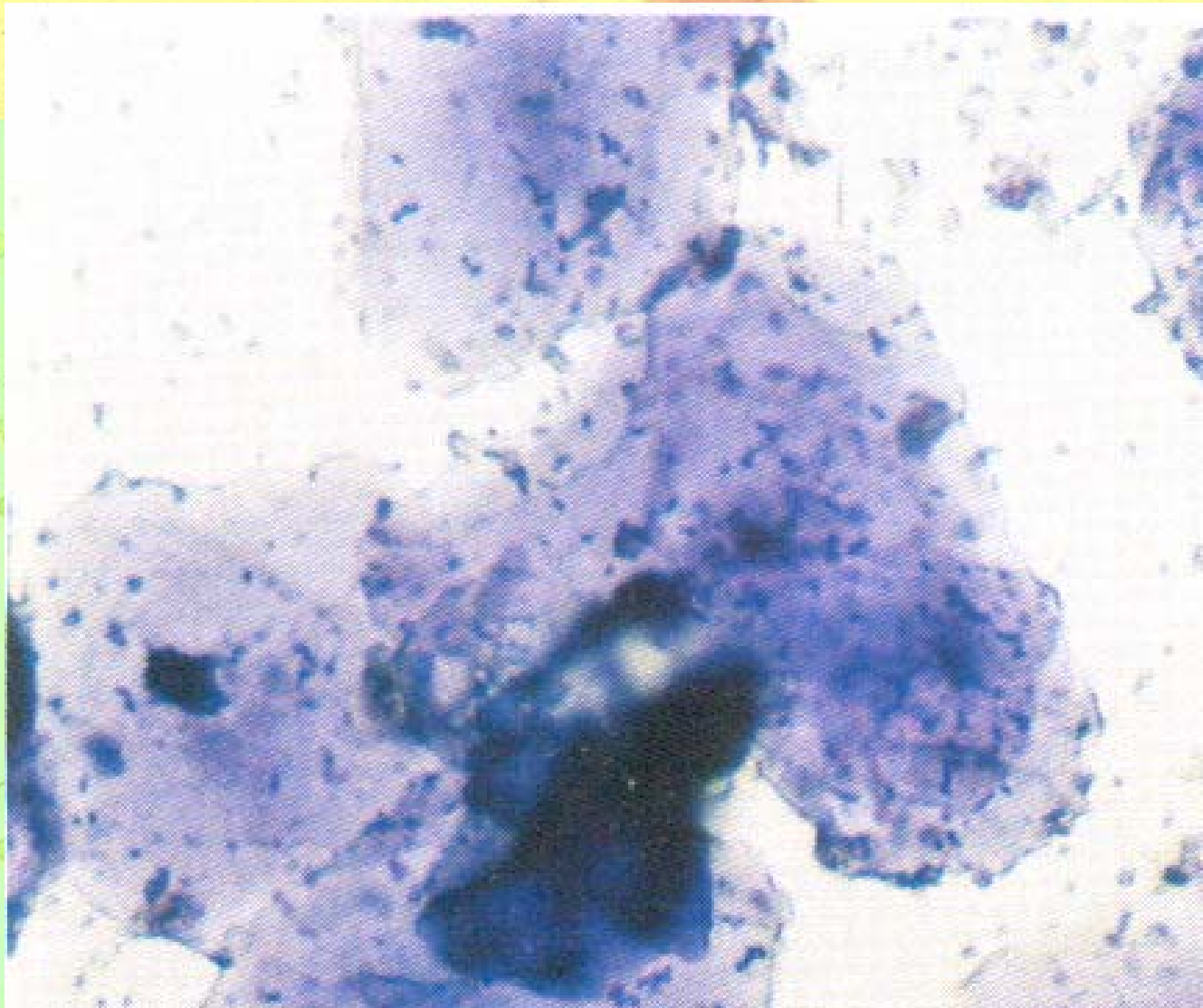
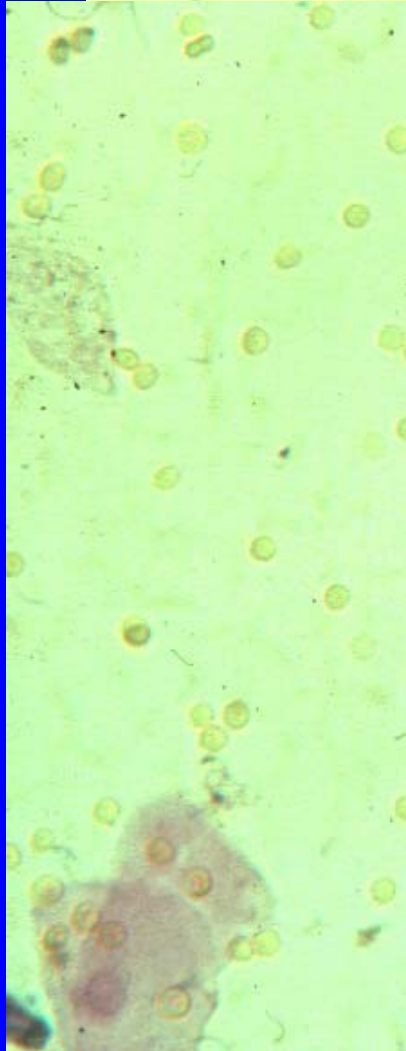
Vaginal smear - cell types

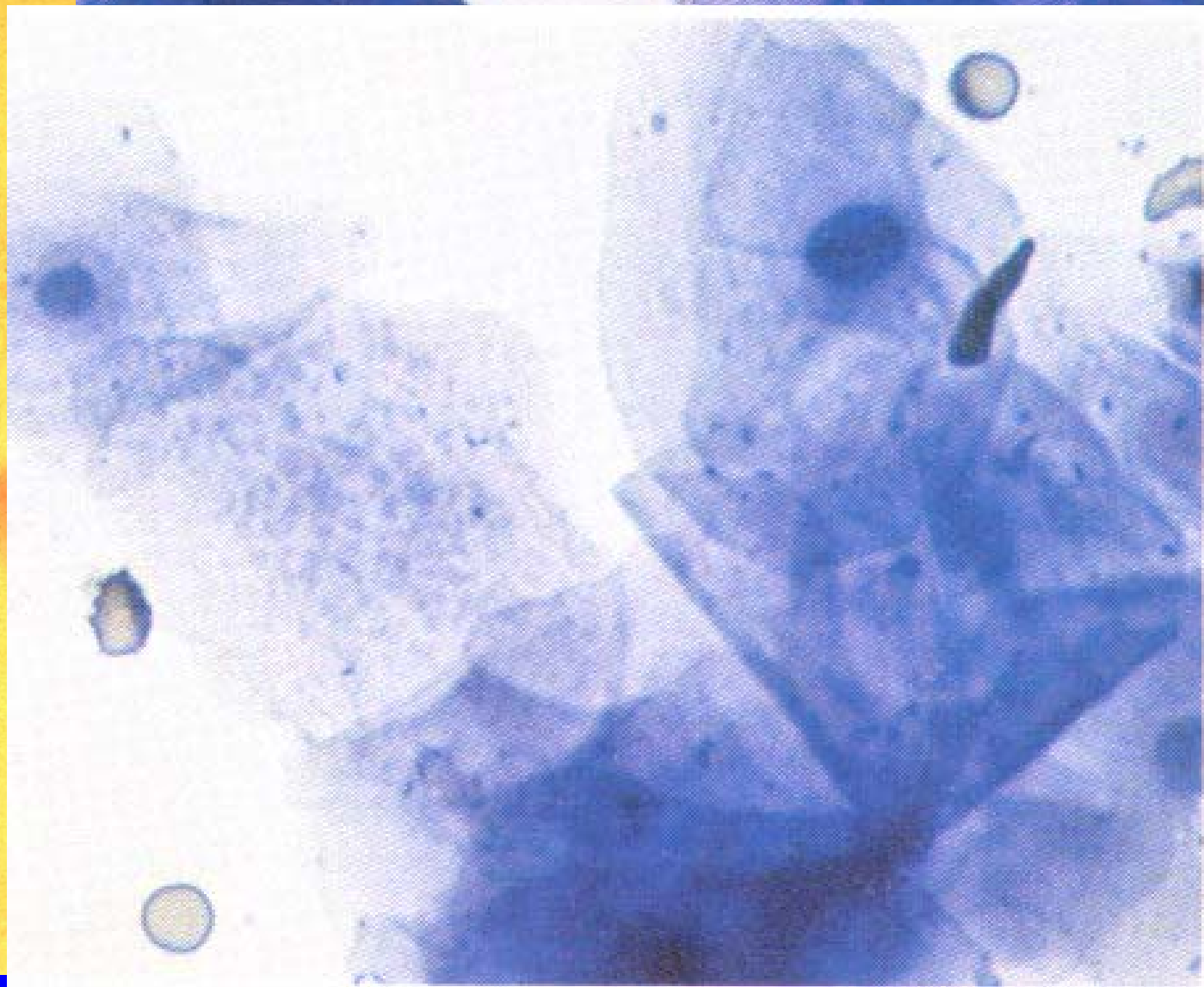
- Fully cornified
- Superficials
- Intermediates
- Parabasale
- Basal cells, foam cells







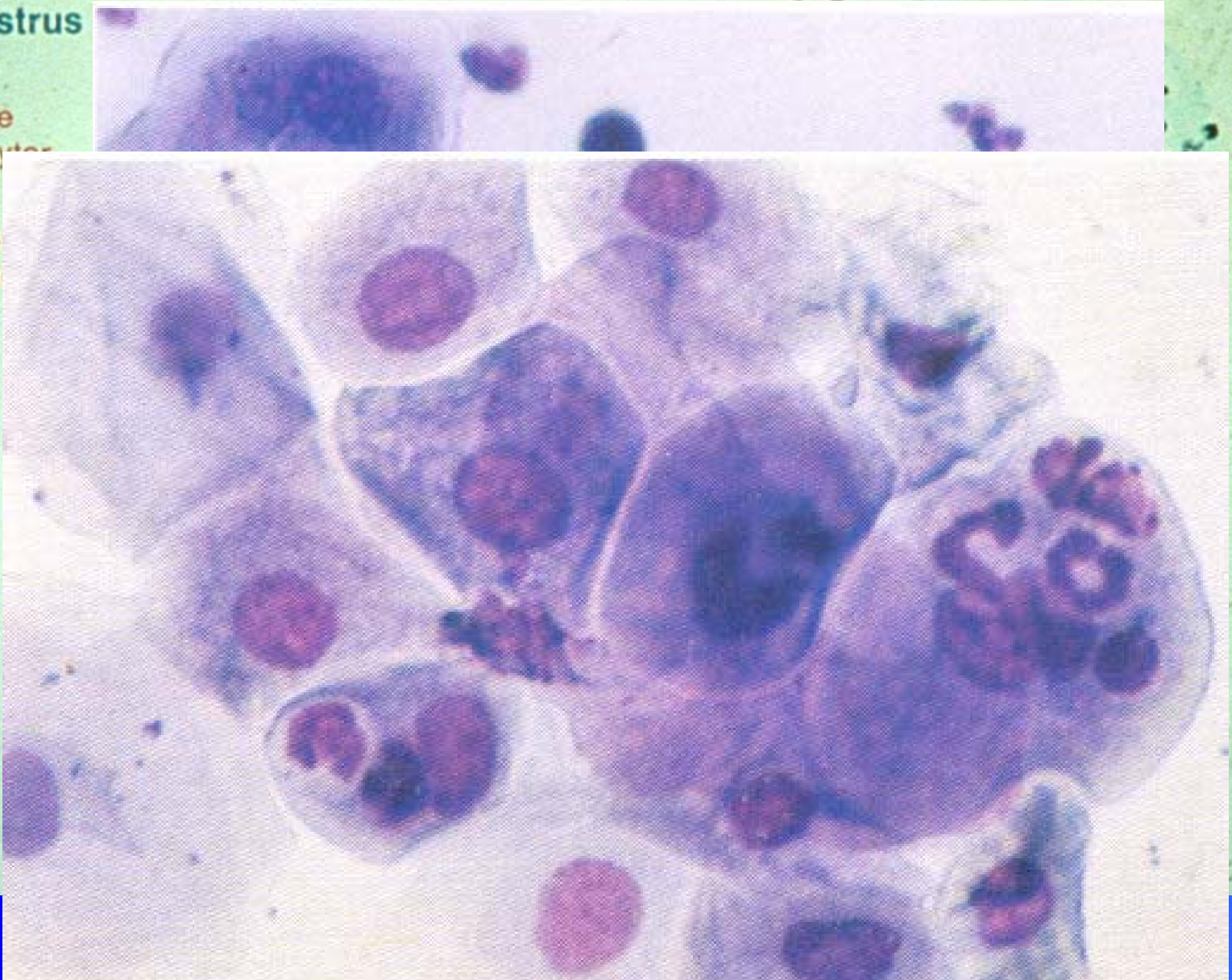




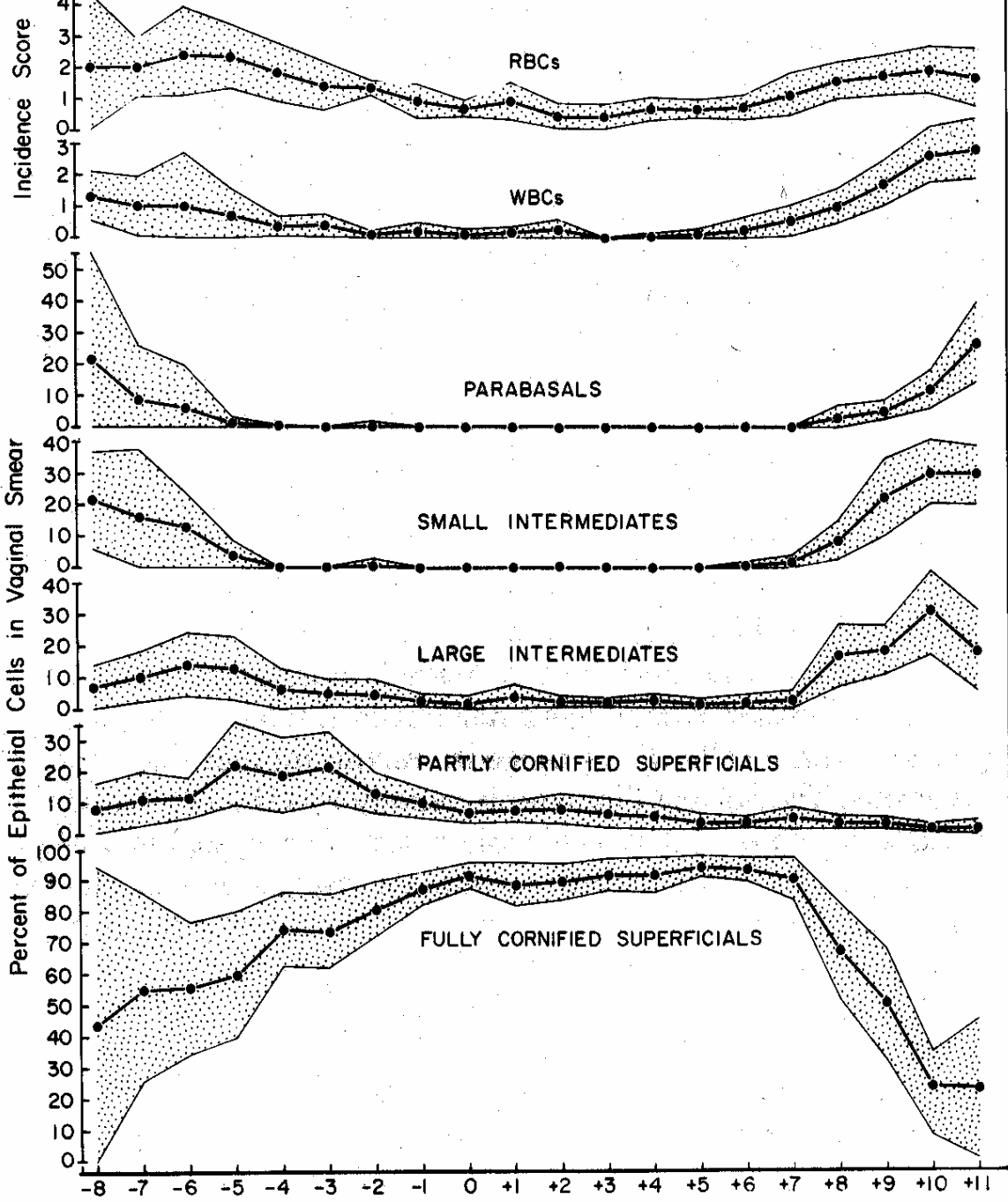
D) Met-østrus

Neutrofile
granulocyt

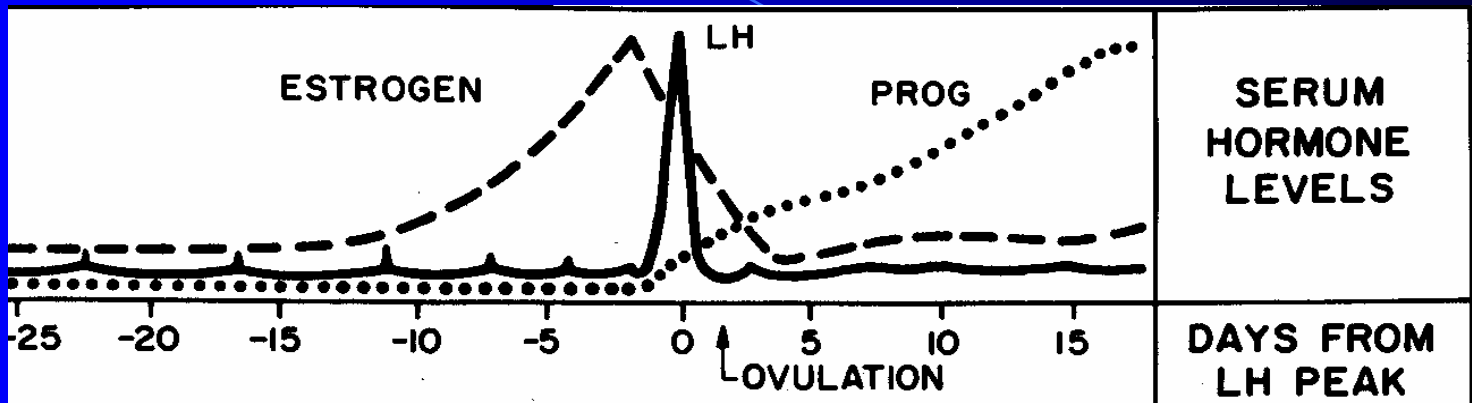
Kjerneho
epitelcell



How va



Progesterone in serum



- Detectable low levels in prooestrus (<math>< 3 \text{ nmol/l}</math>)
- Elevation prior to ovulation
- 6-12 nmol/l at LH-peak
- 15-20 nmol/l at ovulation
- Continued elevation till day 15

When to mate the bitch?

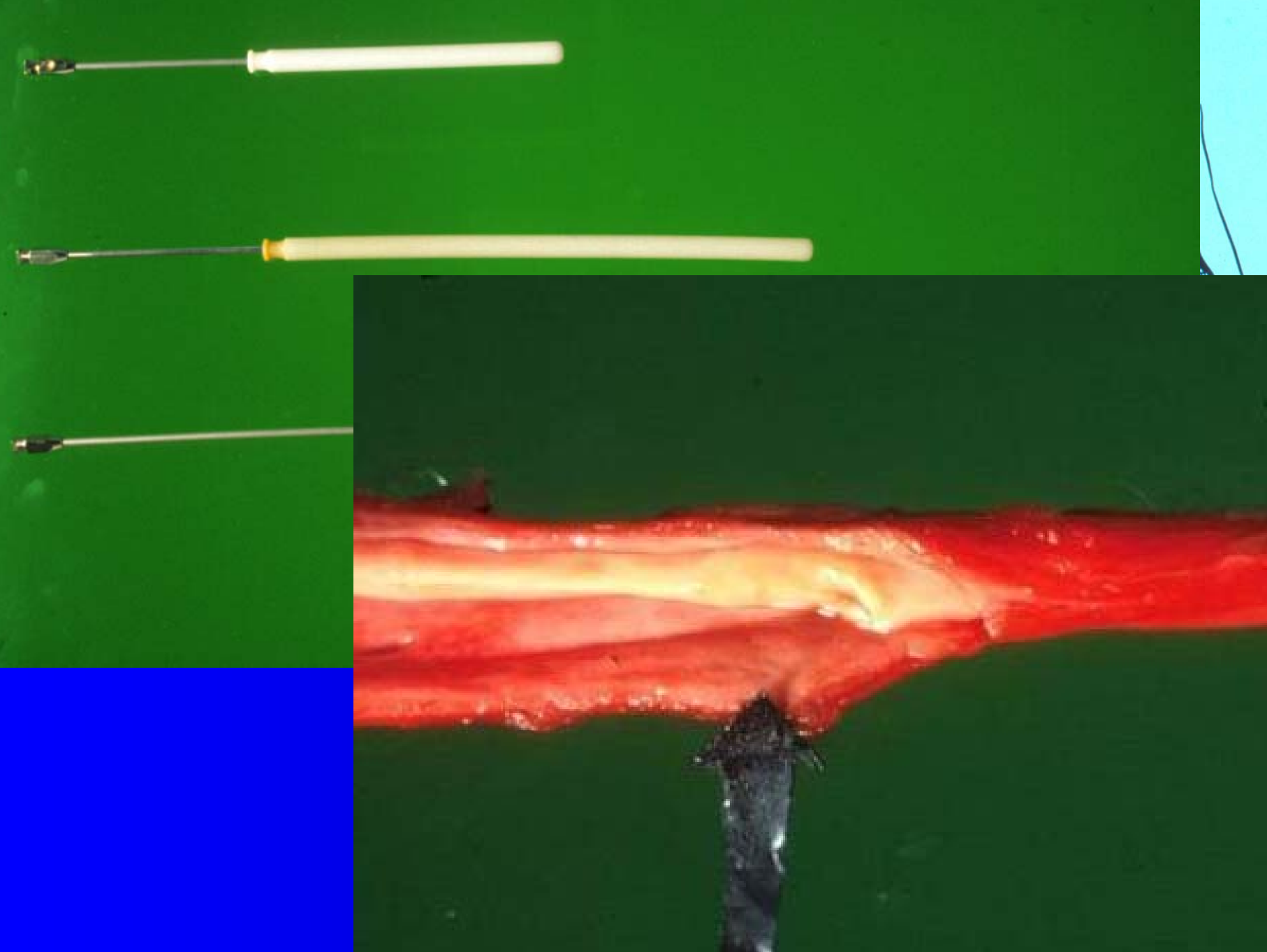
- 12th and 14th day of heat period?
- Aim: fertile sperm cells in the oviducts when the oocytes are mature and ready to be fertilised
- 2-3 d after ovulation
4-5 d after LH-peek
- ➡ Mate the third day the bitch will stand for the male
- ➡ best days of mating: 1. og 2. day after ovulation

Progesterone measurements

- Double of value in 2 days
- Low value f.ex 3 nmol/l → at least 4 days till ovulation (>6 d till too late)
- Renewed sample after 4 days: f.ex 10 nmol/l → 1-2 days to ovulation
→ mating in 2-3 days

Indications for artificial insemination (AI)

- Long distance between male and female
- Injury on the male (or female)
- Not willing or unable to succeed in mating





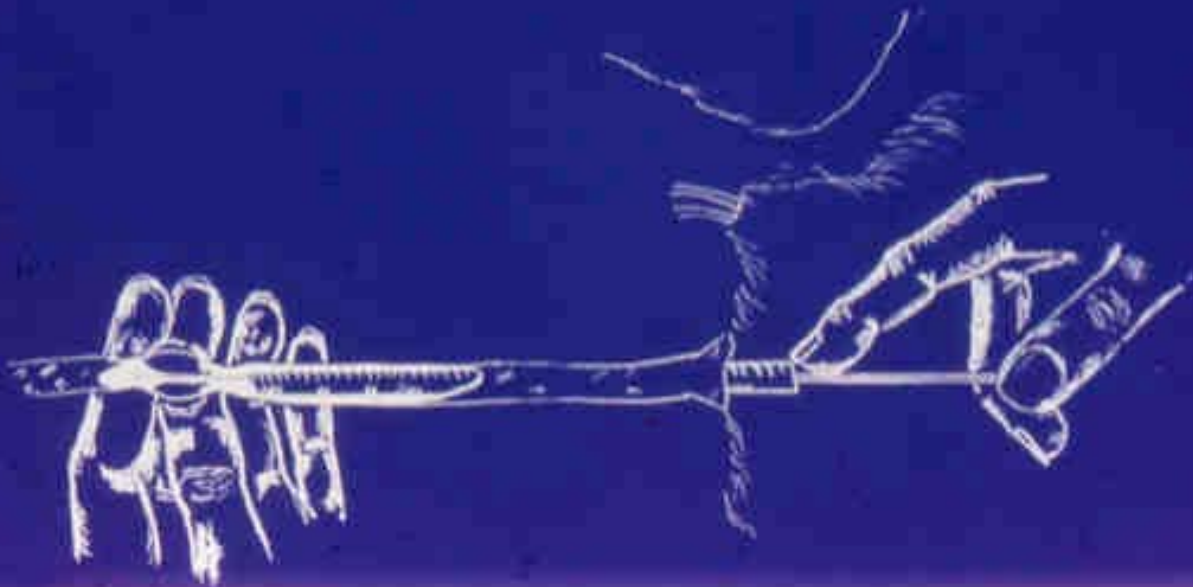
A



B



C



D







Results

- Vaginal deposition: 50-60%
- Intrauterine deposition: > 90%
(as natural mating)

MATERIAL

- 312 BITCHES
- 70 BREEDS
- DOMESTIC SEMEN (129)
- IMPORTED SEMEN (183)

TIMING OF INSEMINATION

- **CLINICAL EVALUATION**

- **VAGINAL SMEAR**

- **SERUM PROGESTERONE**

- 15-25 NMOL/L → AI 2 DAYS LATER
- 25-35 NMOL/L → AI 1 & 2 DAYS LATER
- 35-60 NMOL/L → AI SAME DAY & ONE DAY LATER
- > 60 NMOL/L → AI SAME DAY ONLY

RESULTS AFTER AI

	N	WHELPING RATE (%)	MEAN LITTER SIZE
UTERINE	305	71	5.3
VAGINAL	7	29	6.0
TOTAL	312	70	5.3

RESULTS AFTER OPTIMAL CONDITIONS

- **WHELPING RATE 82% (120 OF 147)**
- **MEAN LITTER SIZE 5.6 ± 0.3 SEM**

Results 1998-2004

- 79% whelping rate and a mean litter size of 6.0 ± 0.19 (SEM)
- One AI yielded the same whelping rate as 2 AI (78%), but a smaller mean litter size, 5.4 ± 0.3 versus 6.4 ± 0.2



A large, black Newfoundland dog is sitting on a grassy lawn. The dog has thick, wavy black fur and its mouth is open, showing a pink tongue. The background consists of green trees and foliage. The text "Thank you for your attention" is overlaid in the lower right quadrant of the image.

Thank you for
your attention