

# Monitoring methods of the sexual cycle of the bitch

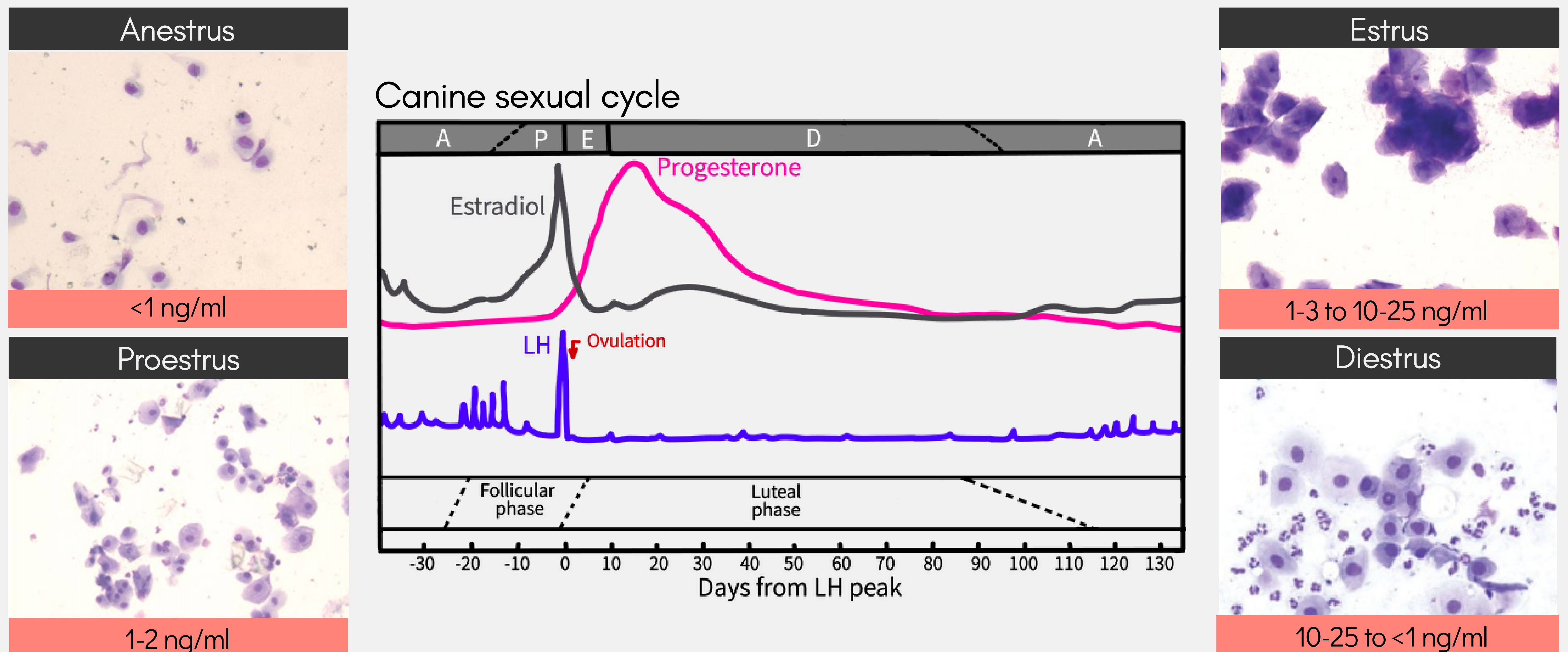
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## Objectives

The rise in the popularity of canine breeding has also increased the demand of veterinarian advice in this regard. Therefore, this project aims to review the current methods in use to monitor the estrus cycle and alternative methods, taking into account the particularities of the species to define the optimal mating time.

## Conventional methods

These methods are based on the monitorization of hormones' evolution and physiological changes throughout the cycle. Nowadays, the most used protocol is the combination of vaginal cytology and the measurement of serum progesterone concentration, obtaining the results shown below.



## Alternative methods

Method	Why is it not in use?
<b>Vaginal endoscopy:</b> observation of epithelial and color saturation changes throughout the cycle.	The endoscopy it is not always tolerated.
<b>Ferning patterns in vaginal mucus:</b> Assess the arborization pattern and the amount of surface covered by it.	Poorly documented and subjective interpretation.
<b>Thermography:</b> Measurement of the temperature of the perivulvar area that varies under hormonal influence.	Non-significant changes and lack of reference values.
<b>Blood LH quantification:</b> LH peak detection to estimate ovulation day.	It is not a routine technique due to its complexity and unavailability.
<b>B-Mode Ultrasound:</b> Monitoring of changes in ovarian follicles.	Difficult interpretation and subjective changes.
<b>Doppler Ultrasound:</b> Monitoring of changes in vascularity and ovarian perfusion due to LH concentration.	Individual variability, thus requiring exhaustive examination.
<b>Vaginal impedometry:</b> Measurement of electric resistance of vaginal mucus to detect the increase in ovulation.	Ignorance of related hormonal changes and variability between bitches.
<b>Vaginal pH:</b> to detect the decrease in ovulation.	Lack of standardized values and variability between individuals.

## Conclusions

- Determination of the optimal mating time requires defining the cycle phase and the day of ovulation.
- This optimizes breeding results, facilitates the monitoring of pregnancy and parturition, and hormonal modulation.
- Research in this field will provide knowledge about the reproductive physiology of the bitch, less invasive techniques useful for endangered species, and increase the range of techniques available to the veterinarian.