

# REPRODUCTION OF SMALL ANIMALS

# Canine Reproduction

# The Bitch

Puberty age: 6 months.

Estrous: Monoestrus (One estrus during breeding season)

Estrous Cycle have Proestrus, Estrus (Heat), Metestrus or Diestrus, and Anestrus.

## Estrous Cycle (Non-Pregnant)

- Proestrus (9 days)

- » Vulva swollen

- » Bloody discharge

- » Attracted to male but does not mate

- **Estrus (9 days, ovulation day 2)**

- » Accepts male

- » Straw-colored discharge

- **Metestrus or Diestrus (90 days)**

- » False pregnancy

- **Anestrus (5 months)**

- » Sexual inactivity

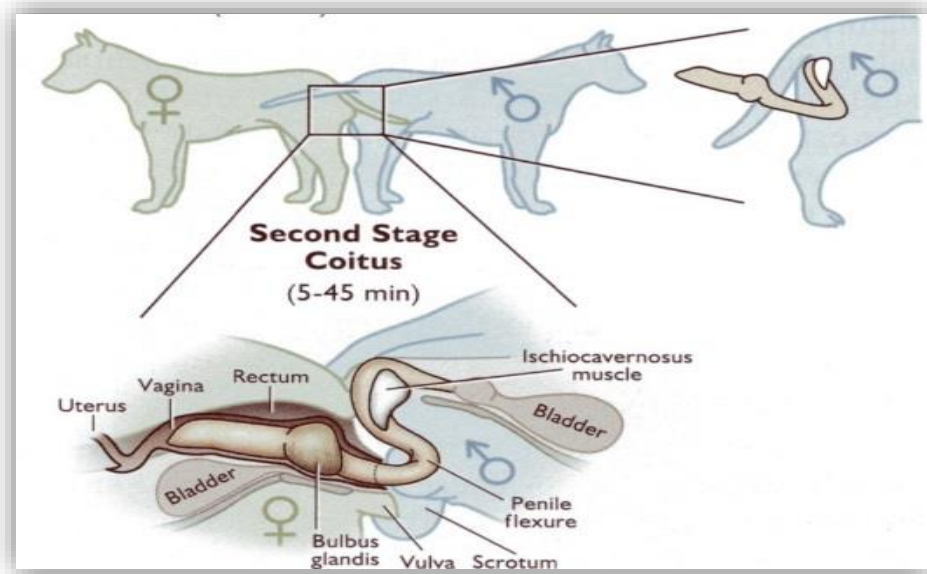
## **Estrous Cycle (Pregnant)**

- **Proestrus (9 days)**
  - » Vulva swollen
  - » Bloody discharge
  - » Attracted to male but does not mate
- **Estrus (9 days, ovulation day 2)**
  - » Accepts male
  - » Straw-colored discharge
- **Metestrus/Diestrus (50 – 60 days)**
  - » Pregnancy
  - » Parturition (63 days from ovulation)
- **Anestrus (5 months)**
  - » Sexual inactivity

## Mating

1. Occurs during estrus
2. Length of courtship by male is variable
3. Licks vulva
4. Bitch stands with tail to one side
5. Male mounts without erection and penetrates – Os penis.

6. In vagina, male bulbus glandis engorges, thrusting
7. Male dismounts and turns around but penis remains in vagina “the tie”
8. Tie last 5 min to 1 hour.
9. Mate 2 times (Days 11 and 13) after start of proestrus.
10. Sperm lasts up to 7 days in female.



*Figure 1 Coitus (Tei) in dogs*



## Hormonal Changes

1. Progesterone maintained higher (ovulation progesterone 2–5 ng/ml). Drop in progesterone triggers parturition
2. CL required to maintain pregnancy and no placental progesterone
3. Placental Relaxin.
4. LH increase associated with progesterone >0.5 ng/ml.

## **Pregnancy**

Gestation period in bitch is 63 days (58–68)

### **Pregnancy detection**

1. Abdominal palpation at 3 – 4 weeks
1. Ultrasound after day 16.

## Parturition

1. Parturition in canine called (whelping).
2. The newborn called (Bobbies).
3. All Bobbies born blindness and have a 3 weeks at less to open there eyes.
4. The Bobbies depend on their mother to nutrient until 3 months.

## **Delayed Parturition**

### **» Primary inertia**

- Does not show signs of parturition
- Does not progress from stage 1 – stage 2
- If green fluid (caesarian section)
- Give oxytocin in several small doses

### **» Secondary inertia**

- Uterine exhaustion
- Lack of oxytocin

## **Induction of parturition**

- » ECG and estradiol

## Reproductive disorders of the Bitch

### 1. Cystic endometrial hyperplasia (pyometra)

- Uterus fills with fluid
- Progesterone increases first
- Contamination of uterus by vaginal bacteria
- Toxemia results from absorption of fluid and endotoxins
- Thirst, vomiting, inappetence, shock, death
- 4–6 weeks after estrus

- Bitches >9 years that have not had a previous pregnancy
- Can be open or closed hysterectomy

## **2. False pregnancy**

- » Normal to some extent
- » 60 days after estrus
- » May lactate, gain weight, nesting behavior

## **3. Mammary tumors**

Thought may be related to similarity to pregnancy and non-pregnancy.

## Disorders of the Male Dog

### 1. Hyperactive sexuality

» Castrate

» Progesterone

### 2. Cryptorchidism

» Normal descent at days 7–10 after birth

» Should be removed if retained for >1 yr.

## Artificial Insemination

- Bitch does not accept the male
- Shipment of semen
- Minimize the number of breeding
- Bitches ovulate around day 10 after they enter proestrus (discharge) or about 1 - 2 days of estrus.



## Ovulation can be detected by:

- LH assay (peak LH value + one day)
- Progesterone assay (>5 ng/ml)
- Cytology of vaginal smear (>50% cornified cells)
- Remember oocytes in the canine are ovulated as 1° oocytes and must mature in the oviduct to a 2° oocyte before fertilization.

- Fresh or cooled semen, inseminate 2 days after ovulation detected and again 48 - 72 hr latter.
- Frozen semen, inseminate on day 5 - 7 after ovulation
- Uterine insemination better than cervical.

# Feline Reproduction

- Female (Queen) and male (Tom)
- Puberty (6 – 9 months)
- Mono seasonal estrous (January to September)
- House cats may cycle year round

## **Estrous Cycle**

### **Pro-estrus**

- » 1 – 2 days
- » Attracted to males
- » Rubs head and neck on objects
- » Vocalization, posturing and rolling

## Estrus

- » Accepts male
- » 4 – 6 days if male present, 10 days if no male
- » Ovulation 27 hours after mating (induced)
- » Affectionate to aggressive towards owners
- » Proestrus if queen did not ovulate (8 – 10 days)

## Diestrus after ovulation

- » pseudo-pregnancy - 40 days
- » pregnancy - 60 days

## Anestrus

- » 3 - 4 months

## Hormonal Changes

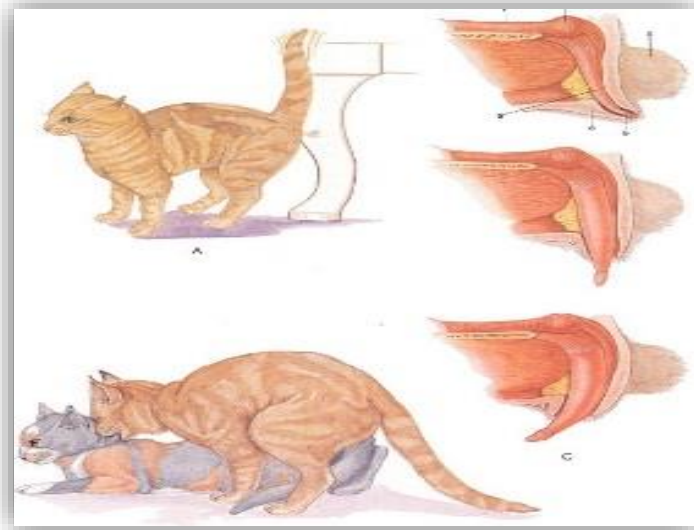
- Proestrus
  - » Estrogen increases due to follicular development
- Estrus

- » Estrogen high until ovulation
- » Ovulation 27 hr after mating (vaginal stimulation)
- Diestrus
  - » No Cl if mating does not occur, so no diestrus
  - » Cl produces progesterone (63 days, peak day 20)
  - » If pregnancy does not occur or fails; life of the CL is only 1/2 h that seen in pregnancy.

## Mating

- Queens call or vocalize (low moaning sound)
  - » Owners may think a sign of illness
- During mating, tom bites neck female with erection penis faces forward only lasts 30 seconds to 5 minutes
  - » As male dismounts female gives a loud copulatory call and tom retreats
  - » Mating occurs 6 – 7 times until queen declines. May occur for up to 4 days.





## Pregnancy

- Gestation period: 63 days
- Diagnosis: (abdominal palpation day 17 -25).

## Parturition

- Similar to other species in events and hormonal control
- Dystocia rare – caesarian
- Uterine inertia – oxytocin.

## **Control of Estrus**

- Progestins
- Ovariohysterectomy

## **Induction of Ovulation**

- » HCG
- » Vaginal Stimulation

## **Reproductive disorders of the Queen**

### **1.Pseudo-pregnancy**

- » Mating to sterile male
- » Vaginal stimulation or hormonal stimulation

### **2.Cystic endometrial hyperplasia (Pyometra)**

- » Same as in bitch

### **3.Failure to cycle**

- » Stress, poor nutrition, disease, inadequate light, cystic follicles

## **Diseases of the Tom Cat**

- Cryptorchidism (castration).

