

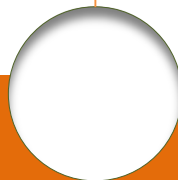
Artificial Insemination

Male reproduction organs



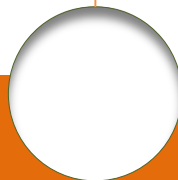
Male reproduction organs

- **Gonads – the testes**
- **The tubular genital tract – pathway for sperm cells and semen, accessory glands (seminal vesicles, prostate, bulbourethral glands)**



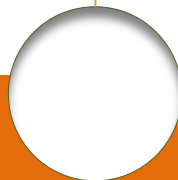
Function

- **Sperm cells production**
- **Transfer of the semen to the female**
- **Male sex hormones production**



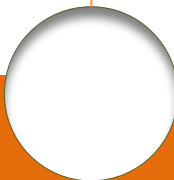
Parts

- **Testes**
- **Epididymis**
- **Ductus deferens**
- **Accessory glands**
- **Penis**
- **Scrotum**
- **Praeputium**



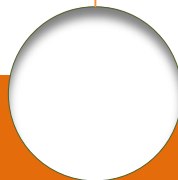
Scrotum

- **The skin pouch for carrying testicles, epididymis, ductus deferens**
- **Sus, Ca – caudal area**
- **Bo, Eq – pubic area**
- **Abdominal protrusion – similar architecture to abdominal wall**

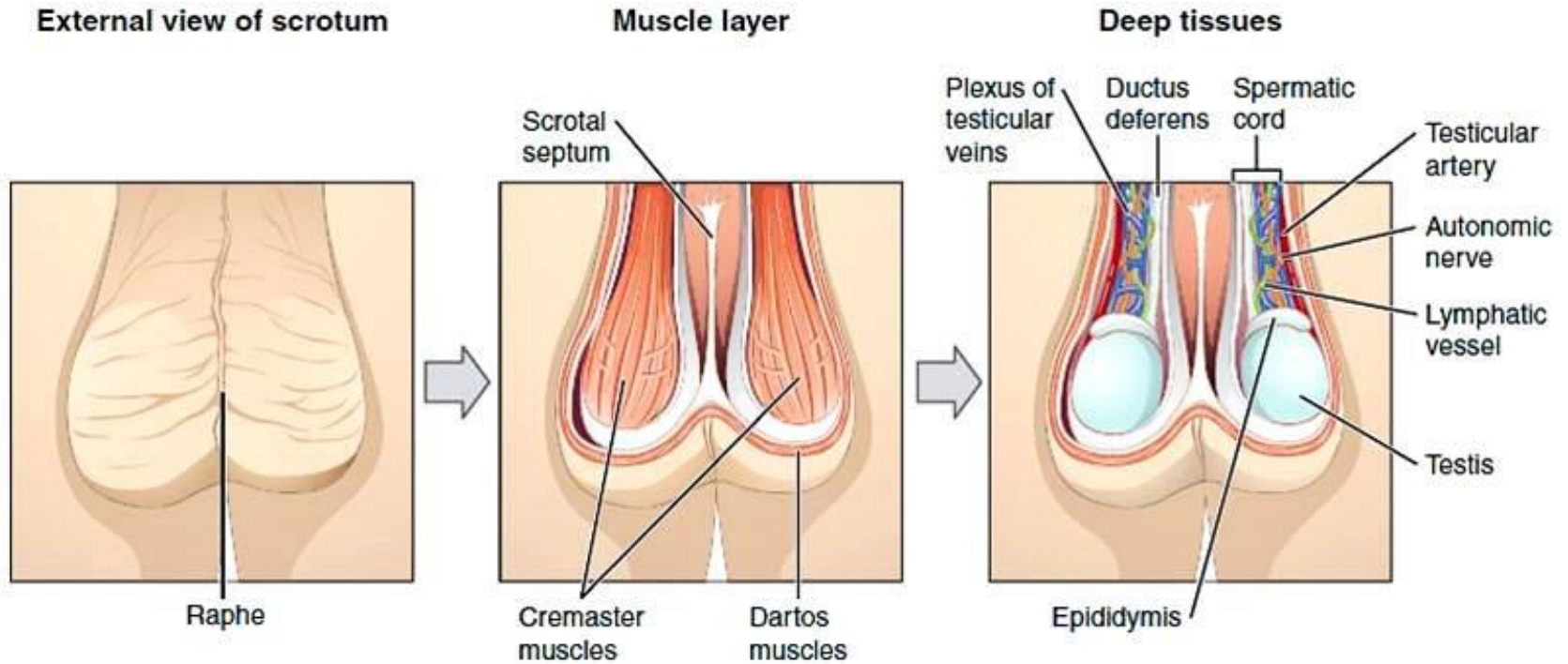


Scrotal anatomy

- **SKIN** – fine haired (Cap, Ov – thick haired)
- **TUNICA DARTOS** - elastic fibers layer and smooth muscle cells, creates medial septum, reacts to external temperature changes, keeps inner temperature 3-4 °C lower than body temperature
- **TUNICA VAGINALIS** – peritoneal protrusion
- **INGUINAL RING** – connection to abdomen
- **LIGAMENTUM TESTIS** – pulls testes to scrotum for optimal spermatogenesis

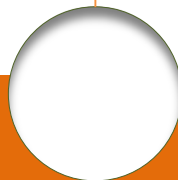


Scrotum



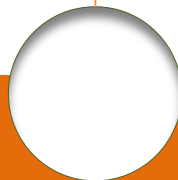
Testes (*Orchis in Greek*)

- **Pair male gland**
- **Spermatogenesis – stimulated by FSH, augmented by testosterone**
- **Secretion of steroid hormones – Leydig cells – influence of LH, testosterone**
- **TESTOSTERON – development and function of accessory glands, copulatory organs, male sex characteristic and behavior, photoperiod affects steroidogenesis and spermatogenesis**

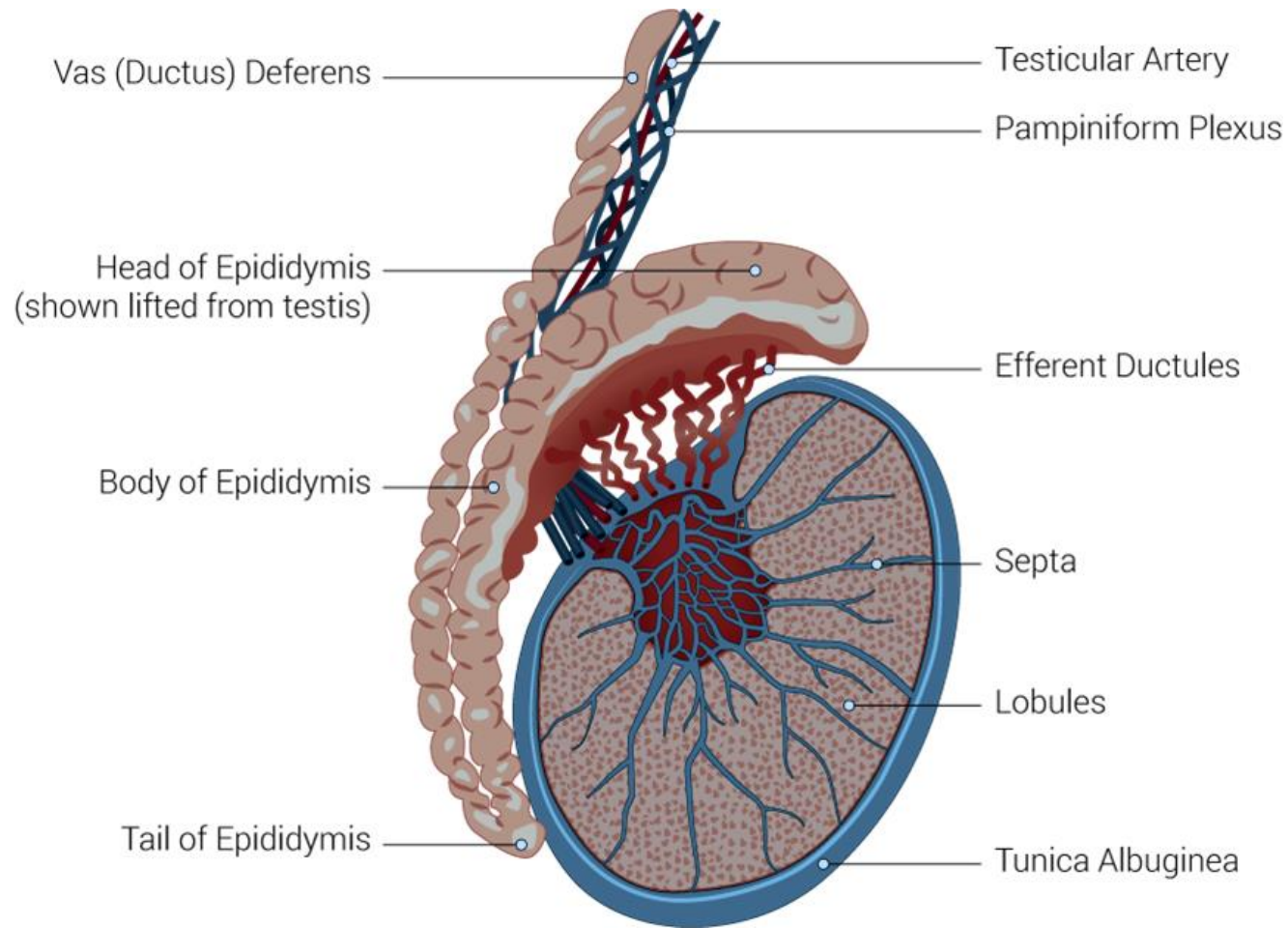


Testes - evaluation

- **Representative semen samples and hormone assays**
- **Palpation, adspection and measurement of testicles helps predict potential sperm output and may reveal pathologic conditions**

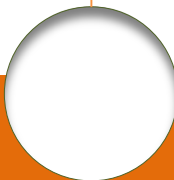


Testical anatomy



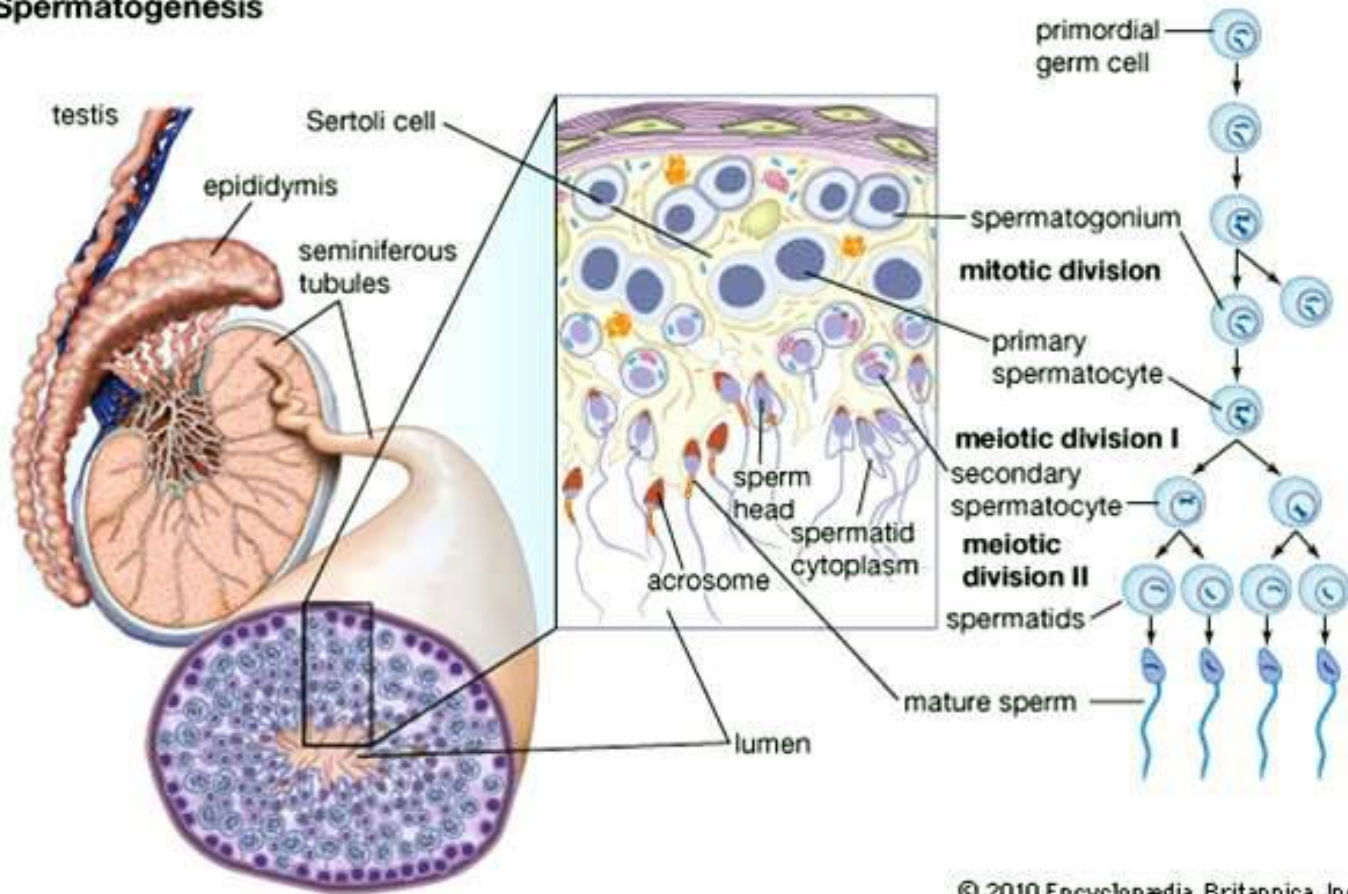
Testical anatomy

- **TUNICA ALBUGINEA – crates pyramidal lobules in testical tissue, thick fiber layer**
- **Each lubulus contains 2-3 curled up seminiferous tubules (spermatogenesis) with Leydig cells among them**
- **After 5-8 cms it straight up and flows to epididymis**



SPERMATOGENESIS

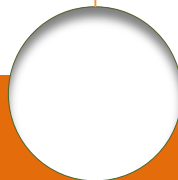
Spermatogenesis



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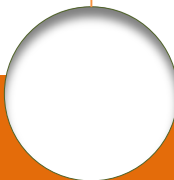
SPERMATOGENESIS

- **Only in seminiferous tubules**
- **Origin in germinative epitel of tubules**
- **Reproduction, growth, maturing, transformation**



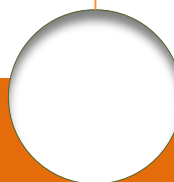
The male tubular genital tract

- **Begins in testicles as efferent ductules**
- **Head, body and tail of epididymis**
- **Ductus deferens – ascends into abdominal cavity via inguinal ring, passes the dorsal aspect of the bladder to enter the pelvic urethra**
- **Pelvic and penile urethra is shared for outlet for urine and semen**



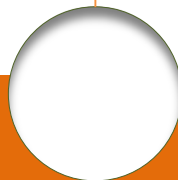
Epididymis

- **Connected to testicles by ligamentum epididymidis**
- **Storage, maturity and selective absorption of sperms**
- **Head – efferent tubules from testicles**
- **Body**
- **Tail**
- **total length of ductus in bovine epididymis is 50 meters**



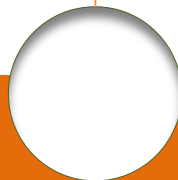
Ductus deferens

- **it contains many accessory glands in proximal part**
- **Smooth muscle cells in the wall – peristaltic waves during ejakulation**



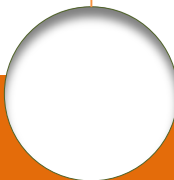
Spermatic cord

- **Ductus deferens**
- **Smooth muscle – musculus cremaster**
- **Artery**
- **Vein**
- **Inervation**
- **Lymphatic vessel**
- **in inguinal ring**



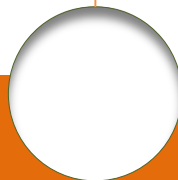
Accessory sex glands

- **Contribute to the formation of seminal plasma**
- **Secrets provide optimal conditions for sperm cells in the urethra and in the vagina**
- **Nutrition for sperm cells**
- **SEMINAL VESICLES**
- **PROSTATA**
- **BULBOURETHRAL (Cowper's) GLANDS**



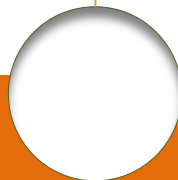
Seminal vesicles

- **The largest**
- **On the dorsal aspect of a bladder**
- **Alcalic pH, ions, glucose**
- **Sperm cell nutrition**
- **In the end of ejakulation**
- **Not in dogs**



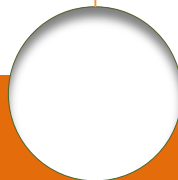
Prostata

- **On a bladder cervix**
- **2 symmetrical parts**
- **Enters uretra by two ducts**
- **Secret is „milky“, watery, highly alcalic**
- **Neutralization of low pH in vagina**

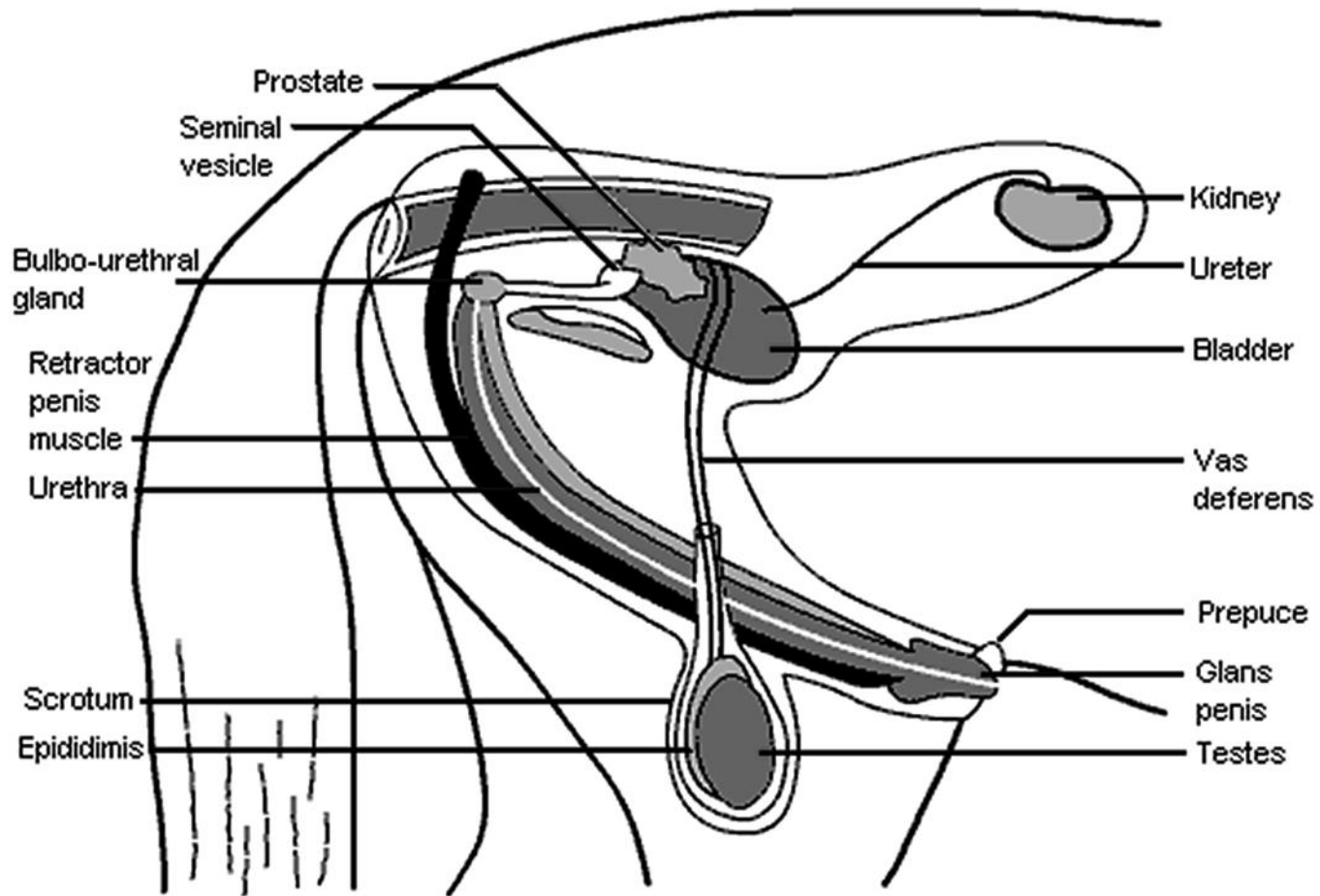


Bulbourethral glands

- **Cowper's glands**
- **Situated on urethra when leaving pelvic space**
- **Two parts – species dependent**
- **Thick secret to smooth urethra and to elevate its pH**



Anatomy

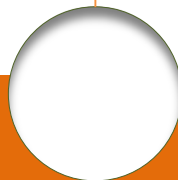


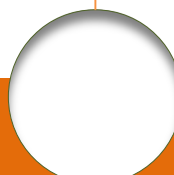
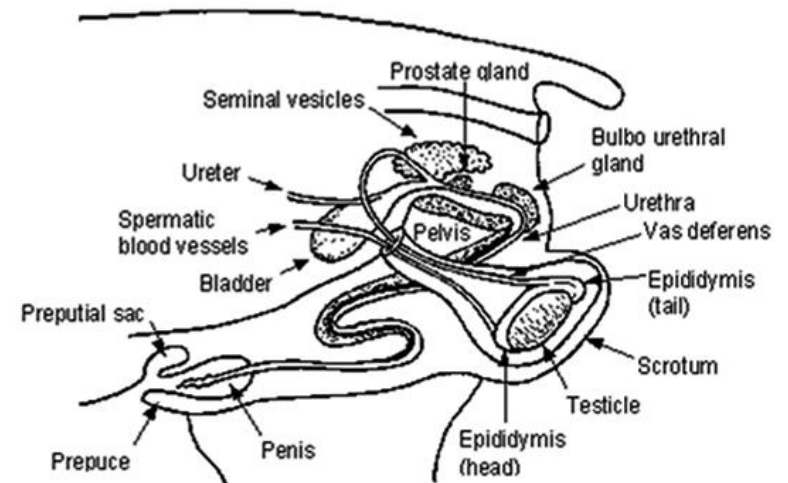
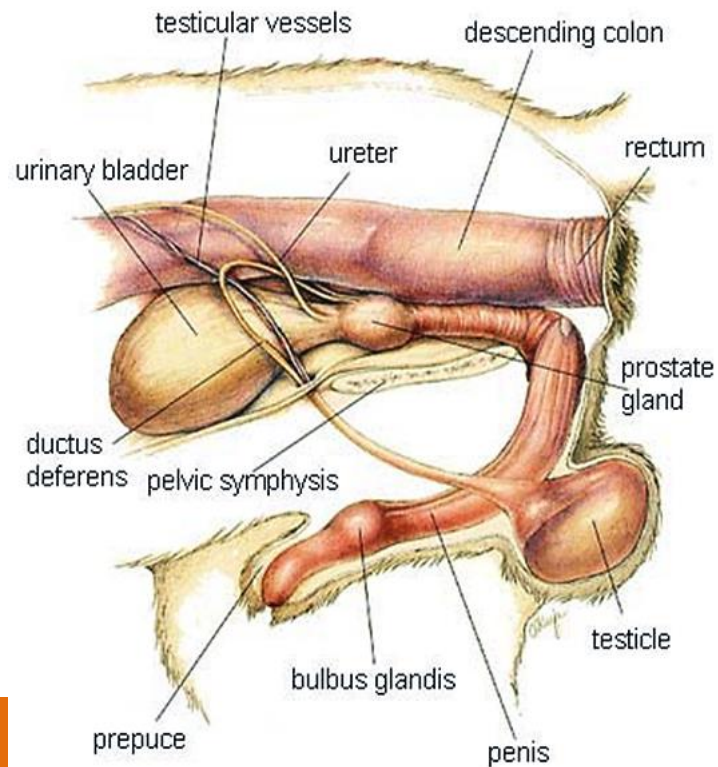
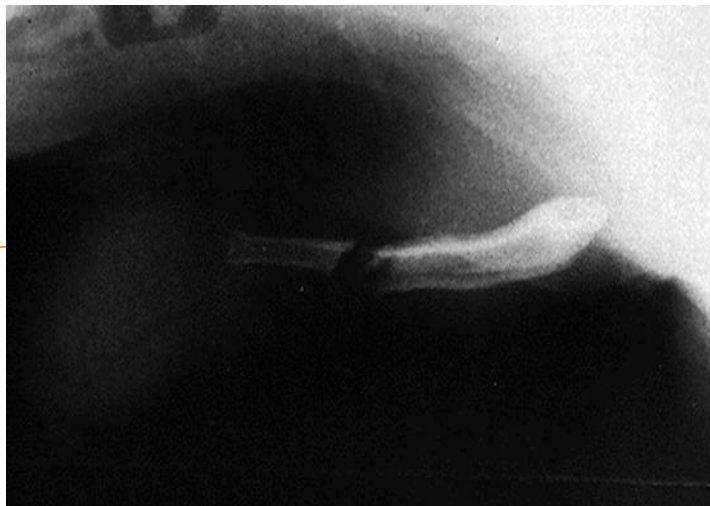
Penis

- **Copulation organ**
- **For inserting semen to female**
- **Special structure to be able to enlarge, to get straight during sexual irritation**
- **CORPUS CAVERNOSUM – erectile unit, sponge like, fibrous case, able to be filled by blood, two branches leading from ischiadic bones, ventral sulcus for urethra**

Penis

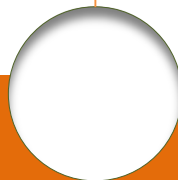
- **Equine – strong penis, 0,5 m long, large glans**
- **Bovine – cylindrical, fibroelastic, S-shaped – during erection straightens, 1 m long, small glans**
- **Swine – no glans, S-shaped, screw end**
- **Ram – S-shape, extra urethral end**
- **Dog – os penis**





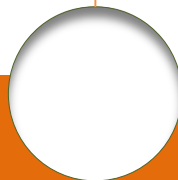
Praeputium

- **Skin cover for retracting penis**
- **Mucous membrane with numerous sebaceous glands producing SMEGMA – sharp odour secret**



Semen

- **Sperm cells + secrets of accessory glands**
- **Epithelial cells, leukocytes**
- **90-98% is water**
- **Feromones**
- **Ions**
- **Evaluation: composition, sperm vitality, sperm cell count, concentration**
- **Nutrition, age, housing, exercise, using in reproduction**



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