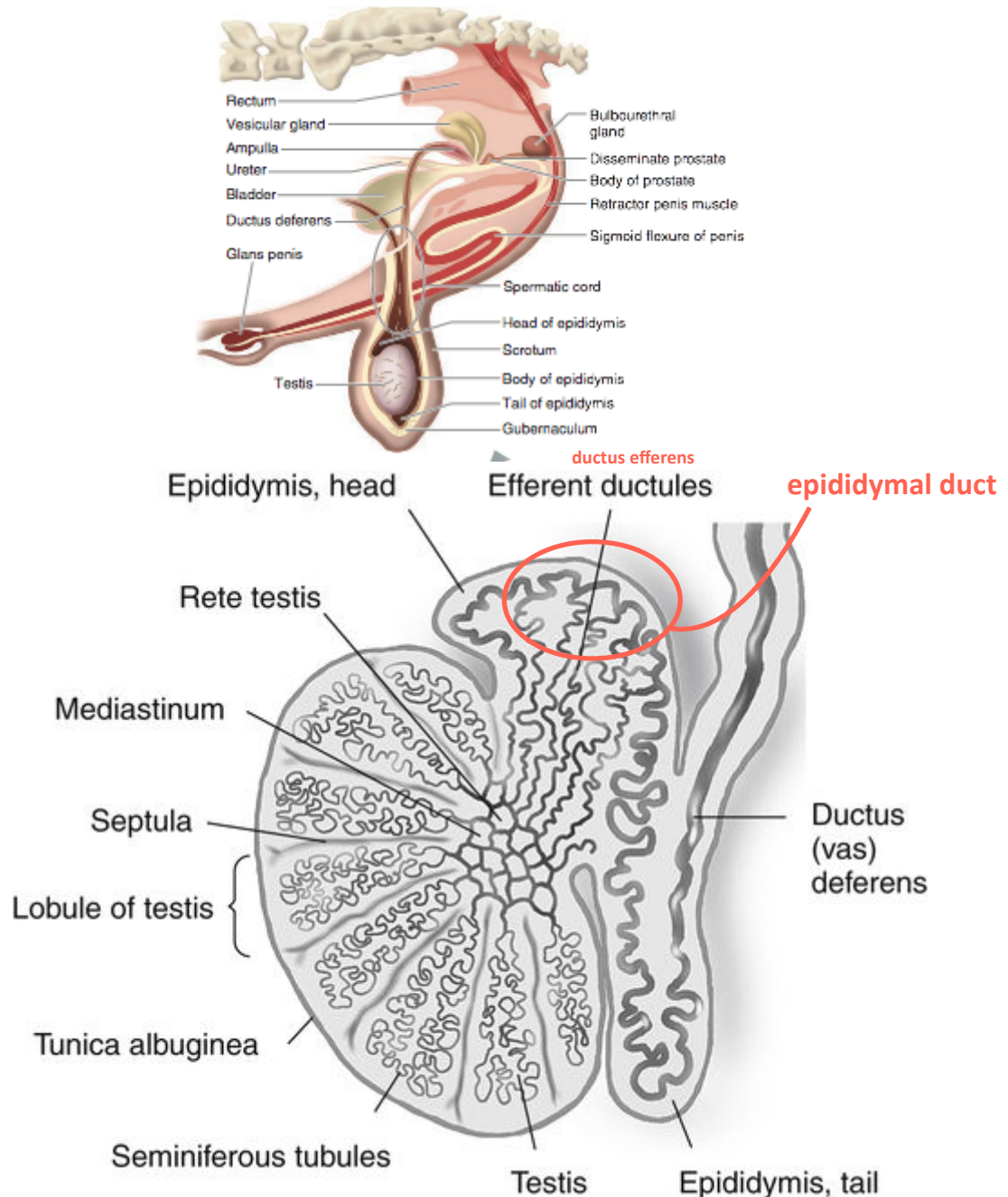


Male Reproductive System (Anatomy)

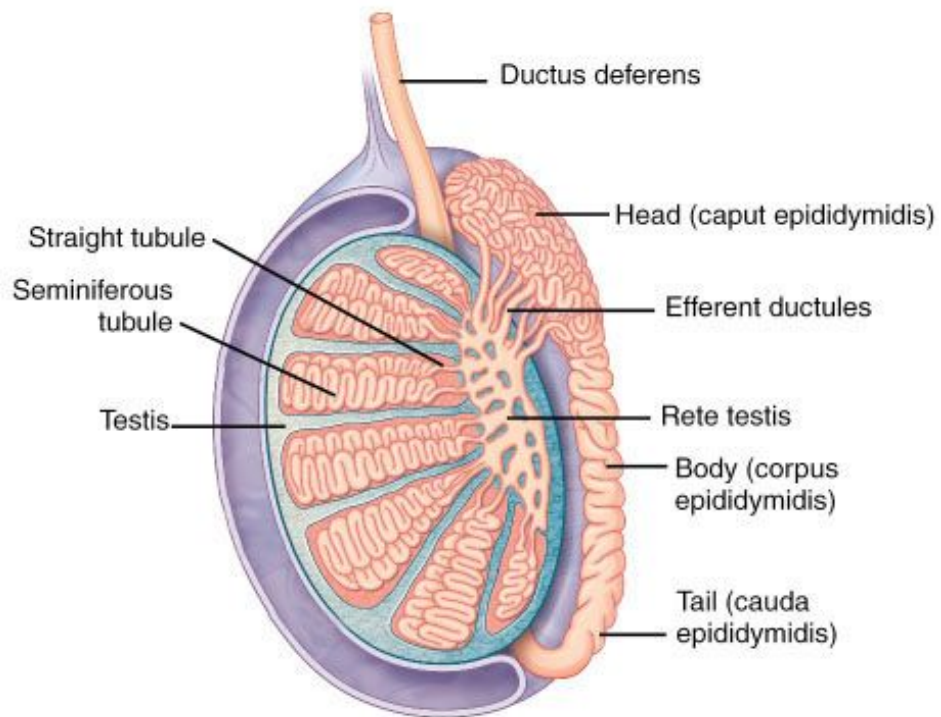
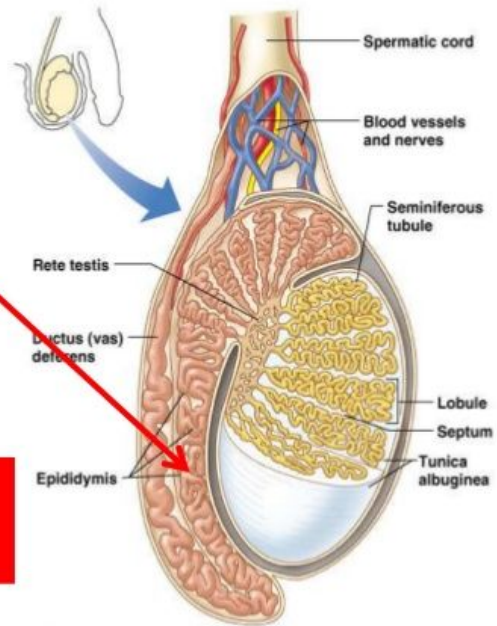
Learning Objectives:

1. Be able to **describe** the **components of the male reproductive system** of domestic mammals, and their anatomical relationships to each other and to the body cavities (scrotal, abdominal and pelvic cavities)
2. Be able to **describe the structure of the testes and scrotum**, and be able to use these structures to **explain** regulation of testicular temperature and sperm production and maturation
3. Be able to **describe**, in general terms, the **process of testicular descent**
4. Be able to **describe** the **accessory sex glands of the male genital system**, and the **differences** among the domestic mammals in the presence and form of these glands
5. Be able to **describe** the **penis and prepuce**, and **variations in these among the domestic animals**



epididymis

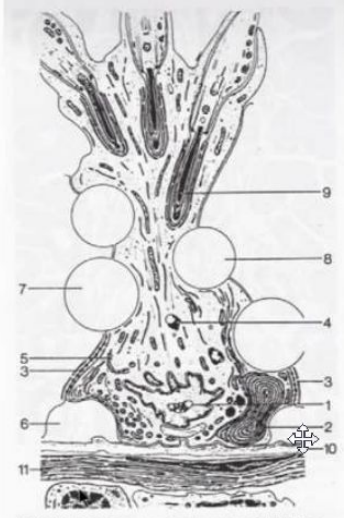
Highly coiled tubular structure



Structure	Description	Components	Function	Subdivision components
Testes	- Solid, smooth ellipsoid organs	Testicular parenchyma <ul style="list-style-type: none"> - soft, greyish to pink 	Produces sperm	As septula testes radiate out from the mediastinum, blending with the tunica albuginea, testicular parenchyma is divided into separate wedge-like TESTICULAR LOBULES . <ul style="list-style-type: none"> - Primarily consists of SEMINIFEROUS TUBULES with some loose connective tissue between them - <u>Seminiferous tubules</u>: <ul style="list-style-type: none"> • Highly convoluted; • Open a each end into a terminal straight portion • Epithelial lining consists of 2 types of tall columnar cells: <ol style="list-style-type: none"> 1. SUSTENTACULAR CELLS (Sertoli cells): supporting cells 2. SPERMATOGENIC CELLS: undergo division and maturation to become spermatozoa (takes about 50 days to develop, depending on the species); sit between one Sustentacular cell and the next one - <u>Connective tissue</u> contains: INTERSTITIAL CELLS (leydig cells) - produce male hormones like testosterone
		Fibrous skeleton	Provide framework to support parenchyma	<ol style="list-style-type: none"> 1. External TUNICA ALBUGINEA 2. Central rod - MEDIASTINUM <ul style="list-style-type: none"> - Contains a network of microscopic channels: RETE TESTIS which have cilia to create current and pull the sperm out along the length 3. Series of fine lamellae - SEPTULA TESTIS

Spermatogenesis (production of sperm cells) is undergone by spermatogenic cells of the epithelial lining of the testicular parenchyma; it consists of 3 main stages:

- 1. **Spermatocytogenesis**: mitosis of **spermatogonia** in the peripheral epithelium → **primary spermatocytes**
- 2. **Meiosis**: primary spermatocytes → meiosis I → **secondary spermatocytes** → meiosis II → **spermatids**
- 3. **Spermiogenesis**: maturation of spermatids into motile **spermatozoa** without further division



(8) represents spaces occupied by developing spermatogenic cells (spermatids) between one sustentacular cell and the next; they gradually migrate up [from the **basement membrane** (10) to the lumen of the seminiferous tubule] in the spaces between one sustentacular cell and the next as they mature into spermatozoa.

Eventually, spermatozoa are released from the sustentacular cells (**spermiation**) and float free in a small amount of fluid in the lumen, transported along towards the straight terminal portions of seminiferous tubules by contraction of **peritubular contractile cells** (11) surrounding each seminiferous tubule.

*peritubular contractile cells function like the smooth muscles along GIT; they contract in a peristaltic fashion

From the terminal, spermatozoa pass into rete testis in which they trickle along towards the end of the testes (cranial end in dog and horse) and enter the **efferent ductules** which exist the testis by passing through the tunica albuginea. Ductus efferens then combine together to form a single **epididymal duct** which runs along one border of the testis.

*sperm are not yet motile during their passage through the efferent ductules and epididymal duct so they are transported via cilia in