

Excretory ducts in the male reproductive system

The male genital tract transports as yet immature sperm from the varlet to the ovary and ultimately to the urinary tube. Sperm are transported in the urethra in testicular fluid, which is produced predominantly by Sertoli cells.

They can be divided into **intratesticular** (located in the testis) and **extratesticular** (outside the testis).

Intratesticular genital tract

Tubuli recti

These are narrow ducts arising from the seminiferous ducts of the testis (*tubuli seminiferi contorti*). The initial sections are lined by **Sertoli cells**, which pass from the seminiferous tubules and release sperm. The remaining sections are lined by a **single-layered cuboidal epithelium** surrounded by a layer of dense collagenous connective tissue.

Rete testis

A system of irregular, multiple anastomosing slits and ducts formed in the mediastinum testis. The **rete testis** is lined by a **single-layered cuboidal epithelium**.

Extratesticular genital tract

Ductuli efferentes

Altogether about 10-20 coiled ducts^[1] protruding from the rete testis on the dorsal side of the testis. It is located in the sparse collagenous ligament of the head of the epididymis and exits laterally into the *ductus epididymidis*. They are lined by **single-row (or double-row) epithelium** in which groups of higher (cylindrical) and lower (cuboidal) cells alternate. The cuboidal cells have microclusters used to thicken the testicular fluid produced by the Sertoli cells. Cylindrical cells have cilia that oscillate outward from the epididymis to aid in sperm transport. A circularly arranged layer of smooth muscle cells located in the sparse collagenous connective tissue, external to the basement membrane of the epithelium, also participates in sperm transport.

Ductus epididymidis

A single coiled duct which, when unfolded, would be 4-6 meters in length^[1]. It is lined by a **double-rowed cylindrical epithelium** composed of **main cylindrical cells** and low **basal cells**. The principal cells contain immobile stereocilia and an apically located proton pump, which provides an acidic environment in the lumen that inhibits sperm motility. The basal cells attach to the basement membrane and are the precursors of the cylindrical cells. Below the epithelium is a thin layer of sparse collagenous connective tissue with myofibroblasts (head and body) or smooth muscle cells (tail). Spermatozoa in the *ductus epididymidis* mature and are stored there (in immobile form, mainly in the tail region of the epididymis). The contractile elements (myofibroblasts and smooth muscle cells) transport the contents of the ductus epididymidis slowly forward, with transport through the epididymis taking approximately 12 days^[2]. After some time, the unejaculated sperm degenerate and are phagocytosed by macrophages and the principal cells of the *ductus epididymidis*.

Ductus deferens

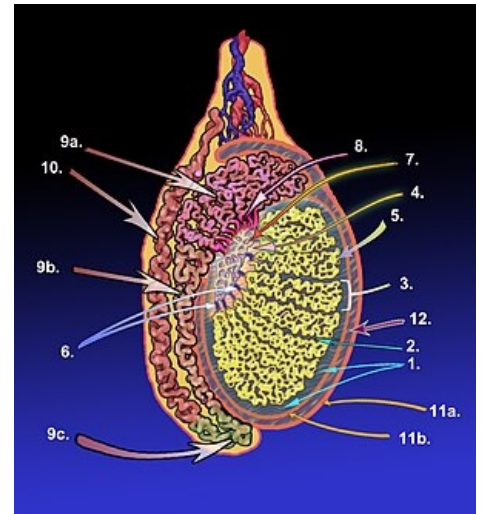
The *ductus deferens* connects the epididymis to the urethra and is the longest part of the male genital tract (approximately 40 cm)^[2]. It provides rapid transport of fluid with sperm into the urethra. It passes in the seminal vesicle (*funiculus spermaticus*) into the inguinal canal and continues through the small pelvis to the prostatic part of the urethra. It has a narrow lumen with longitudinal mucosal cilia, a thin mucosa, a thick muscular wall and a **tunica adventitia**.

 For more information see *Faeces*.

Ampula ductus deferentis

Extension of the *ductus deferens* in front of the mouth of the seminal vesicles (*vesiculae seminales*)'. After the entrance of the seminal vesicles, the duct is called **ductus ejaculatorius**. It differs from the remaining sections of the ductus deferens by the structure of its mucosa. There is a larger lumen and a heavily thickened mucosa. The epithelium is **single-layered cuboidal to cylindrical**, without stereocilia, with a secretory function.

Ductus ejaculatorius




Male reproductive tract

An outlet formed by the union of the ductus deferens with the outlet of the seminal vesicles. It enters the prostate and exits there at a prominence called the *colliculus seminalis*, located on the posterior wall of the *pars prostatica urethrae*. It is lined by a **single-layered cuboidal or cylindrical epithelium**, without stereocilia, with a secretory function (or a double-rowed epithelium). The mucous membrane consists of longitudinal cilia.

Urethra

From the *ductus ejaculatorius* into the urethra, the male genital tract continues together with the urinary tract. Following a nerve stimulus, the ejaculate, consisting of sperm and secretions from the testes (testicular fluid), seminal vesicles and prostate, passes through the three parts of the urethra (*pars prostatica, pars membranacea et pars spongiosa urethrae*)' to the external orifice of the urethra (***ostium urethrae externum***).

 For more information see Urinary tube.

Links

Related articles

- Epididymis
- developement of genital excretory tract
- myodermous hyperplasia of prostate gland (sample)

Histological samples

- Collection of histological samples
- Ductus deferens (SFLT)
- Atlas of histological samples/Male reproductive system

Sources

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- EROSCHENKO, Victor P. *diFiore's Atlas of Histology: with Functional Correlations*. 12. edition. 2012. ISBN 1451113412.
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References

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2. LÜLLMANN-RAUCH, Renate. *Histology*. 1. edition. Grada, 2012. pp. 413. ISBN 978-80-247-3729-4.