

LABORATORY 30 - MALE REPRODUCTIVE SYSTEM - TESTIS AND GENITAL DUCTS
(first of two laboratory sessions)

OBJECTIVES: LIGHT MICROSCOPY: Recognize the duct systems and their components that are found in the testis including: seminiferous tubules, straight tubules, rete testis, efferent ductules and epididymis also spermatic cord with vas deferens.

ELECTRON MICROSCOPY: Recognize the components of seminiferous tubules and Leydig cells.

ASSIGNMENT FOR TODAY'S LABORATORY

GLASS SLIDES

[SL 156](#) Testis and epididymis

[SL 55](#) Testis and epididymis

[SL 47](#) Vas deferens and spermatic cord

[SL 159](#) Vas deferens and spermatic cord Trichrome stain

POSTED ELECTRON MICROGRAPHS

S-98 Seminiferous tubule

S-100 Leydig cell

[Lab 30 Posted EMs](#); [Lab 30 Posted EMs with some yellow labels](#)

HISTOLOGY IMAGE REVIEW - available on computers in HSL

Chapter 16, Male Reproductive System

Frames: 1064-1094

SUPPLEMENTARY ELECTRON MICROGRAPHS

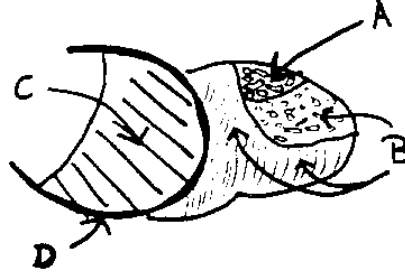
Rhodin, J. A.G., [An Atlas of Histology](#)

Copies of this text are on reserve in the HSL.

Male reproductive system, pp. 386 - 398

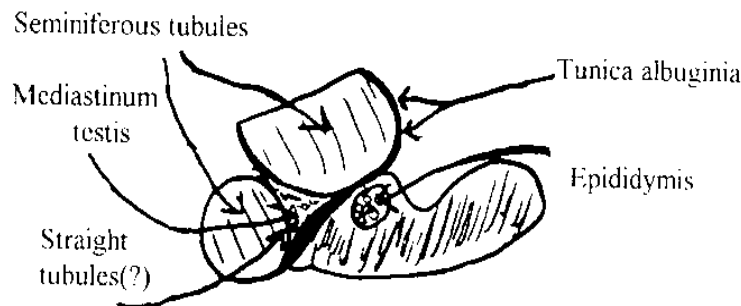
TESTIS AND GENITAL DUCTS

- A. TESTIS AND EPIDIDYMIS - Adult. [SL 156 \(scan\)](#) The rough diagram of this slide (below) will help you determine the location of different regions in the section. Refer to J. 21-1 to determine the plane of this section.



1. Identify the [tunica albuginea](#) (D) of the testis and [seminiferous tubules](#) (C). The triangular piece on this slide is the head of the [epididymis](#) ([low](#), [med](#), [high](#)) showing the tubules of the epididymis (A) and, to varying extent, tubules of the [efferent ductules](#) ([ductuli efferentes](#)) (B) ([tunica albuginea, red arrows; seminiferous tubules, black line; epididymis, blue line; efferent ductules, green line](#)).
2. Note in (C) lobules of [seminiferous tubules](#) interstitial connective tissue and [Interstitial cells of Leydig](#) ([enclosed in blue line](#)) (J. 21-3, 21-4; W. 18.4, 18.9).
3. In the seminiferous tubules identify cells representing the various stages in spermatogenesis ([1](#), [2](#)) (J. 21-5, to 21-9; W. 18.5). Also, identify [Sertoli cells](#) and review their function (J. pp. 438-440; W. 18.6). [Cells identified in seminiferous tubule:](#) Sertoli cells (red arrows), [spermatogonia](#) (black arrows), [primary spermatocytes](#) (blue arrows), [spermatids](#) (green arrows) and also [myoid cells](#) (yellow arrows) that are found around the periphery of the tubules.
4. Observe the structure of the [epididymis](#) (J. 21-16; W. 18.12) compared to the [efferent ductules](#) (W. 18.11), especially the differences in the characteristics of the epithelium. Which has true cilia?

- B. TESTIS AND BODY OF THE EPIDIDYMIS - Adult. [SL 55](#). A rough diagram is given for orientation, but not all sections will look exactly like this.



1. Identify [epididymis](#), [tunica albuginea](#), and [seminiferous tubules](#). In the [mediastinum testis](#) numerous, irregularly-shaped channels are found, the [rete testis](#) ([low](#), [med](#)) (W. 18.10). Observe the structure of the rete testis ([epididymis, yellow arrow; tunica albuginea, green arrows; seminiferous tubules, red arrows; rete testis, enclosed by blue line](#)), and the epithelium that lines it.

2. Along the margin of the mediastinum, there may be a few tubules lined with simple cuboidal to low columnar epithelium that are devoid of spermatogenic cells. These are the straight tubules (tubuli recti, [blue arrow](#)) that connect the seminiferous tubules to the rete testis (J. p. 442; Fig. 21-1).
 3. On this slide, review the structure of the seminiferous tubule, spermatogenesis, and interstitial tissue.
- C. Study the process of spermiogenesis in your texts (J. 21-10; W. 18.6).
- D. Electron Microscopy. From your texts, study Figures J. 21-11 to 21-15; W. 18.7, 18.8, noting the characteristics of spermatozoa and their differentiation and the ultrastructural features of Sertoli and Leydig cells. [EM 12](#) shows a small region of a Leydig cell. The appearance of Leydig cells is typical of steroid secreting cells.
- E. VAS DEFERENS AND SPERMATIC CORD.
[SL 47](#) ([scan](#), [med](#)) (J. 21-17; W. 18.13) Stained with H and E;
[SL 159](#) ([low](#), [med](#)) stained with Bencosme's trichrome.
1. The epithelium of the vas deferens is similar to that of the epididymis. The muscularis is very thick and three distinct layers can be detected. The adventitia blends with the connective tissue of the spermatic cord.
 2. The spermatic cord consists of several components in addition to the vas deferens including: the thick-walled veins of the pampiniform plexus, the testicular artery, nerves and scattered groups of skeletal muscle fibers of the cremaster muscle.
- F. Review the changes in the structure and function of all types of epithelia encountered from seminiferous tubule to vas deferens.

OBJECTIVES FOR LABORATORY 30: MALE REPRODUCTION – TESTIS AND GENITAL DUCTS

1. Using the light microscope or digital slides, identify:

Testis

Regions

- Tunica albuginea
- Mediastinum testis
- Seminiferous tubules

Cell types

Germ cells

- Spermatogonia
- Primary spermatocytes
- Secondary spermatocytes not seen on our slides
- Spermatids
- Spermatozoa

Sertoli cells

- Interstitial cells of Leydig (Leydig cells)

Myoid cells

Ducts within testis

- Straight tubules
- Rete testis
- Efferent ductules

Epididymis

Spermatic cord

- Vas deferens (ductus deferens)
- Testicular artery
- Pampiniform plexus
- Cremaster muscle

2. On electron micrographs, identify:

Spermatid

- Acrosome

- Manchette

Sertoli cell

Leydig cell

REVIEW

1. Why are secondary spermatocytes difficult to find in the seminiferous tubules?
2. What is the relationship between Sertoli cells and the hormone secreted by Leydig cells.
3. The blood testis barrier is formed primarily by which cells?
4. How can you explain the presence of skeletal muscle in the spermatic cord?