The Reproductive System: Male Anatomy

A reproductive system lab activity using Visible Body’s Human Anatomy Atlas

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This lab activity is aligned with Visible Body's Human Anatomy Atlas app.

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**PRE-LAB EXERCISES**

Use the following modules in Visible Body’s Human Anatomy Atlas app to guide your exploration of the reproductive system. You can manipulate the images to see different views and isolate each structure. Be sure to select the book icon under the structure name to read information specific to that structure.

As you explore the modules, locate the organs and related structures on any additional charts, models, or specimens available.

Make the following observations, and note that you are responsible for **all bold terms** and diagram labels.

### I. MALE REPRODUCTIVE SYSTEM OVERVIEW

To start: Select the Views menu at the top of the screen, then select Systems. Scroll down to Reproductive System Views at the bottom and select 1. Reproductive System (M).

1. The external organs of the male reproductive system, the **penis** and the **testes**, lie outside the pelvis. Deselect the skin by choosing the skin icon at the top of the system list on the left (it looks like a head). Select any part of the **penis** or scrotum to see the **dartos fascia**, the connective tissue that surrounds the external organs.
2. Hide the dartos fascia and select either of the **testicles (testes)**. This will highlight the **spermatic fascia** that cover the testes and continue as tubes over the pubis and into the pelvic cavity.
3. Deselect the skeletal system (the skull icon) and follow the path of the spermatic fascia to the vas deferens, over the bladder, and into the prostate.
4. Rotate the view so you can see the paired **seminal vesicles** attached to the posterior part of the bladder above the prostate.

5. Locate the bottom of the prostate and note how it attaches to the penis. Zoom in and find the small paired **bulbourethral (Cowper's) glands**. The bulbourethral glands, the prostate, and the seminal vesicles are **accessory glands** of the male reproductive system.

**TIME TO PRACTICE!**

**GO TO THE REPRODUCTIVE SYSTEM QUIZZES AND TAKE QUIZZES 1. OVERVIEW, REPRO. (M) AND 2. EXTERNAL GENITALIA (M).**
II. MALE REPRODUCTIVE SYSTEM: TESTICLES AND SPERMATIC CORDS

1. In the Reproductive System menu select Show More, then select 6. Testicles. Select the right spermatic fascia and hide it. Next, select the right testicle (testis) and read the definition in the content box.

   a. What is the primary purpose of the testes?
      **To produce sperm**

   b. Testes are the ____gonads____, the **primary male sex organs**.

   c. What are gametes?
      **Sex cells**
d. What is the name for male gametes?

Sperm

e. Testes also secrete _____testosterone_____, a hormone important in the development of male characteristics.

2. Refresh the model and then hide the skin once more. Look at the sheaths formed by the spermatic fascia that enter the pelvis via the inguinal canal.

a. What are these sheaths called?

Spermatic cords

b. What is carried inside these sheaths?

The vas deferens, testicular arteries and veins, and nerve fibers
3. In the Reproductive System menu select Show More, then select 7. Testicle Section. Note the **lobules** formed by connective tissue inside the testis.

   a. What are contained in these lobules?
   
   **Seminiferous tubules**

4. Sperm cells develop inside these tubules from puberty throughout a man’s life.

   a. The male sex cells, sperm, contribute ____half____ the genetic information required to form an embryo.

5. Select the right **epididymis**, the small banana-shaped gland attached to the posterior region of each testis. Read the definition and answer the following questions.

   a. The epididymis is divided into three regions: the ____head____, the ____body____, and the ____tail____.

   b. The epididymis collects ____semen fluid/sperm____ from the seminiferous tubules.

   c. Sperm cells remain in the epididymis for two to three months and, as they mature there, they acquire the ability to swim and to fertilize an egg. After they leave the epididymis, sperm enter the ____vas deferens____.
III. MALE REPRODUCTIVE SYSTEM: VAS DEFERENS, SEMINAL VESICLES, AND THE PROSTATE GLAND

1. In the Reproductive System menu select 4. The Prostate. Select one of the vas deferens and follow its path to the prostate. Rotate the model in order to look at the posterior side of the prostate. Select the prostate and read the definition in order to answer the following questions.

   a. Accessory glands add fluids to the sperm to form **seminal fluid**, which is **ejaculated** from the urethra during sexual activity. The prostate is one of the **accessory glands**, which are glands that contribute to the fluid containing sperm, of the male reproductive system. Fluid from the prostate enters into the **prostatic portion of the urethra**.

   b. Prostate fluid contributes **enzymes** and other substances to semen.
c. Select the right side of the prostate and hide it. Select any of the lobes of the prostate. These lobes contain **glandular** tissue.

2. Locate the urethra, the tube that drains from the urinary bladder into the penis. Note that it passes directly through the prostate. The portion of the urethra that passes through the prostate is called the **prostatic urethra**.

3. Select the prostate and then choose the pathology icon in the popup window (the stethoscope) to see common diseases associated with the prostate. How could an enlarged prostate affect urination? *It may hinder or block urination by obstructing the urethra.* "Urinary tract infection" is another possible answer.

4. Locate the **seminal vesicles**, two glands attached to the posterior portion of the urinary bladder. Locate the spot where the seminal vesicles join with the vas deferens as they enter the prostate.

   a. What substances are secreted by the seminal vesicles?
   **Sugars and prostaglandins (and other things)**

   b. What proportion of the seminal fluid is contributed by the seminal vesicles?
   **2/3**

   c. The vas deferens and the seminal vesicle ducts join to become the **ejaculatory duct**.
IV. MALE REPRODUCTIVE SYSTEM: EJACULATORY DUCTS AND THE BULBOURETHRAL GLANDS

1. In the Reproductive System select Show More, then select 10. Ducts. Locate the **ejaculatory duct**, which carries sperm from the vas deferens, along with seminal vesicle secretions, through the prostate to the **prostatic urethra**.

2. Note that the first part of the prostatic urethra carries only urine from the bladder. After the junction of the ejaculatory duct, the urethra is responsible for carrying both sperm and urine (at different times).

3. Choose the portion of the urethra that lies between the prostate and the penis.
   
   a. What is this called?
   
   **The membranous urethra**
4. Near the **membranous urethra** are the two paired **bulbourethral (Cowper’s) glands**. Ducts from these glands join the urethra below the membranous urethra at the proximal portion of the **spongy portion of the urethra** (the spongy urethra).

   a. What do the bulbourethral glands secrete?
   
   **Alkaline mucus**

   b. What is the function of this secretion?
   
   **To counteract any acidic remains of urine**

5. Select the **corpus spongiosum** of the penis and hide it. Select the spongy urethra and follow it to the slightly enlarged ending where the urethra ends externally at the end of the glans penis.
1. In the Reproductive System select Show More, then select 12. Penis. Note the skin (faded) that covers the penis. Select the part of the skin that covers the glans penis. Part of it is removed during a procedure called circumcision.

   a. What is it called?
   Foreskin/prepuce

2. Choose the skin icon on the left to hide the skin. Locate the glans penis, the paired corpus cavernosum, and the corpus spongiosum. The latter two structures are made of spongy tissue that fills with blood to cause the penis to become erect.

3. Select the muscle (the arm) and skeletal system icons, then hide them. Next, choose the circulatory system icon (the heart) to show it. Locate the dorsal superficial vein of the penis and the dorsal artery of the penis. Next locate the paired deep arteries of the penis. The spongy portions of the penis become engorged with blood from these arteries during sexual arousal and the veins drain the blood after ejaculation.

4. Rotate the model so that you can see where the urethra exits the body at the tip of the glans penis.
VI. PELVIS CROSS SECTION

View 3: Pelvis Cross Section

In the Cross Section tab scroll down to the Pelvis section and select 3. Pelvis (Symphysis) (M). Locate the following:

a. Corpus cavernosum
b. Corpus spongiosum
c. Buck’s fascia
d. Deep dorsal vein of the penis
e. Prostate
f. Prostate capsule
g. Urethra
PUTTING IT ALL TOGETHER

Name the structures through which sperm passes, from the testis to the glans penis.

Testis > epididymis > prostatic urethra > membranous urethra > spongy urethra

List the accessory glands that contribute fluid to seminal fluid.

Prostate, bulbourethral glands, and seminal vesicles

TIME TO PRACTICE!
GO TO THE REPRODUCTIVE SYSTEM QUIZZES AND TAKE QUIZZES 3. INTERNAL GENITALIA (M) AND 4. REPRO. DUCTS (M).
Student Practice

Label all the structures on the following images:
Source: Reproductive System Views: View 1 Reproductive System (M)
Source: Reproductive System Views: View 1 Reproductive System (M)

Penis

Scrotum

Dartos fascia
Source: Reproductive System Views: View 1 Reproductive System (M)

- Bladder
- Prostate
- Buck's fascia
- Glans penis
- Testicle (inside spermatic fascia)
- Spermatic fascia
- Vas deferens
Source: Reproductive System Views: View 1 Reproductive System (M)

- Bladder
- Seminal vesicles
- Prostate
- Vas deferens
- Bulbourethral (Cowper's) glands
Source: Reproductive System Views: View 6: Testicles

- Gonadal vessels
- Spermatic cord
- Vas deferens
- Spermatic fascia
- Right testicle
Source: Reproductive System Views: View 7: Testicle Section

- Vas deferens
- Epididymis
- Lobule
Source: Reproductive System Views: View 4: The Prostate
Source: Reproductive System Views: View 12: Penis

- Dorsal artery of penis
- Corpus spongiosum
- Corpus cavernosum
- Dorsal superficial vein of the penis
- Glans penis
Source: Pelvis (Axial) Cross Sections: View 3 Pelvis (Symphysis) (M)

- Corpus cavernosum
- Corpus spongiosum
- Deep dorsal vein of the penis
- Prostate
- Prostatic capsule
- Buck's fascia
- Urethra