

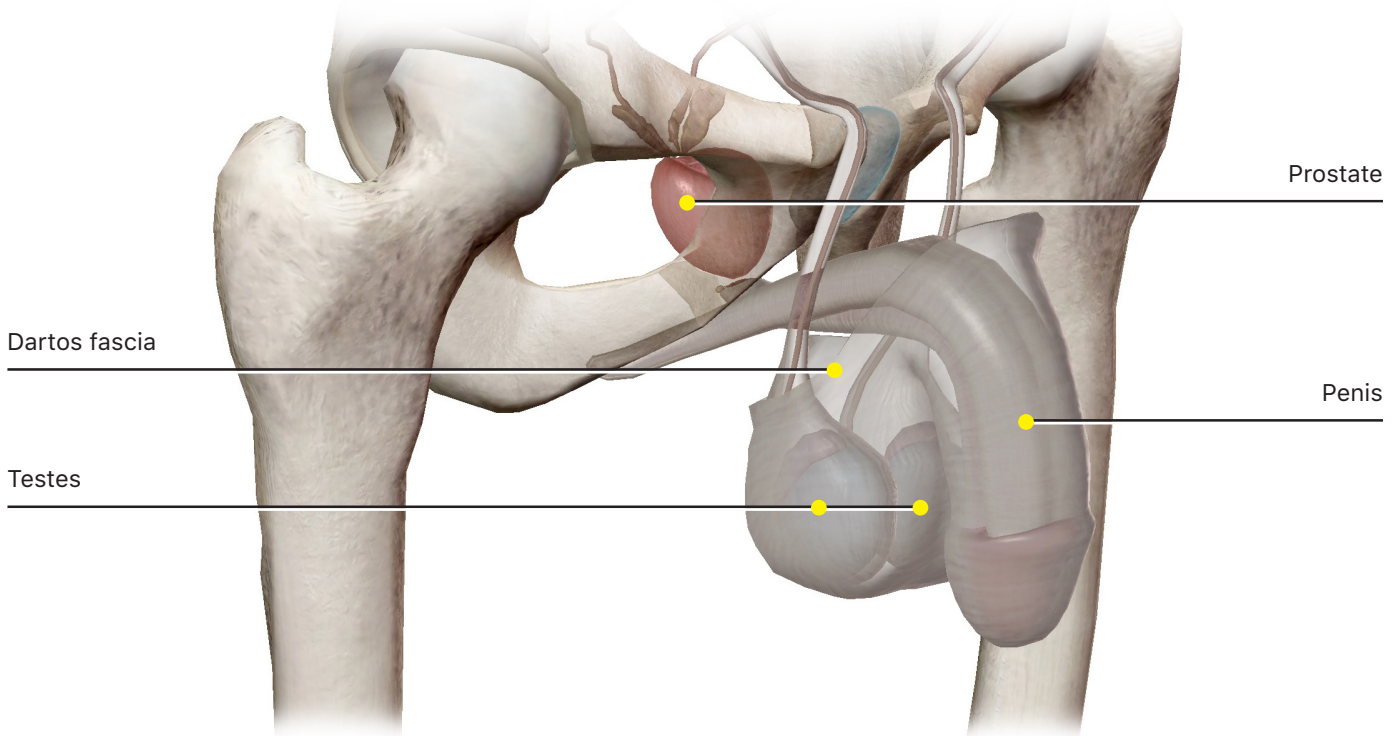
The Reproductive System: Male Anatomy

A reproductive system lab activity using
Visible Body's Anatomy & Physiology

**Blythe Nilson, Associate Professor of Biology,
University of British Columbia Okanagan**

PRE-LAB EXERCISES

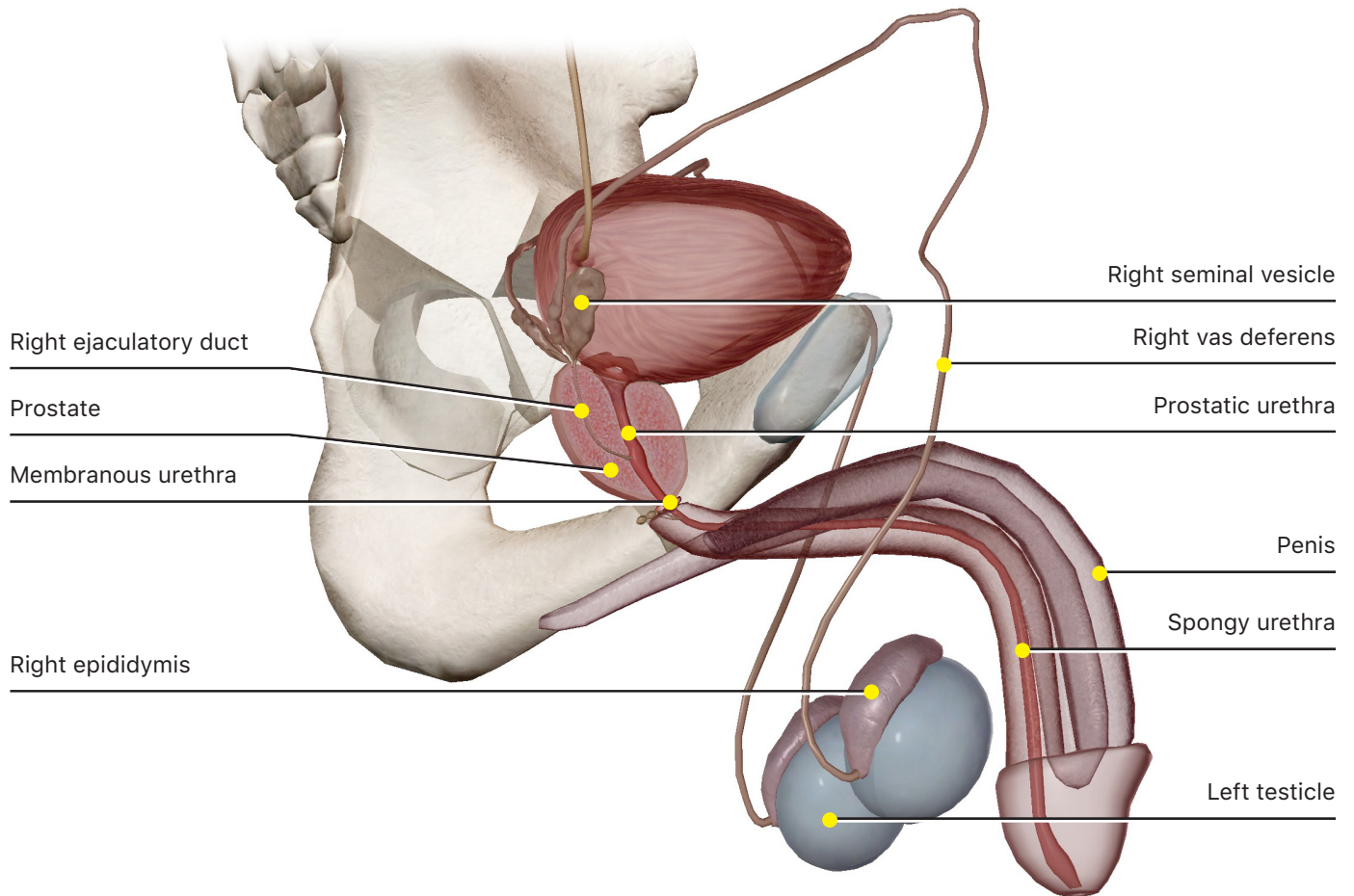
A. Open Module 47.2 Reproductive Anatomy.



Male reproductive anatomy consists of glands and ducts that deliver sperm to the female reproductive tract. Sperm are produced in the testes and travel through the reproductive system via a series of ducts. Using the list of structures in this module, follow the path of sperm from production to ejaculation by clicking on the following structures in order. Read the definitions for each term by selecting the book icon, and answer the questions.

1. Testes

- Before selecting anything, look at the way that some of the organs, the **testes** and **penis**, of the male reproductive system are outside the pelvis. Look at the layer of tissue (faded here) surrounding the penis and testes. Select anywhere on it and you will see the definition for the dartos fascia. Select Show. The portion housing the testes is called the dartos, and is one of the layers of the scrotum, the sac of skin, muscle, and connective tissue that contains the testes.
- Another name for sex a cell is "gamete." What are the gametes produced in the testes called?
- What is the main sex hormone produced by testes?
- Sperm contribute _____ the genetic instructions necessary for the development of an embryo through fertilization.



2. Epididymis

The epididymis ducts receive immature sperm cells from the testes. These sperm cells remain in the epididymis for two to three months and, as they mature in the epididymis, they acquire the ability to swim and to fertilize an egg.

- a. The epididymis is divided into three regions: the _____, the _____, and the _____.

3. Vas deferens

- a. The vas deferens carries semen (the fluid containing sperm) from the _____ to the _____.

4. Ejaculatory ducts

- a. The ejaculatory ducts carry semen from the _____ to the _____.
- b. Ejaculatory ducts begin at the union of the _____ and the _____.

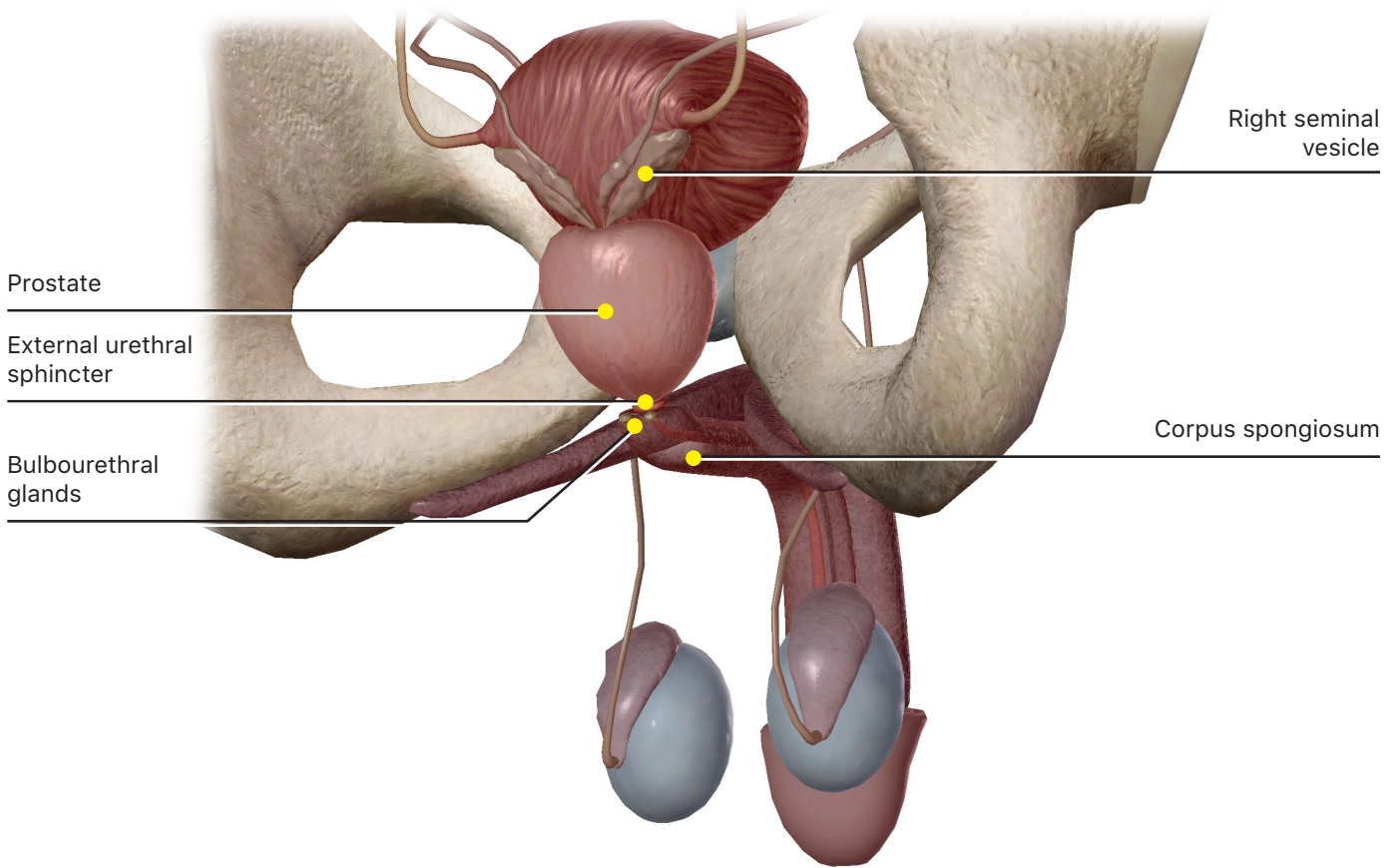
5. Urethra

- a. The urethra is a channel that carries both _____ and _____.
- b. The urethra is divided into three parts: the _____ urethra, the _____ urethra, and the _____ urethra.
- c. The prostatic urethra passes through the center of which gland?
- d. Which of the three parts of the urethra carries only urine, and never sperm, at least for part of the way?

6. Penis

- a. The penis contains spongy, erectile tissue that fills with _____, causing it to stiffen during sexual arousal, enabling it to penetrate the vagina.
- b. During _____ semen is deposited at or near the female _____, the passage to the uterus.

B. Go to Module 48.8 Accessory Glands.



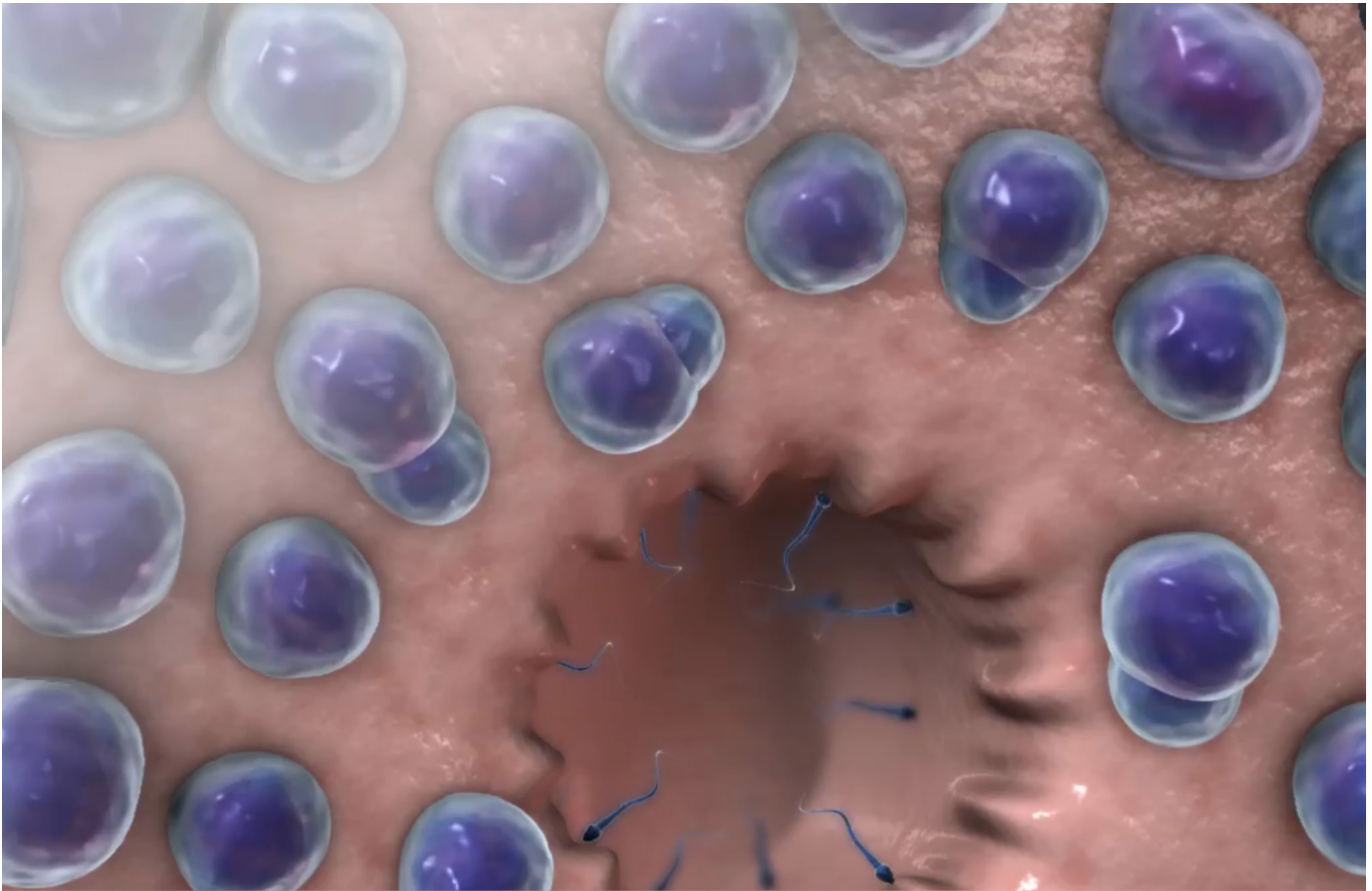
Accessory structures that contribute fluids to semen (the fluid containing sperm) include the seminal vesicles, the prostate, and the bulbourethral (Cowper's) glands. Choose Seminal vesicles and read the definition.

1. Seminal vesicles

- a. Seminal vesicles consist of long coiled tubes that join with the _____ to become the _____.

- b. The fluid secreted by the seminal vesicles makes up about _____ of the volume of semen. It contains _____, _____, and other substances.

C. Watch the video for Module 48.5 Spermatogenesis (formerly 48.4), and answer the following questions:



1. Sperm production begins with stem cells called _____.
2. These stem cells divide by _____ to produce primary _____.
3. Human cells normally have 46 chromosomes. Primary spermatocytes divide by the process of _____ to produce _____ that have _____ chromosomes.
4. Secondary spermatocytes develop into _____.
5. Spermatids mature into _____ in the _____.

D. Watch the video for Module 49.6 Oogenesis (formerly 49.5), and answer the following questions:



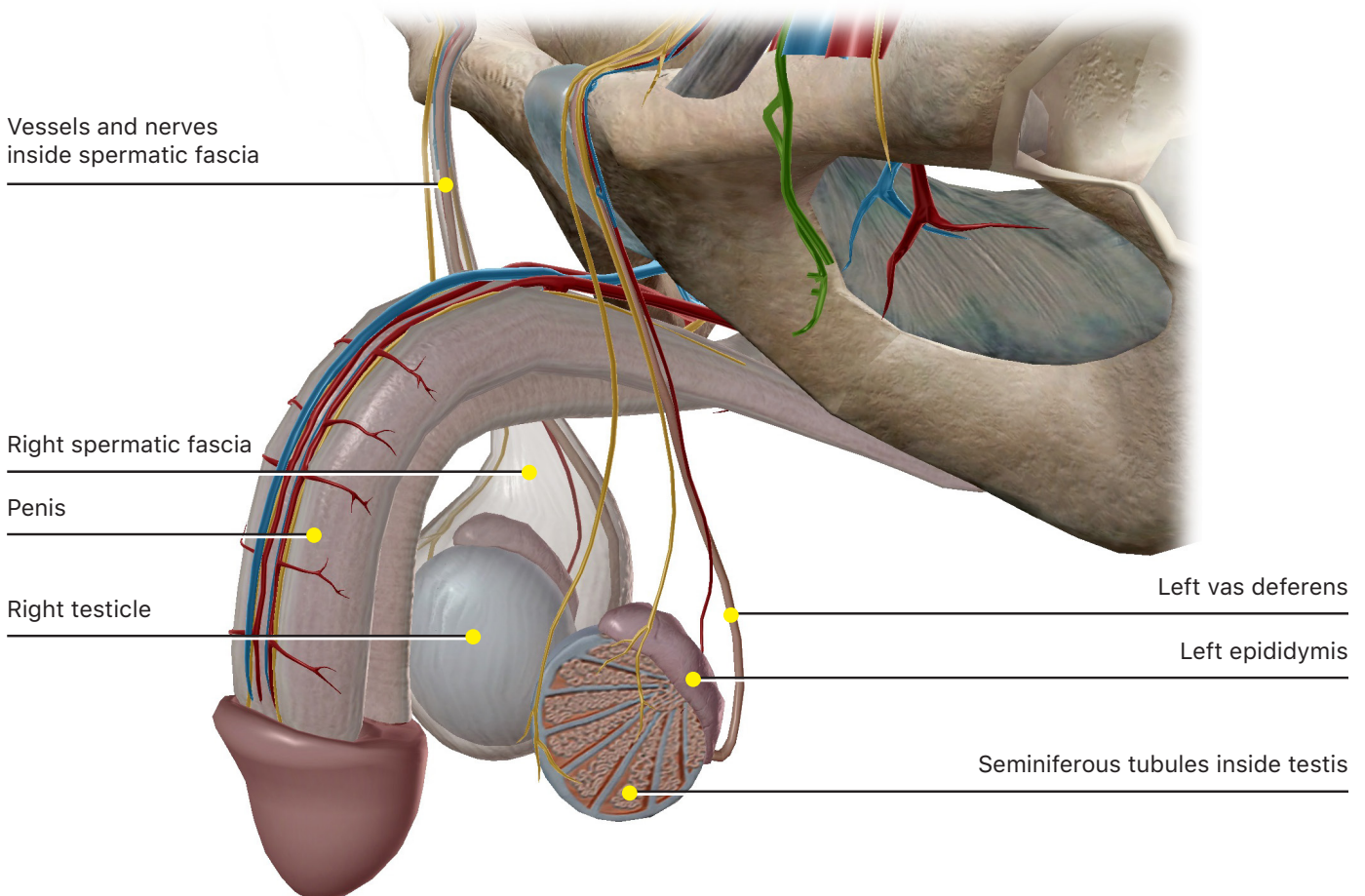
1. Oocyte production begins with stem cells called _____.
2. These stem cells divide by _____ to produce primary _____.
3. At puberty, some primary oocytes become surrounded by primordial _____.
4. Inside primordial follicles, primary oocytes complete meiosis I and some begin _____, then pause. These cells are called _____.
5. Each month one of these secondary oocytes is released into the uterine tube where it may become fertilized by a _____.

IN-LAB EXERCISES

Use the following modules in Visible Body's Anatomy & Physiology 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.

You are responsible for the identification of **all bolded terms**.

A. Go to Module 48.2 Testes and Spermatic Cords.



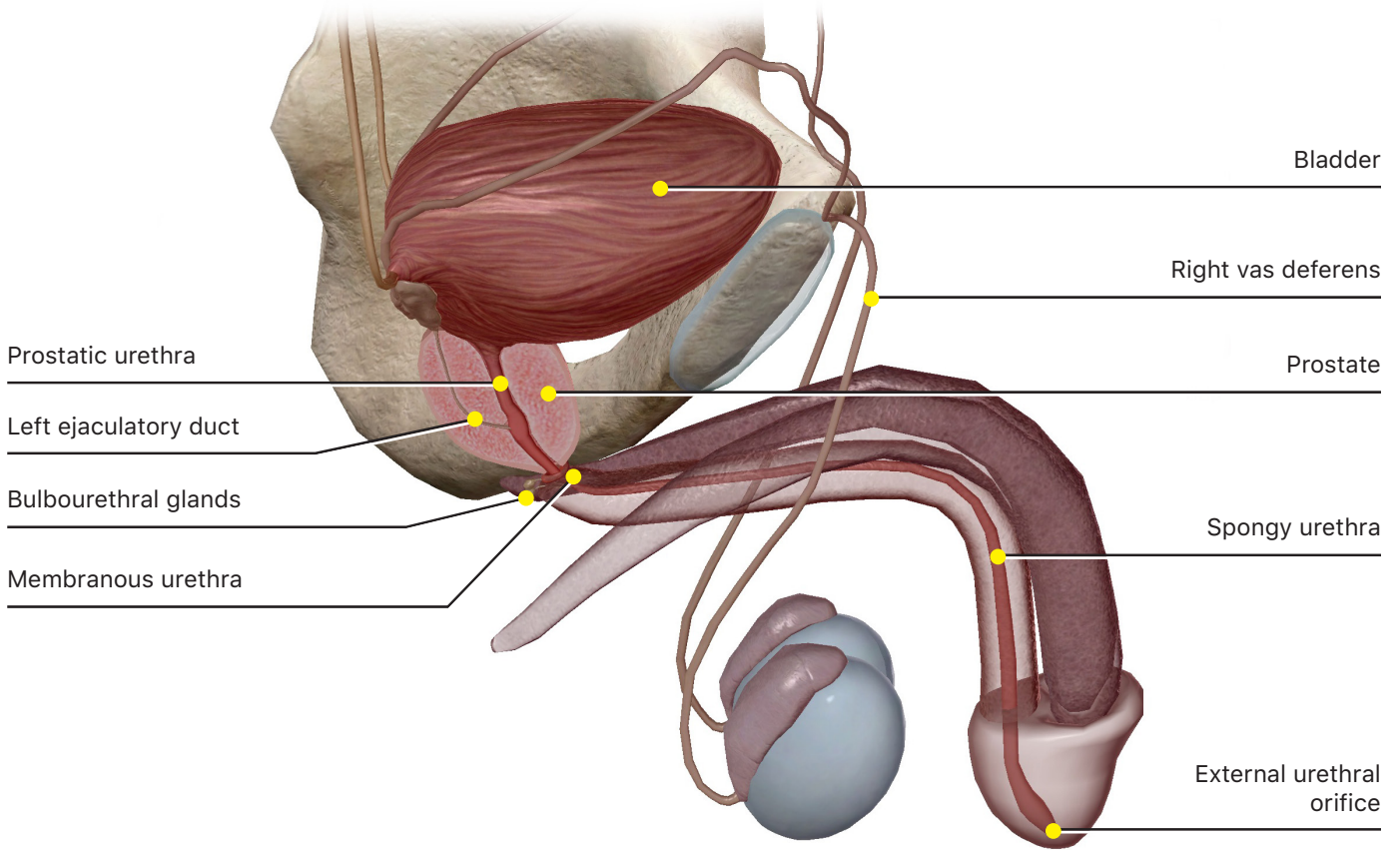
1. The testes are male **gonads**. What does the term gonad mean?

2. Select Vessels and nerves to see how the **testes** communicate with the other organs of the reproductive system. Hide the spermatic fascia to identify the vessels and the nerves.

3. Select Spermatic cords and fascia. Note how the testes, along with the vessels, ducts, and nerves that connect to them are wrapped in **fascia** that protects them. The long, tubular fascia that penetrate the pelvic floor are called the **spermatic cords**. List the three main structures that pass through the spermatic cords:

4. Select the testis and then select the spermatic fascia and hide it. Select the testis and hide it. This will reveal the testis cross-section. Note the seminiferous tubules that fill the organ. These produce sperm cells and carry them to the epididymis.

B. Go to module 48.8 Urethra (formerly 48.7)



1. Locate the following structures:

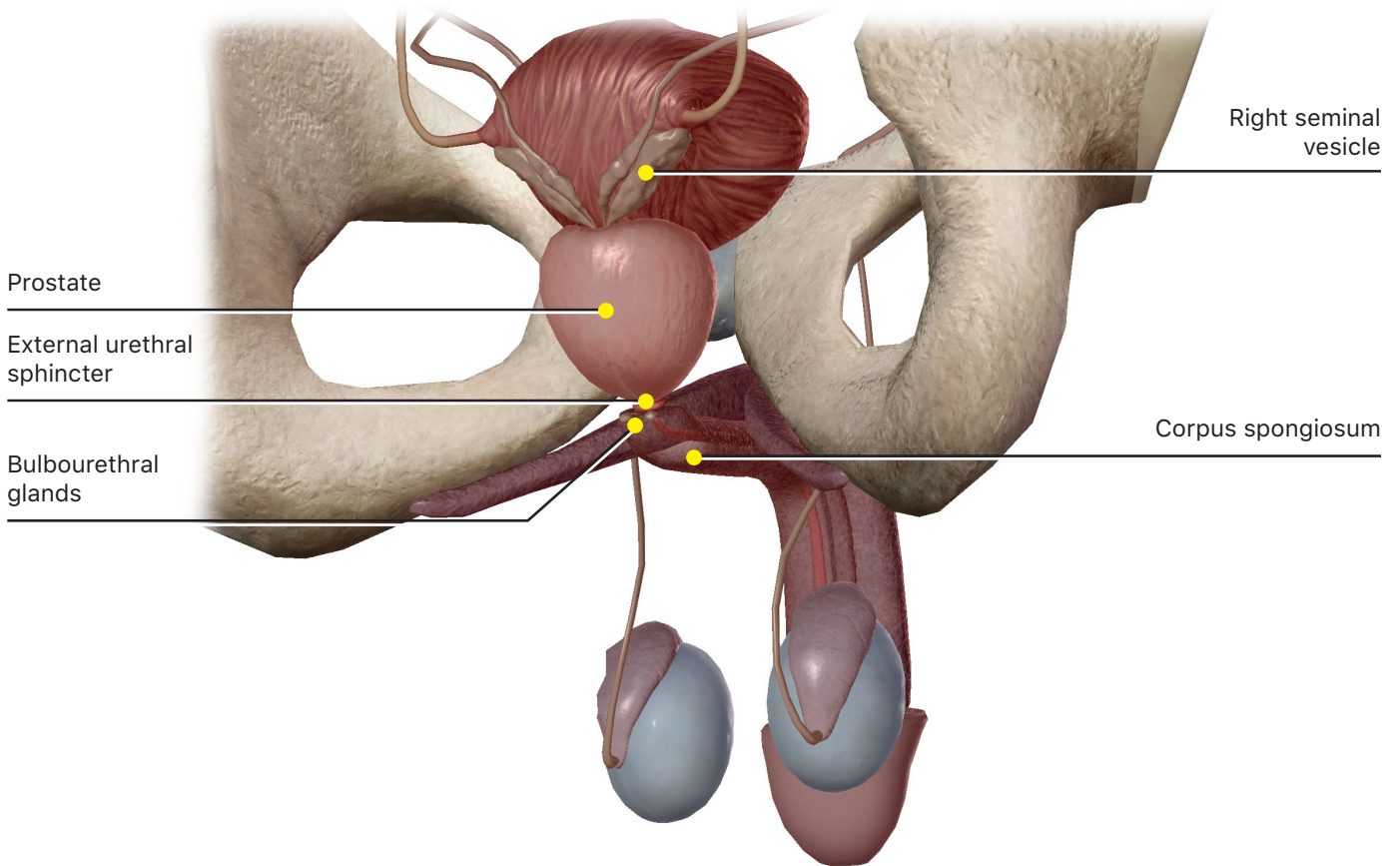
- a. **Bladder**
- b. **Ejaculatory ducts**
- c. **Urethra**

2. Trace the path of **semen** (fluid containing sperm) from the **vas deferens** to the **external urethral orifice**. List the structures that semen passes through, in order.

- a. _____
- b. _____
- c. _____
- d. _____

3. Note that the **ejaculatory duct** is located entirely inside the **prostate**. Note the region where it joins with the urethra.
4. Click on each of the three parts of the urethra to locate them and read the definitions.
 - a. Which is the shortest part of the urethra?
 - b. Which part of the urethra receives ducts from the **bulbourethral glands**?
 - c. What are the two portions of the cavernous (spongy) urethra? Locate them in the model.
 - d. What physiological problems do you think might be caused by an enlarged **prostate**?

C. View Modules 48.9 Accessory Glands (formerly 48.8) and 48.10 Semen Production (formerly 48.9)



1. List the three accessory organs that contribute to semen production, and describe the function of their secretions.

a.

b.

c.

2. In **Module 48.9** (formerly 48.8), select the prostate gland, then zoom in and orient the model so that you can see the **prostate** and both **bulbourethral glands**. Now look for the circular ring of tissue surrounding the urethra as it exits the prostate. It should be between the prostate and the **corpus spongiosum**. This ring of smooth muscle is the **external urethral sphincter**. This voluntary muscle controls the passage of **urine** into the **urethra**.

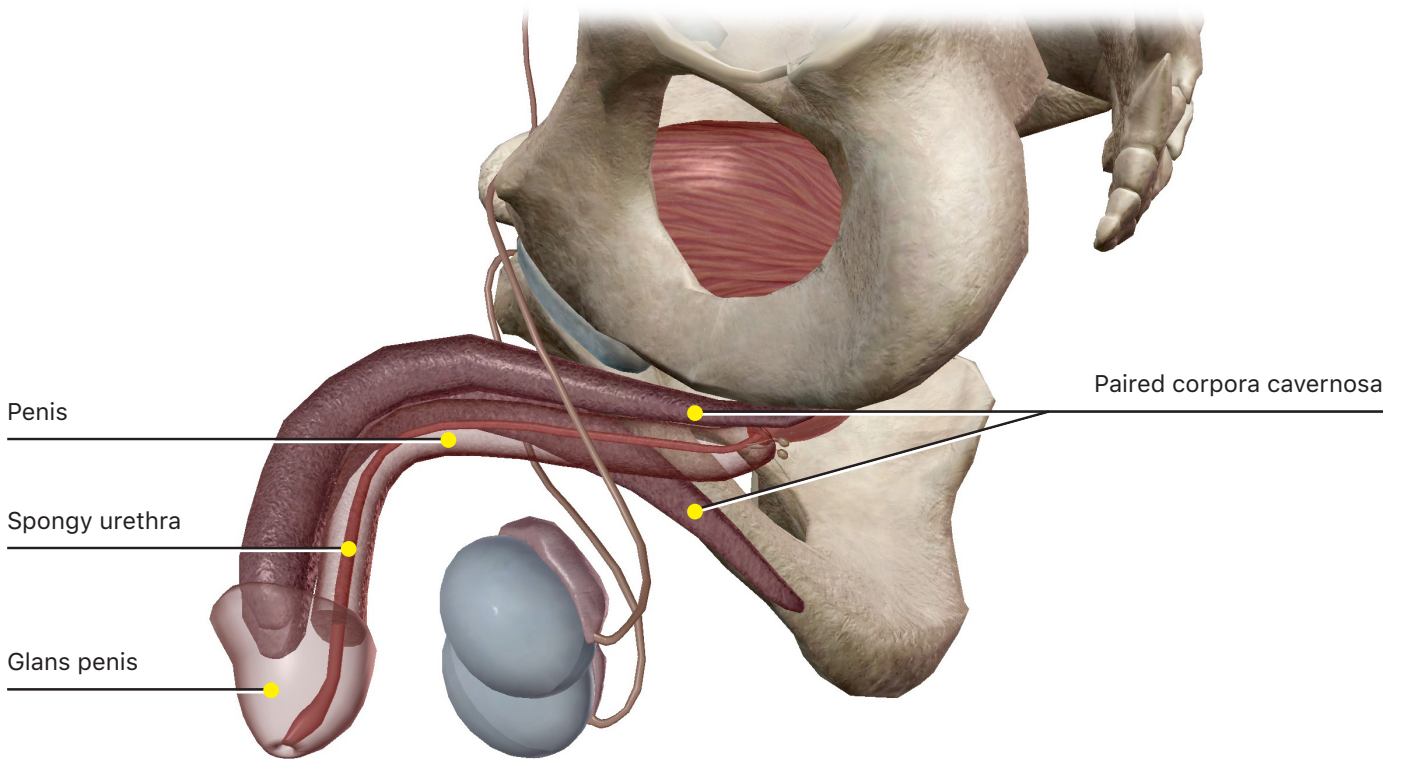
3. Distinguish between these three terms:

a. **Sperm** –

b. **Seminal fluid** –

c. **Semen** –

D. Go to Module 48.11 Penis Internal Anatomy (formerly 48.10)



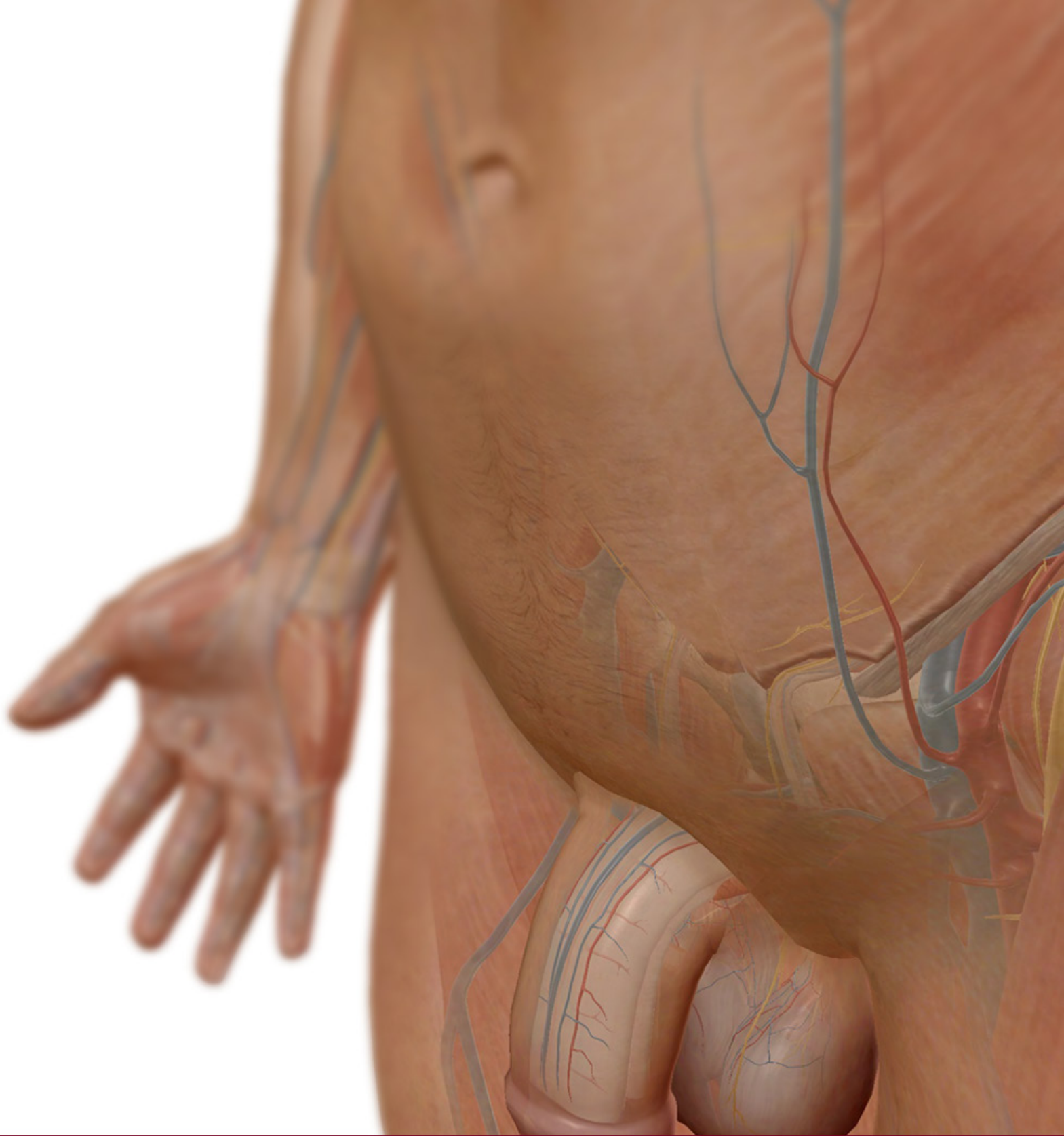
1. Select the model to locate the paired **corpora cavernosa**. What is the function of the sponge-like tissue that makes up this structure?
2. Select the model to locate the **corpus spongiosum**, which is also made up of **erectile tissue**. It is located in a groove between the _____.
3. Which part of the **penis** is enlarged to form the **glans penis**?
4. Which part of the penis contains the urethra?
5. Which portion of the urethra lies entirely inside the penis?

PUTTING IT ALL TOGETHER

1. Name the structures through which sperm passes, from the testis to the glans penis.
2. What is the sex hormone in males and where is it produced?
3. List the accessory glands that contribute fluid to seminal fluid.

TIME TO PRACTICE!

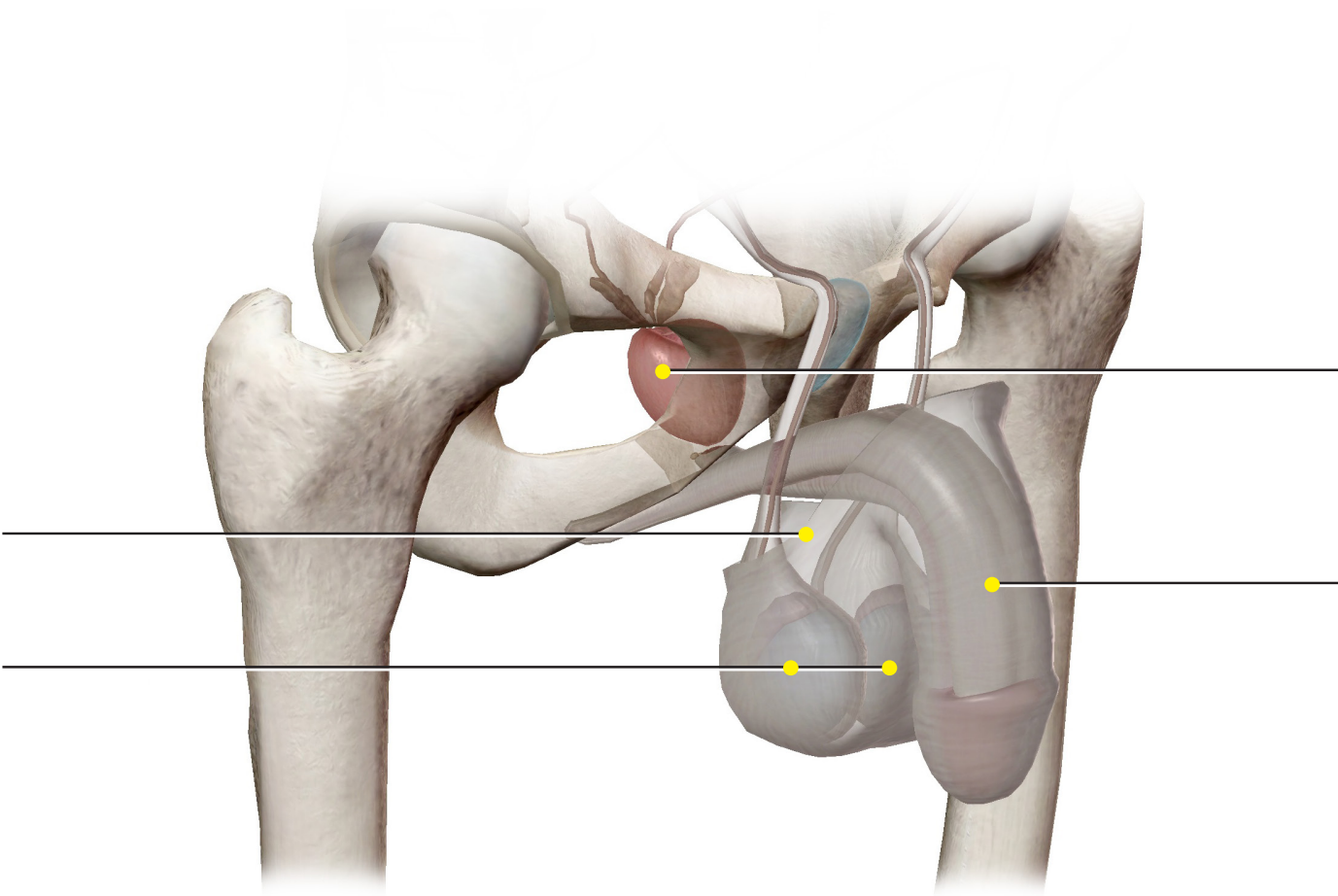
GO TO THE QUIZZES MENU AND COMPLETE QUIZZES 48A AND 48B.



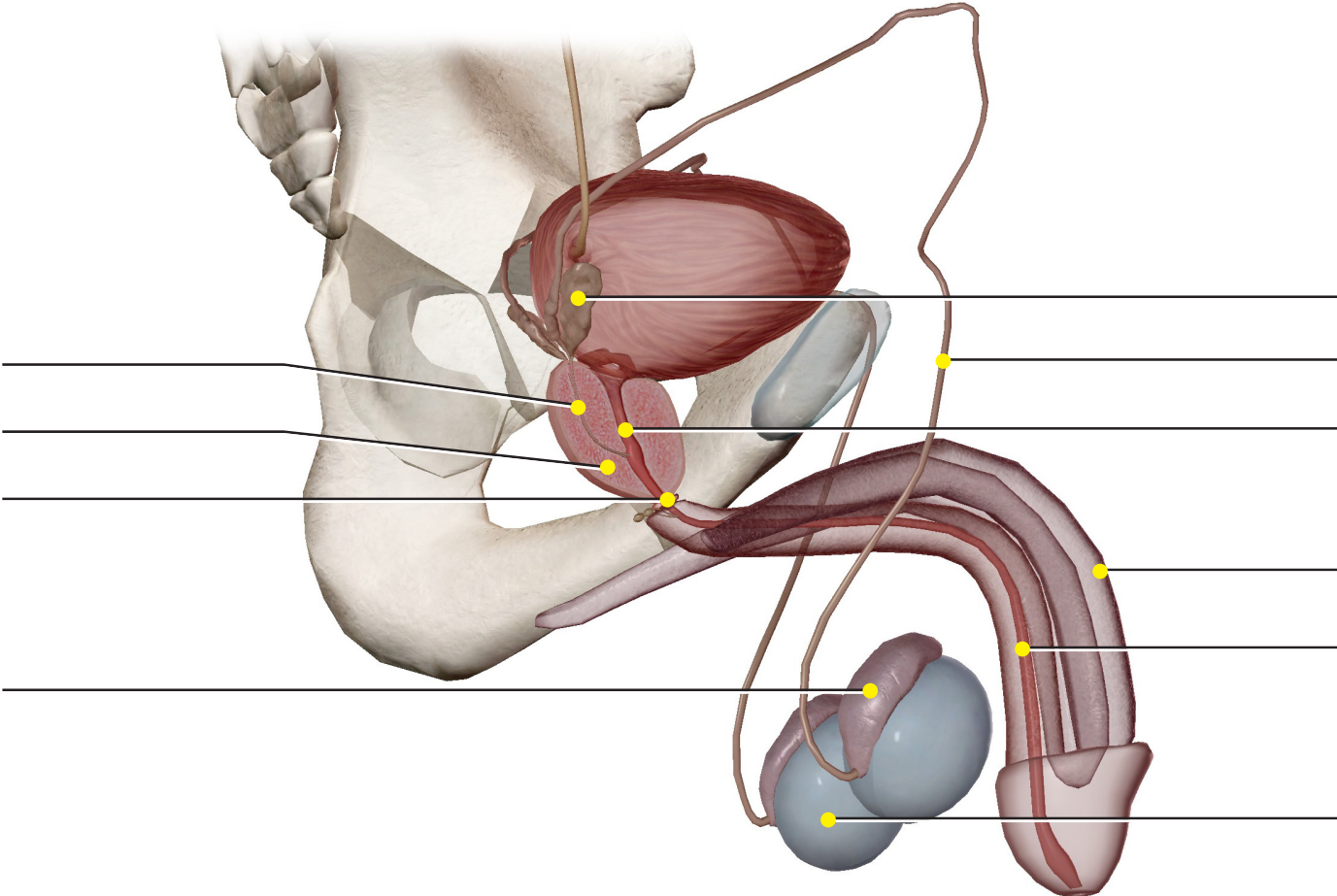
Student Practice

Label all the structures on the following images:

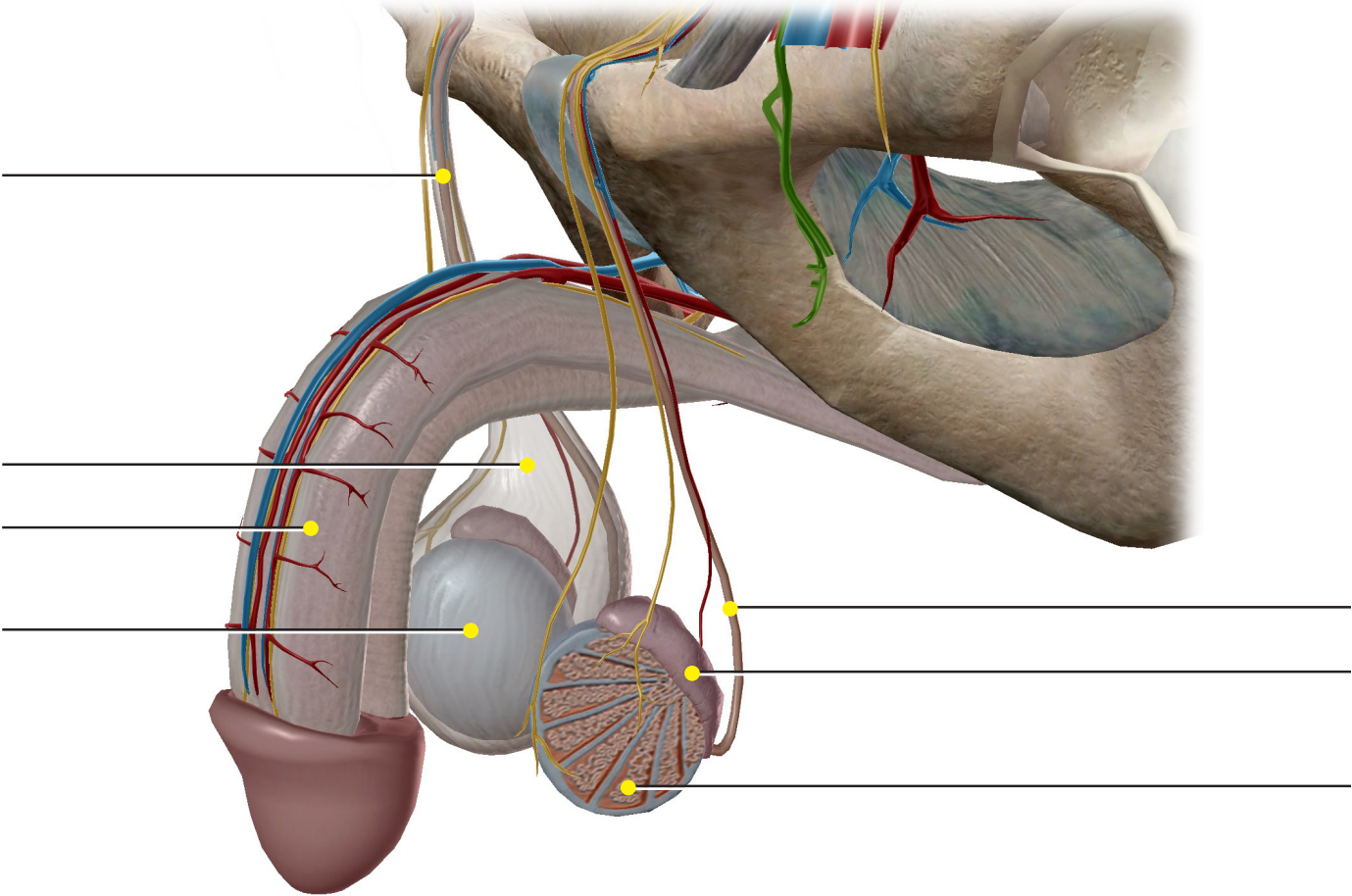
Module 47.2 Male Reproductive Anatomy



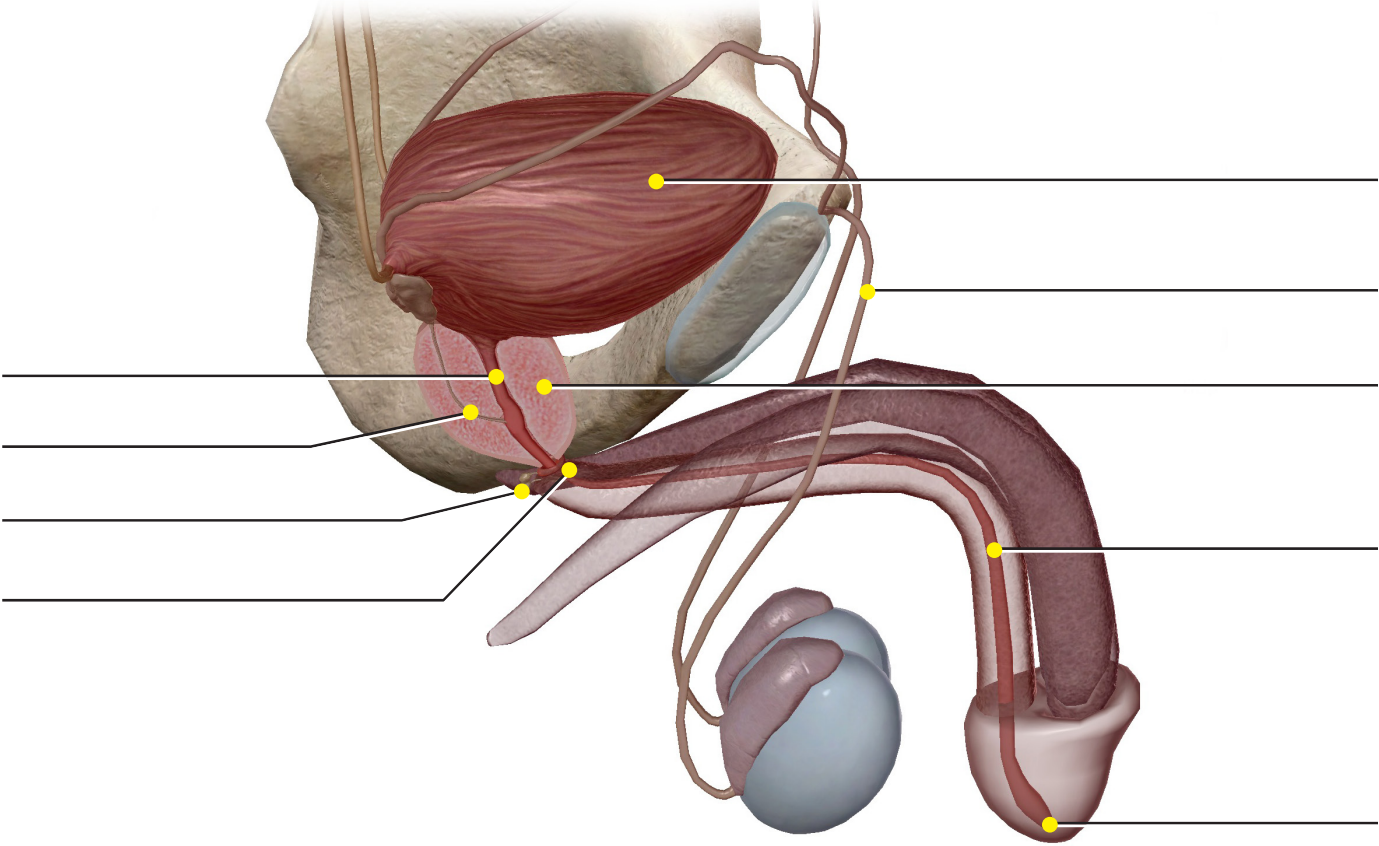
Module 47.2 Male Reproductive Anatomy



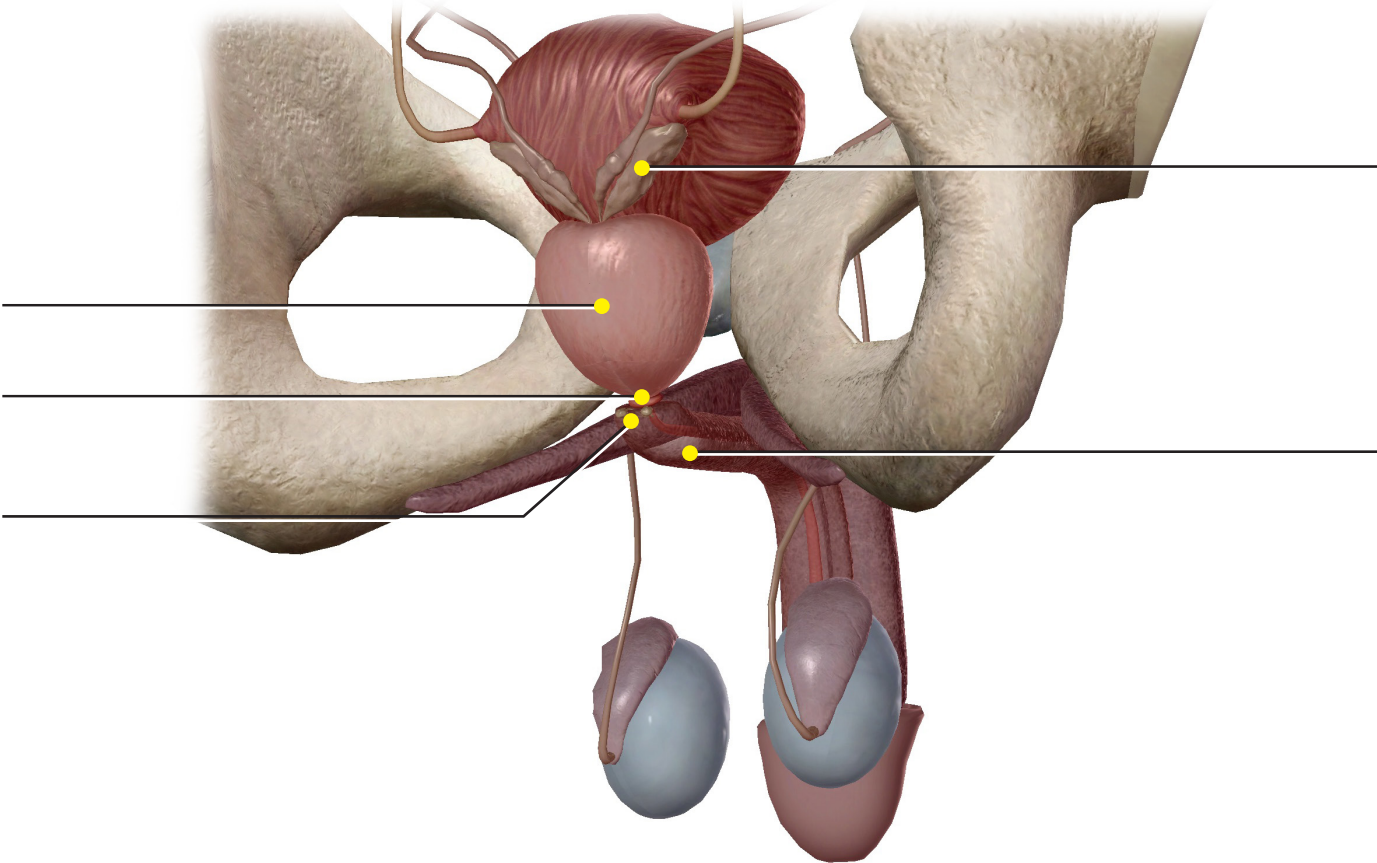
Module 48.2 Testes and Spermatic Cords



Module 48.8 Urethra (formerly 48.7)



Module 48.9 Accessory Glands (formerly 48.8)



Module 48.11 Penis Internal Anatomy (formerly 48.10)

