

Urinary System:

- **Outcome:** I can describe the main structures and functions associated with the urinary system.
 - **Drill:**
Explain the differences between asthma and emphysema.
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Urinary System Overview

Urinary system

- Two **kidneys**
 - Receive 25 percent of the cardiac output
 - Perform the excretory functions of the urinary system
 - Produce **urine**

Urinary System Overview

Urinary system (continued)

- **Urinary tract** includes the:
 - **Ureters**—receive urine from the kidneys
 - Conduct urine to the urinary bladder
 - Urine moves by both gravity and peristalsis
 - **Urinary bladder**—receives and stores urine
 - Contraction of muscle in walls drives urination
 - **Urethra**—conducts urine from the bladder to outside the body

Kidneys

Ureters

**Urinary
bladder**

Urethra

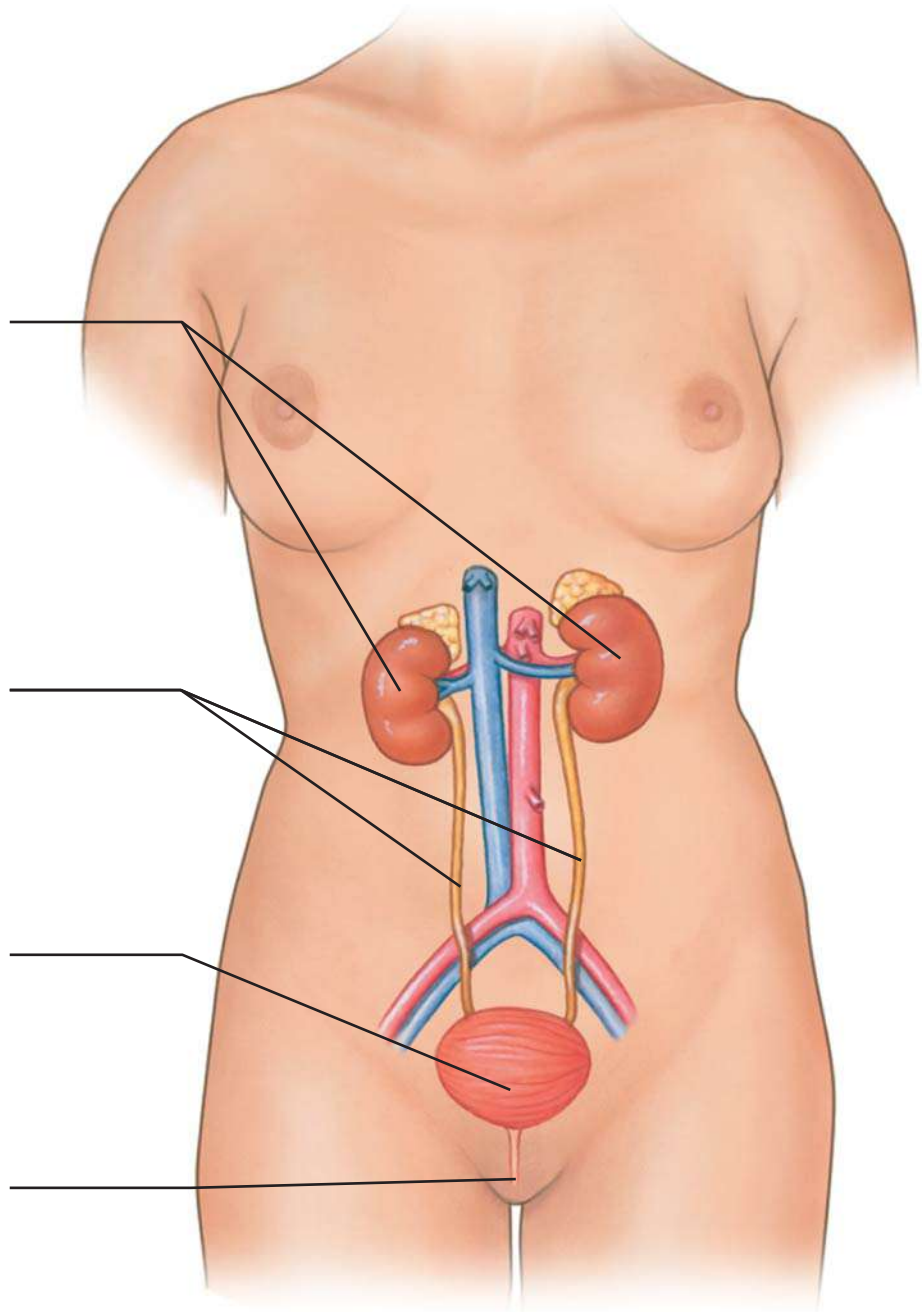
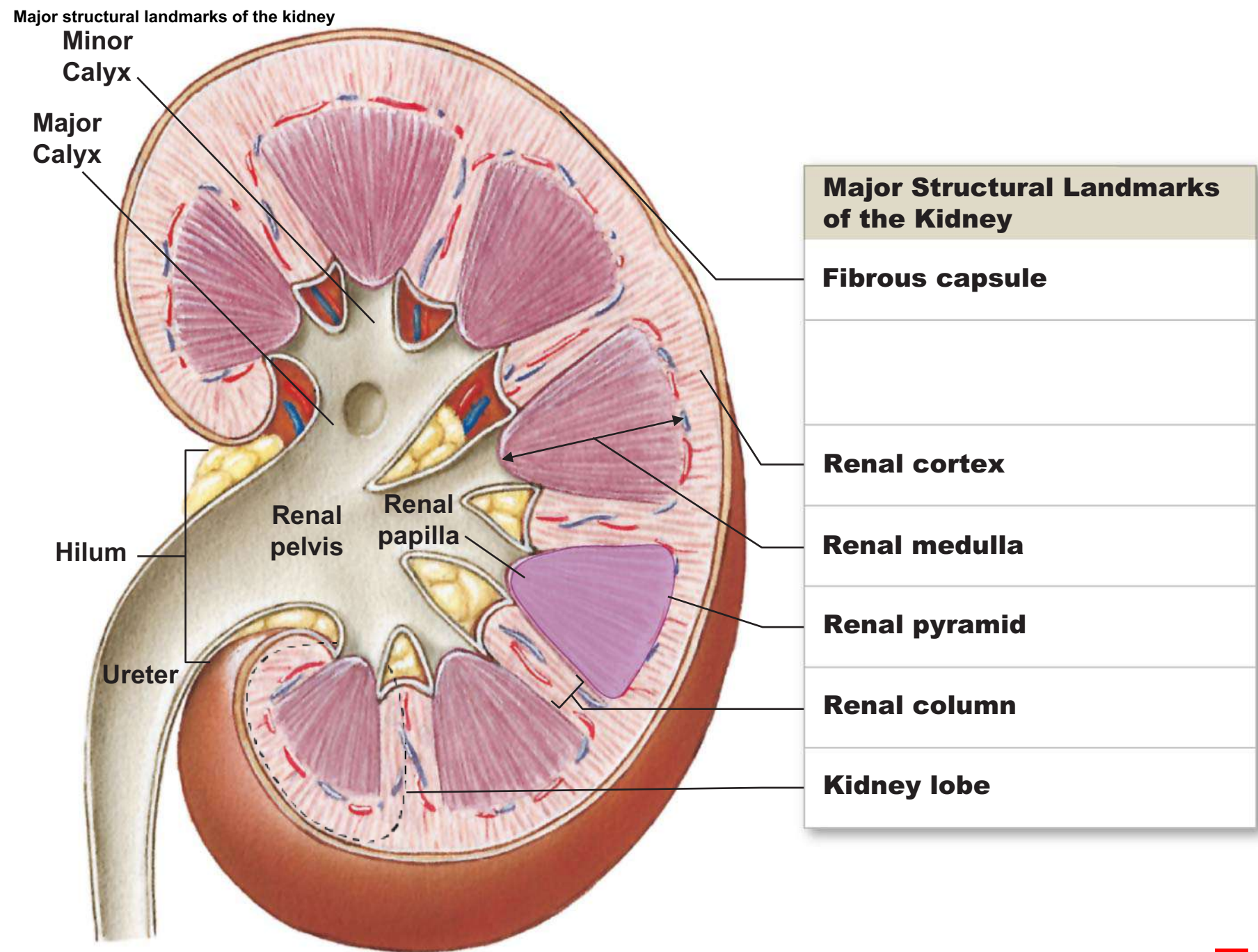
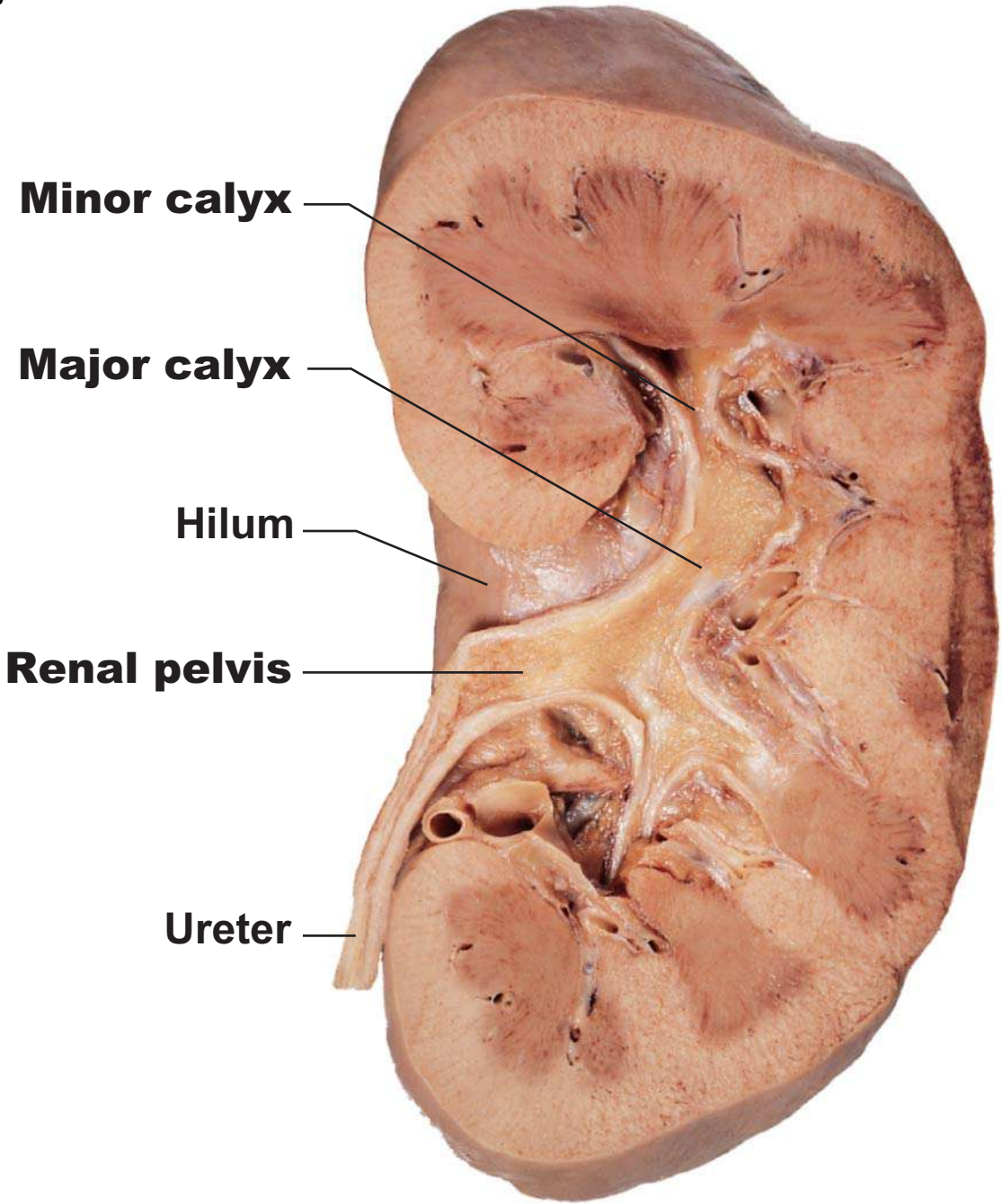


Figure 24.1 **1**

Functions of the Urinary System

- Adjusting blood volume and blood pressure
- Regulating blood plasma concentrations of sodium, potassium, chloride, and other ions
- Stabilizing blood pH
- Conserving valuable nutrients by preventing their loss in urine
- Removing drugs and toxins from the bloodstream





Renal Physiology Overview

Renal physiology

- Urinary system maintains homeostasis by regulating the volume and composition of blood
- Excretes solutes, especially metabolic wastes such as:
 - **Urea**
 - Most abundant organic waste
 - By-product of amino acid breakdown
 - **Creatinine**
 - By-product of creatine phosphate breakdown in muscles
 - **Uric acid**
 - Formed during recycling of nitrogenous bases of RNA

The Urinary Tract

Urinary tract

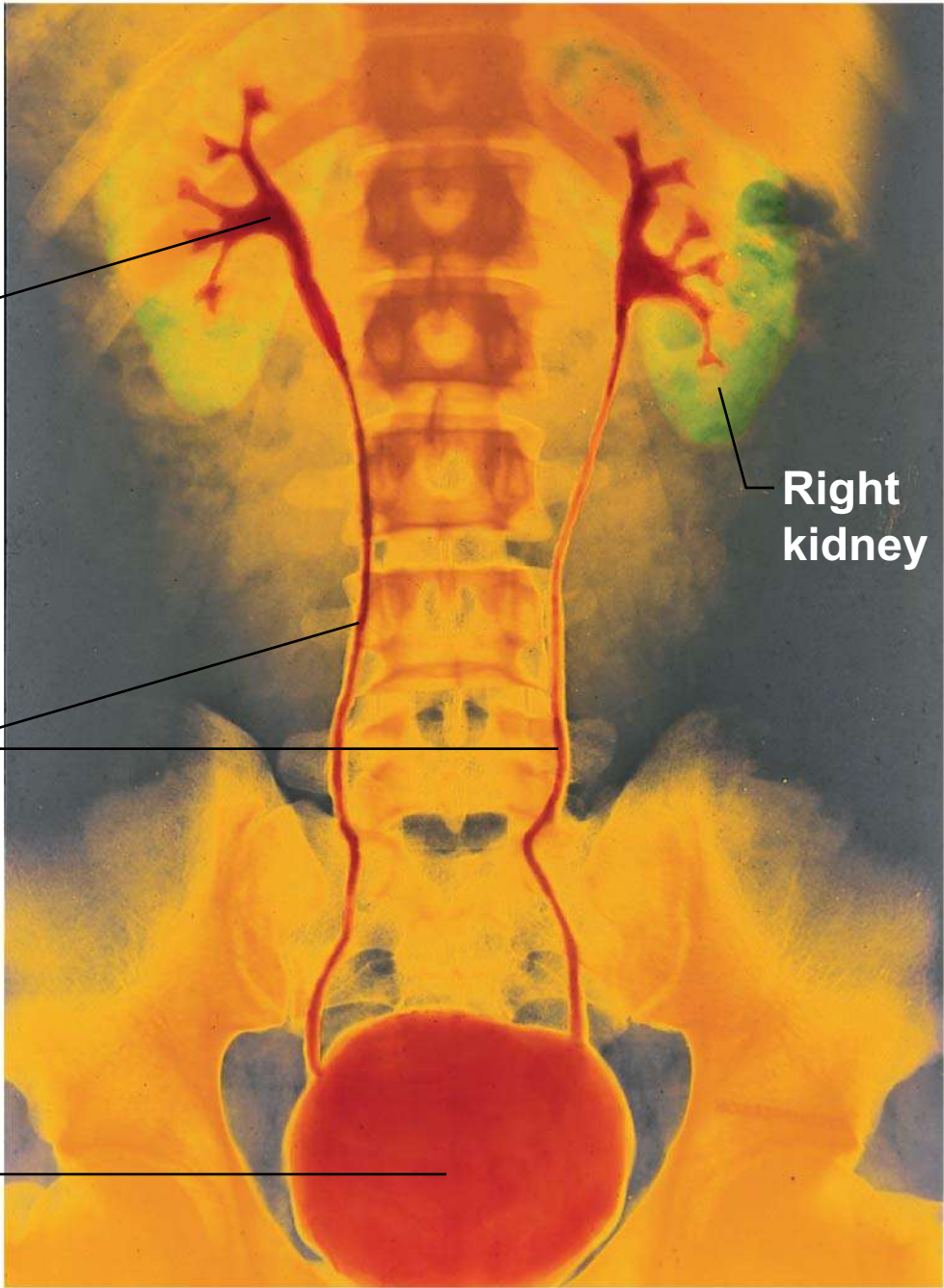
- **Ureters**
 - Paired muscular tubes extending from the kidney to the urinary bladder (about 30 cm)
 - Retroperitoneal and attached to the posterior abdominal wall
- **Urinary bladder**
 - Hollow, muscular organ holding up to a liter of urine
- **Urethra**

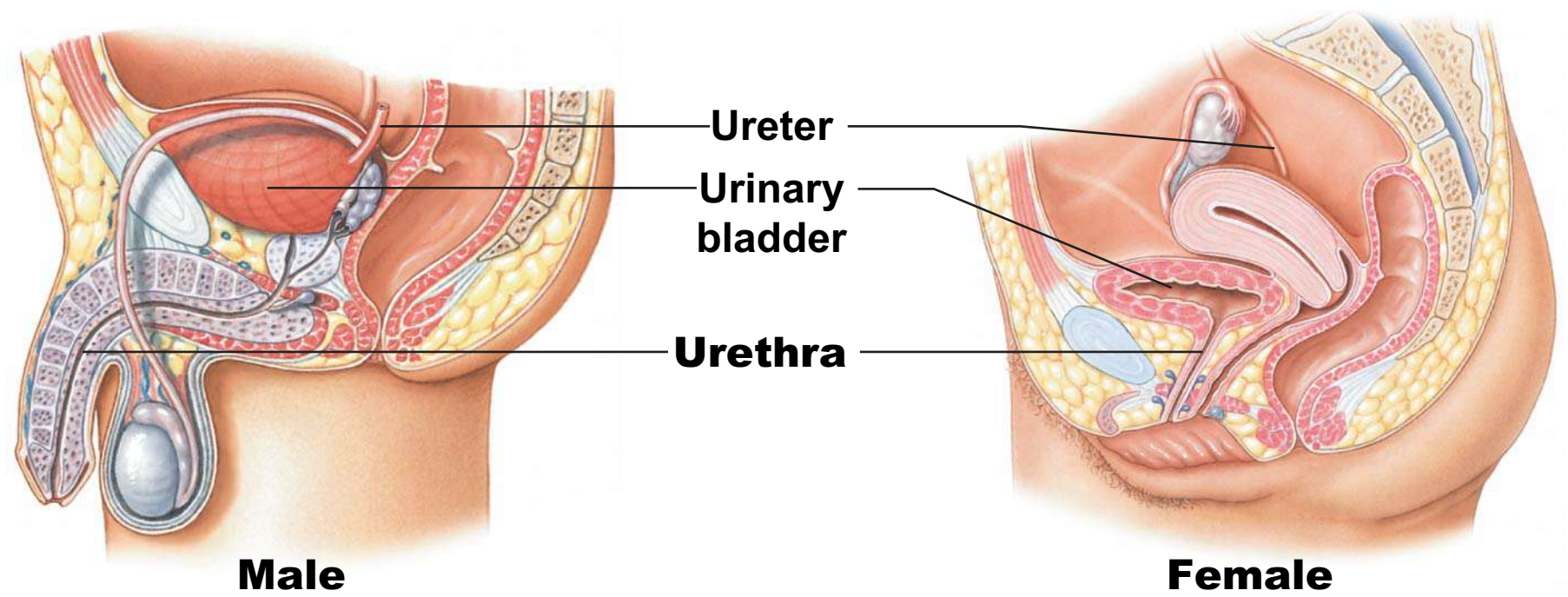
Renal pelvis

Right kidney

Ureters

Urinary bladder

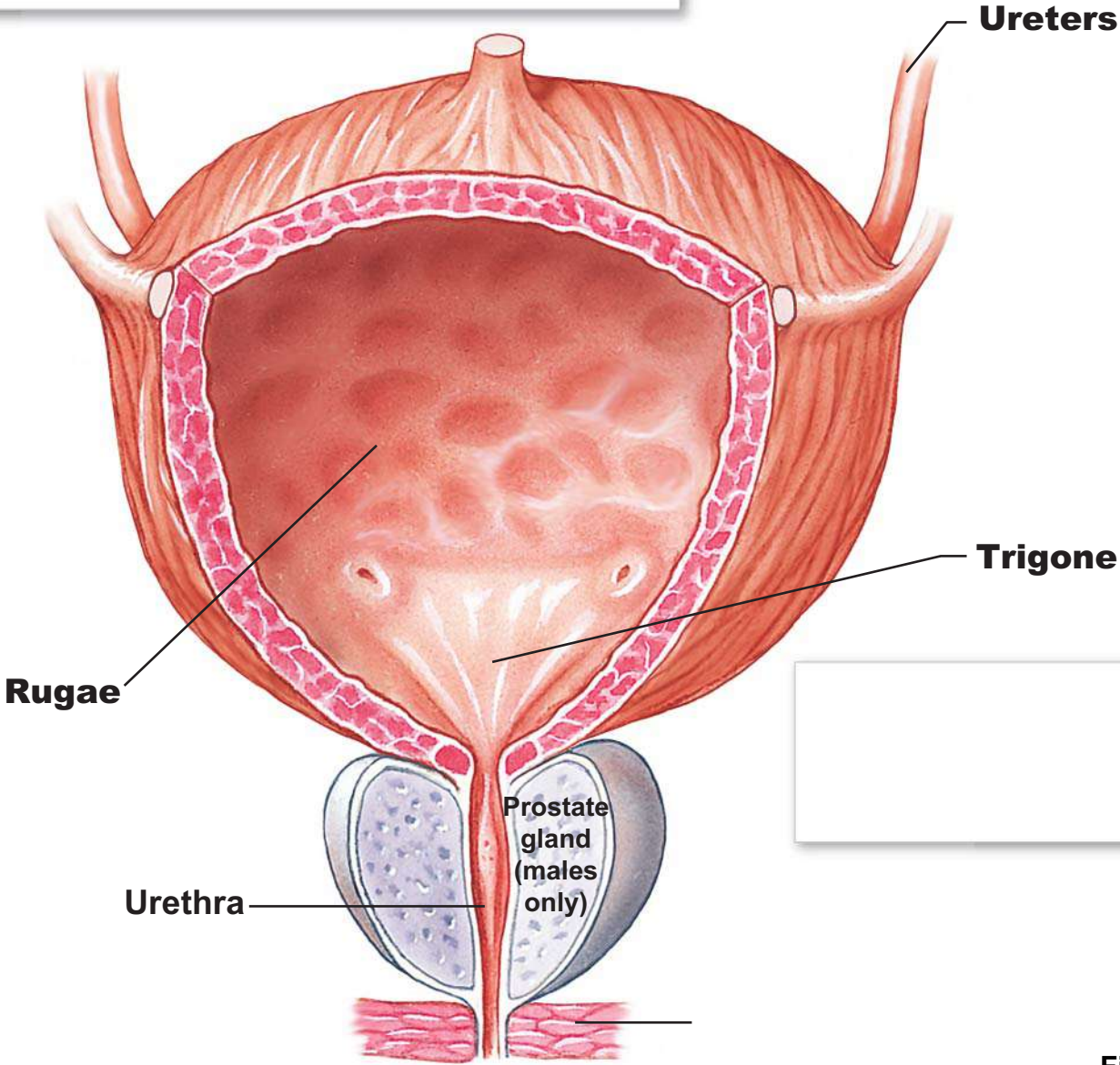
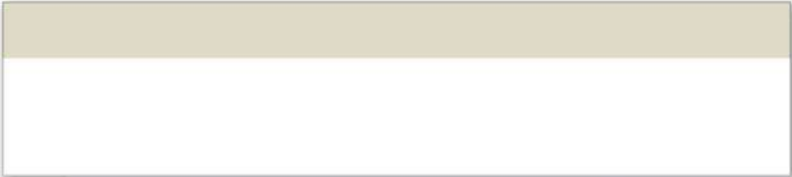




The Urinary Tract

Urethra

- Extends from the neck of the urinary bladder to the exterior of the body
- Different lengths and functions in males versus females
 - Male urethra is longer and transports semen as well as urine



Conduction and Storage of Urine

Urinary bladder (continued)

- **Rugae**
 - Folds in the bladder lining that disappear with expansion as the bladder fills
 - **Ureters** penetrate posterior bladder wall at an oblique angle
- **Trigone**
 - Triangular area bounded the entrance to the urethra
 - Acts as a funnel, channeling urine into the urethra with bladder contraction

Urinary System:

- **Exit Ticket:**
 - Name three waste products eliminated by the urinary system.
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