

Laboratory Activity No. 17

THE URINARY SYSTEM

Scope of the Laboratory Activity

This laboratory activity consists of:

- 17.1. Anatomy of the Urinary System
- 17.2. Physiology of the Urinary System

Overview

In this laboratory activity, we will examine further anatomy and physiology of the urinary system.

Objectives

At the end of this laboratory activity, you will be able to:

1. Identify the gross structural and microscopic features of the urinary system.
2. Define the nephron and describe its anatomy
3. Explain the processes involved in urine formation
4. Name the nephron areas involved in the above processes
5. List the characteristics and normal constituents of urine
6. Identify the mechanisms involved in fluid and electrolyte balance
7. Appreciate the mechanisms involved in fluid and electrolyte balance

Laboratory Activity 17.1. Anatomy of the Urinary System

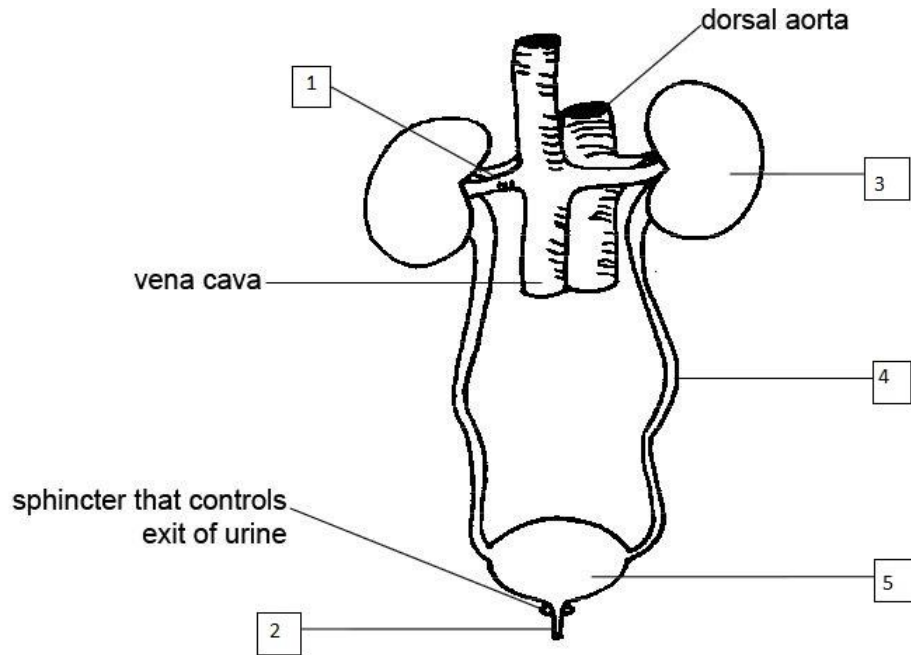
Materials needed:

- Model of the urinary system (or a virtual illustration of the urinary system)
- Anatomic charts (or virtual anatomic chart)
- Reference text

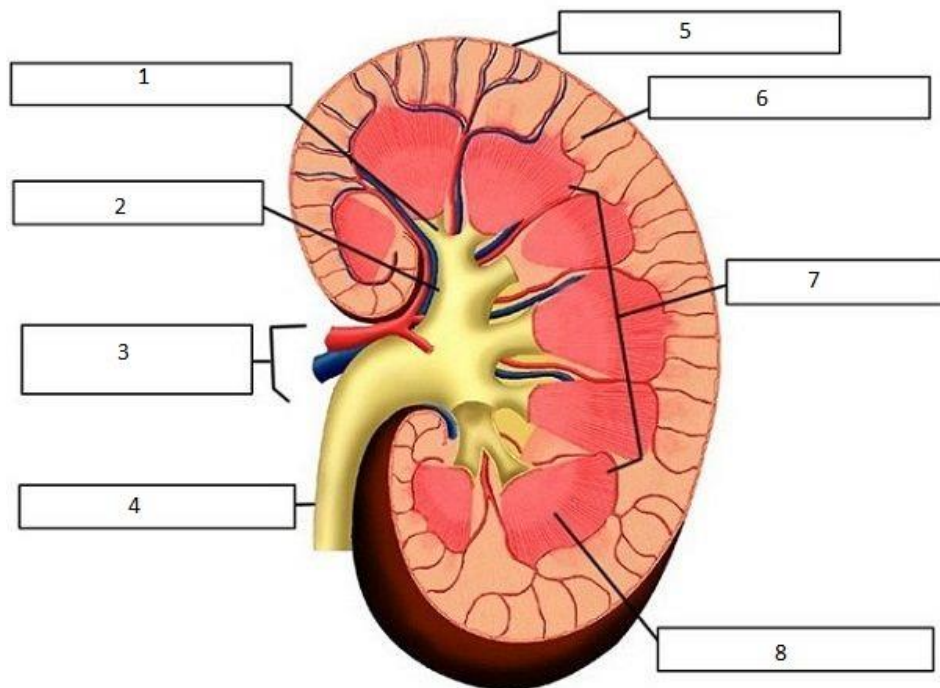
1. Using the model of the human body (or a virtual illustration), familiarize yourself with the structures of the urinary system, taking note of its location, orientation, shapes, and sizes.
2. Label the figure below. Write the name of the part at the space provided corresponding to the number being pointed in the figure.

Write your answers below:

1.	4.
2.	5.
3.	

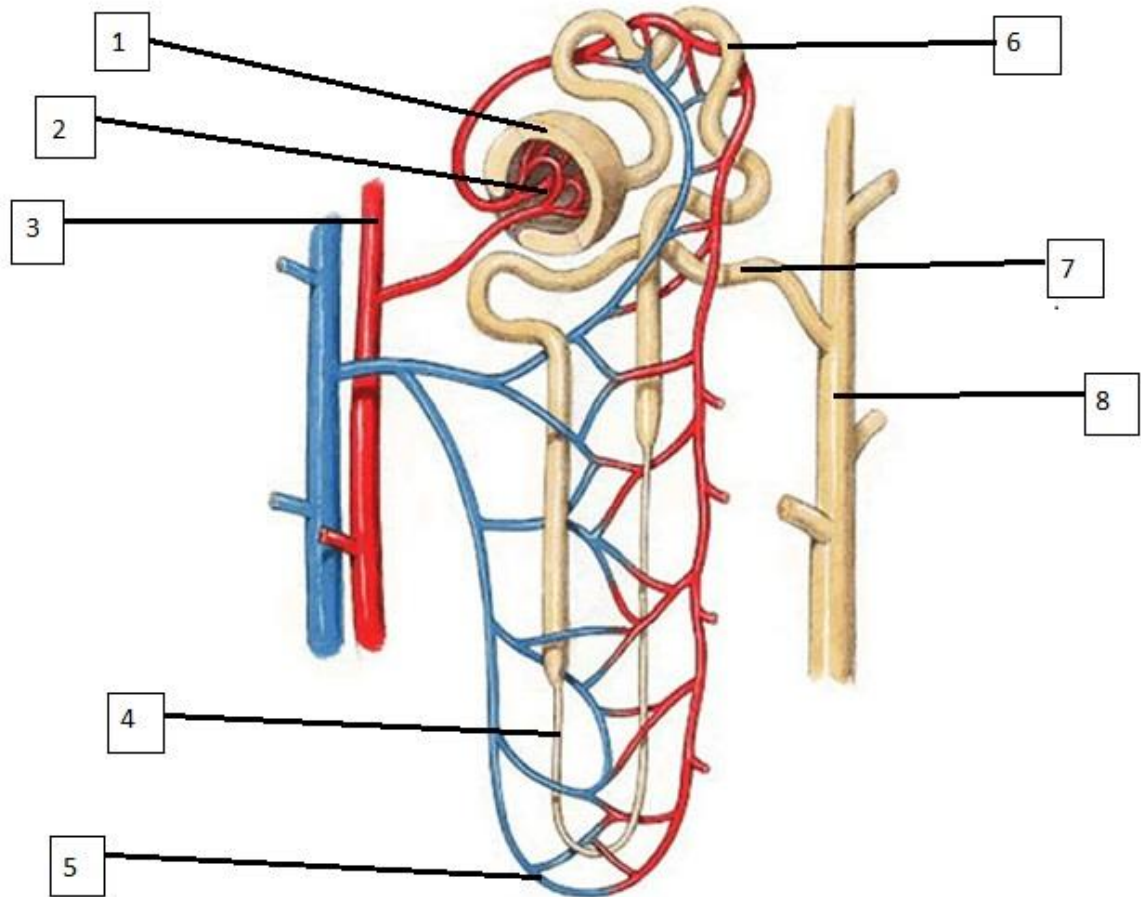


3. Label the parts of the kidneys as shown in the figure below. Write the name of the part at the space provided corresponding to the number being pointed in the figure.



1.	5.
2.	6.
3.	7.
4.	8.

4. Label the parts of the nephron as shown in the figure below. Write the name of the part at the space provided corresponding to the number being pointed in the figure.



1.	5.
2.	6.
3.	7.
4.	8.

5. Answer the following questions:

a. What is a nephron?

b. What composes a renal corpuscle?

Laboratory 17.2 Physiology of the Urinary System

1. Define the following processes in urine formation:

a. Glomerular filtration

b. Glomerular reabsorption

c. Glomerular secretion

2. The chief constituent of urine is _____.

3. Name three (3) types of substances found in normal urine aside from water:

3.1. _____

3.2. _____

3.3. _____

4. What kind of diet decreases the acidity of urine? _____

5. Complete the chart below pertaining to the features of urine:

Feature	Normal Values
Color	
Transparency/ clarity	
pH	
Specific gravity	
Albumin	
Blood	
Glucose	
Total volume per day (liters)	

6. In a healthy person, what is the ratio of fluid intake to output? _____

7. Name three (3) hormones involved in electrolyte balance and explain what each does.

Hormone	Function in relation to electrolyte balance
1.	
2.	
3.	

References:

1. Betts JG, Desaix Peter, Johnson E et al (2017). Chapter 1 An Introduction to the Human Body. *Anatomy and Physiology*. OpenStax Rice University. Pp 7-40.
2. Tortora GJ & Derrickson B. (2014). Chapter 1 An Introduction to the Human Body. *Principles of Anatomy and Physiology*. John Wiley & Sons, Inc. 14 edition. Pp 1-26.