



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## UNIT II: BIODIVERSITY

TOPIC: **THE EXCRETORY SYSTEM**





# The Excretory System

The excretory system includes all the tissues and organs **that remove waste from the body.**

## I. **Parts of the Human Excretory System:**

A. The Urinary System- Excretes water, **nitrogenous wastes, and salts.** These exit the body as urine.

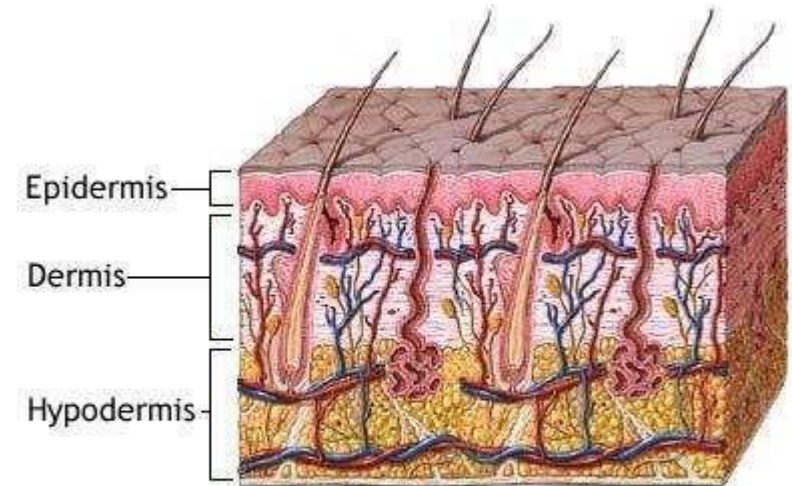
B. The Digestive System- Eliminates water, some salts, bile (stomach acid), and indigestible food matter. **These materials combine to make feces.**



# Components of the Excretory System



- C. Respiratory System- Eliminates **carbon dioxide and water vapor**
- D. Integumentary System (the Skin)- Excretes sweat which includes water, **salts, and small amounts of nitrogenous wastes.**

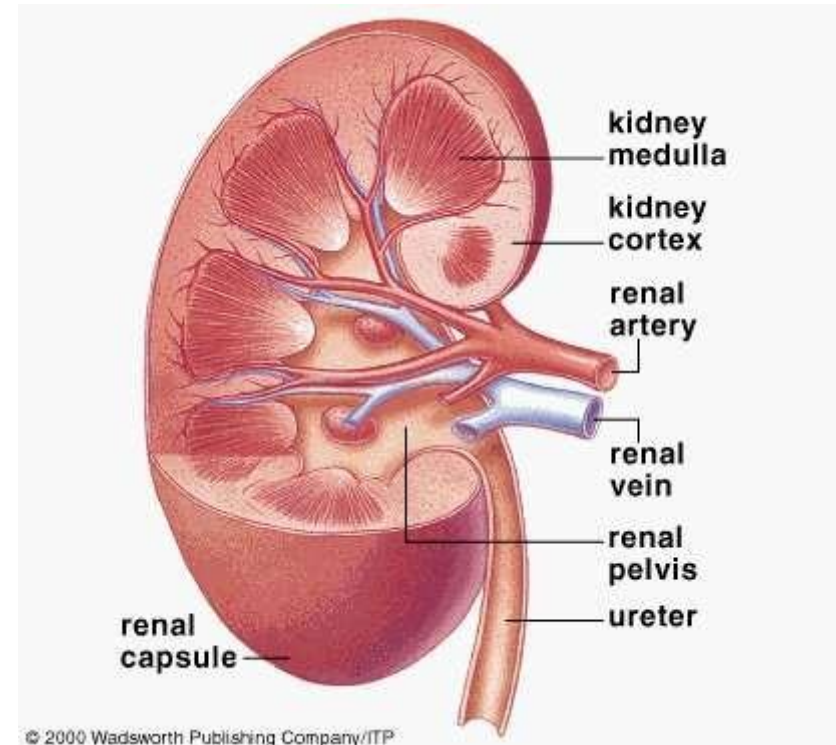


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# ii. The Urinary System in Detail

1. The Kidneys- remove waste from the blood, **balance the fluids of the body, and form urine.**
  - Location- The body's two kidneys are at your lower back

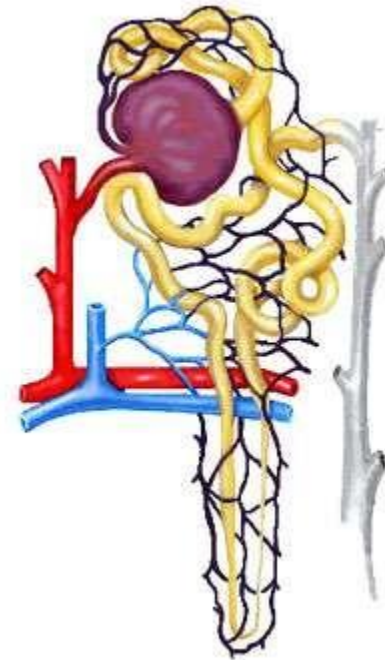




# The Urinary System in Detail

-Inside the kidneys are Nephrons.

-Nephrons are microscopic, coiled sets of tubes with a tiny capillary filled bulb at one end.





# The Urinary System in Detail



2.The kidney's jobs:

- Excretion of waste.

- Breakdown of excess salts and toxins.

- Deamination: when amino acids are broken down and nitrogen is released

- Filtering urea out of the body



# Wastes from the Excretory System

**Ammonia**

**Urea**

**Uric acid**



# The Urinary System in Detail

## 3. Maintaining Water Balance.

-The kidneys are responsible for maintaining a steady level of water in the body, **even when the amount of water entering the body varies from day to day.**



**So if you have too much, you'll excrete some out. If you don't have enough, you'll hold it in.**



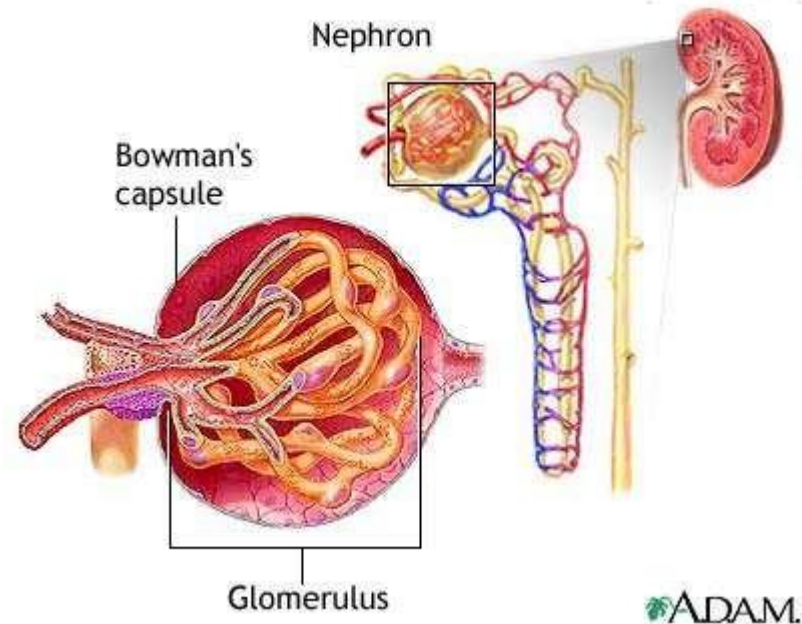


# The Urinary System in Detail



## 4. Excretion of unwanted substances:

- Urea is filtered out of the blood by the bulb end of the Nephron. This structure is called the Glomerulus.

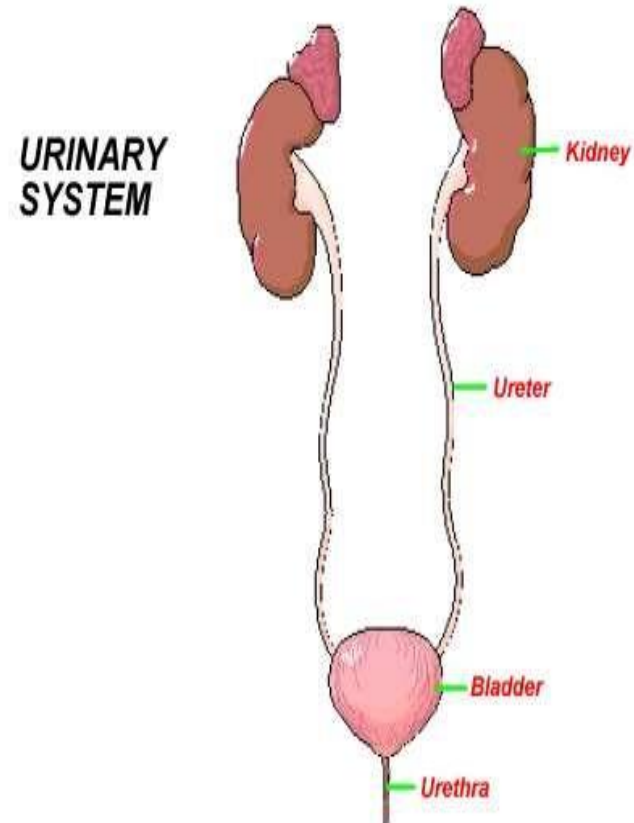




# Filtering Waste in the Urinary System



1. Liquid waste collects in the kidneys. It's just like a coffee filter.
2. Solid wastes are filtered out.
3. If the body needs water, some will go back out to the bloodstream by way of the capillaries.
4. Excess water, urea, ammonia, and uric acid will travel down the ureters.
5. The bladder fills with liquid.
6. When the bladder is full, the liquid exits through the urethra.





# The Urinary System in Detail



C. Urine usually contains the following substances:

- Urea and uric acid (these contain lots of nitrogen)
- Salts, also known as electrolytes.
- Yellow coloring from bile (digestive juices)



# The Urinary System in Detail



D. Urine should NOT contain the following unless something is WRONG:

1. Glucose (sugar)

-If sugar is in the urine, this means your cells are not absorbing sugar. That may be a sign of diabetes.

2. Blood

- If blood is in the urine, there is some type of kidney disease or infection of the urinary system.



# III. Disorders of the Urinary System:



## A. Kidney Disorders:

1. Kidney stones - these are formed when salts and calcium are not dissolved. They clump up in the kidneys and get stuck there.

- Larger ones can be removed with surgery.

-Smaller ones can pass through the ureters, then bladder, and then urethra. This process is VERY PAINFUL!!!



# III. Disorders of the Urinary System:



2. Kidney Failure results when nephrons are no longer able to perform their normal functions.
- Kidney failure may cause dehydration, a build-up of nitrogen wastes in the blood, salt imbalances, anemia (low red blood cells) and high blood pressure.
  - Dialysis- This is when a patient who has kidney failure is hooked up to a machine that filters the body's wastes
  - A kidney transplant is the final treatment for kidney failure.

**REMEMBER THAT THE BODY'S IMMUNE SYSTEM NEEDS TO BE WEAKENED BEFORE A TRANSPLANT SO THAT THE IMMUNE SYSTEM DOES NOT "REJECT" THE NEW ORGAN.**



# III. Disorders of the Urinary System:



3. Gout- results when the body makes uric acid crystals instead of urea.  
-the crystals collect in the joints in the legs, causing pain and swelling.