

X_Biology_ Life Processes (Transportation)_Handout 1/3

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Life of every organism depends on certain basic processes. Excretion is one among them.

How Organisms get rid of wastes from their body-

- **Plants** remove gaseous waste through stomata.
- **Animals** remove carbon-dioxide waste through respiration. They remove undigested solid waste by defecation. Other metabolic activities generate nitrogenous wastes that also need to be removed.

The biological process involved in the removal of these harmful metabolic wastes from the body is called **excretion**.

Every organism, from the smallest protists to the largest mammal must cleanse itself of the potentially toxic by-products of its own vital activities.

Different organisms use varied strategies to do this.

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Many **unicellular** organisms remove these wastes by simple diffusion from the body surface into the surrounding water.

They often have very simple methods of **excretion**, involving dumping wastes to the outside of the cell.

Multicellular organisms have to deal with **excretion** on a number of fronts.

After individual cells expel their waste, the waste is simply deposited into a body cavity or blood vessel.

As we have seen in other processes, complex multi-cellular organisms use specialized organs to perform the same function.

Different organisms follow different modes of excretion such as kidney, lungs, skin and eyes depending on their habitat and food habit.

For example- Aquatic animals excrete waste in the form of ammonia, while birds and insects excrete mainly uric acid.

Humans produce urea as the major excretory product.

The human excretory system organs include:

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- **Kidneys**

Kidneys are bean-shaped structures located on either side of the backbone and are protected by the ribs and muscles of the back. Structure of Kidney

- **Ureter**

A thin muscular tube called the ureter comes out of each kidney. It carries urine from the kidney to the urinary bladder.

- **Urinary Bladder**

It is a sac-like structure that stores urine until micturition. Micturition is the expulsion of urine from the body. The urine is carried to the bladder through the ureters.

- **Urethra**

This tube arises from the urinary bladder and helps to expel urine out of the body. In males, it acts as the common route for sperms and urine. Its opening is guarded by a sphincter.

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NEPHRON

Nephrons are the structural and functional units of the kidney.

Each nephron has two parts- glomerulus and renal tubule.

The tubule is attached to the glomerulus on one side and the collecting duct on the other side.

Glomerulus consists of a bunch of capillaries formed by arterioles.

The renal tubule starts with a cup-like structure called Bowman's capsule and this encloses the glomerulus.

The highly coiled structure in the tubule next to the Bowman's capsule is the proximal convoluted tubule.

The next part of the tubule is Henle's loop which has an ascending and a descending limb. The tubule finally joins the collecting duct.

Source: Science text book, Google