

Function of the Excretion

Excretory system is important because it is primarily a way to get rid of excess nitrogenous wastes from the metabolism of proteins. This may be in forms like uric acid, urea, or urine. The system also gets rid of other substances in the body in excess such as water and ions from salt. In relation to the elimination of substances, the excretory system maintains the balance or homeostasis in the animal body. This is achieved by allowing the excretion of some substances while limiting the exit of others that the body needs like water and large proteins. Because this system controls the volume of fluid in the body especially the blood, it is also related to the function of the cardiovascular system.

Excretory Organ of Invertebrate Animals

The simplest excretion happens in the simplest primitive invertebrate. It is almost similar to protists which are one-celled organism that has a kingdom of its own. Protists like Amoeba, Paramecium and others have vacuoles that serve as a storage area for water. The vacuoles will move towards the plasma membrane and merge with it to remove excess water out of the cell.

In the case of primitive colonial or multicellular invertebrates, individual cells excrete their wastes through the

cell membrane but not directly to the environment. They direct waste initially into a body cavity before it is released to the environment. In sponges, the body cavity that accumulates waste is referred to as spongocoel which has an opening called osculum going to the environment. While hydra has the gastrovascular cavity with a mouth emptying to the environment.

Excretory organ of flatworms like Planaria of the Phylum Platyhelminthes has evolved a specialized excretory organ called flame cells. The problem of Planaria especially freshwater species is to get rid of excess water entering their body. Flame cells refers to the bulb-like structure located along the two strands of tubules that branches on each side of their body. Inside the tubules are cilia which serves to move water and salts through the length of the tubules. The flame cells open to the exterior through an excretory pore, nephridiopores. In some flatworms, these are called protonephridia.

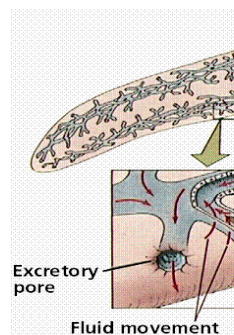


Figure 1: Excretory Sys

The Phylum Annelida represented by earthworms uses nephridia or metanephridia for excretion. In each segment of the body of the earthworm, there is a pair of nephridia. As fluids pass through the collecting tubules waste substances is concentrated due to the tubules semipermeability. The materials that is secreted by the tubules is accepted back by the blood vessels near the tubules. When the mixture of wastes reach the end of the [REDACTED] is very much concentrated and is ready to [REDACTED] through the excretory pore. The earthworm's [REDACTED] e-type excretory system which allows sub[REDACTED] the length of the tube where some subst[REDACTED] allowed to be absorbed back into the body f[REDACTED] may be due to its terrestrial existence a[REDACTED] dehydration.

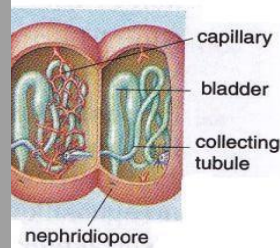


Diagram of a nephridium in an earthworm, a member of Phylum Annelida.

Arthropods [REDACTED] inhabiting land has Malpighian tubules as their excretory system. Unlike the nephridia, the

Malpighian tubule is only found attached to the midsection of the digestive tract or midgut of terrestrial insects. The metabolic waste comes from the hemolymph in the body cavities that bathes the cells. When the fluid from the hemolymph enters the Malpighian tubule it contains both metabolic wastes and salts which collect in the midgut. The Malpighian tubule is a blind digestive tract found at the end part of the digestive tract. The hindgut serves as the site for the reabsorption of substances such as sodium, potassium and water. These are transported actively back to the animal. Uric acid, which is left behind from the reabsorption process will be excreted as undigested food and excreted through the anus as a dry waste.

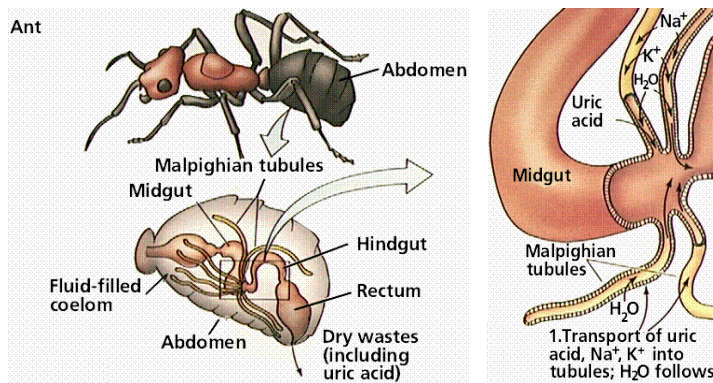


Figure: Excretory System of Selected

Excretory Organ of Vertebrates

Vertebrates and invertebrates would have differences and similarities in their excretory system but

essentially both groups of animal have the same purpose which is to get rid of nitrogenous wastes and other substances in excess that could become toxic to the body when accumulated. Actually, within the vertebrate group there are also structural differences that can be observed depending on the animal's habitat especially for animals living in water. Also, aside this animals would exhibit different ways of regulating the concentration of salts and water according to their needs.