

**WEEKLY HOME STUDY PACKAGE – WEEK 2 (12/07/21 – 16/07/21)**

Subject	BIOLOGY	YEAR/LEVEL	12
Strand	1- Structure and Life Processes		
Sub – Strand	1.4 Comparative Form and Function in Plants and Animals		
Content Learning Outcome	Describe the structures and processes associated with the manufacturing and intake of food in selected organisms.		

NUTRITION

Objective: Compare and contrast the digestive system of selected invertebrates to show increasing complexity.

Digestion by biological means involves both mechanical and chemical processes to break up food into smaller or simpler constituent parts that can be absorbed by the body.

-The two common modes of digestion are **external and internal digestion.**

External digestion- where food is digested from the outside through secreting enzymes -cnidarians as well as some bacteria and parasites also employ external digestion for obtaining nutrients.

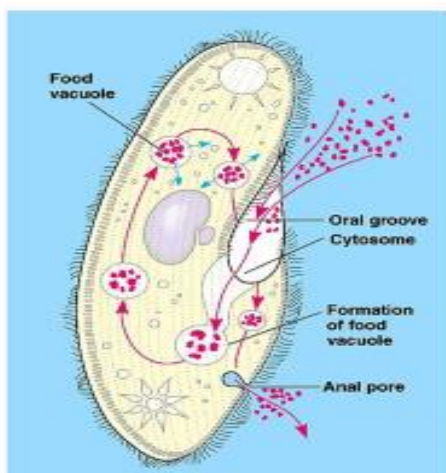
-Most bacteria and fungi are decomposers. They secrete digestive enzymes onto dead matter and wait for the enzymes to decompose the food which is then absorbed into their cells using active transport.

-not suitable for mobile organisms as it requires the organisms to stay with food until it has completed digestion and absorption.

Nutrition in Protists

-Protists are unicellular organisms that are usually classified as a separate kingdom. Some protists function as one-celled plants; they photosynthesize. A common example is a **Paramecium**.

- Paramecium is a genus of protists that lives in fresh water. Their **mode of locomotion** is by beating of the cilia that cover their cell membranes.

How does a Paramecium feed?

Source: <http://www.mun.ca/biology/>

Paramecium feeding steps:

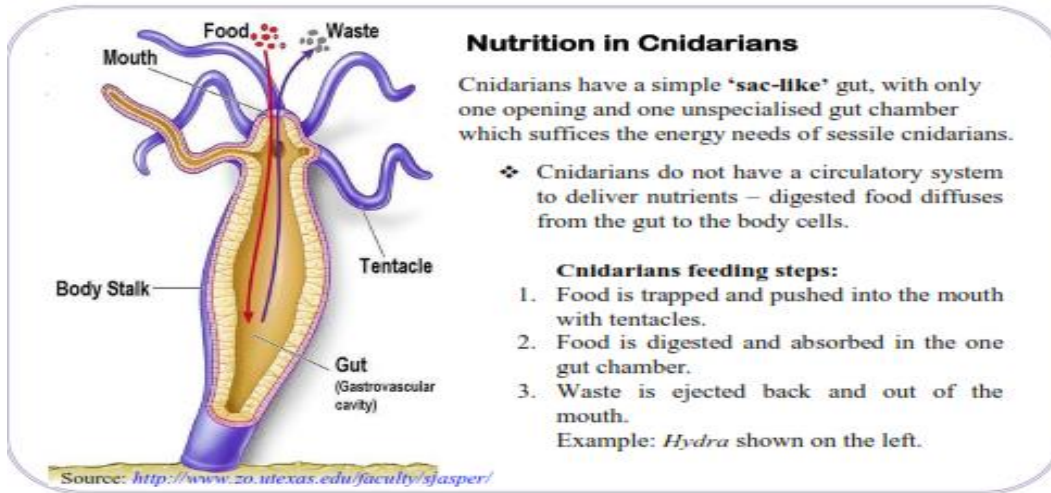
1. A paramecium is a minute particle feeder which uses its cilia to beat food particles in the surrounding water down the oral groove. The oral groove and the cytopharynx (a sac-like structure at the end of the oral groove) act as the mouth of the Paramecium.
2. Food vacuoles surround the food accumulating at the end of the cytopharynx. Lysosomes, containing digestive enzymes, fuse with the vacuoles to digest the food.
3. The digested food diffuses through the cell cytoplasm and mitochondria oxidise it to produce ATP.
4. Wastes are egested by exocytosis at the cell membrane.

- Most **other heterotrophic protists**, such as **Amoebas**, also eat by **endocytosis** i.e. surrounding and digesting food in food vacuoles. They digest food inside their bodies.

❖ This is important because protists are motile.

❖ A protist's energy needs are too great to stay in one place and wait for their enzymes to digest food. 1.

Nutrition in Animals:
Invertebrate Animal Digestive System: Cnidarians



Adaptive Value of the Sac - like Gut -is very simple since cnidarians have an inactive lifestyle. -sessile their cells do not need much energy. -one gut opening, it must completely digest and absorb a meal and egest the wastes before it can eat anything else.

Activity Questions: Answer the following questions

1. Fungi and bacteria have external digestion.

i) Explain what external digestion means. **(1 mark)**

ii) What is a potential disadvantage of external digestion? **(1 mark)**

iii) Why is this disadvantage not a problem for fungi? **(1 mark)**

2. Food particles are assisted into the oral groove of the *Paramecium* by the **(1 mark)**
 A. cilia. B. cytosome. C. cytopharynx. D. contractile vacuole.

3. How does a paramecium move? **(1 mark)**

4. Explain briefly how does a paramecium feed? **(2 marks)**

5. Nutrition in *Hydra* takes place through **(1 mark)**
 A. a sac-like gut. B. food vacuoles. C. a tube-like gut. D. external digestion.

6. Describe the processes of ingestion and digestion in Cnidarians. **(2 mark)**
