

B.Sc First year Zoology (Honours)

Paper-1

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Phylum Porifera are the lowest multicellular animals belonging to the kingdom Animalia.

The word "Porifera" mainly refers to the pore bearers or pore bearing species. Based on the embryological studies, sponges are proved as animals and are classified into a separate Phylum in the animals

This phylum includes about 5000 species. Poriferans are pore-bearing first multicellular animals. The pores are known as Ostia.

The poriferans have a spongy appearance and are therefore called sponges. They are attached to the substratum and do not move. They have the ability to absorb and withhold fluids.

They were initially regarded as plants due to the green colour and their symbiotic relationship with algae. Later, their life cycle and feeding system were discovered, and they were included in the animal kingdom.

Characteristics of Phylum Porifera

Some of the important characteristics of phylum Porifera are mentioned below.

1. The cells of Poriferans are loosely organized.
2. They are mostly found in marine water. Only a few are found in freshwater.
3. They are either radially symmetrical or asymmetrical.
4. Their body is usually cylindrical.
5. The scleroblast secretes spicules while spongin fibres are secreted by spongioblasts.
6. They have no organs in their body.
7. They depict cellular grade of organization.
8. The body comprises numerous pores known as Ostia and osculum.
9. The central cavity is called spongocoel or atrium which opens to the outside through the osculum.
10. They reproduce asexually by budding, and fragmentation.
11. The nutrition is holozoic.
12. They have neurosensory cells but are devoid of any specific nervous system.
13. They have the power to regenerate the lost parts.
14. The development is indirect and the cleavage is holoblastic.
15. The exchange of respiratory gases and nitrogenous wastes occurs by the process of diffusion.

Classification of Phylum Porifera

Phylum Porifera is classified into three classes:

Calcarea

- They are found in marine, shallow, and coastal water.
- Their skeleton is composed of calcareous spicules made of calcium carbonate.
- The body is cylindrical and exhibits radial symmetry.
- The body organization is asconoid, syconoid, or leuconoid.
- Eg., Clathrina, Scypha

Hexactinellids

- They are found in marine and the deep sea.
- The skeleton is made up of six-rayed siliceous spicules.
- The body is cylindrical in shape and exhibit radial symmetry.
- The canal system is Sycon or Leucon.
- Eg., Euplectella, Hyalonema

Desmospongiae

- They are found in marine or freshwater.
- The body is asymmetrical and cylindrical in shape.
- The canal system is a leuconoid type.
- The skeleton comprises spongin fibres, siliceous spicules, which are monoaxon and triaxon.
- Eg: Spongia, Spongilla, etc.

Porifera Examples

Some of the common Porifera examples are:

Sycon

These are solitary or colonial marine sponges found in shallow waters attached to the rocks. The body is cylindrical in shape with numerous spores. The radial canal is made up of flagellated cells. Water enters the body through Ostia and reaches the radial canals by prosopyles. These species undergo both sexual and asexual mode of **reproduction**.

Hylonema

These are also known as glass rope sponges found in marine water. The body is round or oval with twisted root tufts. Small amphidiscs are present in the skeleton.

Cliona

They are also known as Boring Sponges found in coral skeletons, mollusc shells, other calcareous objects. They are green, purple, or light yellow in colour. The canal system is the characteristic of the leuconoid type of sponges, and they reproduce asexually and sexually

Euplectella

These are also known as Venus flower basket and are found in deep waters. The body is cylindrical, long and curved fastened in the mud at the bottom of the sea. The canal system is simple syconoid type. The skeleton consists of siliceous spicules fused at the tips forming a three-dimensional network with parietal gaps.

Spongilla

They are largely found in ponds, streams, lakes growing on submerged plants and sticks. The body wall consists of a thin dermis provided with pores called Ostia. They possess a rhagon type canal system. They reproduce sexually as well as asexually.