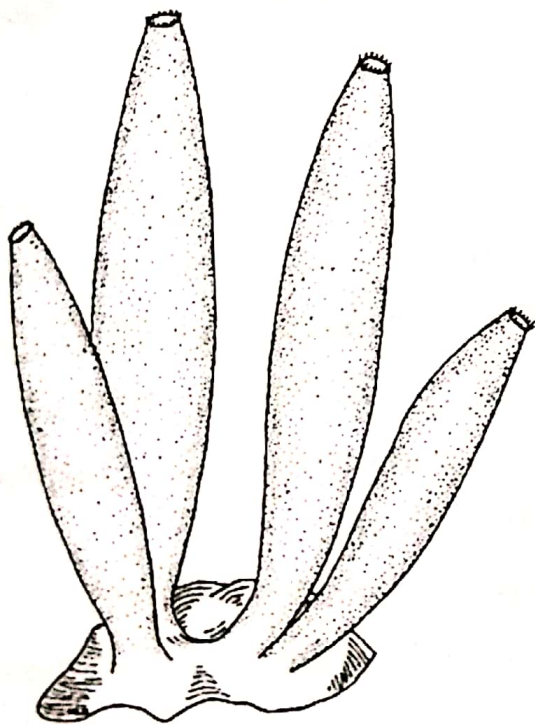


3. Porifera

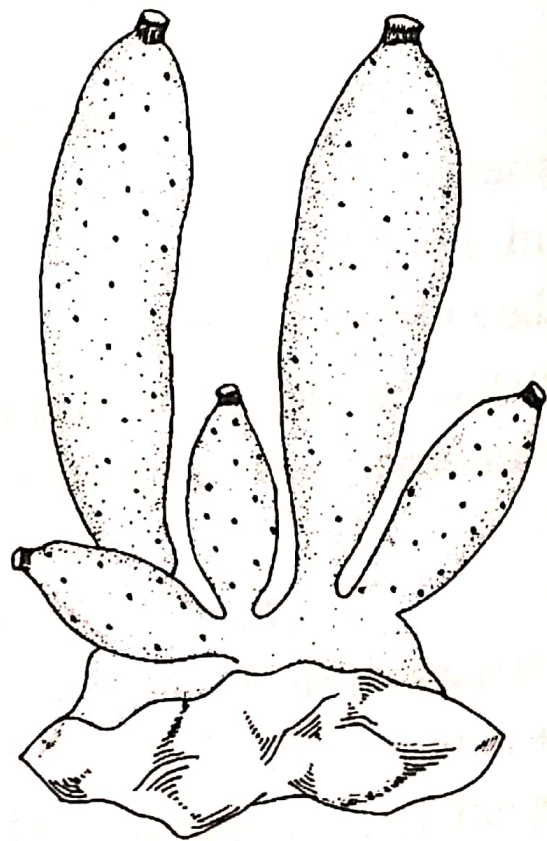
The phylum Porifera includes *pore-bearing* animals called *sponges*. They are the *first multicellular* animals.

General Characters

1. *Porifera* includes pore-bearing animals. They are commonly called *sponges*.
2. All the sponges are *aquatic*.
3. They are *sedentary* in habit.



Leucosolenia



Sycon

Fig.3.1: Some common sponges.

4. They are *asymmetrical* or *radially symmetrical*.
5. They are the first *multicellular* organisms.

6. They have **cellular grade** of organization.
7. They are **diploblastic**. The body wall is formed of two layers, namely an outer **ectoderm** and an inner **endoderm** (choanoderm). The two layers are cemented together by a gelatinous substance called **mesenchyme**.
8. The endoderm is formed of flagellated cells called **choanocytes**.
9. The body is perforated by numerous minute pores called **ostia**.
10. The ostia open into a large cavity called **spongocoel**.
11. The spongocoel opens to the outside by a large opening called **osculum**.
12. The sponges possess an endoskeleton in the form of calcareous **spicules**.
13. Excretion and respiration occur by **diffusion**.
14. They have greater power of regeneration.

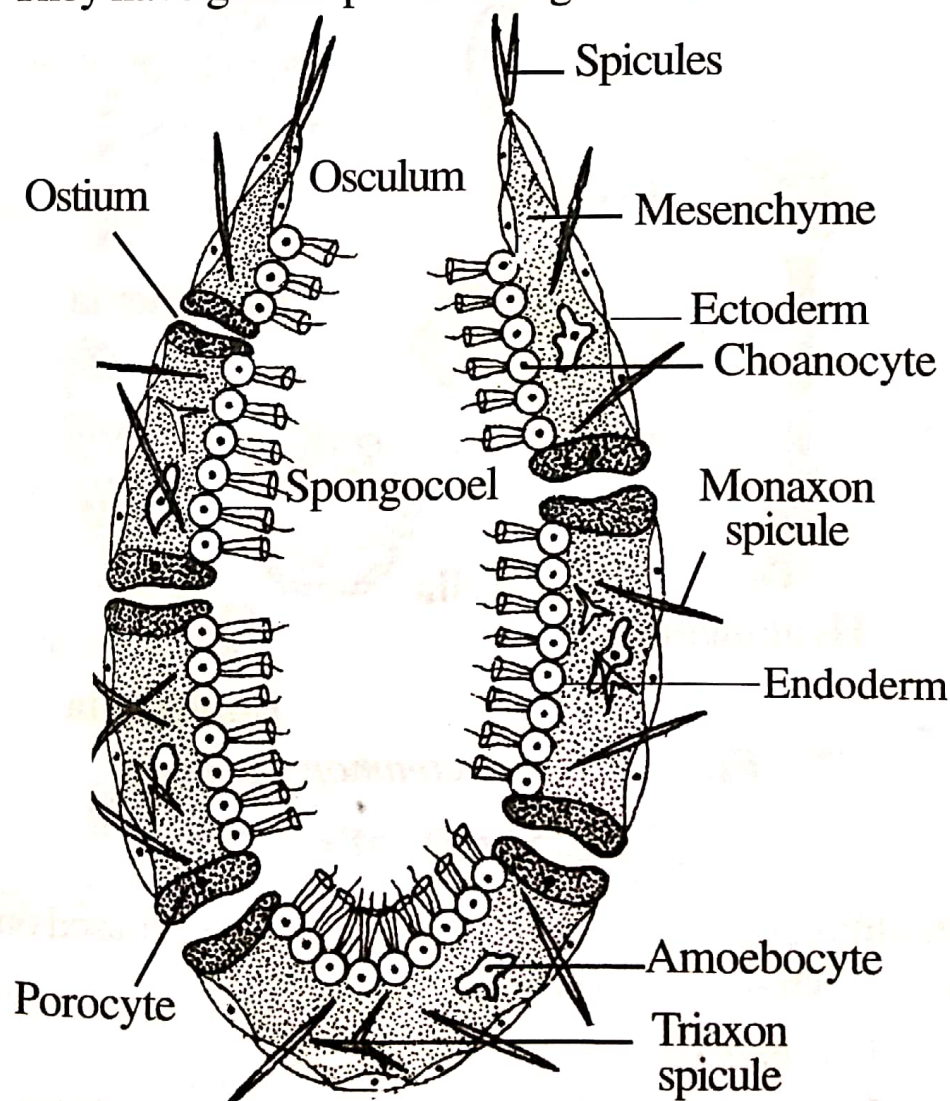


Fig.3.2: L. S. of *Leucosolenia*.

15. Reproduction takes place by *asexual* or *sexual* methods.
 16. Asexual reproduction is by *budding* or *gemmule* formation.
 17. Development is *indirect* or *direct*. The common larval forms are *parenchymula*, *amphiblastula*, etc.
 Eg. *Olyntus*, *Leucosolenia*, *Sycon*, etc.

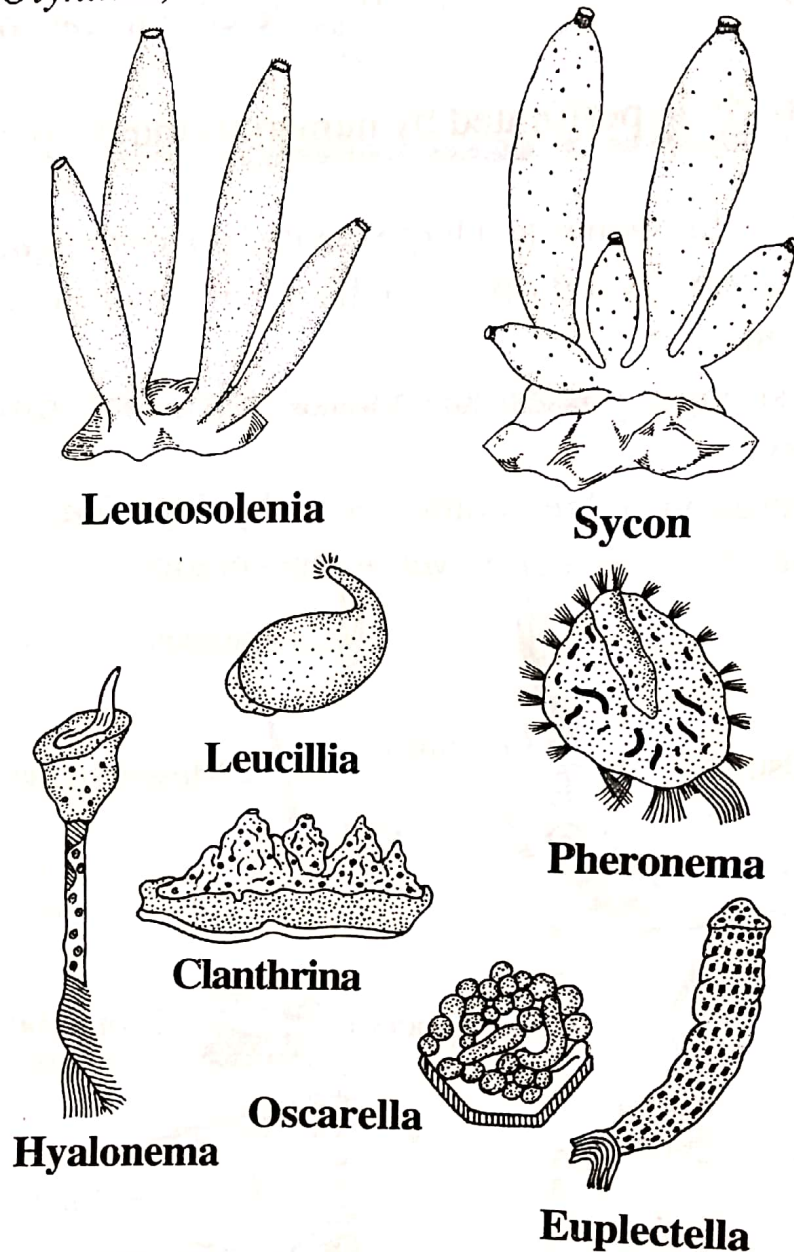


Fig.3.3: Some common sponges.

Classification

Phylum Porifera is divided into three classes based on the types of spicules. They are as follows:

1. *Calcarea*
2. *Hexactinellida* and
3. *Demospongia*

Class 1. Calcarea

1. Skeleton is formed of *calcareous spicules*.
2. Radially symmetrical animals.
3. *Choanocyte* cells are large and conspicuous.
4. They have usually a single cavity, *spongocoel* opening to the exterior through a single opening called *osculum*.

Examples: Leucosoleniu, Sycon, Clathrina, etc.

Class 2. Hexactinellida

1. Skeleton is formed of *six rayed triaxon, siliceous spicules*.
2. *Canal system* is branched or unbranched.
3. Radially symmetrical.
4. These are also known as *glass sponges*.

Example: Euplectella

Class 3. Demospongia

1. Skeleton either absent or present. When present it is either formed of *spongin fibres* or combination of spongin fibres and *silicious spicules*.
2. The *silicious spicules* when present are never six rayed.
3. The canal system is complicated *Rhagon* type.
4. These sponges are of great economic importance.

Example: Spongilla, Cliona, etc.

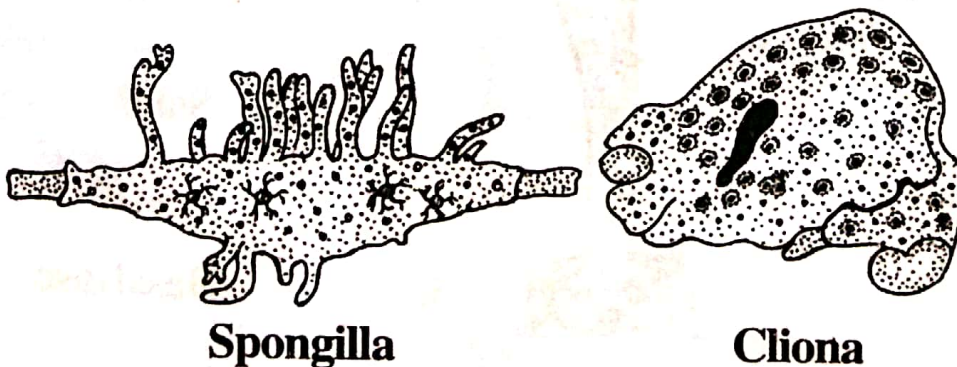


Fig.3.4: Some common sponges.

2. Ascon Sponge (Leucosolenia)

Phylum : Porifera

Class : Calcarea

Order : Homocoela

Leucosolenia is a simple type of sponge called **asconoid sponge**. As its body is perforated by numerous pores, it is included in the phylum **Porifera**. Porifera includes the most primitive multicellular organisms.

It is a **marine colonial** sponge. It is found **attached to rocks**. It is found in **sea-shore areas**.

Leucosolenia is a branched **colony**. The colony consists of **horizontal tubes** and **vertical tubes**.

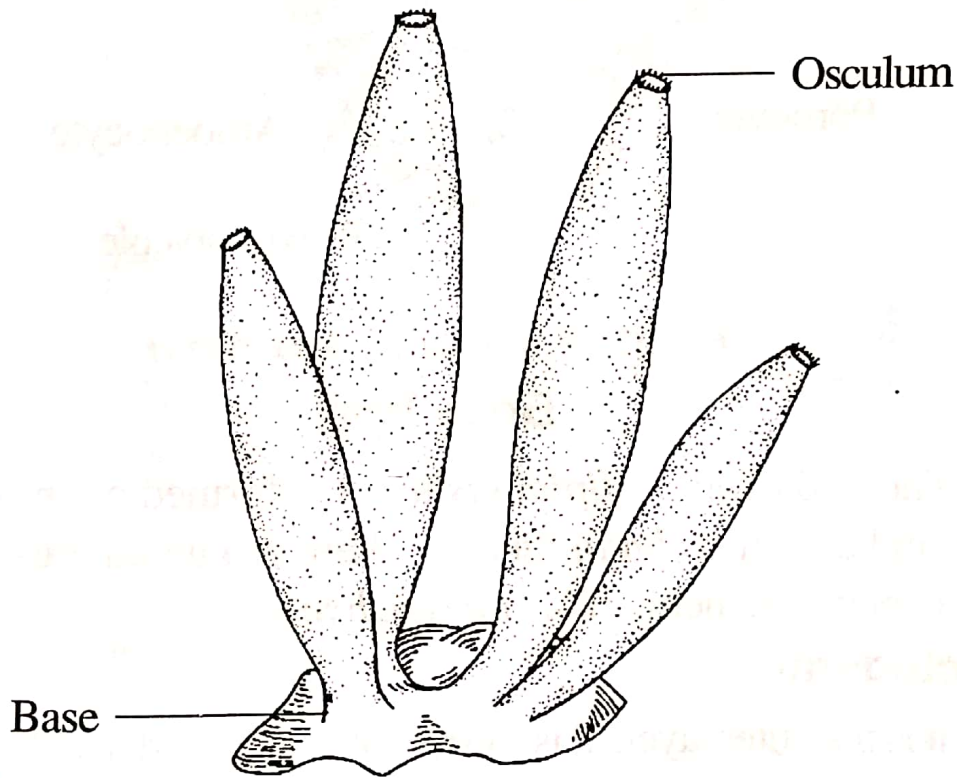


Fig.3.9: *Leucosolenia*.

The **horizontal tubes** are branched and they bear **adhesive discs** by which the colony is attached to the substratum.

The **vertical tubes** are unbranched and they form the individuals of the colony.

Each individual is **vase-shaped**. It is 2.5 cm in height. The surface of the body contains numerous minute openings called **ostia**. The ostia open into a large cavity called **spongocoel** located inside the body. The spongocoel opens to the outside by a large opening called **osculum** situated at the free end of the body.

Canal System

The body of *Sycon* is transversed by a system of canals called **canal system**. The canal system seen in *Sycon* is called **sycon type** of canal system. The canal system consists of the following components:

1. *Ostia*
2. *Incurrent canals*
3. *Prosopyles*
4. *Radial canals*
5. *Apopyles*
6. *Spongocoel* and
7. *Osculum*.

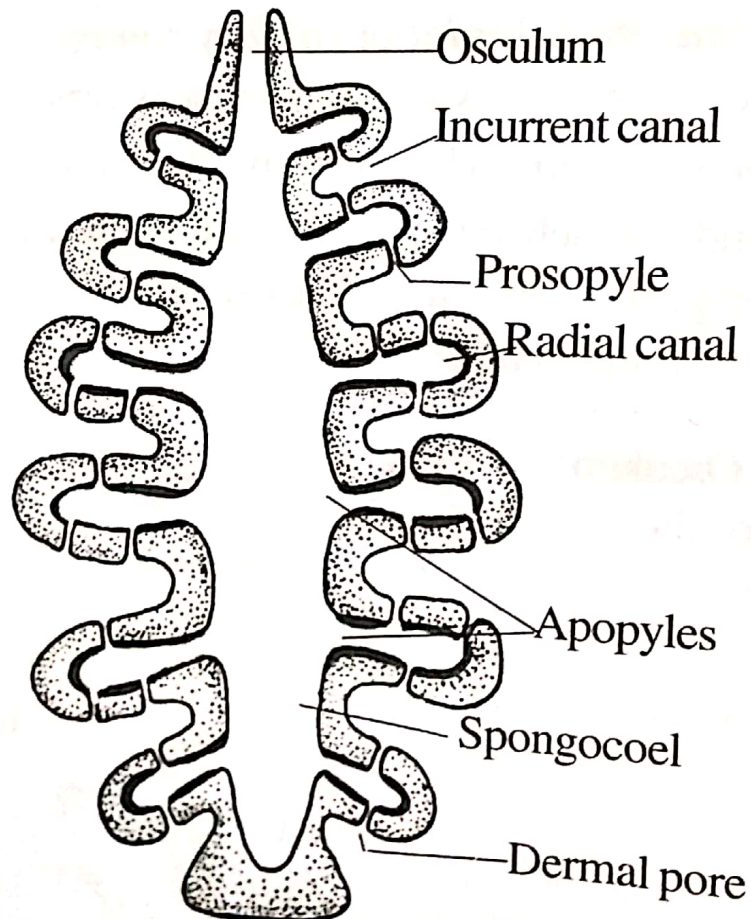


Fig. 3.18: *Scypha*: Canal system.

Ostia are minute openings found on the surface of the body. The ostia are located on a membrane called **pore membrane**. Each ostium is surrounded by contractile cells called **myocytes**. Myocytes regulate the diameter of ostia.

The ostia open into **incurrent canals**. They are lined by ectoderm cells.

The incurrent canals open into the **radial canals** through openings called **prosopyles**.

The radial canals lie parallel to incurrent canals. They are lined with **choanocytes**. The outer ends of radial canals are blind and the inner ends open into the spongocoel by openings called **apopyles**.

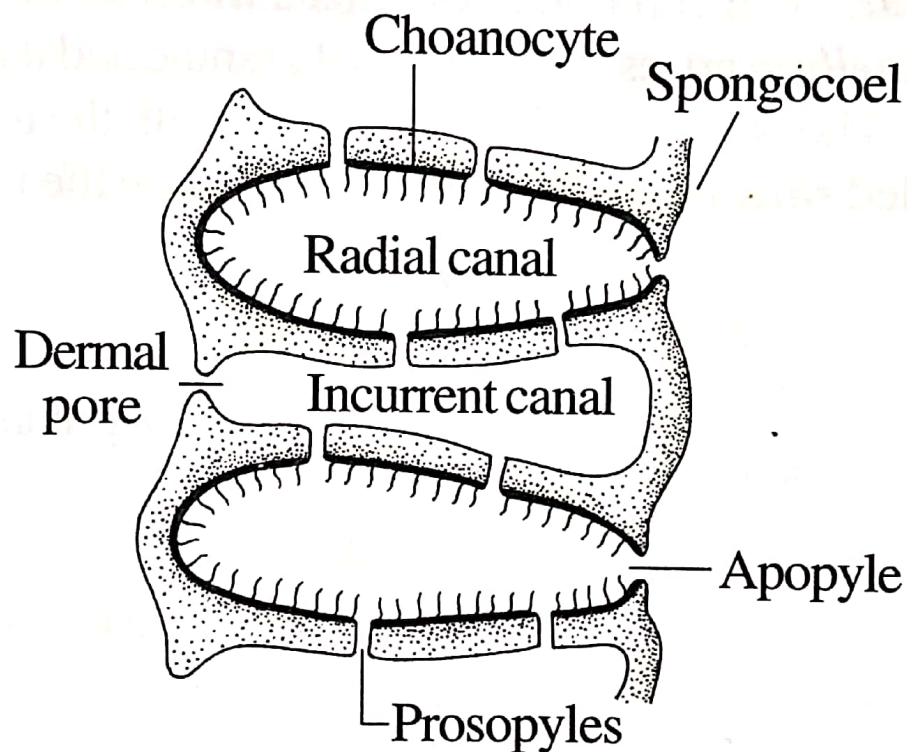


Fig.3.19: Vertical section of Scypha.

The openings of the radial canals leading into the spongocoel are called **apopyles**.

Spongocoel is the central cavity of the body. It is lined with **ectoderm**.

Osculum is the opening of the spongocoel to the outside.

The water current flows in the following direction:

Ostia → **Incurrent canal** → **Prosopyles** → **Radial canal** → **Apopyles** → **Spongocoel** → **Osculum**.