

## Canal System in sponges.

- All the cavities of the body traversed by the currents of water, which nourish the sponge from the time it enters by the pores, until it passes out by the osculum, are collectively called canal system.
- The arrangement and complexity of the internal channels vary considerably in different sponges.
- Canal system divided into mainly three types
  - Ascon, Sycon, Leucon type

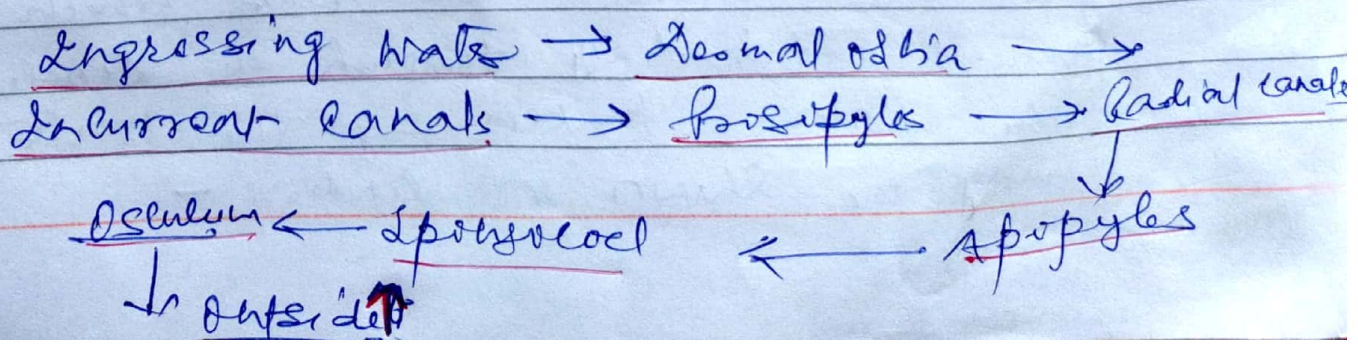
### Ascon type

- It's the simplest of all the types.
- It's found in Asconoid sponges, like *Leucosolenia* is of this type.
- The wall of the Asconoid sponges perforated by numerous microscopic apertures, known as incurrent pores or ostia, which extend from the external surface to the spongocoel.
- These pores are spaces within the tubule like cells - the porocytes which extend radially into the mesenchyme (mesogloea) and finally lead into spongocoel.
- It's large, spherical and central cavity in the sponge body and lined by the choanocytes.
- The spongocoel, opens outside through a narrow circular opening called osculum.
- The flow of water is maintained by the beating of the flagella of choanocytes. The rate of water flow is slow, because the large spongocoel contains much water which can't be pushed out radially through a single osculum.
- The course taken by the water currents may be shown as under: -

Ingressing water → ostia → Spongocoel → Osculum → outside

Sycon - type

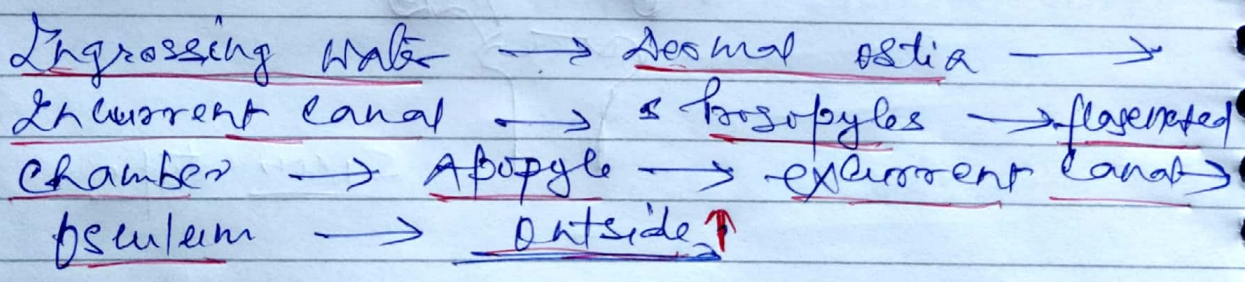
- Sycon type of canal system is more complex system of pores and is characteristic of Syconoid sponges, like Scypha, (Sycon)
- It may be assumed to have derived from the Ascon type. But embryonic development of Scypha clearly shows that Asconoid pattern converting in to the Syconoid pattern.
- Its body wall includes two types of radiating canal: Incurrent canal & Radiating canal.
- Incurrent & Radiating Canal paralleling & alternating with each other.
- Animal ostia found on the ectosome of the body open in to the Incurrent canals.
- Its non-flagellated & lined by pinacocytes & lead in to the radial canal through opening called prosopyles.
- Radial canals are flagellated chambers & are lined by choanocytes & opens in to spongocoel by apopyles.
- Spongocoel is a narrow, non-flagellated cavity & opens in to exterior through an excurrent pore, known as Osculum.
- Its similar to that of Ascon type.
- The course of water current:



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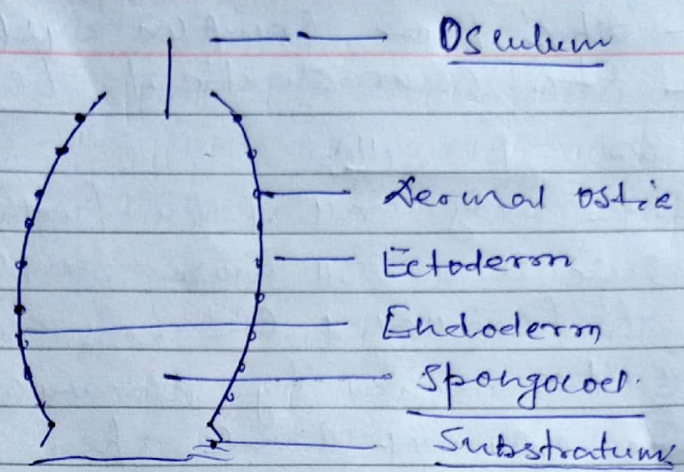
## Leucon type

- It's more complex system.
- It's characteristic of Leuconoid sponges, such as Spongia.
- Its body wall is further folding and gives rise to a still more complex canal system, Leucon type.
- The flagellated chambers are small and spherical cavities lined by choanocytes.
- The excurrent canals open into these chambers through prosopyles and the flagellated chambers in their turn communicate with the excurrent canal through apopyles.
- The excurrent canals are developed by a result of shrinkage and division of the spongoecy.
- The excurrent canals communicate with the outside through the oscula.
- The course taken by the water current is as follows.

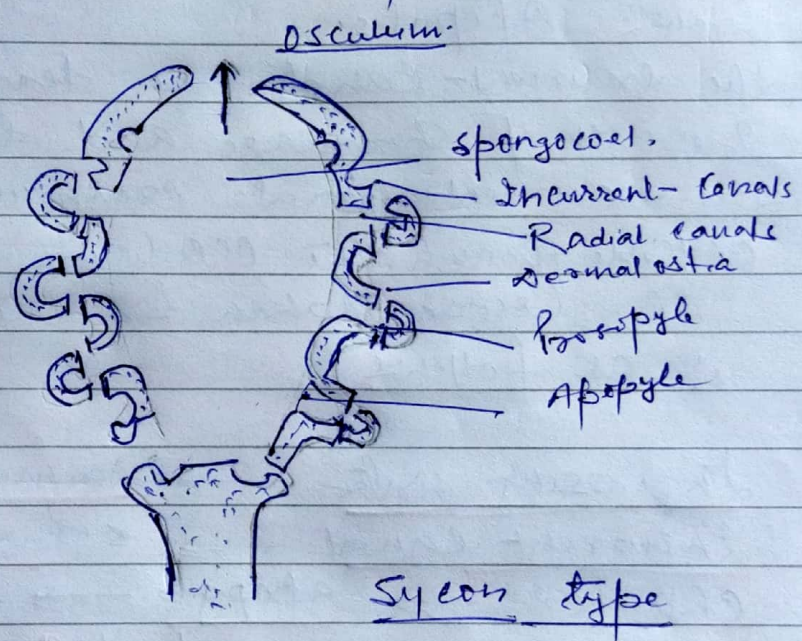


## Function of Canal system

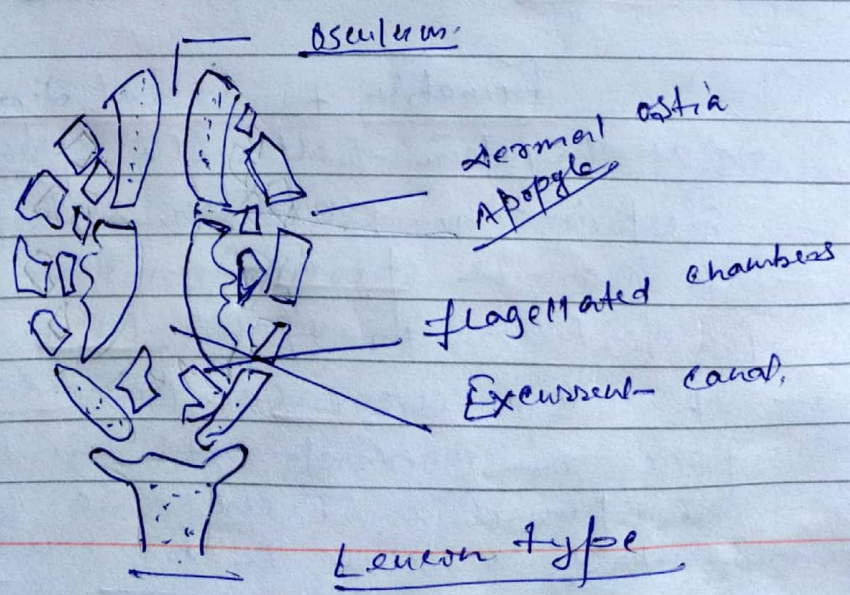
- Canal system helps the sponges in nutrition, respiration, excretion, & reproduction.
- It carries sperm from one sponge to another for fertilisation of the ova.
- It also increases the surface area of the sponge in contact with the water, & thus enable the sponges to increase their volume as surface volume ratio must remain fixed.



Ascon type



Sycon type



Leucon type