

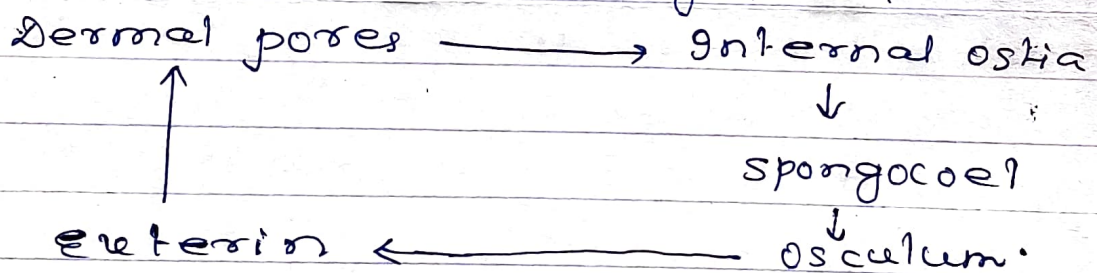
Ques → Give an account of the main types of canal system in Porifera.

Ans: → Inside the body of a sponge the water current flows through a certain system of spaces collectively forming the canal system. The system causes structural complexities in sponges and constituted the most vital system, because all the types work on the background of this system. As we know, the sponges bear a large number of pores on this body surface which lead into a system of channels permeating almost the whole body and ultimately open to the exterior. Canal system in sponges ranges from a very simple grade to highly complex type. The following types of canal system are encountered in different sponges.

1. Asconoid or Ascon type
2. Syconoid or Sycon type
3. Leuconoid or Leucon type.
4. Rhagon type.

Ascon type → This type is regarded to be the most simple grade of canal system. Now-a-days it is rare but probably was common in sponges. In such type the body of the sponge is radially symmetrical.

and vase-like. The wall is extremely thin. It closes a large spongocoel opening at the summit by a narrow osculum. The spongocoel is lined by choanocytes. The wall is pierced by numerous microscopic apertures termed as the incurrent or ostia, which extend from the external surface to the spongocoel. Each pore is intracellularly disposed in a porocyte. The ascon type is characterised by having a complete lining of choanocytes interrupted only by the porocytes. The course of water current is as follows :-



The asconoid type of canal system occurs in the ocythus stage in the development of some simple calcareous sponges, leucosolenia and a few other sponges.

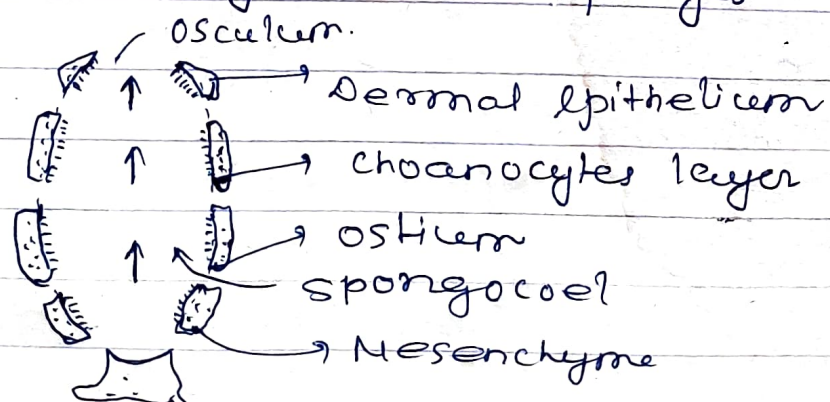


Fig: Ascon type of canal system

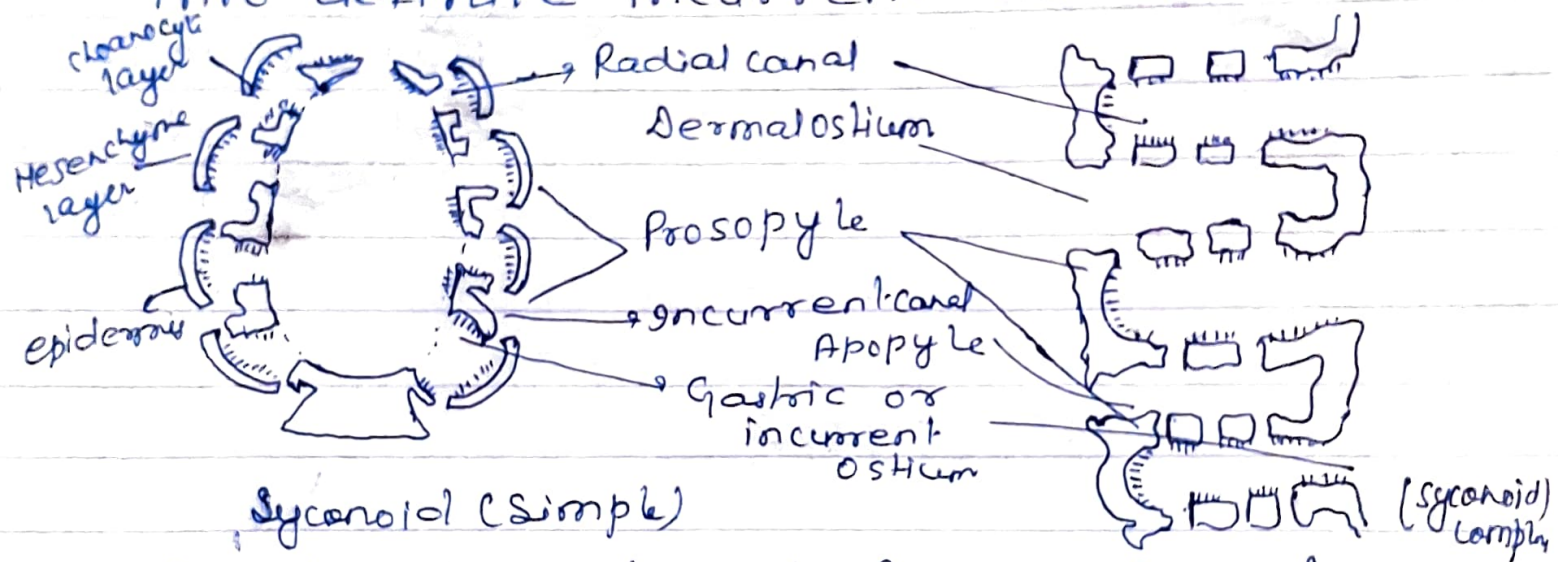
Sycon type →

It is a step forward in the evolution of canal system in sponges and can be derived theoretically from the ascon type by the outpushing of its wall into finger like processes at regular intervals. This occurs due to the increasing surface proportion by the thickening and folding the body-wall. The finger like out-growth are lined by choanocytes and are known as radial canals or flagellated chambers. As the choanocytes come to line the radial canals, the spongocoel possesses epithelial lining of flattened pinacocytes. The wide opening between the two adjacent radial canals forms the ostium and the space between them is known as incurrent canal. The dermal ostia of asconoid sponge now form the prosopyles and these are in the form of intracellular canals.

Two or three distinct grades of sycon type of canal system and syconoid structure are as follows —

- 1) Simple sycon type → In the simplest Heterocoela (eg - Sycecla) the radial canals stand out freely from the central cylinder,

without touching at any point so that outside water surrounds their whole length. The space between them are not organized into definite incurrent canals.



- ii). Complex Sycon type → In complex forms (eg - Sycon) the canal-like spaces called the incurrent canals or inhalent canals are formed due to the fusion of the walls of the adjacent canals. Each incurrent canals are surrounded by four radial canals. The thick walls of a syconoid sponge thus contains alternating radial and incurrent canal. The incurrent canals are lined by the flat epidermal cells. They open to the exterior between the blind outer ends of the radial canals by small dermal pores or dermal ostia perforating a pore membrane and guarded by projecting areas. The incurrent