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B.Sc U. G. Sem I. MJC - Zoology

Paper - I

## Canal System in Sponges

Canal System in Sponges was discovered by Robert E. Grant (1925). He found that water enters into the sponges by small apertures scattered over the body surface and leaves it at a certain larger hole after traversing a final course. This, later on, came to be known as "Canal System". Later workers in the same field observed different types of Canal systems arising from simple forms, differing in modifications and complications. These Canal systems may be classed as —

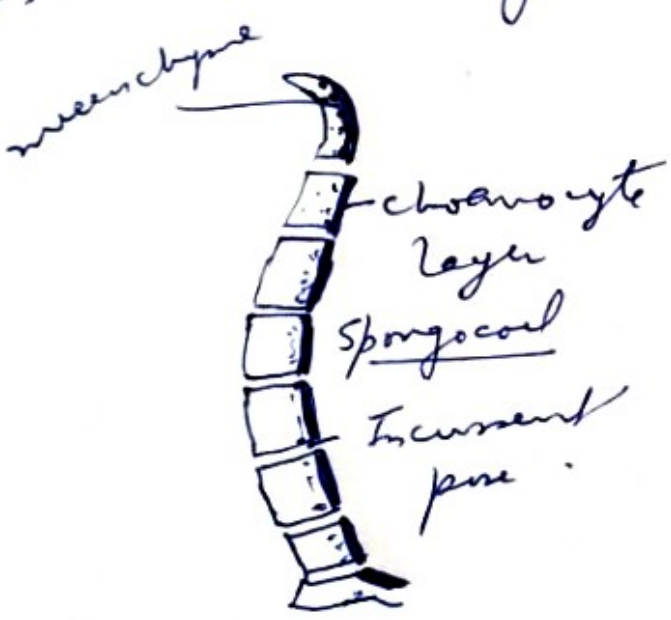
1. Ascon Type
2. Sycon Type
3. Leucon Type which includes
   a. Eurypylous type
   b. Aphodal type and
   c. Diplodal or Rhagon type.

1. **Ascon Type** - This is the simplest Type of Canal System. On the body surface are found regularly arranged many small rounded apertures called

inhalent pores or ostia. The wall is thin and these apertures open directly in the centrally placed paragastric cavity which opens outside through an opening called osculum. The internal lining is formed by flagellated collared cells or choanocytes. In Ascon Type water enters in to paragastric cavity through ostia and escapes to the exterior through osculum. Ex. Clathrina.

2. Sycon Type – This Type has been derived from the simple ascon Type by a process of unequal growth and a consequent folding of the body wall resulting in the formation of blind diverticula, the interior of which becomes covered by collared cells. The central portion of the gastral cavity becomes lined by flattened epithelium cells. There is a large no. of regularly arranged straight passages in the thick body wall. These passages are of two kinds – (i) Incurrent canals which are narrow and lined by flat epithelial cells (ii) radial or flagellated passages or canals lined by flagellated collared cells or choanocytes.
The incurrent canals end blindly at their inner extremities and do not reach the centrally placed paragastric cavity. On the external extremities each becomes

slightly dilated which is covered by a thin pore membrane perforated by 3-4 small openings called ostia. The flagellated canals in their turn are lined at their outer ends. Each communicates internally with paragastric cavity by a short but wide passage called excurrent canal which is lined by flat epithelium cells like incurrent canal and paragastric cavity. The incurrent and radial canals lie side by side and communicate with each other by small apertures called prosopyles. Water enters through ostia into incurrent canals and then through prosopyles enters into the radial canals due to flagellar movement of flagellated collar cells. Water then enters into the paragastric cavity through excurrent canal and ultimately passes out through the large osculum. Ex. Sycon.




ASCON TYPE

SYCONOID TYPE

3. Leucon Type :- Radial Canals of the Sycon type of Canal System may be compared with ascon like Canal System. If this undergoes the same process of folding by which Sycon type was derived from ascon type then this gives rise to leucon type of Canal System. Due to this growth and folding, the radial Canals get arranged in groups. Each group being centered around a main excurrent Canal. The Incurrent Canals may form a branching System. This results in the reduction of flagellated chambers and ultimately the chambers become small and spherical and irregularly scattered in the sponge wall.

a) Eurypylous type :- In this case the sponge has a flat broad base having an opening at the apex and body like a pyramid. There are a no. of flagellated chambers and it knows as hypophose, whereas the upper wall with flagellated chambers is called spongophore. The folded spongophore give rise to incurrent canals. Due to this folding, the flagellated chambers do not open into the gastral cavity but into the diverticula of it, which are the excurrent canals.

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