

Affinities and Systematic position of Phylum Porifera

Porifera taxonomic position -

Sponges were considered as plants for a long time. Ellis in 1765 placed them in Animal Kingdom. Linnaeus placed porifera in Zoophyta. 1836 Robert Grant coined the word Porifera and sponges are placed in it. Sponges are a group of multicellular, cellular grade organisms. They are the lowest metazoan group. The following are the characters of Phylum Porifera -

- 1) Sponges are multicellular sedentary animals.
2. They are cellular grade metazoans.
3. Sponges are diploblastic organisms.
4. Their body shows a number of openings called dermal ostia, hence this group is called phylum Porifera.
5. In the center of the body Paragastric cavity is present. It opens out through osculum.
6. Skeleton is made by spicules. The classification of phylum porifera is based on spicules.
7. Canal system is present in phylum Porifera
8. Flagellated cells or choanocytes are present. They catch the food particles of the incurrent water.
9. Digestive, respiratory and circulatory systems are absent.
10. Asexual reproduction is by budding, gemmule formation etc.

11. Sexual reproduction is by union of male and female gametes

Porifera - Affinities with Coelenterata

Resemblances -

- 1) Diploblastic body
- 2) Presence of Mesoglea
- 3) sessile in nature.
- 4) Presence of central cavity in the body.
5. Presence of asexual reproduction by budding.
6. Presence of free swimming larva in both groups.

Differences -

- 1) Absence of tissues in Porifera.
2. Absence of organs and system in Porifera
3. Absence of stinging cells in Porifera.
4. Absence of nervous system in Porifera
5. Presence of intracellular digestion in Porifera.
6. Presence of flagellated cells in Porifera.

Affinities with Phylum Protozoa -

Resemblances -

- 1) Sponges resemble a colonial Protozoan called Protozoa in following ways
- a) Presence of collar cells in both.
- b) Presence of amoeboid cells in both.

Differences -

- 1) canal system is present in sponges.
- 2) Presence of skeleton in sponges.
3. alth and oscula in sponges.

Presence of division of labor among the cells of sponges. The origin of sponges is not clearly understood. Porifera resembles with protospongia and coelenterates. The presence of choanocytes in the body of sponges has led some workers to believe that they are originated from colonial protozoans. But this view is not correct. The flagellated cells are to the outside in protospongia but in sponges the flagellated cells are internal.

Hence it is supposed that sponges might have originated from some different groups of flagellates and evolved separately or they have separated themselves from the metazoa at an early period of their evolution.

Hence this group is a blind off shoot of the main line of organic evolution. Considering the above facts Robert Grant separated sponges and kept them in phylum Porifera.

In 1875 Huxley and in 1884 Collas separated the sponges from Metazoa and kept them in a separate group called 'Parazoa'!

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