

Q Describe the structure and function of different type of cells present in the body wall of sponge.

The structure and function of Porifera offer several points of interest, they are more complex than protozoa yet they are the lowest of multicellular animals. They are diploblastic their body structure is different types of cells and within various groups of sponge are similar except with minor variations.

The epithelial or germ layers are two types.

(1) Dermal layer: →

constituting the thickness of the sponge wall and forming the outer covering.

(2) Gastral layer: →

Lining of spongocoel.

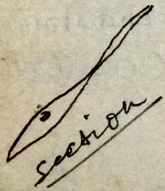
The dermal layer is subdivided into two layers: →

(a) Covering layer → (Pinacoderm) → Formed of Pinacocyte.

(b) Skeletogenous layer: → Filling the space between the layer of Pinacocyte and gastral layer.



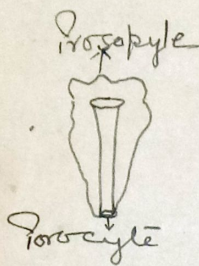
Pinacocyte



Section

(a) Pinacoderm: → Formed of Pinacocyte cells there are thin polygonal scale like cells they are large and flat with a central nucleus closely. They are highly contractile. They form the external dermal layer. They line the in-current canal but in Sycon they line the spongocoel.

The external pinacocyte are spoken of as ectodermal or dermal cortex and those lining of spongocoel are endoderm or gastral cortex. The outer lining of pinacocyte are called the epitheloid membrane. This name designated by H.V. Wilson.



Porocyte : →

Porocyte are modified Pinacocytes they are large size contractile cells through the Porocyte runs a large perforation called a poropyle which connects an incurrent canal to a radial canal. Prenant 1925 considered it to be a amoebocytes of mesenchyme.

Skeletogenous layer : →

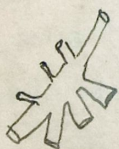
This consist of a nonliving jelly like material containing living mesenchyme cells which move about in amoeboid fashion. Their end touching by the fine Pseudopodia. The cells and the gelatinous mass constitute the mesenchyme or mesogloea. The jelly is a colloidal gel and mostly secreted by collared cells. It may occur in two forms when the jelly holds comparatively fewer cells, then it is a collenchyme otherwise it is called as parenchyma.

Different kinds of cells in Mesogloea

Amoebocytes : → Amoebocytes are a amoeboid cells with Pseudopodia they wander about freely in mesogloea. They are modified cell with Pseudopodia.

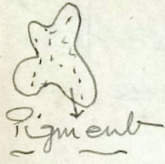
a) Collenchyma cells →

Collenchyma cells have several slender long branching Pseudopodia which anastomose to form a network they are like connective tissue cell in mesogloea.



b) Archeocytes : → Archeocytes have a few blunt Pseudopodia. The nucleus is large they are generalized cell and they are transport food and waste substance. They can give rise to other type of amoebocytes and they form sperms, ova and

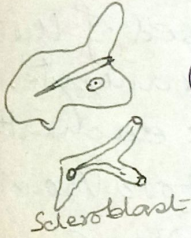
sexual reproductive bodies called germules.
They are sex cells.



(c) Chromocytes: → These are pigmented amoebocytes with lobose pseudopodia large nucleus & small granules of different colours are found in these cells. They give colour for the sponges.

(d) Thesocytes: →

These have pseudopodia and are filled with food reserves.



(e) Scleroblast: → They are ordinary amoebocytes and manufacture the endo-skeleton the nature. They are named according to the product they produce as →

(i) calcoblasts (ii) silicoblasts (iii) spongioblasts.

(1) when they made up of silica then called silicoblast
(2) when they made up of calcium carbonate they called Calcoblast.

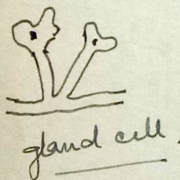
(3) when they made up of spongin then they called spongioblast.



Myocytes: →

They are fusiform contractile cells they form a sphincter around apertures such as oscula and apophyses where they act like muscle to open or close these aperture

Gland cells: → They are attached to the surface by long strands and presumably and secrete the slime.



Germ cells: → The ova and sperm of

sponges differentiated from amoebocytes though in some cases they have been stated to be modified choanocytes.

Phagocytes: → They are cells when visit the choanocyte and pick up food from them they by means of their pseudopodia in the amoebic fashion they also engulf excrete and damaged tissue.

Lophocyte: → There are amoeboid or oval there is a tuft of fibrils at one rarely at both ends often fibrils arise from a filament but not much is known about function.

Desmocyte: → Lie at the basement membrane of the canals and are long and slender.

Gastral layer: → It is composed of the flagellated cell known as choanocyte. It is large oval nucleated cells each with contractile vacuole and some food vacuoles. A long flagellum arise from a basal granule at one end. The flagellum is surrounded by transparent thin delicate and highly contractile funnel like protoplasmic membrane called collar. It is discovered by James Clark in 1869.

Choanocytes: →

Stand side by side loosely arranged and not touching their neighbouring cells. It lines the radial canals. The movement of their flagella creates a current of water. It is endodermal in origin a current of water. It is endodermal in origin. It helps the digestion excretion and reproduction.

