

Structur of cyanobacterial cell

Body of blue-green algae consists of a single cell but often aggregate to form colonies or filaments of different shapes.

The cyanobacterial cell is installed simplified where no nucleus, no nuclear membrane surrounds the genetic material, also lacks many of the organelles such as Mitochondrial, Golgi apparatus and plastids as well as the endoplasmic reticulum.

The protoplast consists of two parts usually:

The external colored part known as Chromoplasm which contain the common pigments; and the interior part is colorless which know as the central body, where the nuclear material (RNA, DNA) were distributed.

The protoplast also characterized by the absence of vacuoles, whereas, these vacuoles may appear in older cells.

The absence of vacuoles help the cell to resistant the drought and high osmotic pressure.

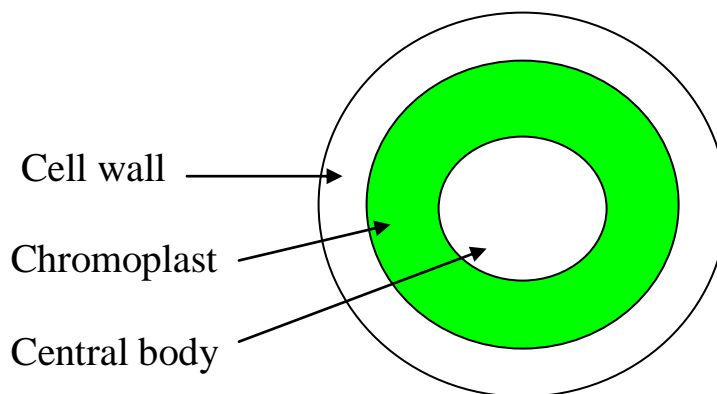
In some cases you can see in some water algal species pseudovacoules. It was believed to contain gases which resulting from the process of respiration and helps algae to float.

The food stored in the form of oil droplets and starch granules characteristic of this type of algae (Porter and Jost, 1976).

There are also other food items stored in the vegetative reproductive cells but disappear gradually during periods of growth and activity.

The protoplast surrounded by thick cell wall which consists of two layers; the external layer which consists of hemicelluloses and the internal layer which consists of Murein similar to the bacteria.

The cell wall also surrounded by gelatinous cover which contains pectin (Zarb, 1992).



Structure of Cyanobacterial cell.

Morphological Forms of cyanobacteria:

Blue-green algae take several forms, they may be take the form of single cell, colonies, or filamentous.

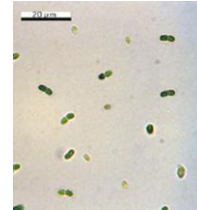
- * Single cells such as *Chroococcus*, *Synechoccus*.

- * In the case of colonial form, the cells grouped after cell division and takes the same gel layer and may be irregularly shaped colonies, such as *Microcystis* or symmetrical composed cuboidal colonies such as *Merismopedia*.

- * In the filamentous species, the filament may be unbranched such as *Nostoc* or be branched (true branched) as in the case of *Stigonema* or false branched as in the case of *Scytonema* (El-Hadethy, 1986).



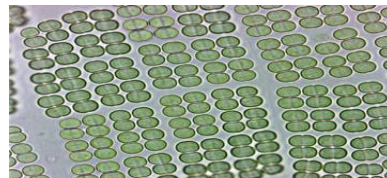
Chroococcus



Synechococcus



Microcystis



Merismopedia



Nostoc



Stigonema



Scytonema

Sheath:

The cyanobacterial cells surrounded by a sheath. It is composed of several compounds such as pectic acids and sticky acidic polysaccharides (mucopoly-saccharides).

The sheath and the wall can appeared with brown, blue, red or yellow when the optical density become high and become colorless when less density (El-Hadethy, 1986).

Heterocyst:

Some species contain special cells called heterocyst, which are spherical large cells with thick walls. These cells are formed of normal vegetative cells and contain large quantity of reserved food materials and appeared of a yellowish-green color due to the presence of chlorophyll pigments, or carotene pigment.

It may be terminal or intermediate position and have a number of functions:

- A - The ability to germinate in the absence of nitrogen.
 - B - Play a role as an element of connection, connecting the filament mat and is evidenced by the prevailing surface.
 - C - Helps blue-green algae to live and grow in the environment that are less than the amount of nitrogen.
- Generally the heterocysts were formed when the concentration of ammonia or their derivatives becomes less than the level at which the algae needs (Sabri, 1986).
 - Heterocysts usually common in families of Nostocaceae and Rivulariaceae.

Trichomes:

The filamentous algae consist of hair like structures called trichomes. Trichomes consist of separated cells and septa enclosed within sheath.

These structure have the ability to crawl on solid surfaces, as is the case in bacteria creeping (El-Hadethy, 1986).

Branching:

Branching characteristic of many filamentous algae, which is of two types:

1. True-branching such as *Mastigocladus*, *Stigonema*.
2. False-branching, which depends on the breaking the original thread, such as *Scytonema* species.