

**Taxonomy of blue-green algae:**

According the suggestion of Bold (1956), cyanobacteria was grouped within eight divisions include all algae, the first one is the prokaryotic or Blue-green algae (Laroussi, descriptive, 1993). While bacteriologist's grouped Blue-green algae within the eleven section of bacterial sections, which includes oxygenic phototrophic bacteria in a book (Bergey's Manual of Determinative Bacteriology, 1994)

The blue-green algae were classified by different systems of classification by many scientists, one of them which mentioned in Golubic (1976). It classified blue-greens to six orders:

- Chroococcales: the alga body is single cell or consist colonies, such as *Microcystis*.
- Chamaesiphonales: the alga body is single cell, but sitting in external boards with exospores such as *Chamaesiphon*.
- Pleurocapsales: the alga body is filamentous with endospores such as *Pleurocapsa*.
- Oscillatoriales: the alga body is filamentous which do not contain heterocyst such as *Oscillatoria*.
- Nostocales: the alga body is filamentous containing heterocyst such as *Anabaena*.
- Stigonematales: the alga body is filamentous with true branches such as *Stigonema*.

Rippka et al., (1979) classify blue-green algae into five orders; Chroococcales Pleurocapsales, Nostocales, Oscillatoriales and Stigonematales.

In the following study, some blue-green alga was classified as mentioned in Alsrani et al, (2000) according to the system of classification recorded by Bold and Wynne (1985) as follows:

Division: - Cyanophycota

Class: - Cyanophycophyceae

Order: - Nostocales

Family: - Oscillatoriaceae

Genus: - *Oscillatoria*

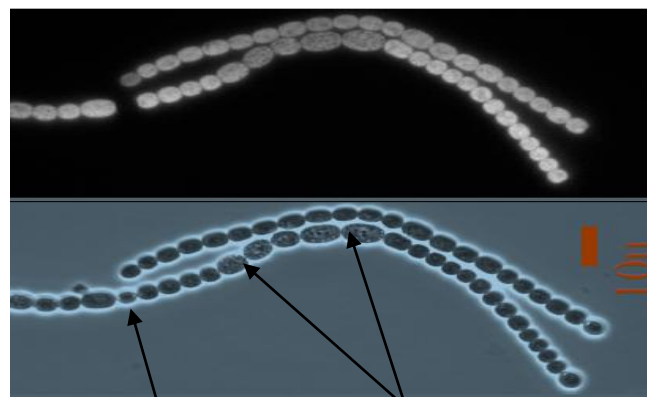
- This family includes filamentous blue-green algae that have the ability to binary fission in one level, resulting in new vegetative cells.
- Do not contain heterocyst or akinets and thickness trichomes ranges 0.4 -100 micrometer.
- Forms may be flexible to flexion or medium hardness or take the form of a spiral or helical open.
- The packed cells enclosed by gel sticky layers (sheath).
- The filaments consist of separated cells (Lamont, 1969: Ciferri, 1983).
- They are inhabits all terrestrial environments and water, and appeared as mucosa layers on the rocks and humid plants. The aquatic forms live in marine and fresh water as benthic or floating forms. Some species also live in the waters of hot springs that may reach a temperature to 62°C (Castenholz, 1969). Rare symbiotic relationship between members of this family.
- Trichomes move by rotating movement called Osillation movement which derives its name (Alsrani, et al 2000).



*Oscillatoria limosa*

### **Reproduction of the blue-green algae**

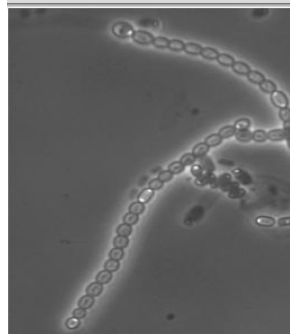
- Cyanophyta reproduce asexually by binary fission, which characterizes the majority of prokaryotic organisms.
- Also some forms have a property or a relationship to reproduce by other types of asexual reproduction, that believe that this type of reproduction is to save the type most of the function of reproduction, including:
  1. Akinetes. Vegetative cells grow and develop into permanent structures which become resistance to unfavorable conditions, called akinetes. This commons in the families Rivulariaceae and Nostocaceae. These cells are much larger than normal vegetative cells, which are thick walls and contain granules of cyanophycin.



**Heterocyst**

**Akinetes**

2. Hormogonia. Hormogonia of common appearance in the majority of filamentous blue-green algae. They are small pieces of trichome separated from the original thread and moved creeping away from him and then grow each of them separately to form new trichomes as in *Cylindrospermum* and *Oscillatoria*.



Hormogonium layer

3. Spores. A method for asexual reproduction and maintain the kind in the blue-green algae. It is a common type in the unfilamentous cyanobacteria, where external (Exospores) or internal (Endospores) or vesicle (Nanocyst) which occurred in a few species only (Sabri, 1986).
4. The sexual reproduction is not known among the blue-green algae (sprue, 1992).