

General Introduction

- Algae are a highly diverse.
- They are morphologically simple, **chlorophyll-containing**, **non-flowering**, and typically aquatic plants of a large family with members including seaweeds and a range of microscopic and unicellular to very large multicellular organisms.
- Algae are either **prokaryotes or eukaryotes** and lack vascular tissue, leaves, true stems, and roots .



- The **prokaryotic algae** are the **blue-green algae**, which are also referred to as Cyanobacteria or Cyano-prokaryota and belong to the **kingdom Eubacteria** (Monera)
- **The eukaryotic algae** belong to the **kingdom Protocista**.
- They are reported to be the chief converters of water and carbon dioxide to biomass and oxygen as they receive radiation from sunlight, and are therefore referred to as primary producers.
- Most algae are photoautotrophic and carry on photosynthetic .
- Microalgae are a promising **renewable resource for biofuels**, and optimization and control of the biomass growth production have gained economic and commercial interests

Algal cell structures

- Algal cells have well-defined cell walls composed of cellulose, except for the cell walls of cyanobacteria (**blue-green algae**), which are composed of peptidoglycan.
- Algal cell structures include the cell wall, nucleus, plastids, starch and pigment-producing centers, stored nutrients, mitochondria, Golgi bodies, contractile vacuoles, eyespots, and flagella. Some algae also possess specialized structures, such as aerobic anae, which aid in buoyancy.

Algal classification

- - General classification of different living organisms and their classification into five kingdoms: Waitker (1969)
- 1- Plant Kingdom
- 2- Animal Kingdom
- 3- Fungi Kingdom
- 4- Protista Kingdom (including eukaryotic algae)
- 5- Monera Kingdom (prokaryotic algae and bacteria).

- The fundamental principles of algal classification include:
Pigment type ,Type of stored food and feeding methods
Reproductive methods External appearance and internal
cellular structure Cell wall structure Types of flagella

Kingdom: Monera

Division:(Cyanobacteria) Cyanophyta.

Kingdom: Protista

- 1- Division: Euglenophyta
- 2- Division: Chlorophyta
- 3- Division: Bacillariophyta

- 4- Division: Xanthophyta
- 5- Division: Chrysophyta

- 6- Division: Phaeophyta

- 7- Division: Rhodophyta