**Algae (Chapter 20)**

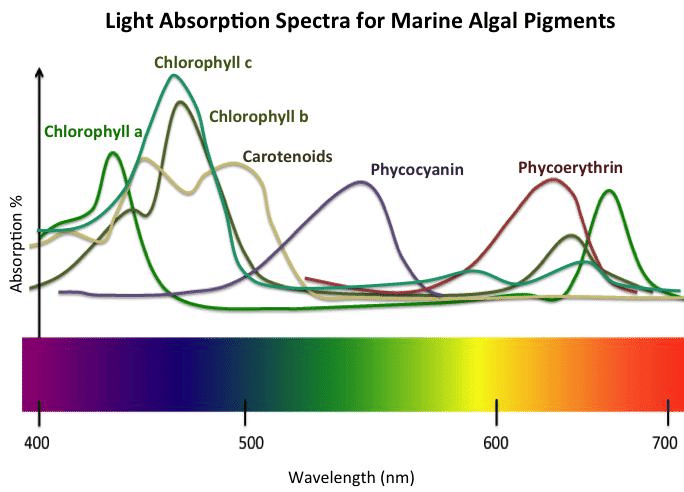
**Part 1: Characteristics of Algae**

**Key Characteristics**

* Photosynthetic, have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (and sometimes other photosynthetic pigments)
* Eukaryotic
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Aquatic
* Classification debated; no clear definition on what ‘algae’ are

**Adaptations for Aquatic Living**

* Thin leaf-like structures; exchange gases and nutrients directly with surroundings
* No \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to transport water
* No \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (water provides sufficient support)



**Chlorophyll and Accessory Pigments**

* All algae have chlorophyll *a*, whichuses red and violet light (scarce underwater)
* Algae often use different forms of chlorophyll (*b*, *c*, *d*) and/or **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to use other wavelengths of light

1. Why do leaves appear green to our eyes?
2. The leaves of trees have chlorophyll and carotenoids. In the fall, green leaves break down and recycle their chlorophyll, leaving the carotenoids behind. Why does this cause the leaves to change colour to yellow, orange, and red?
3. Water filters out long-wave visible light like red, orange, and yellow. Some algae live on the sea floor.
   1. What pigments are these algae likely to utilize? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. What colour are these algae likely to be? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 2: Groups of Algae**

**Chlorophyta (Green Algae)**

* Have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Colour: \_\_\_\_\_\_\_\_\_\_\_
* Store food as starch
* Habitat: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Solitary or colonial

Some green algae are colonial. What is a **colony**? What are three examples of colonial green algae?

*Label this diagram of kelp, a brown alga.*



**Phaeophyta (Brown Algae)**

* “Seaweeds”
* Chlorophylls \_\_\_\_ and \_\_\_\_\_, accessory pigment \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Colour: \_\_\_\_\_\_\_\_\_\_\_\_\_
* Store food as starch and oil
* Habitat: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, arctic areas
* Can grow to very large in size (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_),   
  with complex structures

Brown Algae:Fucus Anatomy

* Blade: used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Gas bladder: filled with gas for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Holdfast: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ algae down to rock or other substrate

**Rhodophyta (Red Algae)**

* Chlorophyll \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, accessory pigment \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(absorbs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light)
* Colours: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Live at greater depths than other algae (up to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Store food as starch
* E.g. *Porphyra* (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

**Part 3: Where Algae Fit into the World**

1. Why are algae important for the world and other living things overall?
2. Why are algae important to humans?