CONCEPT: PIGMENTS OF PHOTOSYSTEMS

●In order to harness light energy for *photosynthesis*, chloroplasts have several types of _____.

□ **Pigments**: molecules that _____ wavelengths of *visible light*.

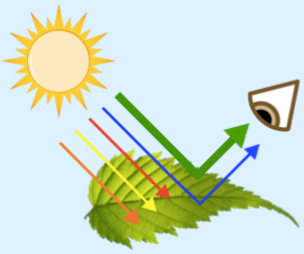
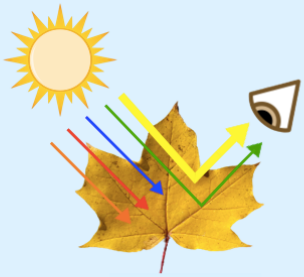
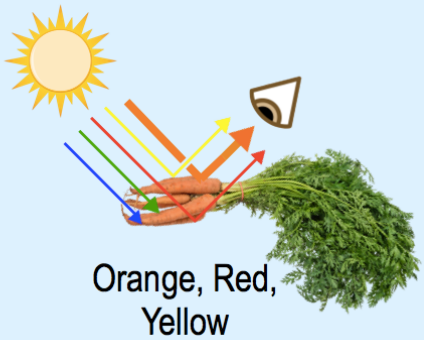
□ **Chlorophyll** _____: the main *photosynthetic* pigment in chloroplasts.

□ **Accessory Pigments**: all other *photosynthetic* pigments that are _____ *Chlorophyll a*.

●Different pigments *absorb* _____ *wavelengths* of light.

□ Some *wavelengths* of light are *absorbed* while others are _____ (we visualize *reflected* light).

EXAMPLE: Types of Photosynthetic Pigments.

Pigment	Chlorophyll ___	Chlorophyll ___	_____enoids
Light _____	 Green-Blue	 Yellow-Green	 Orange, Red, Yellow

PRACTICE: Examples of accessory pigments for photosynthesis are:

a) Chlorophyll *b* and carotenoids.

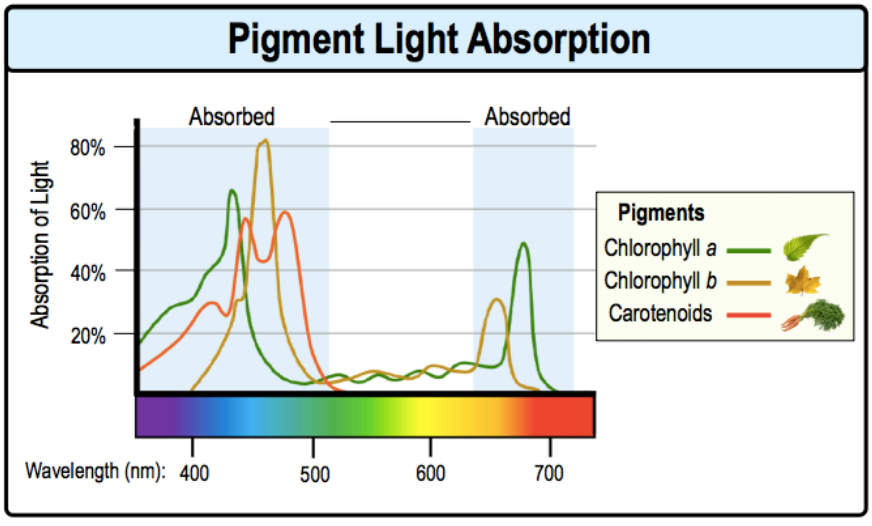
b) Chlorophyll *a* and chlorophyll *b*.

c) Chlorophyll *a* and carotenoids.

d) Carotenoids, chlorophyll *b* and chlorophyll *a*.

Absorption Spectrum of Photosynthesis

●**Absorption Spectrum**: graph showing the light _____ of pigment molecules.



CONCEPT: PIGMENTS OF PHOTOSYSTEMS

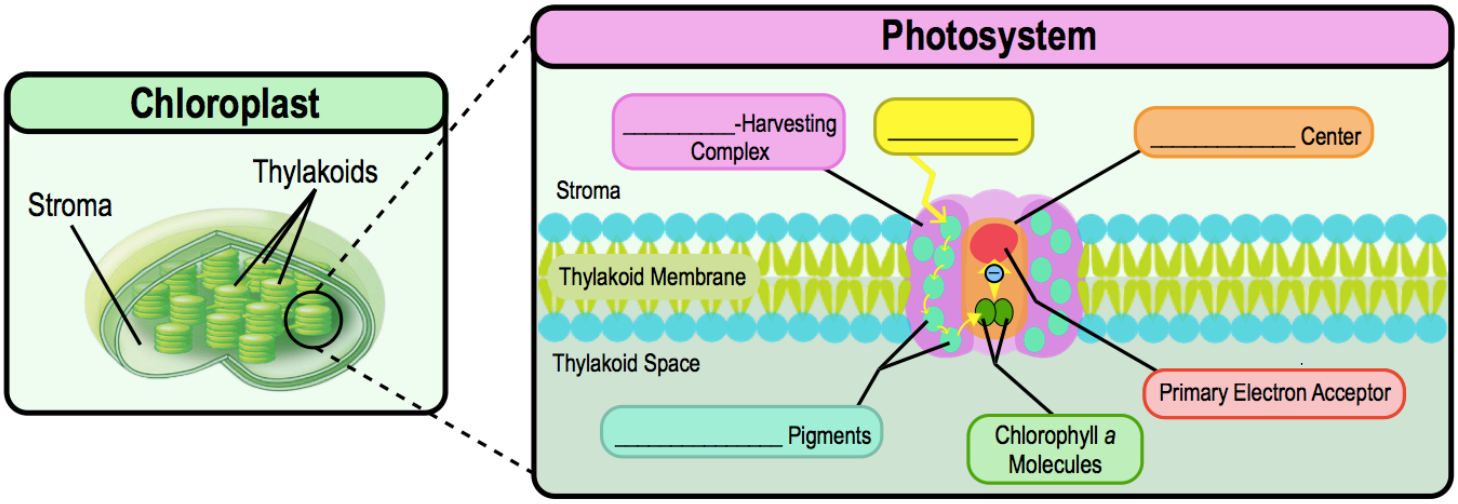
PRACTICE: Which of the following pigments does NOT absorb yellow/orange light (650-750nm)?

a) Chlorophyll a. b) Carotenoids. c) Chlorophyll b. d) Both a & c.

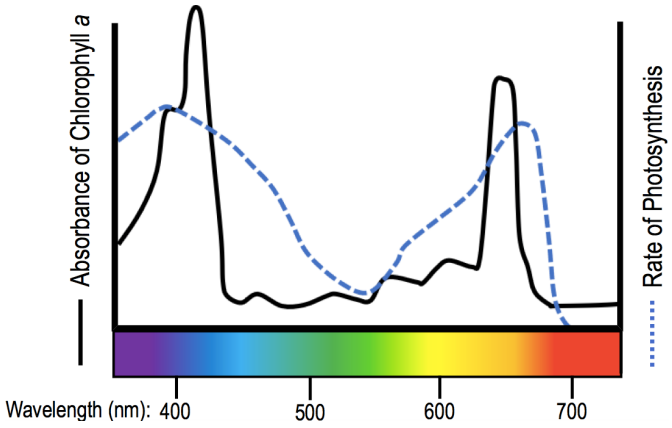
Introduction to Photosystems

- **Photosystems**: complexes of *pigments*, proteins & other molecules found in the _____ *membrane*.
  - □ Composed of several _____-*Harvesting Complexes* surrounding a *Reaction Center*.
  - □ Most plants have _____ photosystems involved with performing the _____-*Reactions* of *Photosynthesis*.

EXAMPLE: Structure of a Photosystem.



PRACTICE: The figure shows the absorption spectrum for chlorophyll *a* and the action spectrum for photosynthesis. Why are they different?



a) Green and yellow wavelengths of light inhibit the absorption of red and blue wavelengths.

b) Oxygen given off during photosynthesis interferes with the absorption of light.

c) Accessory pigments are absorbing light in addition to chlorophyll *a* which can be used in photosynthesis.

d) Aerobic bacteria take up oxygen, which changes the measurement of the rate of photosynthesis.