

Tape Energy and Reactions on pg. 41

- 1. What organelle changes solar energy into chemical energy?**
- 2. Where does the energy for photosynthesis come from?**
- 3. Where does the matter for photosynthesis come from?**
- 4. Which molecule stores more energy; glucose or ethanol?**
- 5. Why are oils (lipids) good sources of fuel?**



Energy

- **Why are lipids (oils) good sources of fuel?**

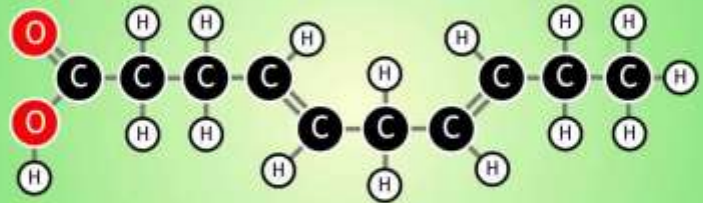


Energy

- Why are lipids (oils) good sources of fuel?



Vegetable oils



many C=C double bonds

Logistics

- Finals start January 21
- **START STUDYING NOW**

SUN	MON	TUE	WED	THU	FRI	SAT
	6	7	8	9	10	11
12	13	14	15	16 UNIT 4 TEST	17	18
19		21 7	22 5/6	23 3/4	24 1/2	25
26		28	29	30	31	

Energy and Reactions

Start by making the molecules and energy units of the reactants and putting them on the reactants side, then rearrange the atoms and energy units to show the products.



Ethanol



Chemical
change

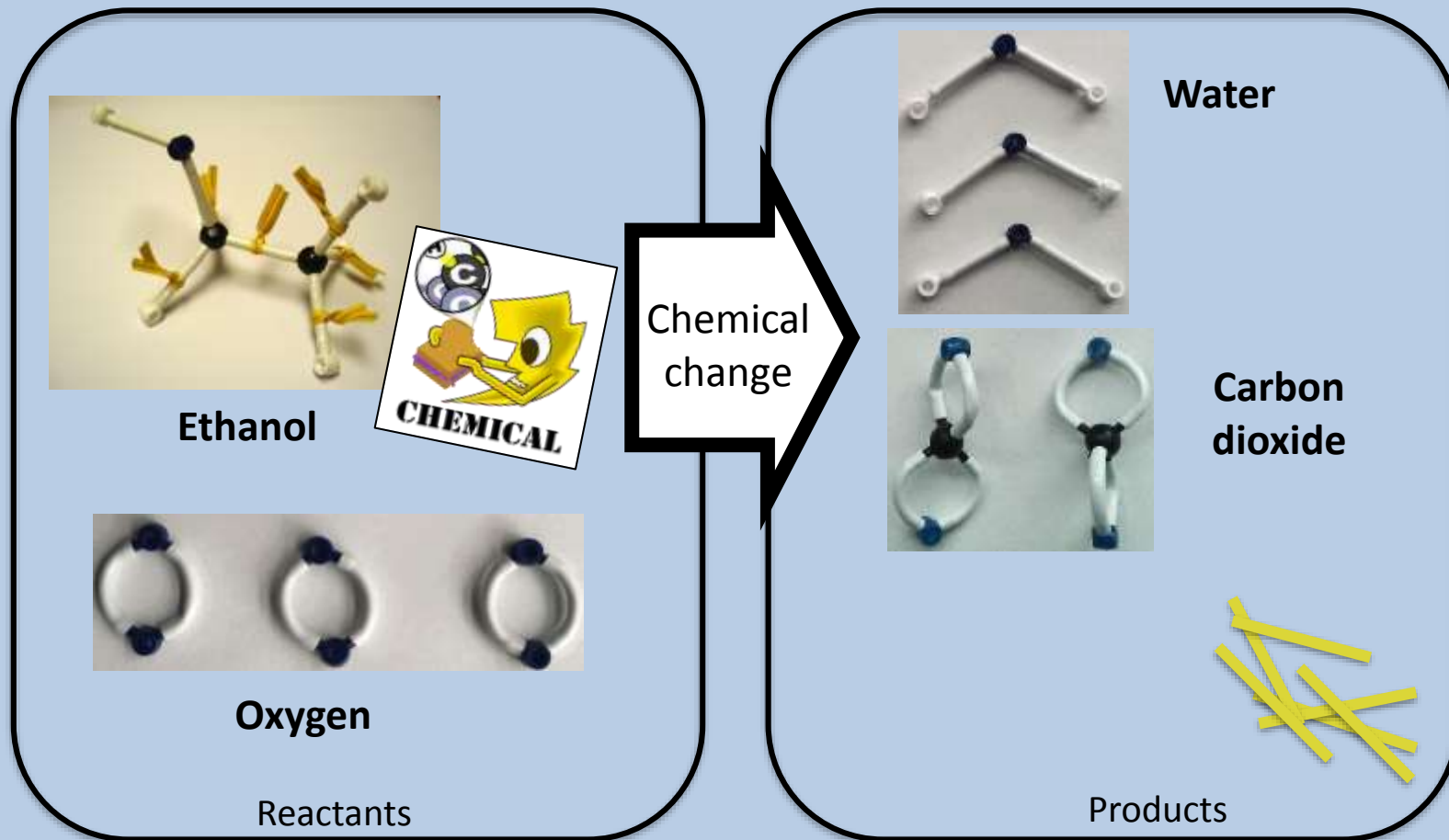


Oxygen

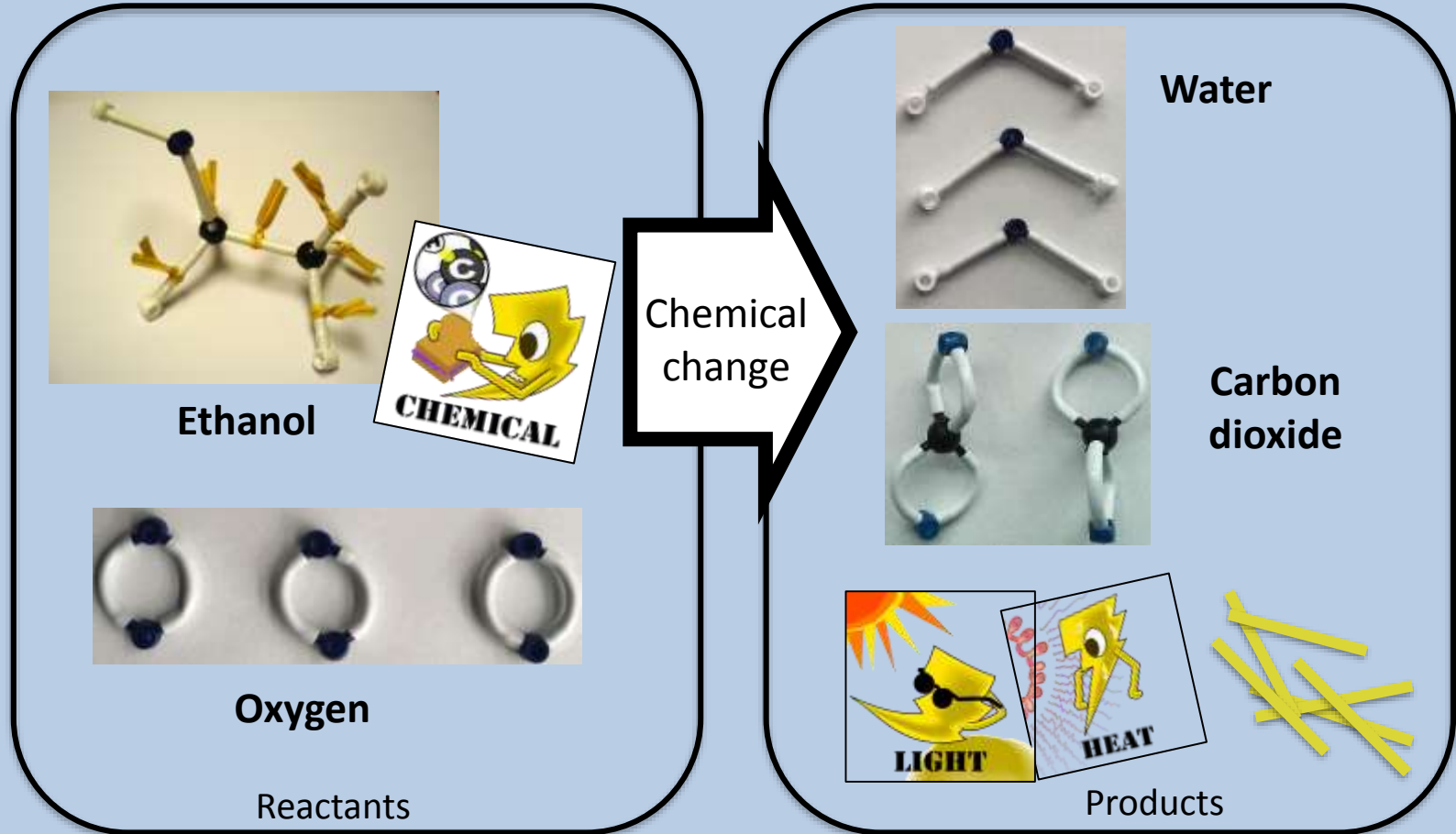
Reactants

Products

Energy and Reactions



Energy and Reactions



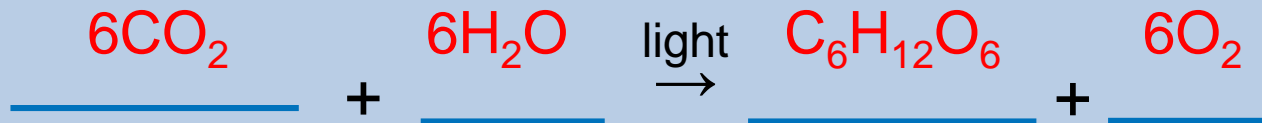
Photosynthesis

- **What is the overall reaction formula of photosynthesis?**

Photosynthesis

Photosynthesis uses the energy of sunlight to convert water and carbon dioxide (low-energy reactants) into high-energy sugars and oxygen (products).

Carbon dioxide + Water $\xrightarrow{\text{light}}$ Sugars + Oxygen



Photosynthesis

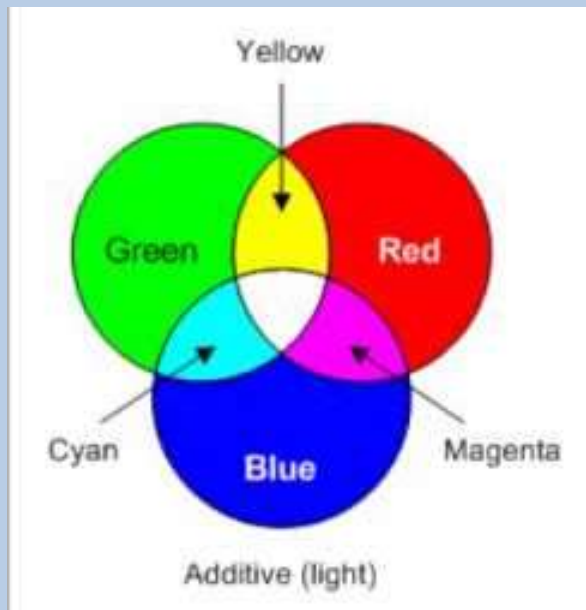


Photosynthesis

- **What are the primary colors of light?**

Photosynthesis

- What are the primary colors of light?

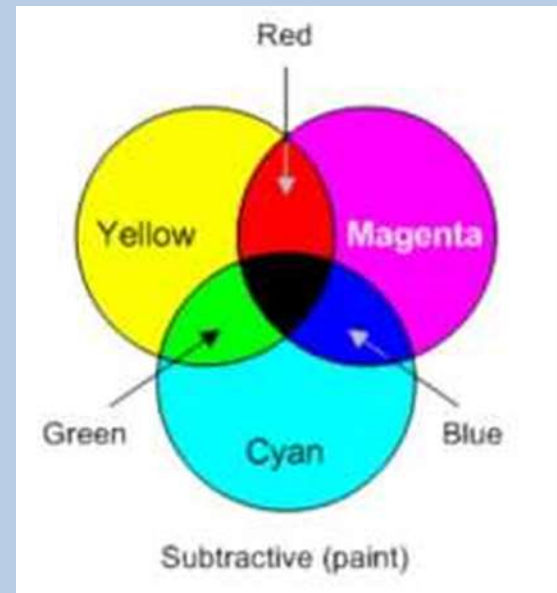


Photosynthesis

- **What are the primary colors of pigment?**

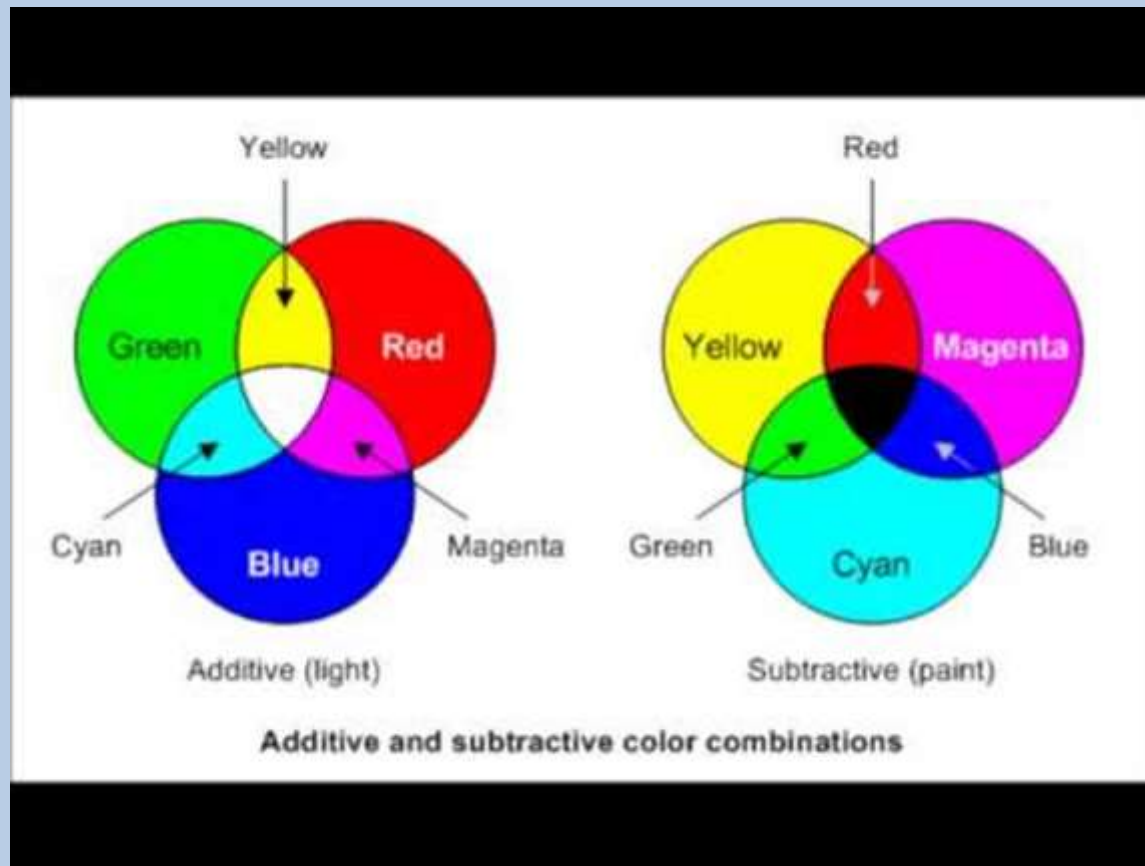
Photosynthesis

- What are the primary colors of pigment?



Photosynthesis

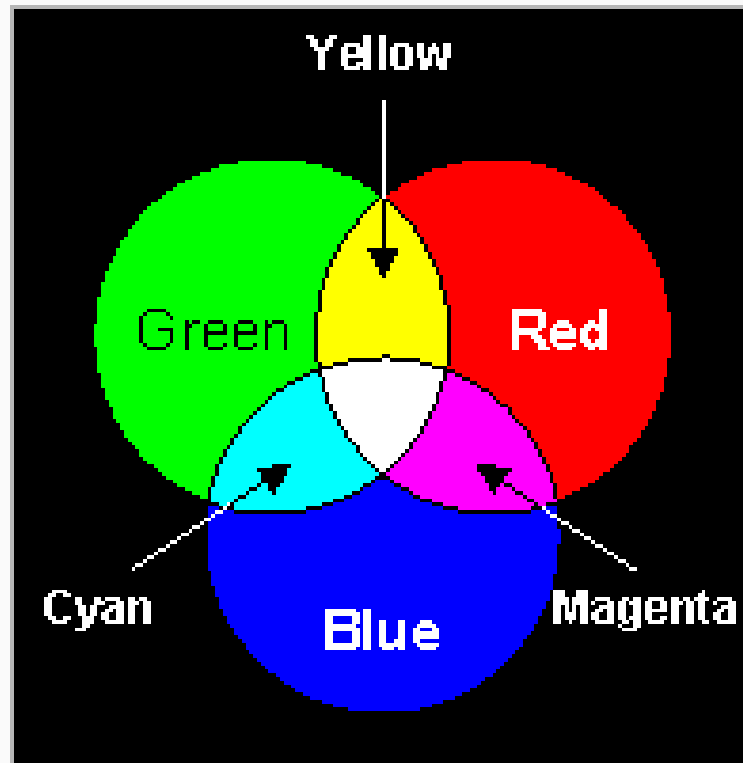
- The primary colors of light and paint are opposite:



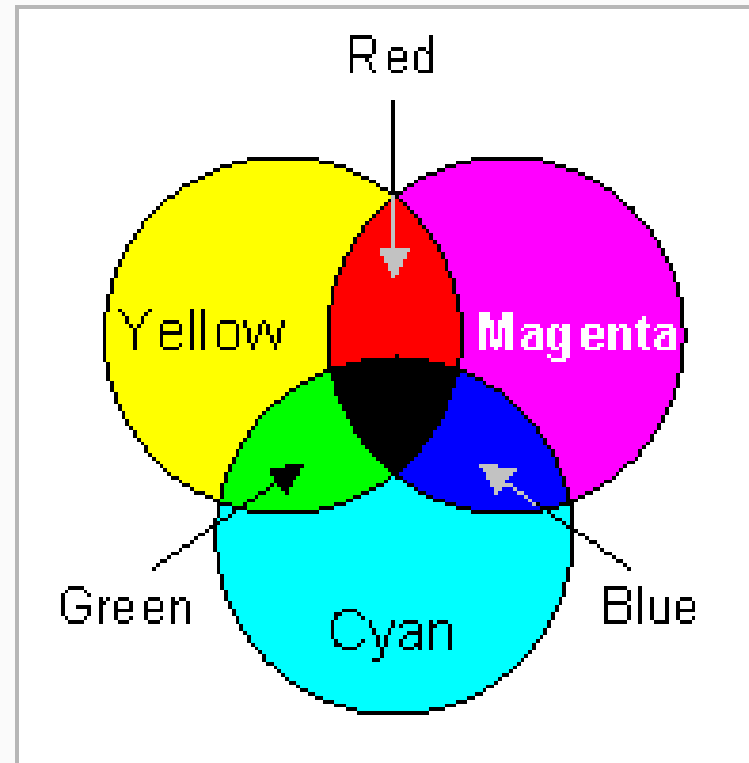
Photosynthesis

- The primary colors of light and paint are opposite because the *colors that objects appear are a result of reflecting light*

Light and Color

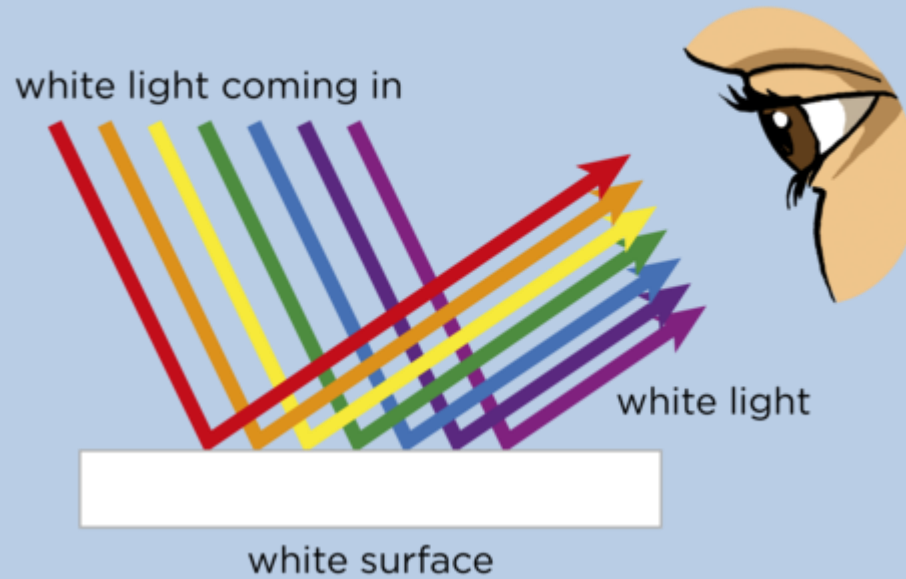


Additive (light)

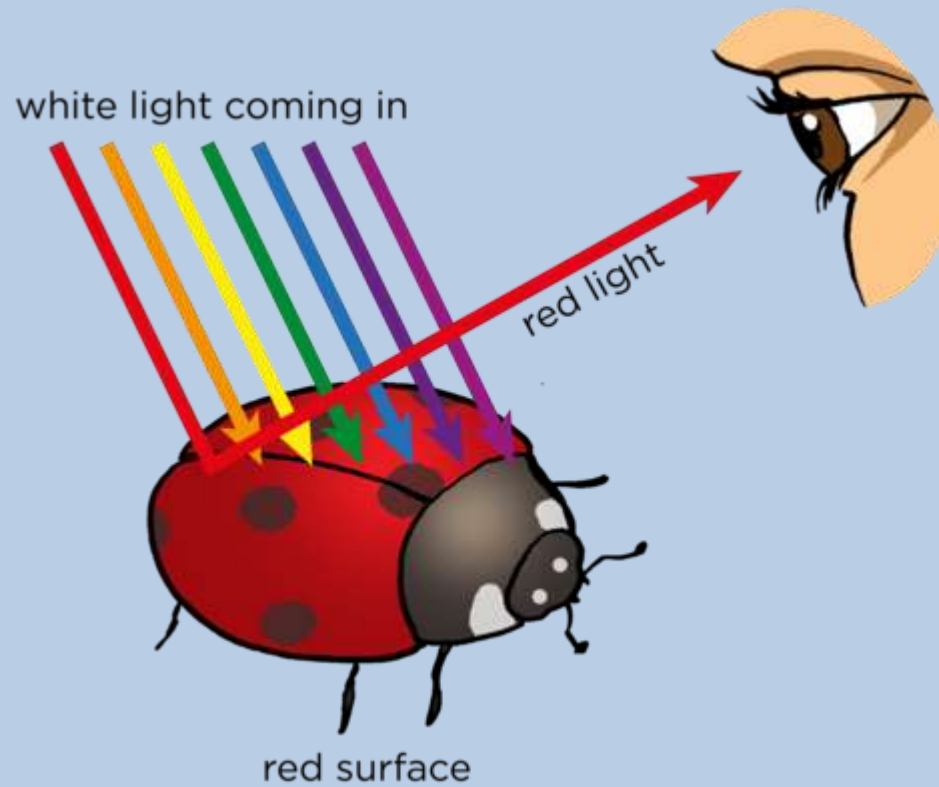


Subtractive (paint)

Photosynthesis



Photosynthesis



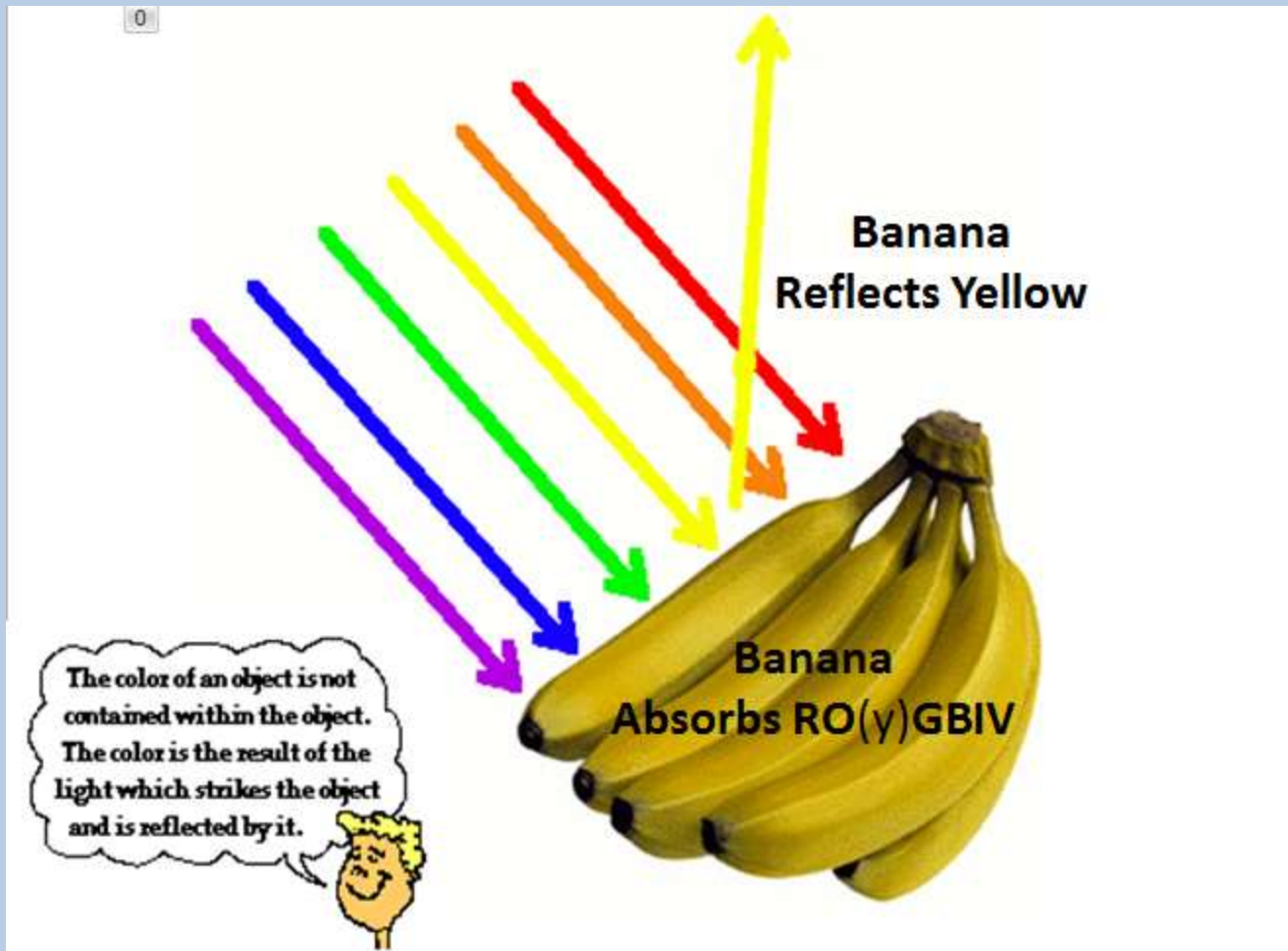
Light and Color

- <https://www.youtube.com/watch?v=dH1YHozEAik>
- <https://www.youtube.com/watch?v=UZ5UGnU7o0I>
- <https://www.youtube.com/watch?v=53-g1Oa0Rel&t=75s>

Photosynthesis

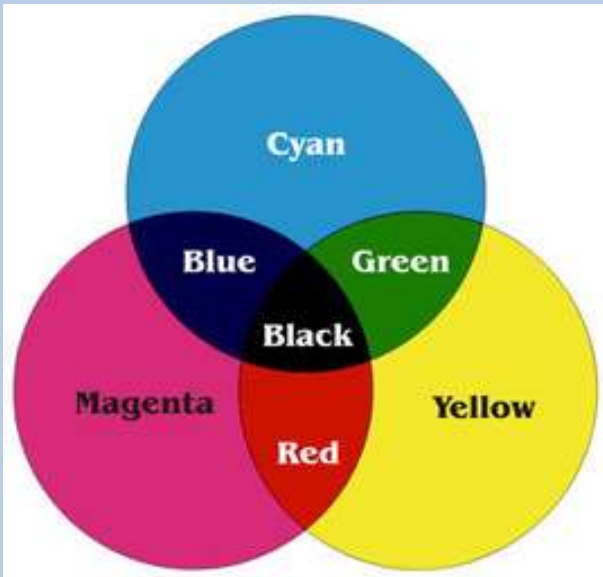


Photosynthesis



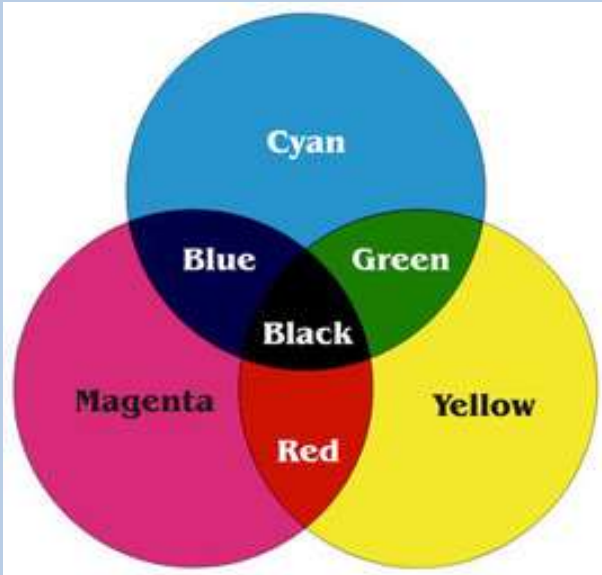
Photosynthesis

- **What color would a banana be if we could see the light that is absorbed instead of reflected?**



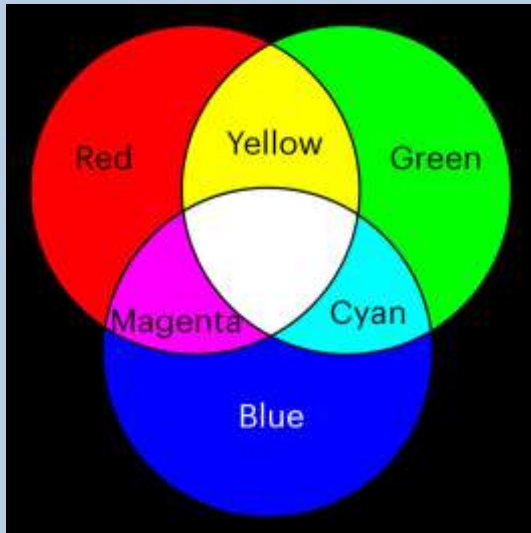
Photosynthesis

- If we could see the light that is absorbed instead of reflected:

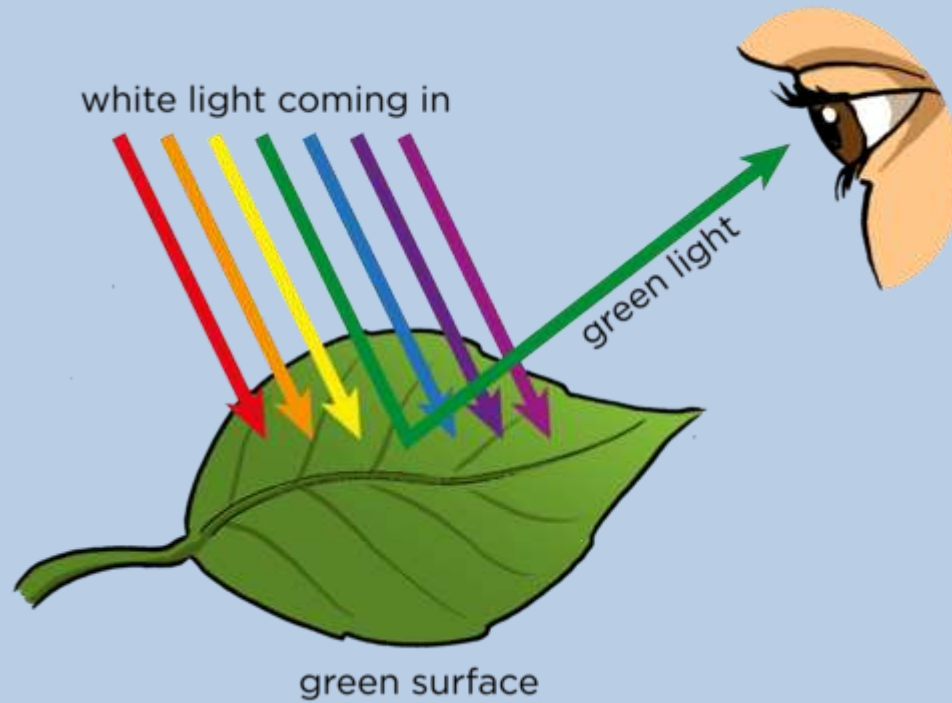


Photosynthesis

- So why do plants appear green?



Photosynthesis

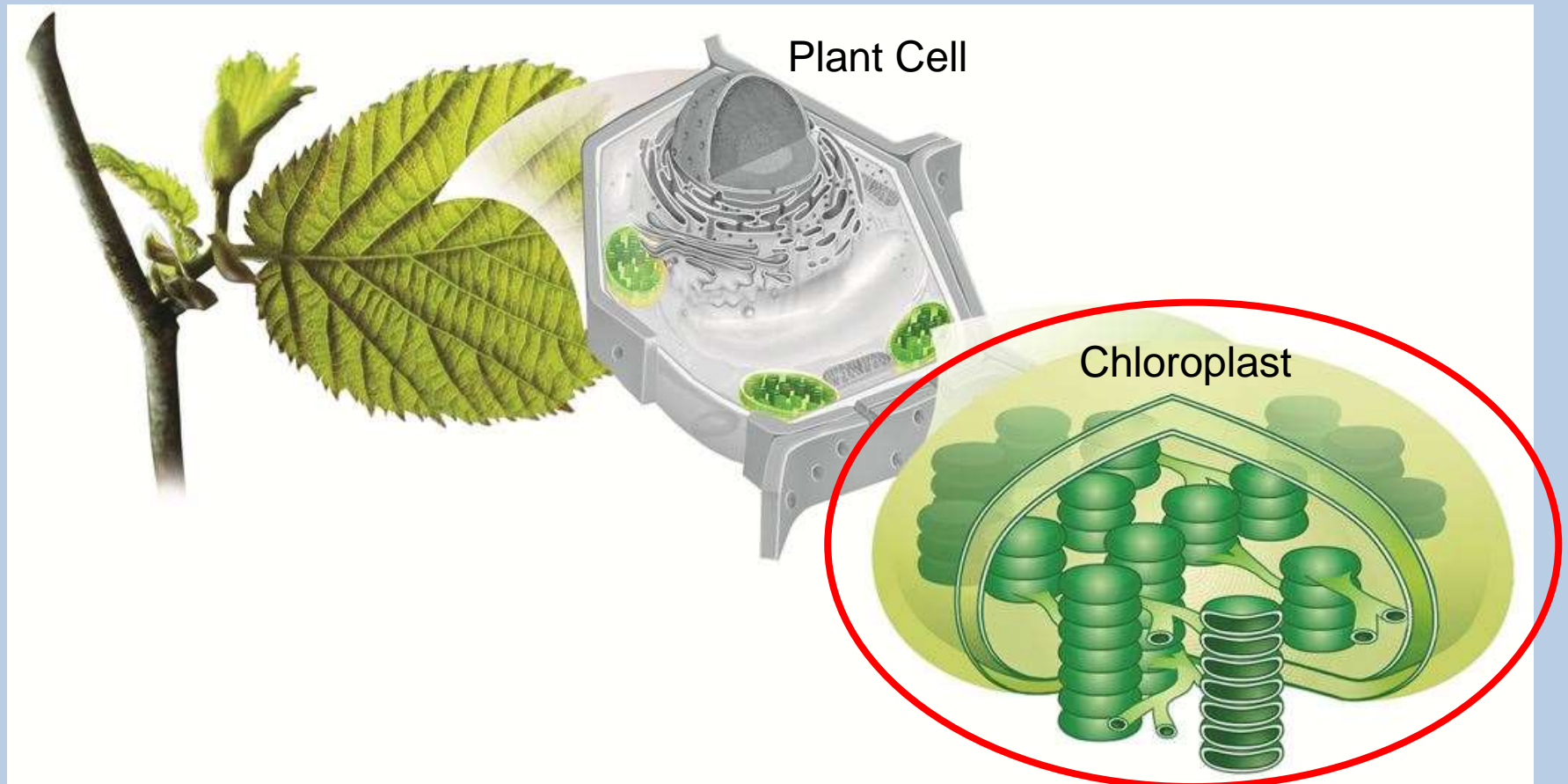


Photosynthesis

- The pigment that reflects green light and absorbs red and blue light is called chlorophyll; what organelle is it contained in?

Chloroplasts

- Photosynthesis takes place inside organelles called chloroplasts.



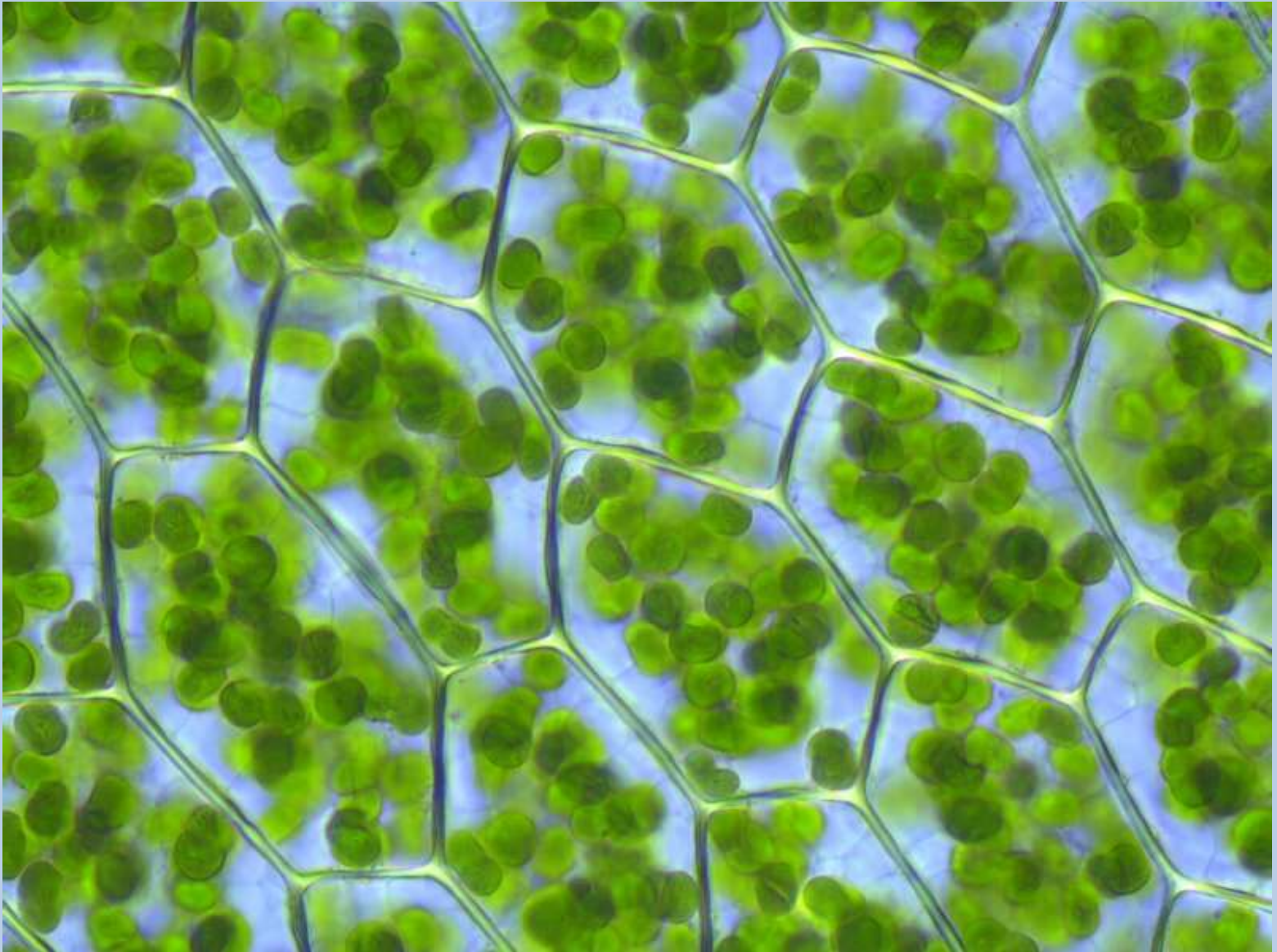
Photosynthesis



Photosynthesis



Photosynthesis

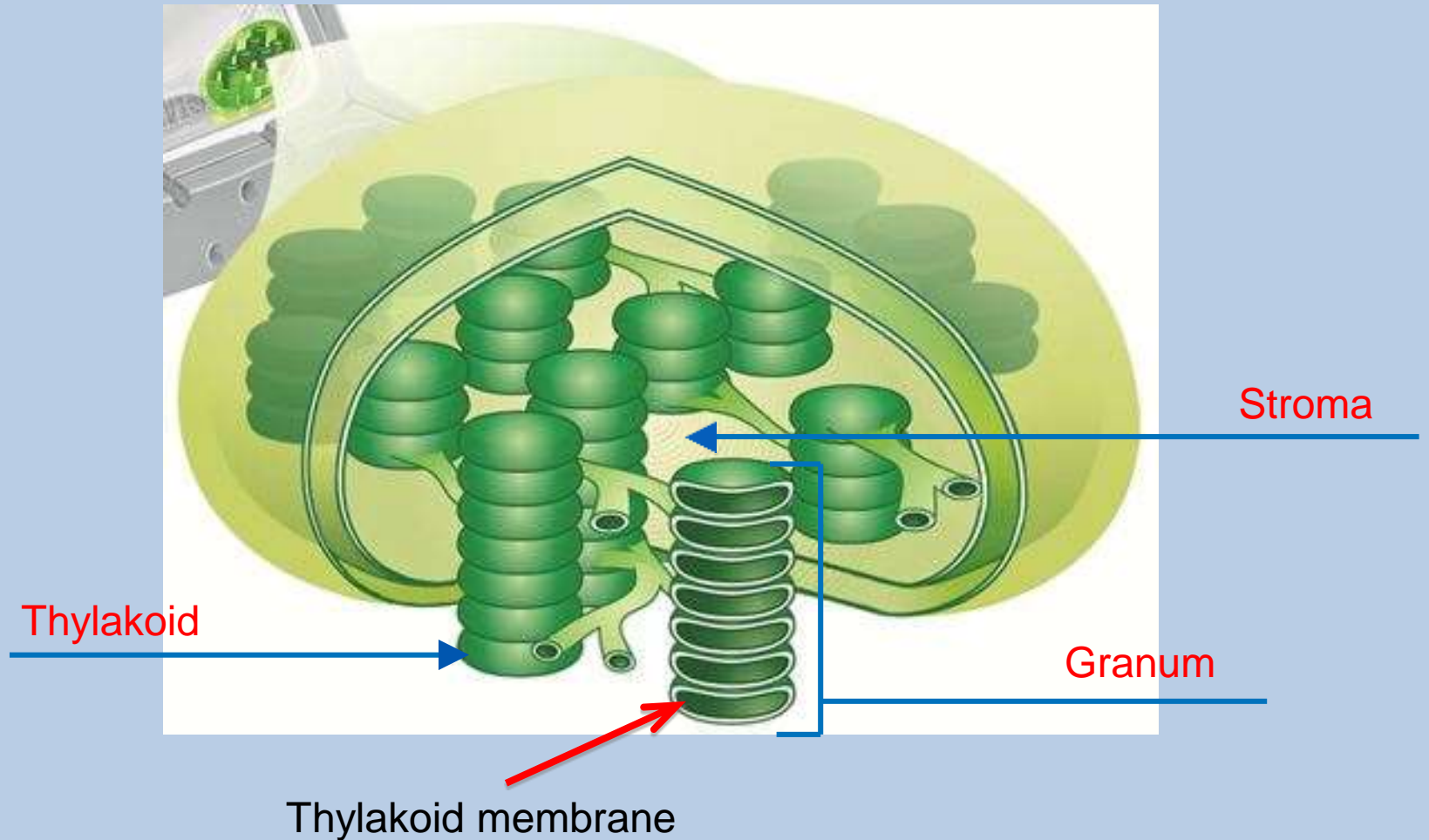


Photosynthesis

- Tape the chloroplast diagram into the middle of **page 42**



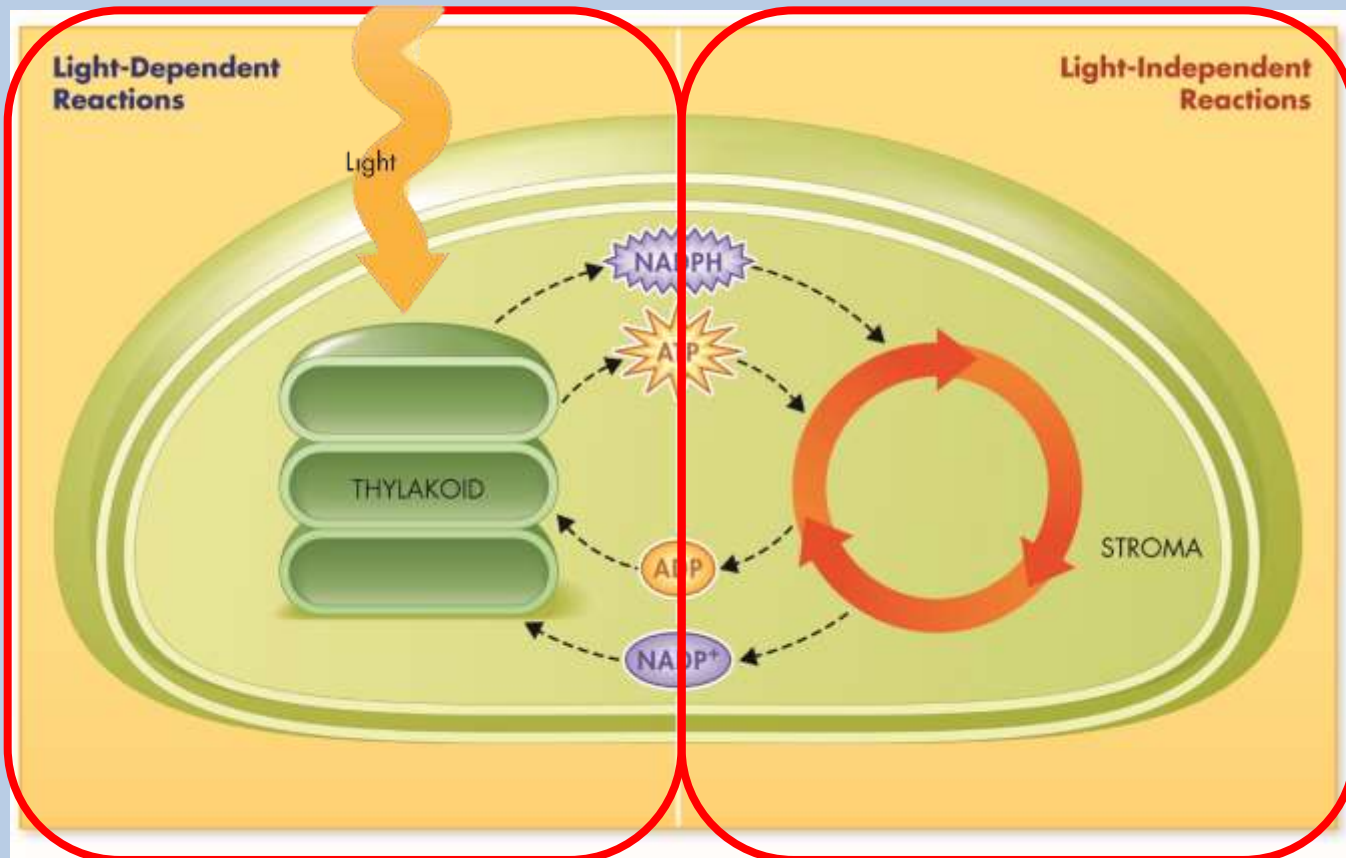
Chloroplast Structure



Photosynthesis and Light

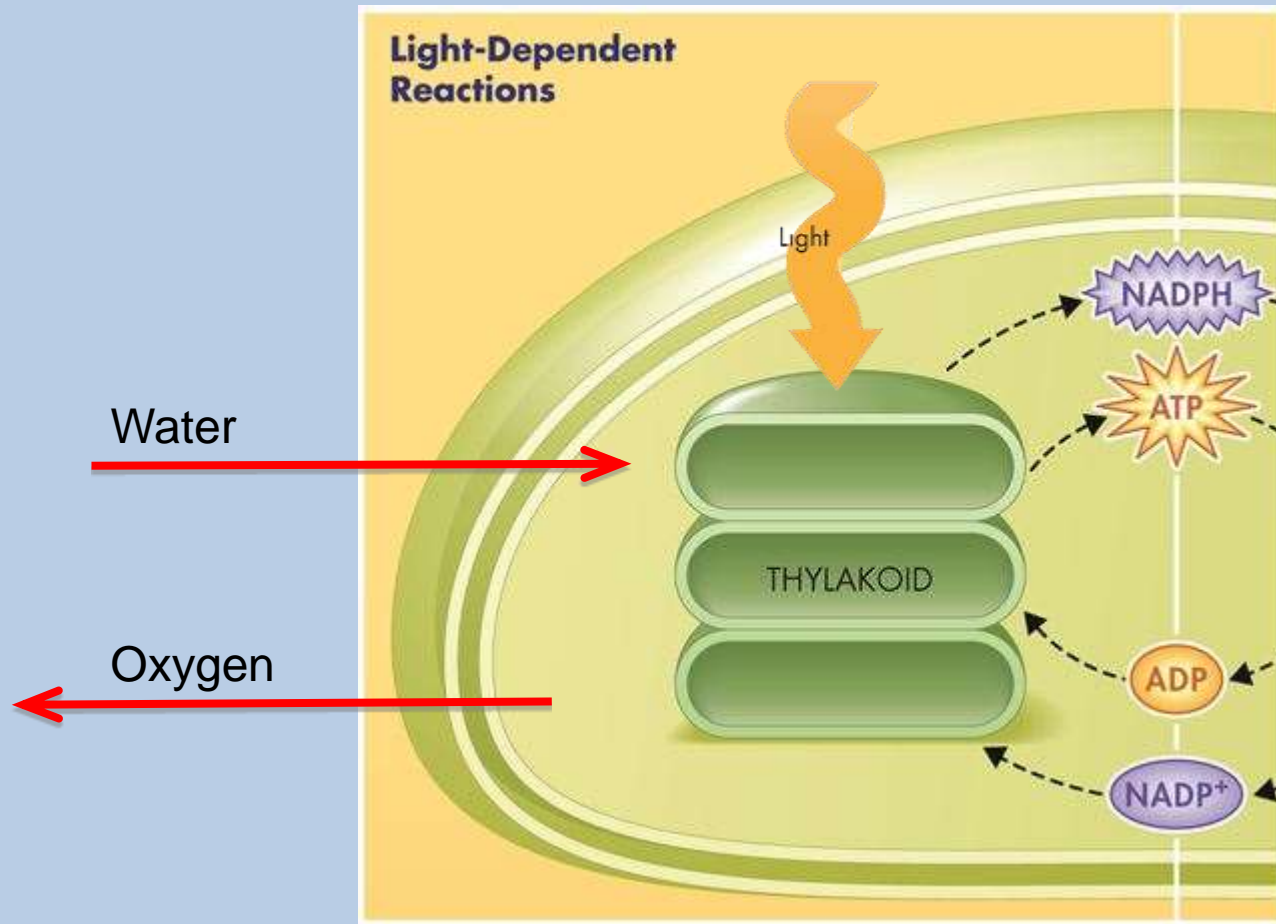
Photosynthesis involves two sets of reactions:

- Light-dependent reactions
- Light-independent reactions



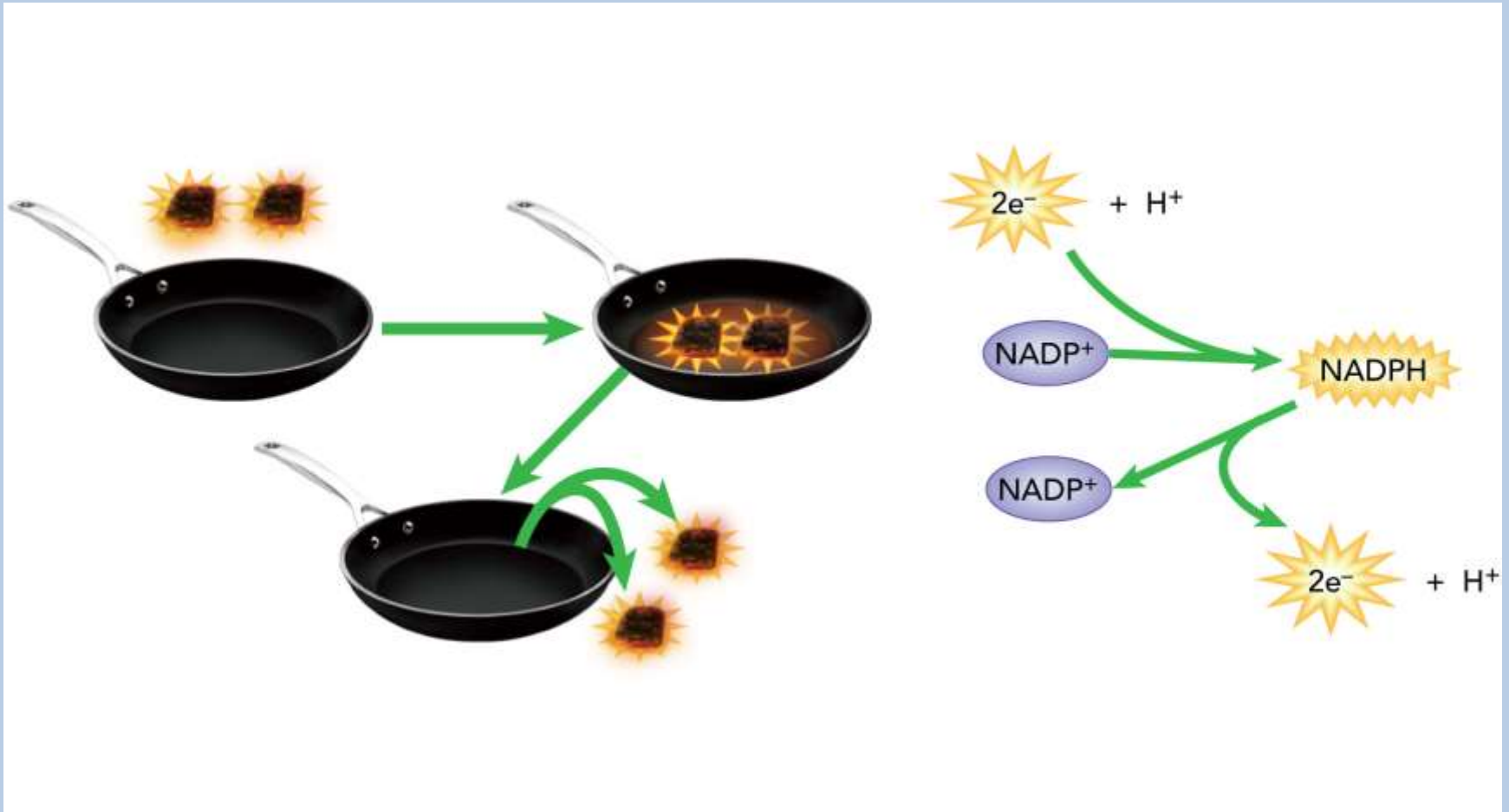
Light-Dependent Reactions

Light-dependent reactions require the direct involvement of light and light-absorbing pigments.



Electron Carriers

The high-energy electrons produced by chlorophyll are highly reactive and require a special “carrier.”

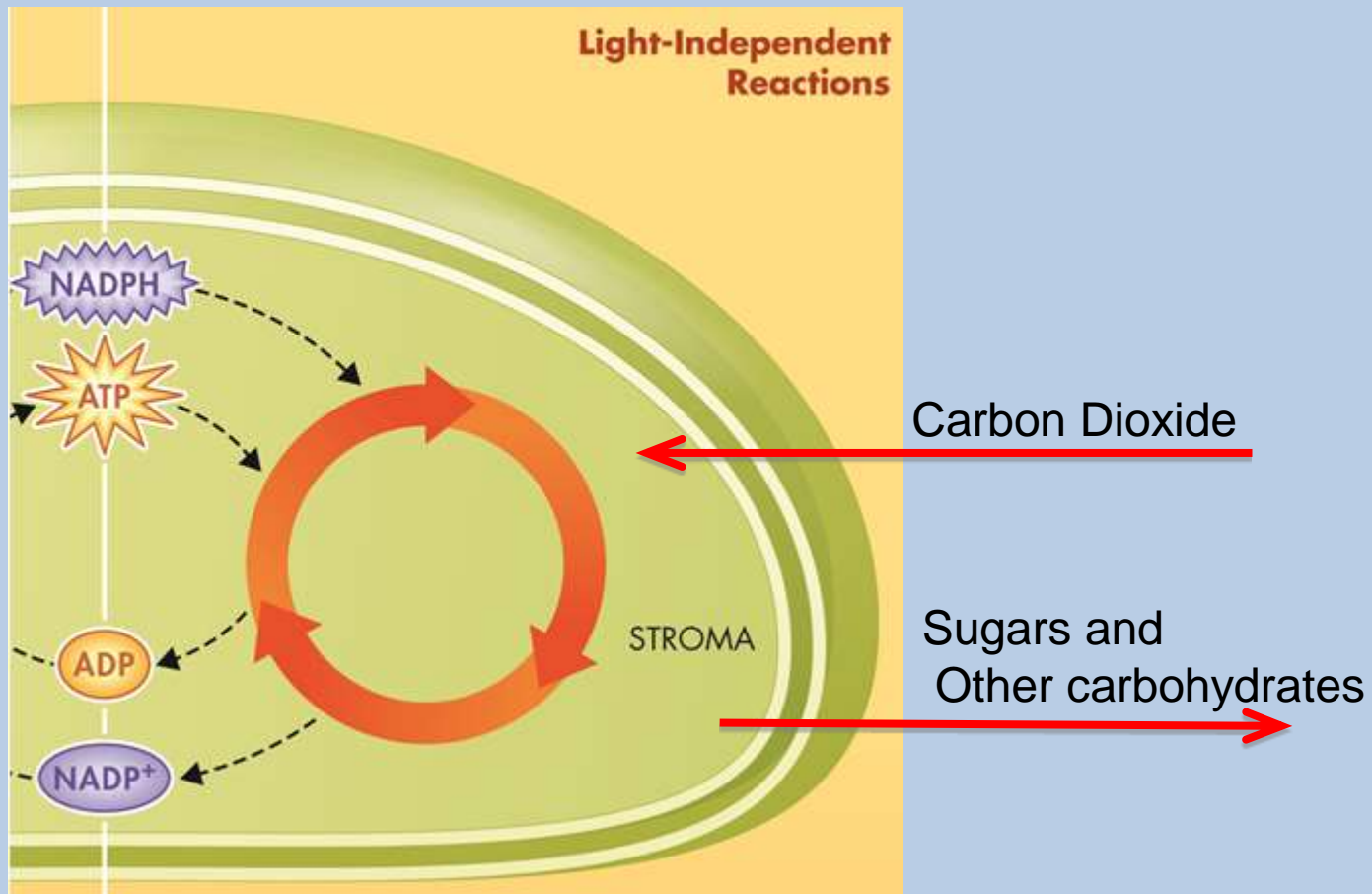


Electron Carriers

- An electron carrier is a compound that can accept a pair of high-energy electrons and transfer them, along with most of their energy, to another molecule.
- NADPH can carry the high-energy electrons that were produced by light absorption in chlorophyll to chemical reactions elsewhere in the cell.

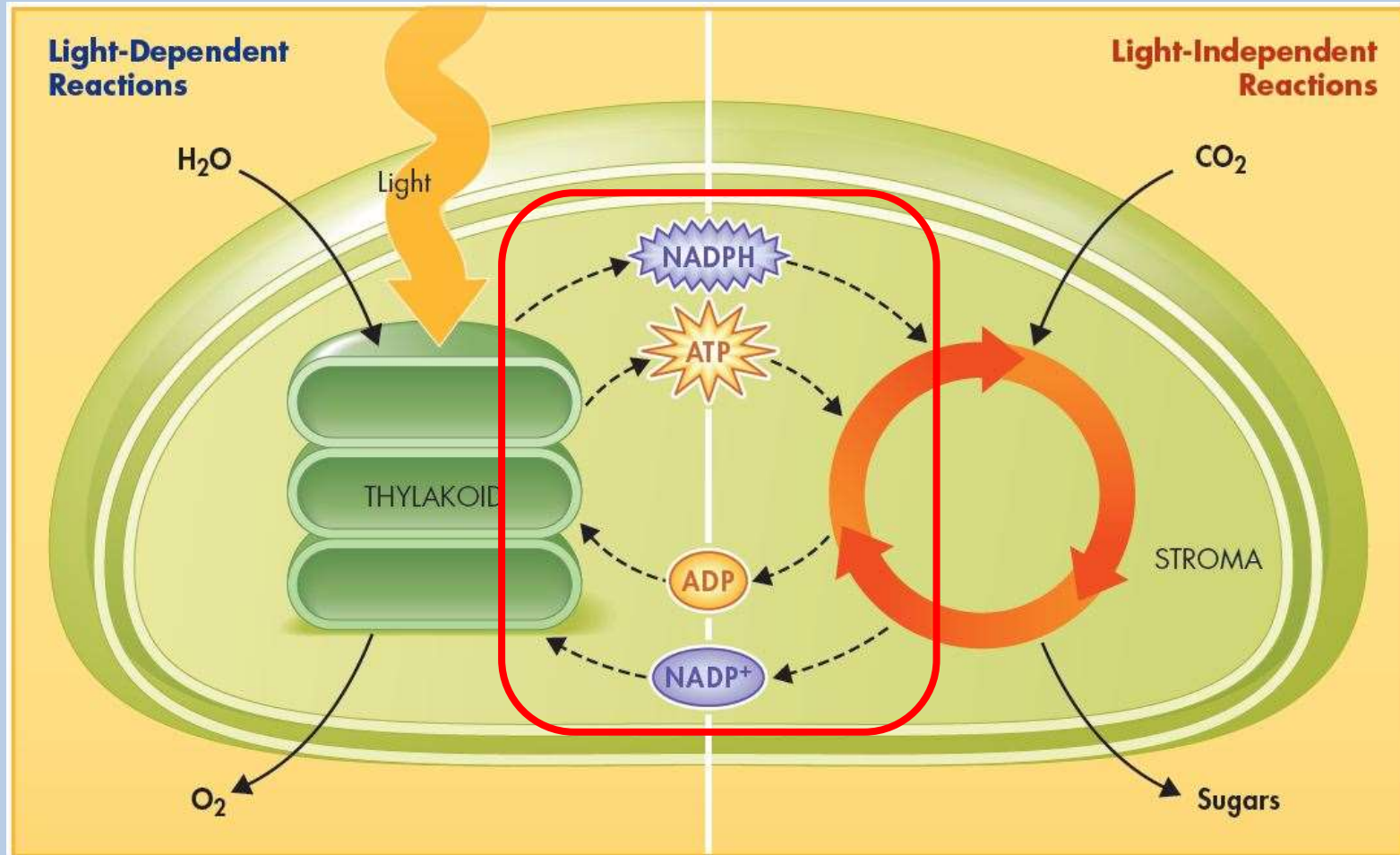
Light-Independent Reactions

Light-independent reactions use ATP and NADPH molecules produced in the light-dependent reactions to produce high-energy sugars from carbon dioxide

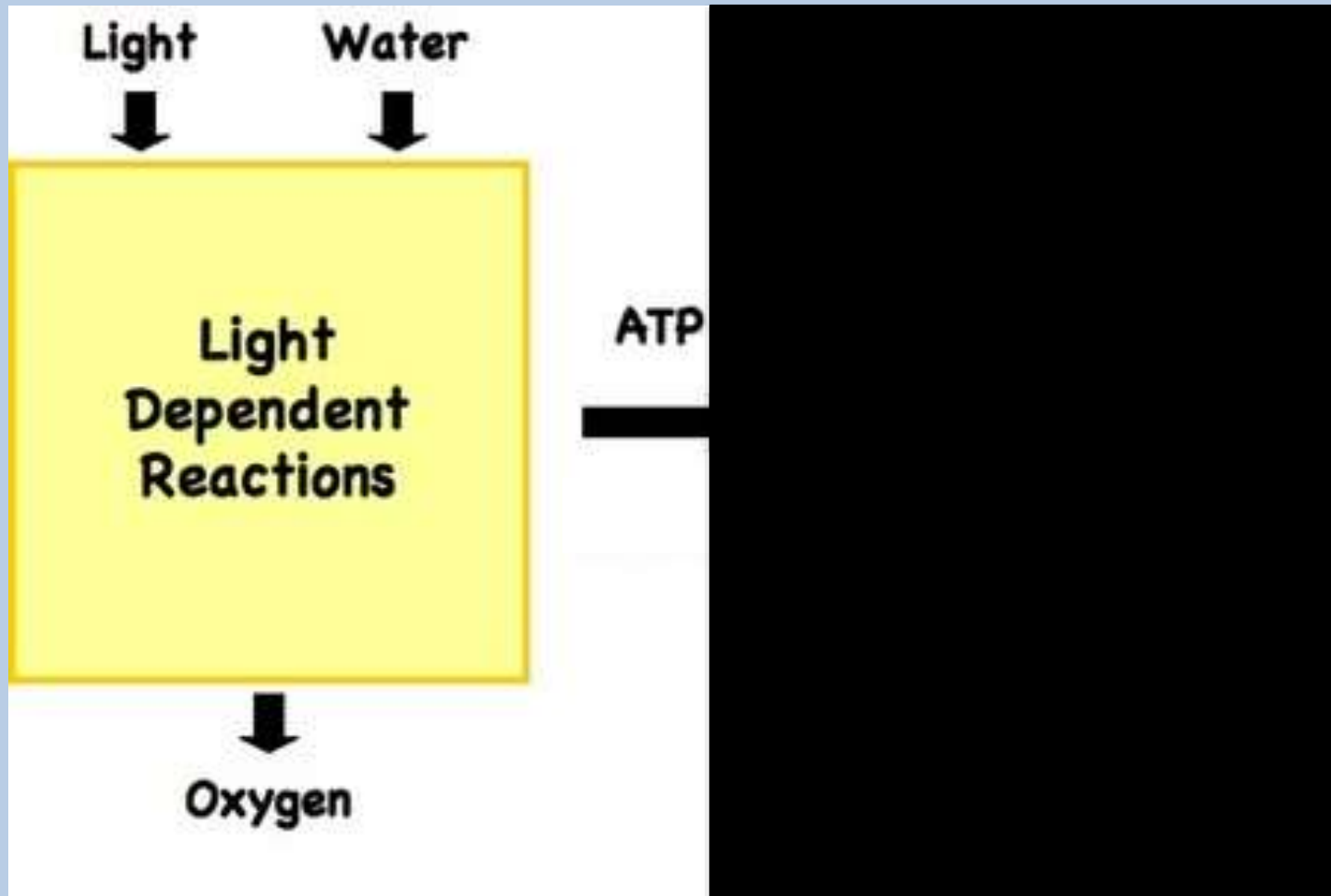


Interdependence of Reactions

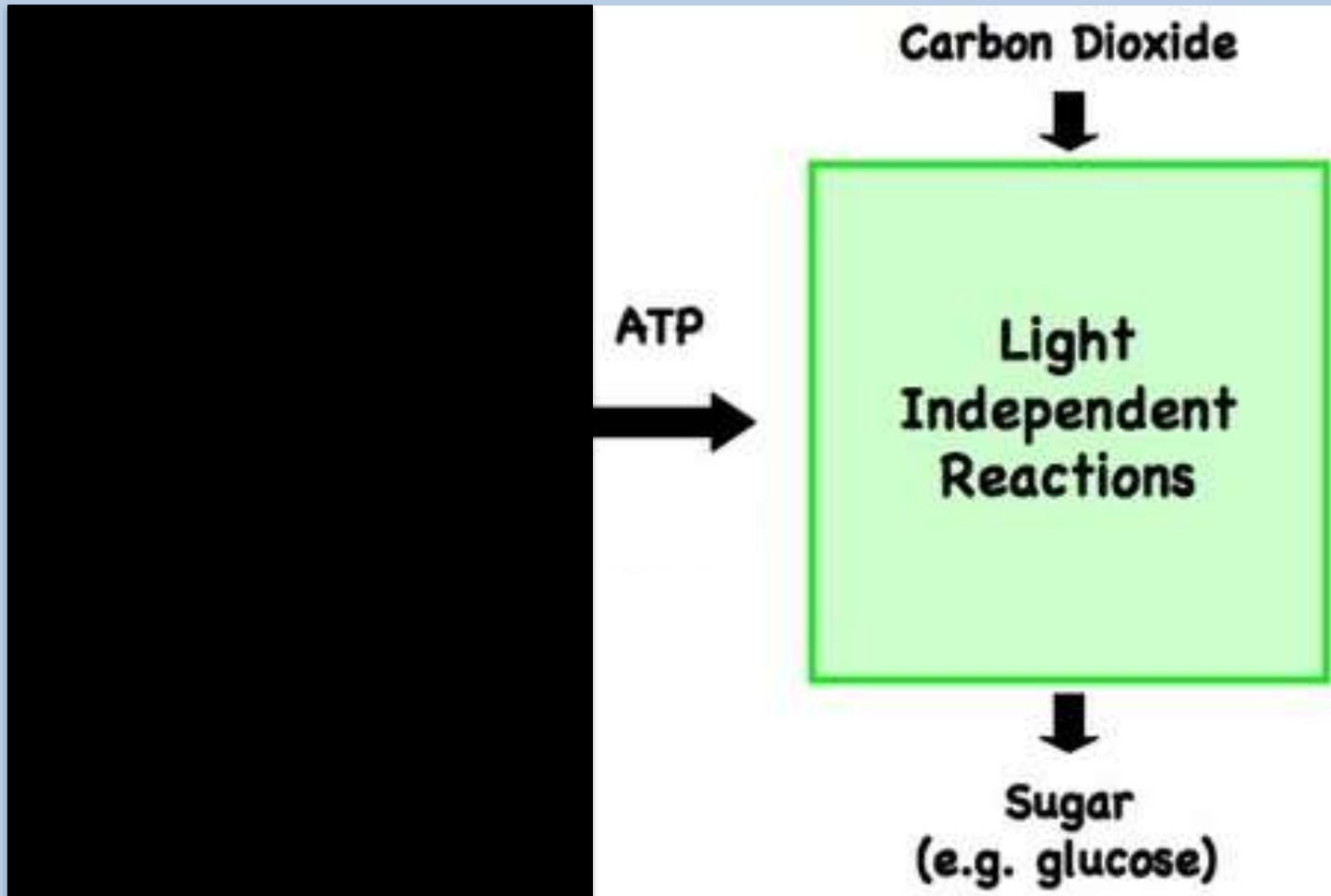
Light-dependent and light-independent reactions have an interdependent relationship.



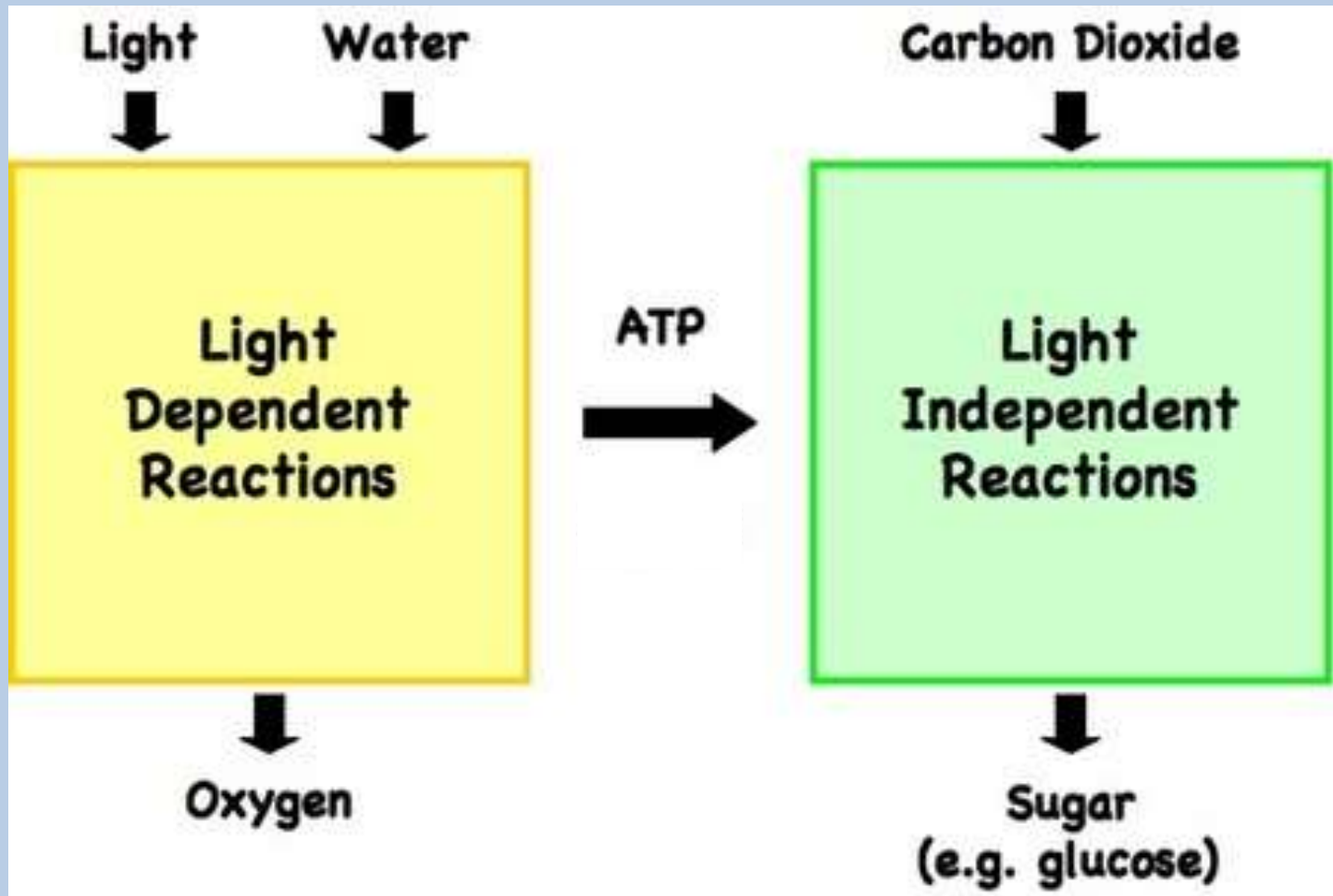
Photosynthesis



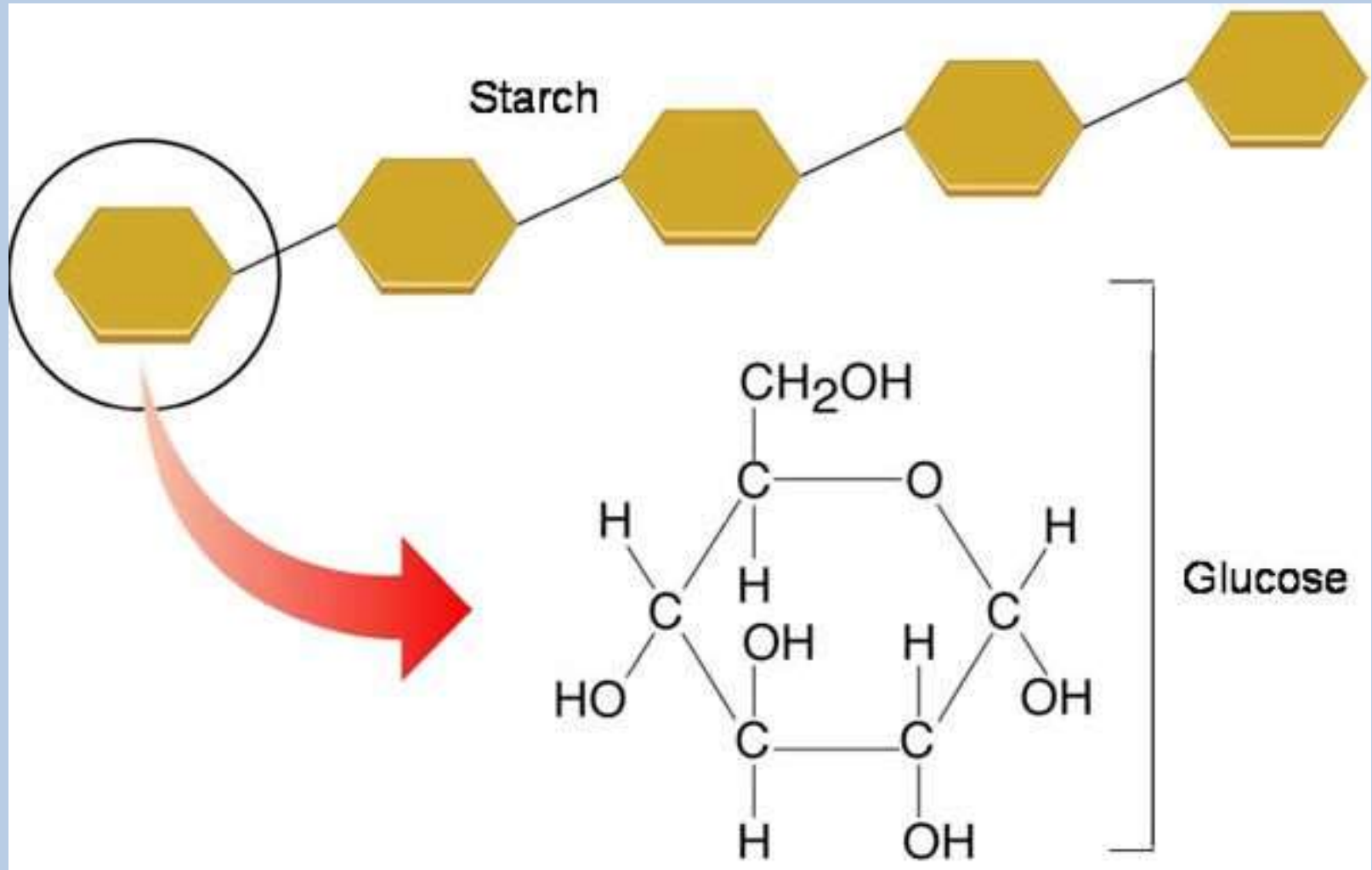
Photosynthesis



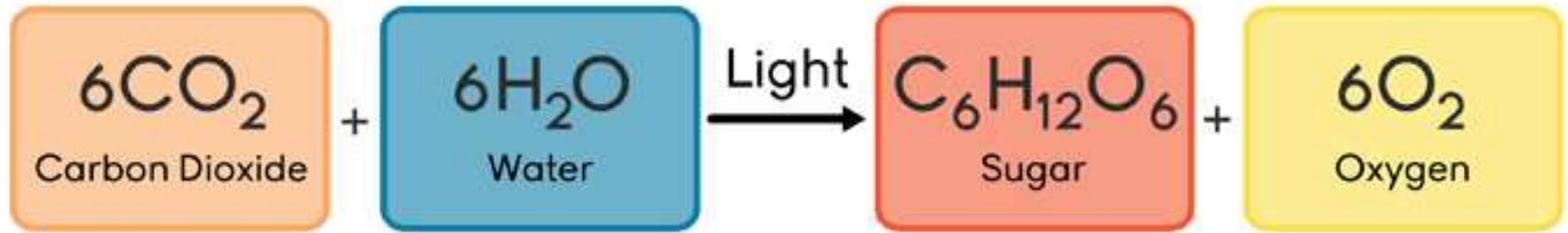
Photosynthesis



Photosynthesis



Photosynthesis



Dance

- **We are about to do an activity in the hallway**
- **We must be QUIET and respectful to other classes**
- **Listen carefully to instructions or you will not understand what is happening**