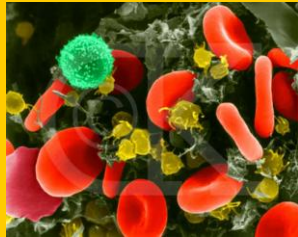


CELLS & ENERGY

Ch's 6&7

Need energy to:

- move
- change shape
- repair structure
- make new cell parts
- transport food
- expel wastes



Sun is ultimate source of energy

Autotrophs – make own food

Heterotrophs – eat other orgs



Energy is obtained through Biochemical Pathways

= linked chemical reactions

(product of one is reactant of another)

2 Important Pathways

Photosynthesis- Light energy converted to chemical energy of organic compounds (carbs)

Autotrophs only

Cellular Respiration- Organic compounds broken down to create ATP

Autotrophs & Heterotrophs

PHOTOSYNTHESIS

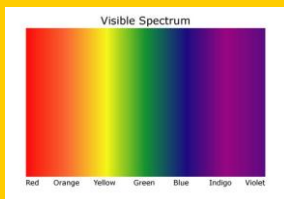


- Occurs in leaves where chloroplasts are abundant

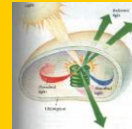


Capturing Light Energy

•White light made of visible spectrum (different wavelengths)



- Plants contain pigments (compounds that absorb light)
- Chlorophyll – reflects green light (green leaves); uses red & blue



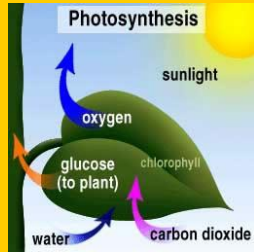
- Carotenoids – reflect yellow, orange, brown (fruits/flowers)



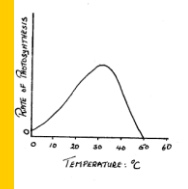
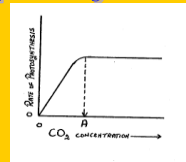
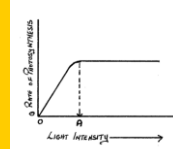
Converting Light Energy

3 STAGES

1. Energy captured from light
2. Energy used to make ATP & NADPH (high energy compound)
3. ATP & NADPH used to make carbs from CO₂



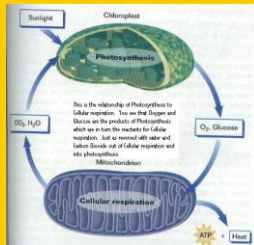
Factors that affect photosynthesis



CELLULAR RESPIRATION

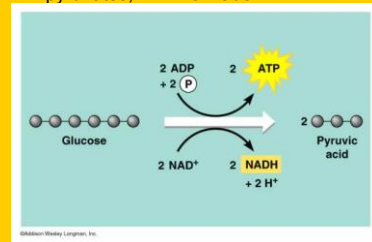


Process by which all orgs release energy stored in organic molecules



2 STAGES

1. **Glycolysis:** in cytoplasm, no energy or O₂ needed
 - Series of 10 reactions; a molecule of glucose is split into 2 identical smaller molecules called pyruvates; 2 ATP's made



2. Aerobic Respiration:

- Occurs w/O₂; in mitochon of eukary., cytoplasm of prokary.
- Produces 36 ATP's

OR

Fermentation:

- Absence of O₂
- Forms lactic acid (yogurt / cheese)
or ethyl alcohol (beer / wine / bread)