


BIOENERGETICS

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Transformation of energy in living organisms



Autotroph **Heterotroph**



- Photosynthesis
- Chemosynthesis

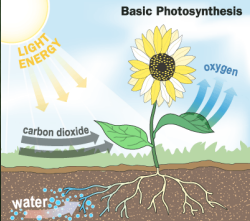
Autotroph **Heterotroph**



- Herbivore
- Omnivore
- Carnivore

AUTOTROPH: PHOTOSYNTHESIS

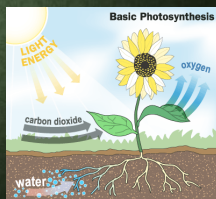
Chemical process that plants use to make their own food



The diagram illustrates the process of basic photosynthesis. It shows a sunflower with its roots in the soil. Light energy from the sun is shown entering the plant. Carbon dioxide is shown entering the plant from the air. Water is shown being taken up by the roots from the soil. Oxygen is shown being released from the plant.

AUTOTROPH: PHOTOSYNTHESIS

Energy from the sun's **light** creates a *chemical reaction* that combines **carbon dioxide** and **water** to create **sugar** and leftover **oxygen**



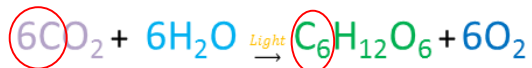
AUTOTROPH: PHOTOSYNTHESIS

Energy from **light** combines **carbon dioxide** and **water** to create **sugar** and leftover **oxygen**

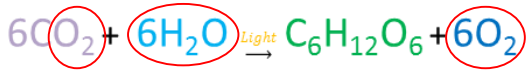


Carbon Dioxide Water Sunlight Glucose Oxygen

AUTOTROPH: PHOTOSYNTHESIS



AUTOTROPH: PHOTOSYNTHESIS

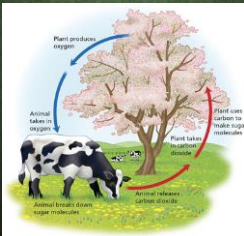


AUTOTROPH: PHOTOSYNTHESIS



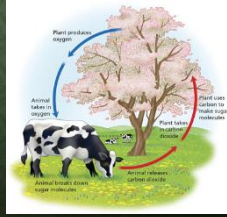
HETEROTROPH: CELLULAR RESPIRATION

The release of energy from food to be use by the cells



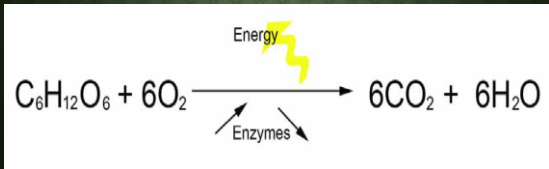
HETEROTROPH: CELLULAR RESPIRATION

Enzymes create a *chemical reaction* that combines **sugar** and **oxygen** to create **useable energy** with leftover **carbon dioxide** and **water**

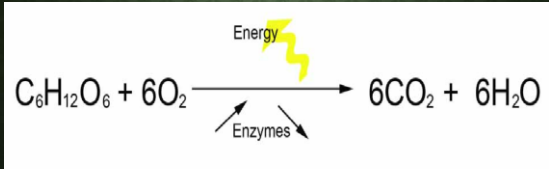


HETEROTROPH: CELLULAR RESPIRATION

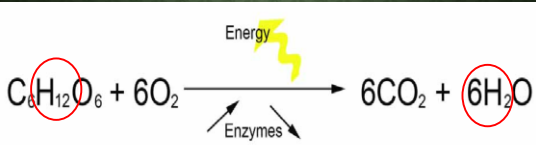
Enzymes combine **sugar** and **oxygen** to create **useable energy** with leftover **carbon dioxide** and **water**



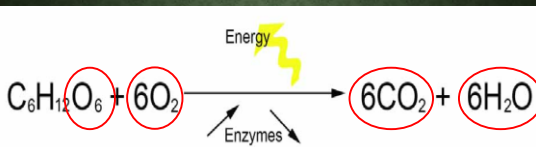
HETEROTROPH: CELLULAR RESPIRATION



HETEROTROPH: CELLULAR RESPIRATION



HETEROTROPH: CELLULAR RESPIRATION



COMPARISON

Photosynthesis

Respiration

- | | |
|---------------------------------|---------------------------------------|
| • Only plants | • Plants and animals |
| • Uses sunlight energy | • Uses enzyme energy |
| • Uses water and carbon dioxide | • Uses oxygen and sugar |
| • Produces sugar | • Produces energy |
| • By-product of oxygen | • By-product carbon dioxide and water |
