

Plants and other autotrophs are the primary producers of the biosphere

Organisms acquire organic molecules used for energy and carbon skeletons by one of two nutritional modes: 1) *Autotrophy* or 2) *Heterotrophy*.

Autotrophy = (Auto = self, trophos = feed) Nutritional mode of synthesizing organic molecules from inorganic raw materials.

- Examples of autotrophic organisms are plants, which require only CO₂, H₂O and minerals as nutrients.
- Because autotrophic organisms produce organic molecules that enter an ecosystem's food store, autotrophs are also known as primary producers.
- Autotrophic organisms require an energy source to synthesize organic molecules. That energy source may be from light (photoautotrophic) or from the oxidation of inorganic substances (chemoautotrophic).

Photoautotrophy = Autotrophic organisms that use light as an energy source to synthesize organic molecules. Examples are photosynthetic organisms such as plants, algae and some prokaryotes.

Chemoautotrophy = Autotrophic organisms that use the oxidation of inorganic substances, such as sulfur or ammonia, as an energy source to synthesize organic molecules. Unique to some bacteria, this is a rarer form of autotrophic nutrition.

Heterotrophy = (Heteros = other; trophos = feed) Nutritional mode of acquiring organic molecules from compounds produced by other organisms; heterotrophs are unable to synthesize organic molecules from inorganic raw materials.

- Heterotrophs are also known as consumers.
- Examples are animals that eat plants or other animals.
- Examples also include decomposers, heterotrophs that decompose and feed on organic litter. Most fungi and many bacteria are decomposers.
- **All** heterotrophs depend on autotrophs for food and oxygen (a by-product of photosynthesis in the case of photoautotrophy).