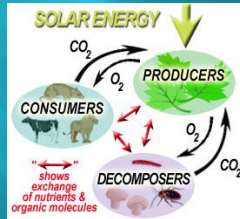
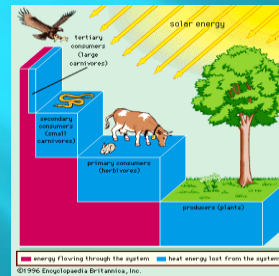


## CYCLING OF MATTER



## ENERGY TRANSFER

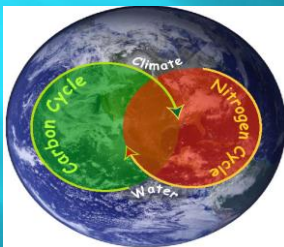


·Solar energy is transformed into cellular energy by photosynthesis

·Energy cannot be created, or destroyed, only passed

·Most energy is lost as heat, but the rest is transferred to the consumer

## CYCLING OF MATTER



·certain types of matter exist in self sustaining cycles, such as Nitrogen and Carbon

## CYCLING OF MATTER

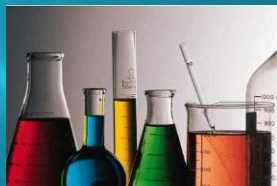
- Matter is continually cycling through ecosystems but it is only the organic matter that forms a continuous cycle.

- **ORGANIC MATTER** is matter that contains atoms of carbon and hydrogen. They often contain oxygen and nitrogen atoms as well.



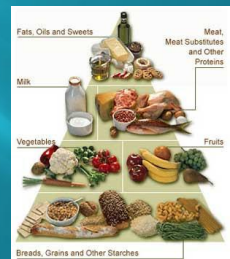
## ORGANIC MATTER

- Proteins, sugars, and fats are all examples of organic compounds that your body is made up of & needs.
- Organic chemicals undergo changes within living things & within ecosystems. Their complex structures are broken down and rebuilt in a continuous cycle.



## ORGANIC MATTER

- Food is organic matter that is continually being cycled throughout our bodies.
- Through the process of digestion, complex organic molecules are broken down into simpler ones. The cells in our body use the simple molecules to build complex ones which become a part of our structure.



## ORGANIC MATTER

- DECAY is another way that organic material is cycled.
- DECOMPOSERS break down dead organisms and waste products like feces into small inorganic compounds.
- These compounds then pass into soil or water and provide vital nutrition for that ecosystem.



## INORGANIC MATTER

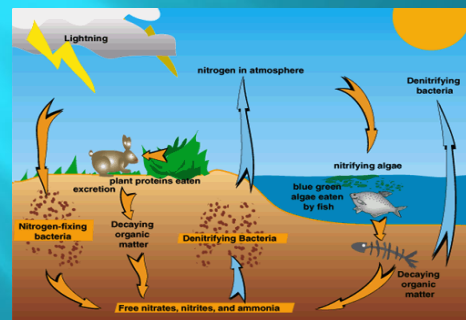
- Matter that does not contain a combination of carbon and hydrogen are called **INORGANIC**.
- Carbon dioxide, minerals, ammonia, & water are all inorganic compounds.



## THE NITROGEN CYCLE

- The atmosphere is mostly  $N_2$ , which most living things cannot use, they must "fix" the  $N_2$  into usable nitrates.
- Nitrogen-fixing bacteria live within the roots of a few plants such as: beans, peas, clover, and alders.
- The bacteria use sugar provided by the plants and in exchange produce ammonia which is a form of nitrogen that the plants can use (**MUTUALISM**).
- Excess nitrogen from the bacteria is released into the soil.
- Plants which don't have the nitrogen-fixing bacteria get nitrogen from the soil above.
- Animals get their nitrogen from the plants they eat or the animals they eat that eat those plants.

## THE NITROGEN CYCLE



## THE CARBON CYCLE

- When Producers (PLANTS) take in carbon dioxide ( $CO_2$ ) from the atmosphere during **PHOTOSYNTHESIS**.
- consumers eat the plants they get the carbon they need and breathe out excess  $CO_2$  through the process of **CELLULAR RESPIRATION**.
- Plants and animals eventually decay and become fossil fuels.
- The fossil fuels are burned releasing more carbon dioxide in the atmosphere to start the process again.

## THE CARBON CYCLE

