6.1

- Energy-to do work or bring a change-allows living things carry on process of life like growth, reproduction, and development
- Energy occurs in two forms: -kinetic and potential
- Kinetic energy-energy of motion-like the ball rolls
- Potential energy-stored energy-food we eat
- Chemical energy-food-contains energy in chemical bonds of organic molecules
- Mechanical energy- type of kinetic energy associated with motion-walking
- Thermodynamics-law of conservation of energy-energy can't be created or destroyed, changed from one form to another
- Photosynthesis-solar energy covert energy poor molecules-carbon dioxide and water to carbohydrates-some become heat-form of energy
- Second law of thermodynamics-energy cannot be changed from one form to another without loss of energy
- Life depends on constant supply of energy from the sun

6.2

- Cellular metabolism-sum of all chemical reactions that occur in cell
- Catabolism-breaking down molecules
- Anabolism-building up molecules
- Reactants-substances that participate in a reaction
- Products-substances that form as a result of a reaction
- Free energy-cell biologist use instead-amount of energy available
- Exergonic reactions-spontaneous and release energy
- Endergonic reactions-require an input of energy to occur
- ATP-commom energy currency of cells-used in many different types of reactions-high energy-energy stored in chemical bonds of phosphates
- Coupled reactions-energy released by an exergonic reaction
- ATP can be used for the following
  -Chemical work:atp supplies the energy need to synthesize anabolism that make up the cell
  -Transport work-atp supplies the energy need to pump substances across the plasma membrane
  -Mechanical work-atp supplies the energy need to permit muscles to contract

6.3

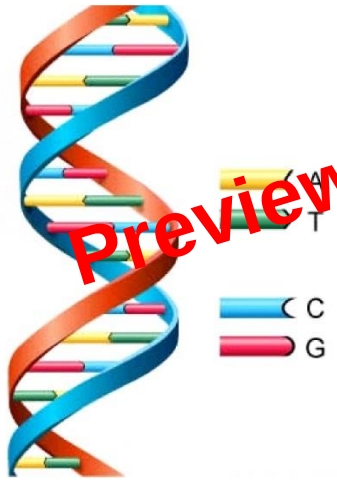
- Oxygen combines with metal such as iron or magnesium
- Oxygen receives electrons and becomes ion-negatively charged
- Metal-loses electrons and becomes an ion-positive charge

Oxidation-Reduction Reactions

- 1940-genes are on chromosomes-contain both proteins and nucleic acids
- Protein-contain up to 20 different amino acids

DNA is Genetic material

Oswald Avery, Colin MacLeod, Maclyn McCarty (1944)	Alfred Hershey and Martha Chase (1950)
A.) DNA from S strain bacteria causes R strain bacteria to be transformed-produce capsule B.) DNase-enzyme digests DNA-prevents transforming-supports DNA genetic material C.) Transforming substance-large-possibility of genetic variability D.) Enzymes has no effect on transforming substance	-radioactive tracers-in bacteria cells-become transformed



Double Helix

-James Watson and Francis Crick discovered (1950)

-DNA-chain of nucleotides-deoxyribose, phosphate, and nitrogen containing base-purines (double ring), pyrimidines (single ring)

-strands held together by hydrogen

- Complementary base pairing- hydrogen bonding

25.2

-carry out-enzyme- DNA polymerase

-old strand and new strain

-strands identical

DNA Replication