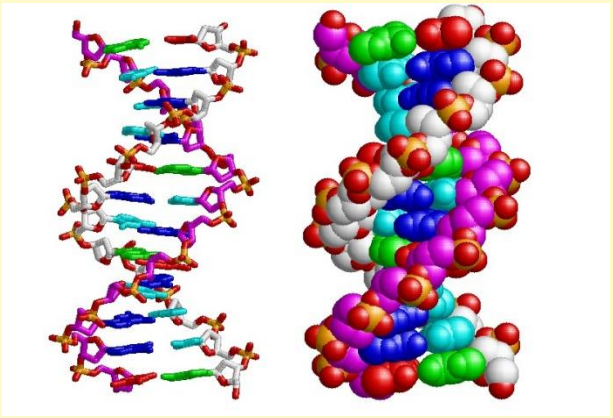
Characteristics of Living Things



All Living Things…

- Are made up of units called cells

A cell is the smallest unit of an organism that can be considered alive

Types of Cellular Organisms

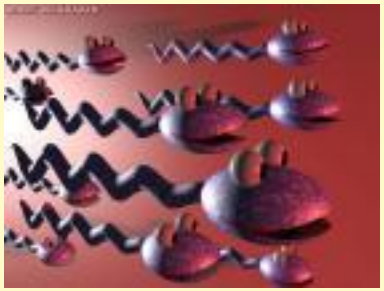
- Unicellular
  - Uni means “one” so unicellular means consisting of only one cell
- Multicellular
  - Multi means “many” so multicellular means consisting of many cells.
    - The cells become organized in a multicellular organism
      - (seen later)

Living Things …

- Reproduce
  - to form offspring similar to the parents

Types of Reproduction:

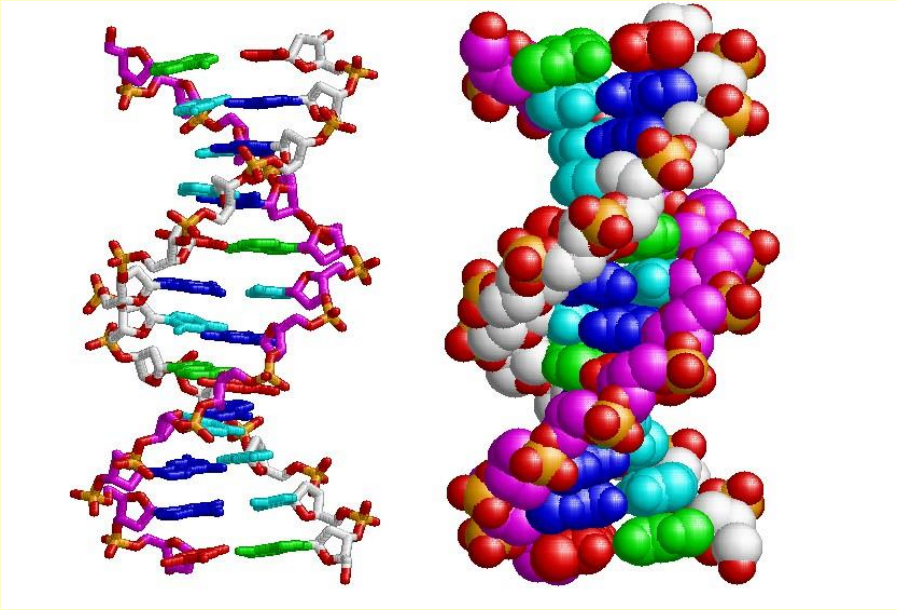
- Sexual reproduction
  - Two parents



- Asexual reproduction
  - One parent

Living Things…

- Are based on a universal genetic code
  - Organisms inherit traits from their parents
  - DNA contains the genetic code



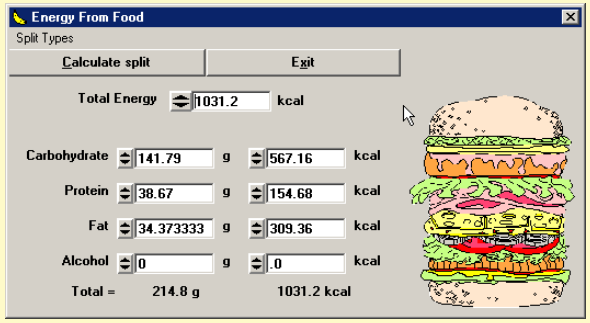
Living Things …

- Grow
  - an increase in size
- and Develop
  - All the changes that occur as a living thing grows.

Living Things …

- Obtain and use materials and energy

- **Cellular respiration-**
  - the process by which "food" molecules are broken down and energy is released.



- **Photosynthesis** –
  - using light (as energy) and water to produce sugars
  - Organisms which contain chlorophyll perform photosynthesis

Living Things….

- Materials (to use as energy)
  Example food
- Consumers
  - living things that eat or consume, like animals
    Also called **Heterotrophs**
    (*hetero means other)*

- Producers –
  - living things that make or produce their own food, like plants
    Also called **Autotrophs**
    (*auto means self – self feeder*)

All Living Things …

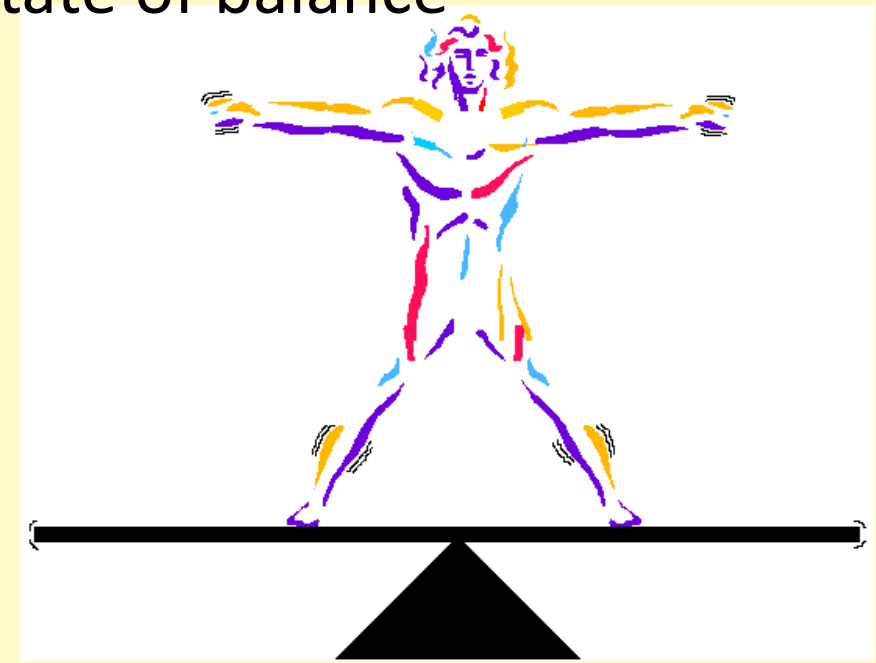
- Respond to their environment
- A **stimulus** is something that causes a response
  - Examples:
    - Light
    - Temperature
    - Sound

  - Example: Birds flying south for the winter
  - Trees lose leaves in the fall

All Living Things…

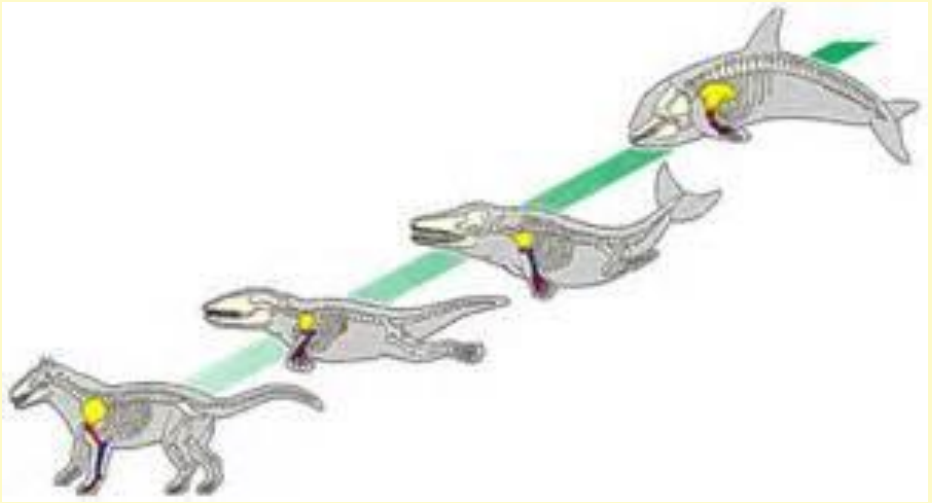
- Maintain a stable internal environment
  - **Homeostasis**
    - The process in which an organism regulates its internal environment.

Its like maintaining a state of balance



Living Things…

- Evolve – change over time
  - **Adaptation** (living things adapt)
    - A trait that makes a living thing better able to survive

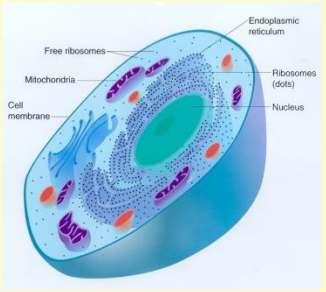


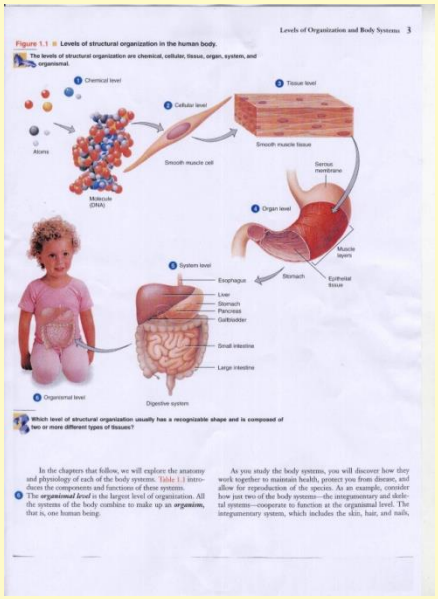
Can you put the levels in the correct order?

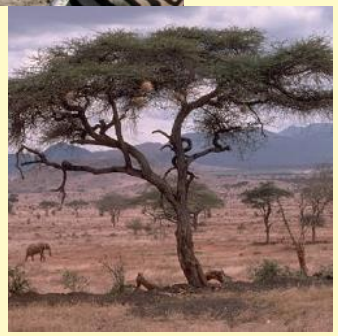
- Levels of organization activity

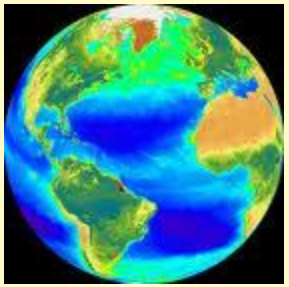
Levels of Organization

- Molecules
- Cells
- Tissues (next slide)
- Organs
- Organ systems
- Organism
- Population
- Community
- Ecosystem
- Biosphere







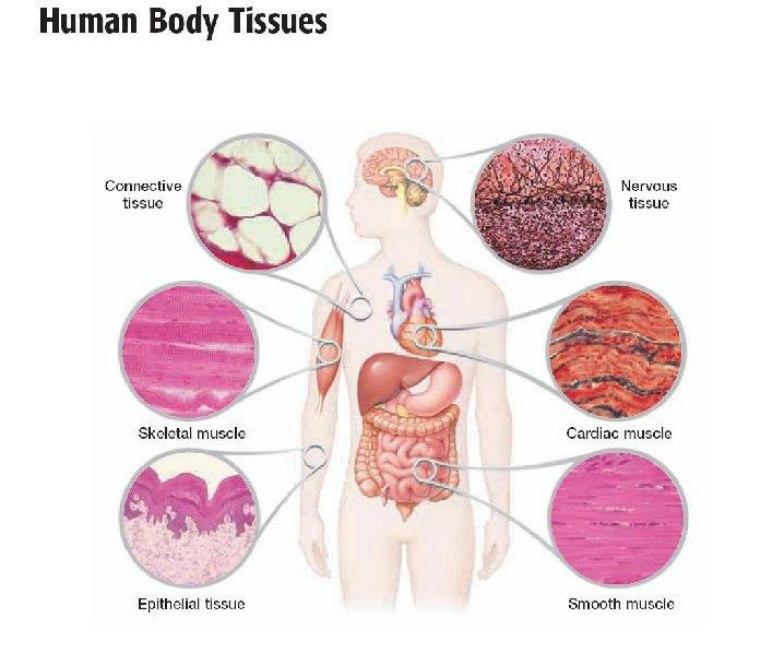


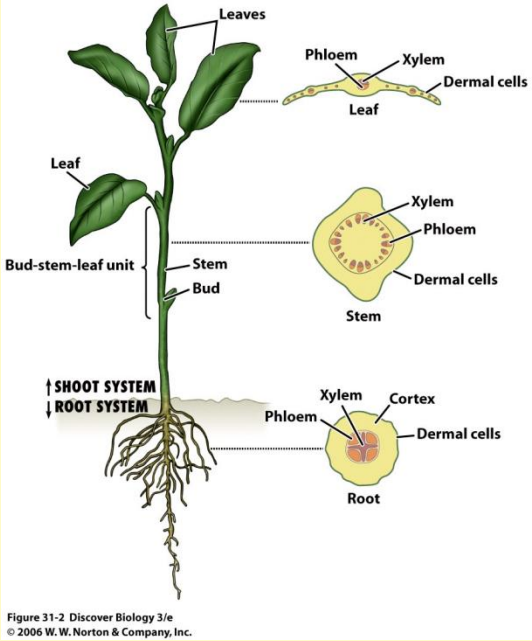
- Molecule
  - The smallest particle of a substance that retains the chemical and physical properties of the substance and is composed of two or more atoms held together by chemical forces

- Cell
  - The basic unit of structure and function for all living organisms

Tissues and organs

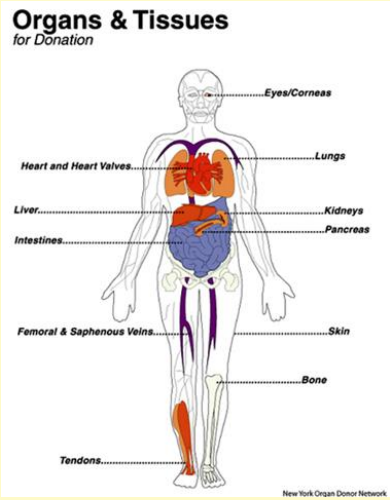
- Tissue
  - An anatomical unit composed of cells organized to perform a similar function
    - One kind of cell makes up tissue





- Organ
  - An anatomical unit composed of tissues serving a common function
    - Consists of different tissues

- Organ System
  - An anatomical system composed of a group of organs that work together to perform a specific function or task
- Organism
  - A form of life; animal, plant, fungi, etc.



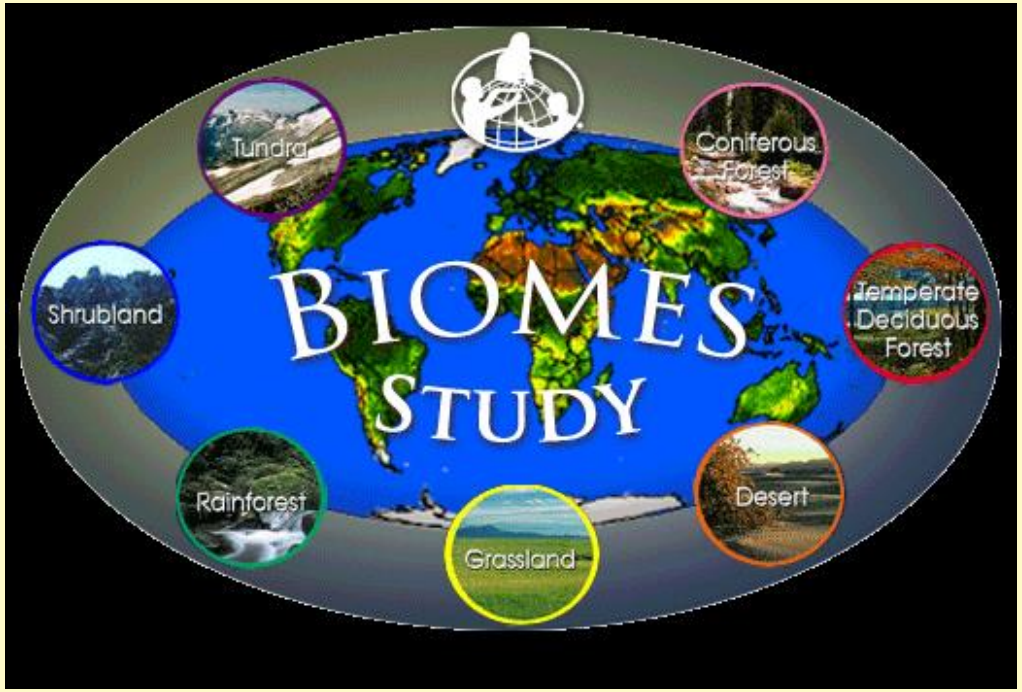
- Population
  - A group of individuals of the same species living in a specific geographical area and reproducing

- Community
  - Different populations of organisms interacting in a shared environment

- Ecosystem
  - A system composed of organisms and nonliving components of an environment

Biosphere – the zone of life on earth: sum total of all ecosystems on earth

Biome – a large area or geographical region with distinct plant and animal groups adapted to that environment



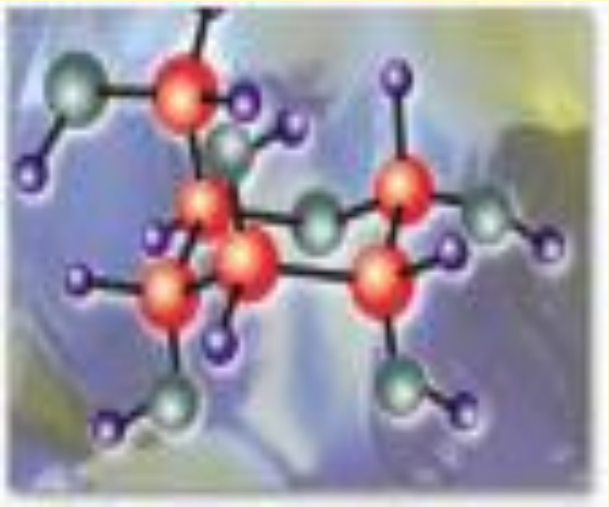
So Exactly What is Biology?

- The study of living things.

  Biology includes many other subdisciplines (branches) such as …..

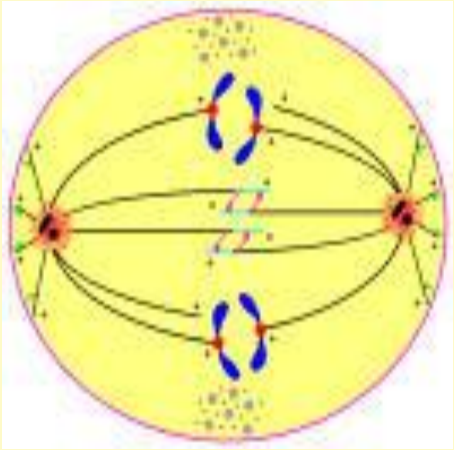
Molecular Biology

- The study of life at the molecular level



Cell Biology

- The study of life at the cellular level



Zoology

- The study of animals

Botany

- The study of plants

Ethology

- The study of animal behavior

Ecology

- The study of ecosystems (living things and their non-living environment)

Paleontology

- The study of OLD things that were once living