What is life? Notes

Processes of Life: (needed for an individual organism)

Nutrition—process to obtain and use nutrients used for energy, growth, and repair of body cells.
i.e. squirrel looking for nuts for food.

Metabolism—take in raw materials and convert them into energy and wastes.

Synthesis—to make chemicals needed for life. Break down larger molecules into smaller molecules and then use those smaller pieces to rebuild into those needed by the organism. i.e. food eaten→muscle

Growth—increase in cell size and number in an organism. Cells grow bigger and then divide i.e. kids may grow 2" in one summer.

Regulation-- all processes that control and coordinate the activities that an organism performs to adjust/change the internal/external environment of a cell. They respond to stimuli in the environment. Another word for this is homeostasis. i.e. when you feel hungry—you eat, when you squint in the bright sunlight

Respiration—combination of two chemical processes 1) removal of energy from food and then 2) convert energy into a more usable form (ATP) for cells.

Excretion—removal of waste produced by cellular respiration. When food is broken down this process gets rid of things not needed by organism's body. Keeps organism from being poisoned the internal environment.

Transport—movement of materials into and out of the cell, as well as within the cell. Also movement of materials throughout the organism. i.e. oxygen into the body and then to the cells that need it.

Other characteristics of life:

Reproduction—this is not needed for individual organisms but needed for the species to continue to the next generation. Asexual—only one cell or organism needed to create next generation i.e. binary fission(similar to mitosis), budding. Sexual—two parents are needed to join genetic material to make the next generation.

Development—this is the change from a young form to the mature adult form.

Evolve—the species may change over time as parent generations pass on genetic info to the offspring (heredity, natural selection). Mutations may occur spontaneously or by environmental factors.

Organization—various levels of organization down to the cellular level, but cell is the basic unit of life.
Organic molecules—Cell—tissue—organ—organ system—organism—population—community—ecosystem—Biome—biosphere

Organisms can be: Unicellular/multicellular (1 cell to trillions of cells)
Autotroph/heterotroph (how they obtain energy)

Needs for life:
Food, water, living space, stable internal environment

Other:
Living can look like non-living i.e. tree in winter

Two major types of cells: Prokaryotes—i.e. bacteria, cyanobacteria
Eukaryotes—i.e. protists/algae, plants, animals