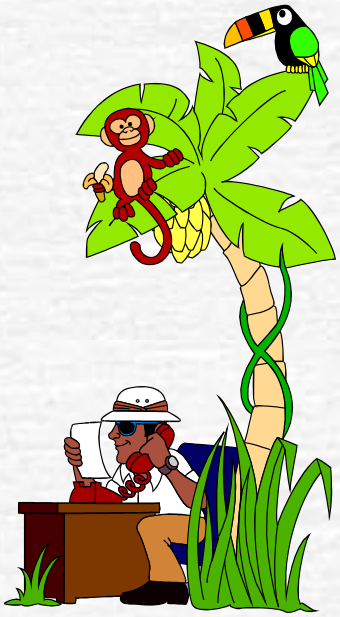
Biology Bellringer 8/18/14

- Look at items A-N on the front table. For each one, decide which category it would belong to:
  - Is Alive
  - Used to be Alive
  - Was Never Alive
  - Not Sure

What is ***BIOLOGY***?

Biology - the study of life.

- Types of life around us.
- Interactions of life.



8 Characteristics of Life

All living things:

1. are made up of units called cells
2. reproduce
3. based on universal genetic code using DNA-**heredity**
4. grow and develop
5. obtain and use energy – **metabolism**
6. respond to their environment
7. maintain stable internal environment-**homeostasis**
8. change over time-**evolve**

- ALL 8 must be present for something to be considered living.
- Organism - a living thing that has all 8 characteristics of life.

1. Cells

- Unicellular or Multicellular? All begin as 1 cell
- Orderly structure.
- Orderly living system.

2. Reproduction

- Production of new organisms.
- Essential for continuing organism's species.
  - Sexual reproduction
  - Asexual Reproduction

3. Heredity

- All living things pass on their characteristics from generation to generation.
- There is a universal genetic code contained in DNA
- Genes- inherited instructions for making proteins
- DNA- the chemical compound that houses the instructions

4. Growth & Development

- Growth -Increase in the number of cells.
- Starts with one cell, then differentiates
- Development - changes that take place during an organism's life cycle.

Ex. Caterpillar develops into a butterfly. (metamorphosis)

5. Energy Use and Metabolism

- metabolism - sum of all of an organism's chemical reactions. All organisms obtain food for energy to perform life's activities.
- Energy is converted
  - Food is necessary for storing energy.
  - Food is necessary for producing energy
- The energy that organisms use is originally from the sun.

6. Response to stimuli in their environment

- Organisms must respond to the constantly changing environment.

Stimulus(action)		Response(reaction)
drop in temperature	⇨	birds migrate south
in lower light	⇨	pupils of eyes dilate

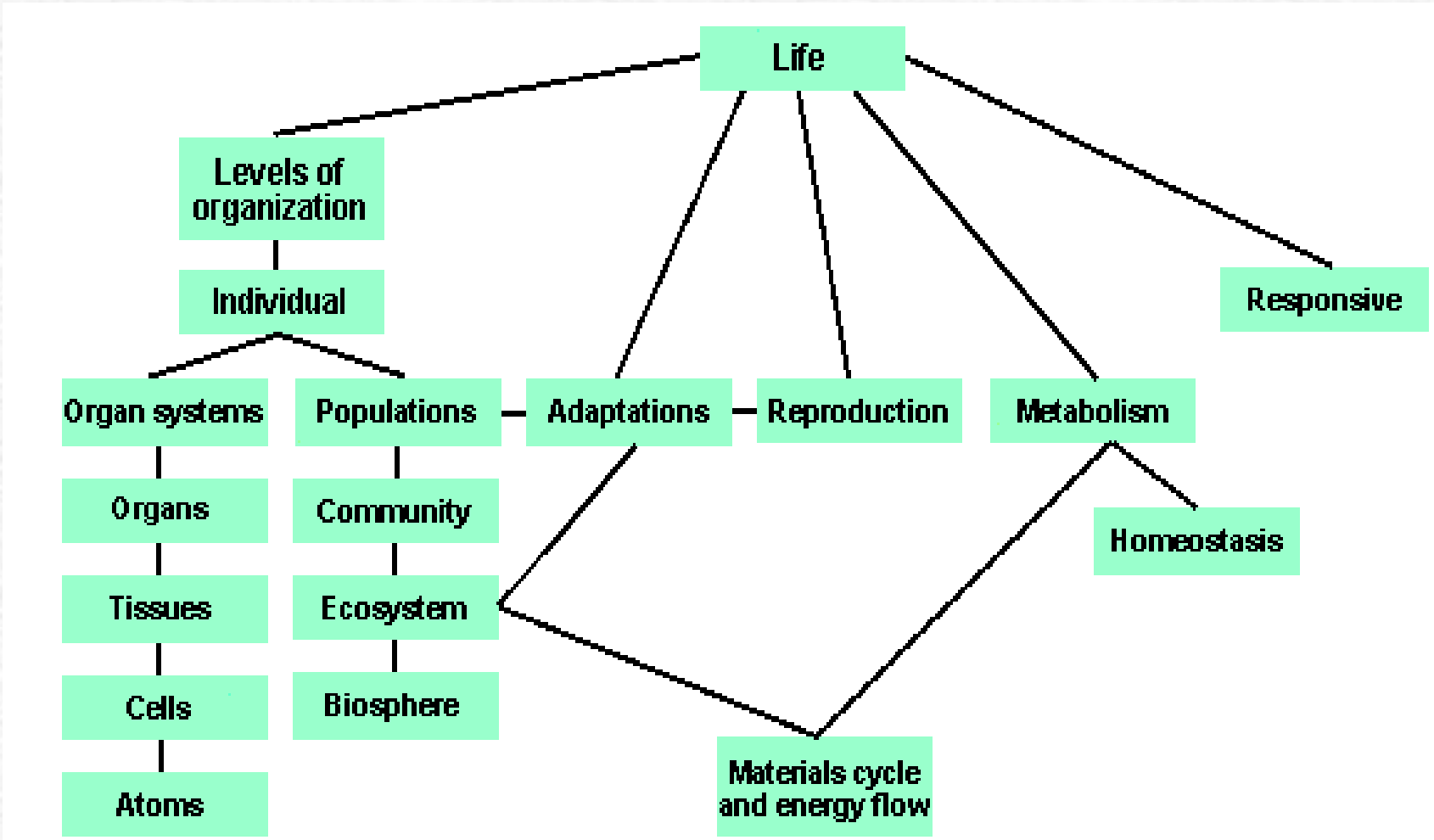
7. Regulation = Maintaining Homeostasis

- The regulation of an organism's internal environment to maintain conditions for continued life.
  - Example: You get hot, you sweat, cooling your internal body temperature.

Evolution is NOT a characteristic of <u>INDIVIDUALS</u>!

8. Evolution

- A change in the inherited traits of a species over time
- <u>Species</u>- a group of genetically similar organisms that can produce fertile offspring
- <u>Natural Selection</u>- Darwin's theory of natural selection is the basis for biology. This has led to the diversity of organisms. Organisms with the more favorable genes survive and reproduce.


Life
Levels of organization
Individual
Organ systems
Organs
Tissues
Cells
Atoms
Populations
Community
Ecosystem
Biosphere
Adaptations
Reproduction
Metabolism
Homeostasis
Responsive
Materials cycle and energy flow

Levels of organization

- Atom, molecule, compound, organelle, cell, tissue, organ, organ system, organism, population, community, ecosystem, biome, biosphere
- In biology (study of life) we start at the cellular level – cell, tissue, organ, organ system, organism, population, community, ecosystem, biosphere

Interdependence

- Organisms in different communities live and interact with one another.
- Organisms are dependent on one another and their environment.