**Biology: The Study of Life**

Biologists study ___________ in ALL its forms.

**Unifying Themes of Biology**

Unifying themes connect concepts from many fields of biology.
- In biology, themes are ideas that come up time after time.
  - Systems
  - Structure and function
  - Homeostasis
  - Evolution

**Systems**
- ________ levels of life have systems of ____________________________ parts.
  - These parts work together to make a whole.
- Examples of systems in biology:
  - A single heart cell
  - Circulatory system, Nervous system, Digestive system, etc, all these make up the body system.
    - Cells → Tissues → Organs → Organ Systems → Organism
  - Ecosystem=forest and a desert, includes living and nonliving things.

**Structure and Function**
- What something does in an organism is directly related to its ___________ or form.
- The structure of your hand allows you to pick something up and hold it—you cannot do the with your ear.
- The structure of different cells differs as well because they perform different tasks in your body.

**Homeostasis**
- The ability of an organism to maintain ____________________________ conditions.
- Important because cells function best in certain ranges of conditions.
  - Changes in temperature, blood sugar, etc can be life threatening.
- Maintained through a process called ____________________________.
  - A change in a system causes a response to return the system to normal.
  - Sweating is a response to you being too hot, this is your body’s way of returning to normal.
- ____________________________ can help maintain homeostasis as well.
  - If you are cold, you may put on a jacket.

**Evolution**
- Evolution is the ____________________________ in living things over ____________.
  - The genetic makeup of a population of a species changes.
- Evolution can occur through natural selection of adaptations.
  - _____________ are beneficial inherited traits that are passed to future generations.
- Evolution is a unifying theme of biology because it accounts for both the ____________________________ and ____________________________ or the unity, of life.

**Diversity**
- Living things are ____________________________!
- Living things come in ____________ shape and size
Biodiversity is...
• The __________________ of life.
  – All the different types of life on Earth.
• __________________ diversity __________________ to the equator.
  – Life thrives better in warm areas
  – Larger food supply

Species...
• A type of __________________ thing that can breed and __________________.
  – Humans
  – Monarch butterflies

ALL living organisms share 4 characteristics...
1. ALL living organisms are made of __________________.
2. ALL living organisms obtain and use __________________.
3. ALL living organisms respond to the ____________________________.
4. ALL living organisms are capable of ___________________________ and developing.

Cells
• The __________ unit of __________
• __________________-celled organisms
• __________________-celled organisms
  – Some cells have specialized functions, for example, muscle cells contract and relax, your stomach cells secrete digestive juices.
  – Specialized cells put together make you a complete organism.

Obtain and Use Energy
• ________________________ is the ability to cause a change or to do work.
• ________________________ energy is the form of energy used by living things.
• Energy is important for ______________________, or all of the chemical processes that build up or break down materials.
• Plants use energy from the __________ to make their own food.
• _________________ get their energy by eating other organisms.

Response to Environment
• Light, temperature, and touch are ___________ factors, or stimuli, that organisms respond to.
• One of your responses is to contract the pupils of your eyes when you are in bright sunlight.
• Other organisms respond to changes is light.
  – For example: plants grow towards light.

Reproduction and Development
• Important for ________________________ of a species.
  – Species must be able to __________________ new individuals.
  – The __________________ must be able to grow and develop so that they can reproduce.
• ______________________ information is passed from parent to offspring.
  – Molecular instructions for growth and development are found in ________.