Science 10: Big Ideas

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| Energy is conserved in the universe. Energy transformations are fundamental to understanding the world and life. | Genes and genetic mutations are the foundation for the diversity of living things. | Chemical processes involve changes in energy as atoms are rearranged. | The formation of the universe can be explained by conservation of energy and the big bang theory |

Biology:

Biology is the study of ***living things*** and of ***life itself***. So before we go on let’s make sure we understand what it means to be ***alive***.

Make a list of some of the things you think are necessary to be a living thing:

Biologists have broken life down into some simple requirements. You will find slightly different definitions depending where you look and what level of understanding you need, but for us, right now, let’s look at 6 characteristics of all living things.

* All living things **reproduce**.
* Living things are composed of one or more **cells**.
* All living things “eat” (use energy) and “breathe” (respirate) and produce waste. Living things undergo **metabolism.**
* All living things **respond to stimuli.**
* All living things **grow.**
* All living things **adap**t to their environment.

There are many types of living things lets look at the major characteristics of some of the major ones: **PLANTS, ANIMALS, FUNGUS, POTISTS, MONERA**

* **MONERA:** Single celled (unicellular) organisms, who have no nucleus. These are very simple organisms. Most bacteria are in this kingdom.
* **PROTISTS:** Single celled organisms with nuclei. These organisms are more complex and may perform photosynthesis and also locomotion.
* **FUNGUS:** fungi are multicellular organisms that **do not perform photosynthesis**. Fungi absorb nutrients from their host. Fungi do not have pollen, seeds or fruit. Most fungi have cell walls.
* **PLANTS:** Plants are multicellular organisms that **perform photosynthesis.** Most plants root in the earth and have stems and leaves. Plants produce pollen, seeds and fruit. Plant cells contain chloroplasts and have cell walls.
* **ANIMALS:** Animals are multicellular organisms that **do not perform photosynthesis.** Animal cells do not have cell walls. Animals have mobility.

For most of the biology unit we will focus on **PLANTS** and **ANIMALS**. Lets compare and contrast them more carefully.

COMPARE:

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| Things Plants and Animals have in common: |
|  |

CONTRAST:

Ways plants and animals are different.

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| PLANTS | ANIMALS |
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