

# Basic Biological Principles

## Standards:

- Describe the characteristics of life shared by all organisms.
- Compare the cellular structures and their functions in prokaryotic and eukaryotic cells.

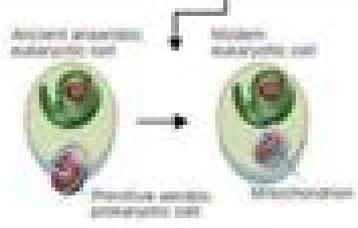
**Cell Theory**

- All living things are made of cells.
- Cells are the basic unit of structure and function in living things.
- Cells come from pre-existing cells.



**Endosymbiosis**

- A theorized process in which early eukaryotic cells were formed from simpler prokaryotes.
- Some organelles, such as mitochondria and chloroplasts, are believed to be evolved prokaryotes that now exist inside eukaryotes.



Earth is home to an incredible amount of biodiversity, however all living things (whether prokaryotic OR eukaryotic) share common characteristics:

- All living things are made of cells.
- All living things exhibit homeostasis (constant internal conditions).
- All living things require energy for metabolism (break down & synthesis of substances).
- All living things respond to their environment (stimuli).
- All living things grow and develop.
- All living things reproduce and pass on their DNA (genetic material) to their offspring.
- All living things adapt and evolve (changes in DNA over multiple generations).

Cells are the smallest, most basic unit of life. There are two types of cells that make up all living things... eukaryotic cells and prokaryotic cells. All cells have common components:

- Cytoplasm
- DNA (Genetic material)
- Plasma (cell) membrane
- Ribosomes

**Differences between prokaryotic and eukaryotic cells:**

	Prokaryotic Cells	Eukaryotic Cells
# of cells:	single	single or multi
size:	usually extremely tiny	varies much less
organelles:	absent, not membrane-bound	many, membrane-bound
DNA:	single circular chromosome attached to cell wall	linear chromosomes in a nucleus floating in the center of the cell
examples:	bacteria	protists, fungi, plants, animals

Membrane-bound organelles are made of biological macromolecules, such as proteins, lipids, carbohydrates and nucleic acids. These organelles carry out specialized functions within cells. (See the chart of organelles on the next page.)



**Animal Cells**

- No cell walls
- No chloroplasts
- Multiple small vacuoles
- Contain lysosomes
- Contain centrioles

**Plant Cells**

- Contain cell wall
- Contain chloroplasts
- Large central vacuole
- No lysosomes
- No centrioles

# Basic Biology Study Guide

**E Staff**



## **Basic Biology Study Guide:**

*Biology Basics (Speedy Study Guide)* Speedy Publishing,2014-12-28 A biology basics study guide can help to teach kids about the fundamentals of life and give them a strong foundation in the sciences By learning about plants animals and other life forms kids can get a grasp of life on this planet and their place in it Important basic concepts like the structure of a cell scientific classification photosynthesis and more can all be taught with the help of a biology basics study guide giving kids an early advantage *General Biology - Biology 1010* , **General Biology Study Guide for Biology 1010 - Answers - EBook** Heather Wilson Ashworth,2015-08-06 **General Biology Fast Facts: Evolution** E Staff, Learn and review on the go Use Quick Review General Biology Study Notes to help you learn or brush up on the subject quickly You can use the review notes as a reference to understand the subject better and improve your grades Easy to remember facts to help you perform better Perfect study notes for all high school college health sciences premed medical and nursing students

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