

# Basic Biological Principles

## Module A Anchor 1

### Key Concepts:

- Living things are made of units called cells, are based on a universal genetic code, obtain and use materials and energy, grow and develop, reproduce, respond to their environment, maintain a stable internal environment, and change over time.
- Prokaryotic cells do not separate their genetic material within a nucleus. In eukaryotic cells, the nucleus separates the genetic material from the rest of the cell.
- The cells of multicellular organisms become specialized for particular tasks and communicate with one another.

### Vocabulary:

Homeostasis

Eukaryote

Cell membrane

Cell

Evolution

Nucleus

DNA

Prokaryote

Asexual reproduction

Sexual reproduction

Membrane-bound organelles

Cell specialization

### Characteristics of Life:

1. List the characteristics of life common to all living things.
2. If an organism lacks any of these characteristics, is it considered living? Why or why not?
3. Which of the following characteristics of living things explains why birds fly south for the winter?
  - A. Living things respond to their environment
  - B. Living things maintain homeostasis
  - C. Living things are made of cells
  - D. Living things are based on a universal genetic code
4. Which characteristic(s) of living things is more important to the survival of the species as a whole, rather than the individual organism? Why?

Prokaryotes vs. Eukaryotes:

1. Compare and contrast prokaryotes and eukaryotes in terms of structures; list specific organelles which are present in each, as well as other structural similarities and differences.

2. Compare and contrast prokaryotes and eukaryotes in terms of genetic material.

3. How are the similarities and differences between prokaryotic and eukaryotic cells dependent on their size?

4. How do the structures of prokaryotic and eukaryotic cells influence their functions?

5. Not all cells are alike. Which of the following is NOT a true statement about differences between cells?

- A. Cells come in many different shapes
- B. Different kinds of cells are different sizes
- C. Some cells have a nucleus and others do not
- D. Most cells have a membrane, but some do not

Levels of Organization:

1. Describe the relationship between organelles, cells, tissues, organs, and organ systems.

2. Cells in multicellular organisms have many sizes and shapes. These differences are referred to as cell specialization. Cell specialization allows cells to:

- A. Reproduce
- B. Perform different functions
- C. Respond to their environment
- D. Be less complex

