Part I: Prokaryotic vs. Eukaryotic Booklet

Fundamental Question: What are the similarities and differences between prokaryotic and eukaryotic cells?

All organisms are made of cells that are either prokaryotic or eukaryotic. Learning about both types, you will create a booklet that explains their similarities and differences.

1. Review pages 2-5 of this guide to learn about prokaryotic and eukaryotic cells.

2. Cut out Student Journal pages 1-4 along the dotted lines.

3. Assemble the book using the page number in the bottom corners as a guide. Once it’s put together, the Eukaryotic Cell pages should be in order from pages 1 to 4. Flip the booklet over and the Prokaryotic Cell pages should be in order, 1 to 4.

4. For page 2 of the booklet, cut out the cell structures from Student Journal page. Glue the correct cell organelles onto the cell model.

5. For page 3 of the booklet, use pages 2-3 of the Student Guide pages as a reference.

6. For page 4 of the booklet, complete the Venn diagram to illustrate the similarities and differences between prokaryotic cells and eukaryotic cells.

As you work on the booklet, remember that...

Prokaryotes DO NOT HAVE a nucleus.

Eukaryotes HAVE a nucleus.
Part I: Prokaryotic Cell vs. Eukaryotic Cell Note Pages

Fundamental Question: What are the similarities and differences between prokaryotic and eukaryotic cells?

**PROKARYOTIC CELL**
- cell membrane
- cytoplasm
- DNA

**EUKARYOTIC CELL**
- cell membrane
- cytoplasm
- DNA

- Both have cell membranes. The cell membrane controls the flow of materials in and out of the cell.
- Both have cytoplasm. Cytoplasm is the jellylike substance that fills the cell.
- Both have DNA.
- Both need energy.
Part I: Prokaryotic Cell vs. Eukaryotic Cell Note Pages, continued

Fundamental Question: What are the similarities and differences between prokaryotic and eukaryotic cells?

PROKARYOTIC CELL
Pro = “before”, karyon = “nucleus

- Smaller
- Less complex and less organized
- Includes few cell structures
- **Lacks nucleus** – DNA floats freely
- Example organisms: bacteria

EUKARYOTIC CELL
Eu = “true”, karyon = “nucleus”

- Larger
- More complex and more organized
- Includes many cell structures
- **Has nucleus** – DNA enclosed inside
- Example organisms: plants and animals
Part II: A Closer Look at Prokaryotic Cells

Fundamental Question: What are the similarities and differences between prokaryotic and eukaryotic cells?

Study this cell type’s characteristics to complete page 6 of your Student Journal.

Bacterium Cell

Characteristics of a Prokaryotic Cell:
• Small – about 1/10th the size of a eukaryotic cell.
• Simple and not well-organized. It contains few cell structures such as ribosomes.
• Lacks nucleus – DNA inside of a prokaryotic cell floats freely around the cell.
• Prokaryotic cells are either rod, spherical, or spiral shaped.
• Bacteria are examples of single-celled, prokaryotic organisms.
Part II: A Closer Look at Eukaryotic Cells

Fundamental Question: What are the similarities and differences between prokaryotic and eukaryotic cells?

Study this cell type’s characteristics to complete page 6 of your Student Journal.

Animal Cell

- cell membrane: controls the flow of materials in and out of the cell
- vacuole: fluid-filled sac that stores different materials
- mitochondria: supply energy
- ribosome: make proteins
- nucleus: contains DNA
- endoplasmic reticulum: moves materials to other cell structures
- cytoplasm: jellylike substance that fills the cell

Plant Cell

- cell wall: outer layer of a plant cell
- chloroplast: makes food for the plant

Characteristics of a Eukaryotic Cell:
- Large – about 10 times bigger than prokaryotic cells
- Complex and well-organized
- Includes many cell structures, which perform a specific function within the cell
- Has nucleus – DNA enclosed inside
- Plants and animals are examples of multi-celled, eukaryotic organisms