

# Giant Magnetic

# Animal Cell

Make your **whiteboard**  
come alive with **science!**

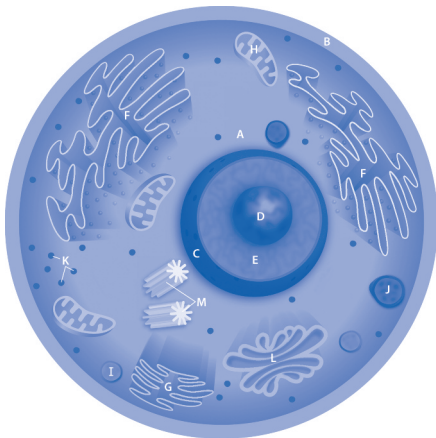
*Explore an animal  
cell through hands-  
on investigation!*



**C**ells are the building blocks of life. All living things are made up of cells. The animal cell is a typical eukaryotic cell, and while there are some differences between functions of specific cells, they all contain the same basic organelles. The animal cell type is found not just in animals, but in humans as well. This Giant Magnetic Animal Cell model allows students to investigate the different parts of the cell on the whiteboard.

The model includes the most basic and common parts of an animal cell. Please note that some specialized organelles have not been included.

## **Parts of an Animal Cell** (as represented by the model)

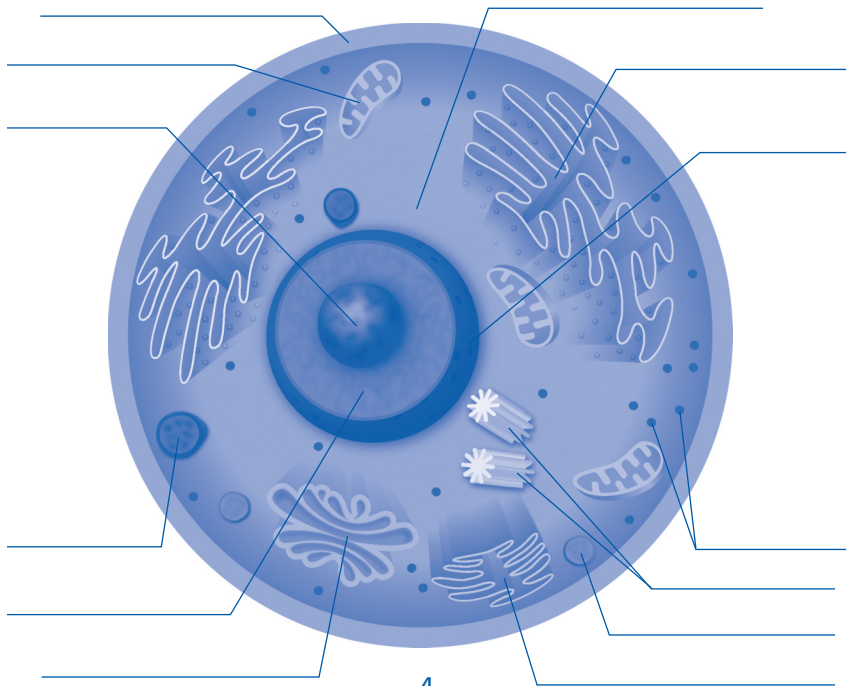


- A. **Cytoplasm** – All organelles of a cell reside in the cytoplasm.
- B. **Cell Membrane** – The cell membrane holds all the parts of a cell. Every cell is enclosed by a cell membrane. It controls the passage of materials in and out of the cell.
- C. **Nucleus** – The nucleus is the controlling center of a cell. It also contains the DNA for the cell.
- D. **Nucleolus** – Located inside the nucleus, the nucleolus produces RNA in the form of ribosomes.
- E. **Chromatin** – Part of the nucleus that contains most of the DNA of the nucleus.
- F. **Rough Endoplasmic Reticulum (Rough ER)** – Covered with ribosomes, the rough ER produces protein and transports materials throughout the cell.
- G. **Smooth Endoplasmic Reticulum (Smooth ER)** – The smooth ER transports materials throughout the cell and produces membrane proteins and digests lipids.
- H. **Mitochondria** – The main energy source for a cell. The mitochondria converts oxygen and nutrients into energy for the cell to use.
- I. **Vacuole** – Helps with digestion by storing food and waste material.
- J. **Lysosomes** – Digestion is the main function of lysosomes.
- K. **Ribosome** – Some ribosomes are attached to the rough ER and they synthesize proteins for the lysosomes.
- L. **Golgi Apparatus** – Prepares proteins and fats that are created in the endoplasmic reticulum for transport to the outside of the cell.
- M. **Centrioles** – Centrioles divide into two parts during cell division and assist in the cell division process. They are only found in animal cells.

# Animal Cell Structure Worksheet

Name: \_\_\_\_\_

Directions: Correctly label all parts of the animal cell.



## Interesting Cell Facts

- Our bodies have approximately ten trillion cells.
- Cells carry out basic life processes such as growth, reproduction, and responses to the environment.
- A group of identical cells that carries out a function together is called tissue.
- Blood is made of cells that carry oxygen and carbon dioxide to other cells in your body.
- All organisms begin as a single cell.
- Our bodies are constantly making new cells to replace old cells that die.
- When a cell reproduces by the process of mitosis, it makes exact duplicate copies of itself.
- Scientists will often use nucleic acid stains to view the RNA and DNA in cells. The stain gives the cells a bluish color.

# Mitosis

Mitosis is the process in which a cell reproduces by dividing and becoming two identical cells. Mitosis occurs in six stages.

**Prophase** – In this phase, the nucleus disappears and twin chromosomes appear that are exact copies of each other.

**Prometaphase** – The nuclear membrane disappears completely and the twin chromosomes begin moving.

**Metaphase** – The twin chromosomes line up in the middle of the cell.

**Anaphase** – The twin chromosomes separate and begin moving to opposite ends of the cell.

**Telophase** – A new membrane forms around the two groups of chromosomes.

**Cytokinesis** – The cell membrane closes together in the middle of the cell, separates and forms two new cells.

## Suggested Activities

- Use for classroom demonstration as well as individual student exploration.
- As an introduction to cell structure, place the Giant Magnetic Animal Cell on your whiteboard and label organelles as you discuss them.
- Place the cell structure on the board with the organelles off to the side. Invite students to name the organelles. If students are correct, put the organelles on the cell in the approximate place where they belong.
- Pass out the organelles to the students. Call out characteristics such as, "Located in the middle of the cell," or "Helps with digestion." Then, have students who are holding organelles with those characteristics stand up and identify the organelles.
- Have students label organelles either within the cell or individually on the whiteboard.
- Assign each student in a group an organelle. Then, have the students work together to create a "performance" showing how the organelles work together. Allow them to perform for the class as a demonstration.



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