

Structure and Function of Cells

On the second screen of the simulation you will see a column with 12 cell organelles and structures. Roll your mouse over each cell organelle or structure to read some information about it.

Your task is to build a typical animal cell and a typical plant cell. To build each type of cell, drag the appropriate organelles or structures into the white space. The organelles and structures will click into place within the cell.

If you drag an organelle or structure into the cell you are building and it is not part of that cell type, you will get an error message stating that this organelle or structure is not part of this type of cell. When your cell is complete, you will get a message stating that it is complete.

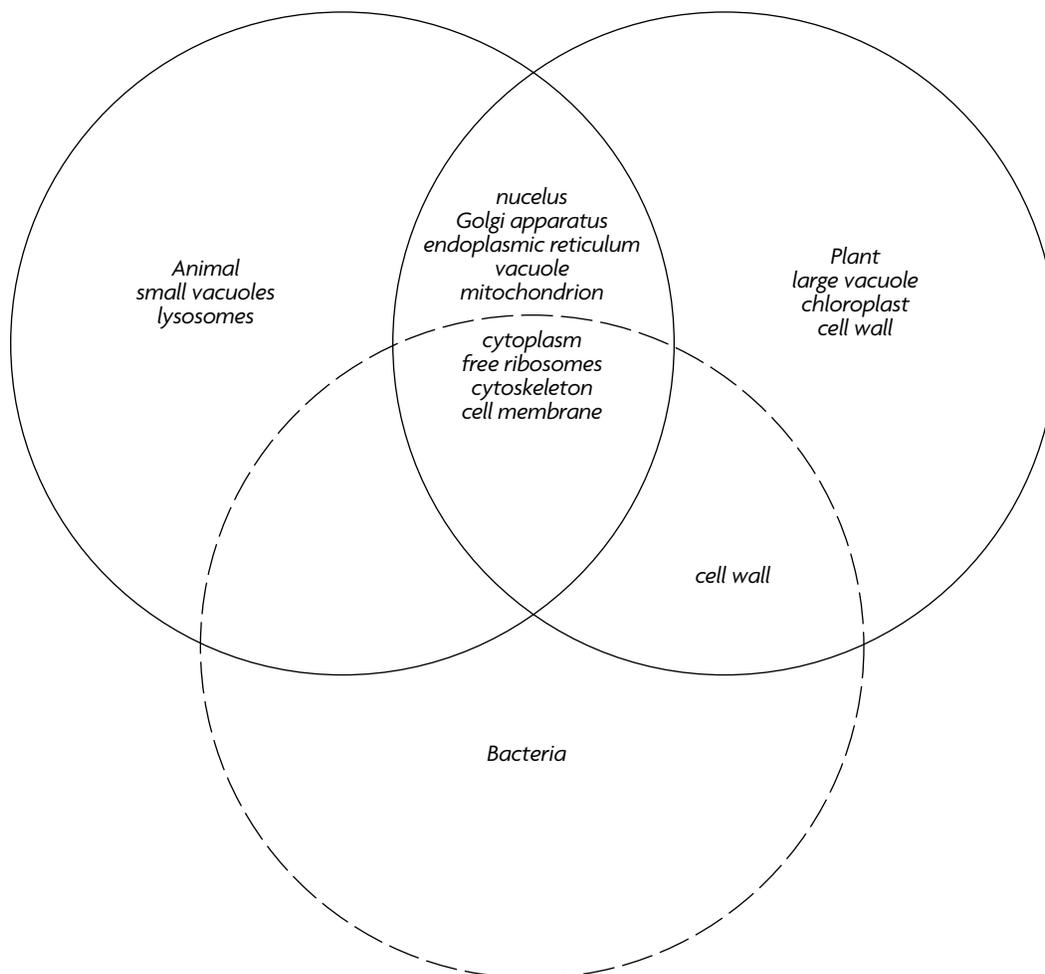
- After you complete Part A of the activity, fill in columns 2 and 3 below for the structures and organelles in animal and plant cells that perform each function listed in the first column.

1. Function	2. Animal cell (eukaryotic)	3. Plant cell (eukaryotic)	4. Bacterial (prokaryotic) cell
Synthesis and modification of molecules needed by cells	Nucleus (contains genetic information) Cytoplasm Endoplasmic reticulum Free ribosomes Golgi apparatus	Nucleus (contains genetic information) Cytoplasm Endoplasmic reticulum Free ribosomes Golgi apparatus	Ribosomes Chromosomes (genetic information)
Storage of substances (such as DNA, water)	Small vacuoles Nucleus	Large vacuole Nucleus	Cytoplasm
Transport of materials within, into, and out of cells	Cell membrane Cytoskeleton (transport within the cell) Vesicle	Cell membrane Cytoskeleton (transport within the cell) Vesicle	Cell membrane Cytoskeleton (transport within the cell)
Support for cells	Cell membrane Cytoskeleton	Cell membrane Cytoskeleton Cell wall	Cell membrane Cytoskeleton Cell wall
Convert energy for cells	Mitochondrion	Mitochondrion Chloroplast	Cell membrane
Break down (digest) cell wastes or microbes	Lysosome	Large vacuole	Cytoplasm

(continued on next page)

Structure and Function of Cells (continued)

2. In the space below, record the Venn diagram you created in the simulation comparing a typical animal cell and plant cell. The student should add the dotted circle and correctly place the structures shared by bacteria in answer to question #5 below.



3. Add a fourth column to the chart in question #1. Label it bacterial (prokaryotic) cell. Use what you learned in Part B in the Student Book from the reading about bacterial cell structure to fill in the fourth column.
4. a. Use what you learned in the reading in Part B in the Student Book to list the functions of bacterial cells that antibiotics interfere with.
- Cell wall structure
- Protein synthesis
- Copying bacterial DNA
- Production of an enzyme needed to copy bacterial DNA
- b. Explain why antibiotics are an effective medication to fight bacterial infections.
- Antibiotics interfere with functions that are vital for the cell, including copying and making the DNA needed to make proteins, and the structure of the cell wall that gives it rigid support and shape.
5. Complete Procedure Step 3 in the Student Book.