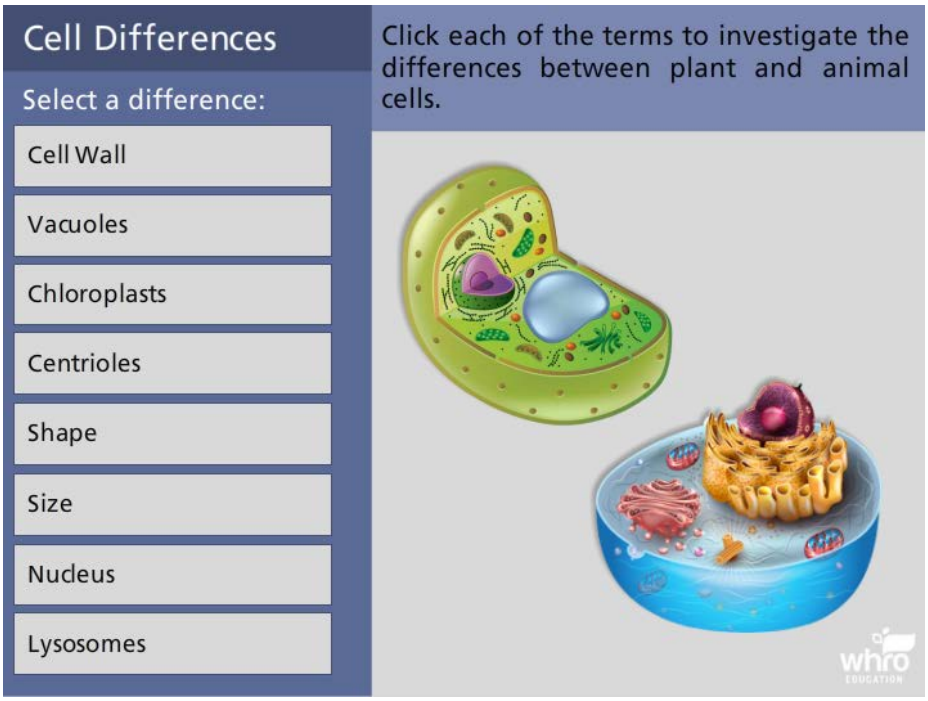
Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

Introduction

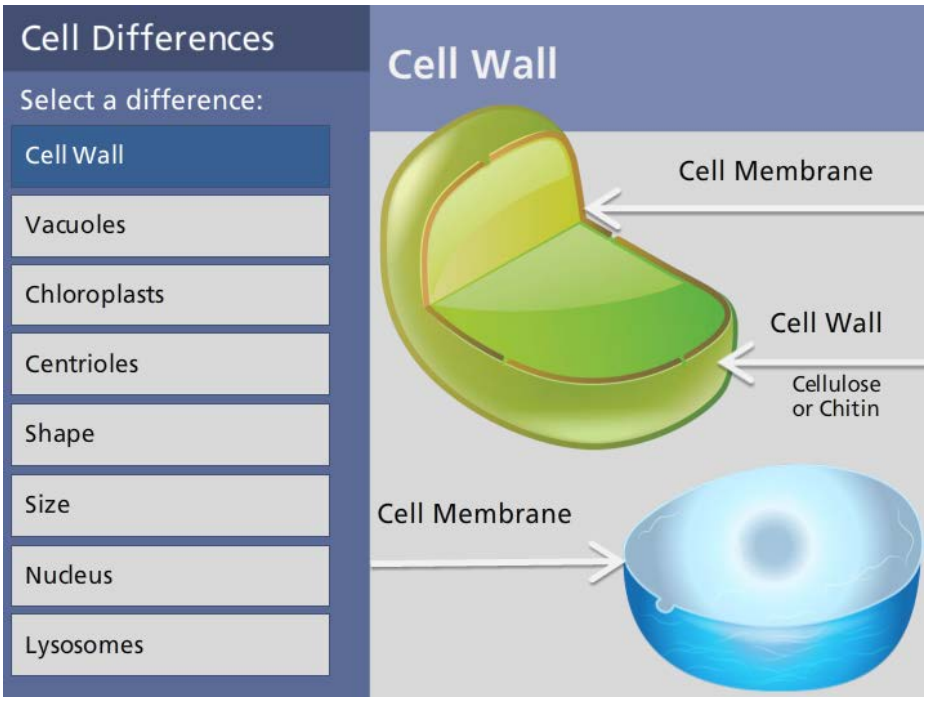


There are several differences between plant and animal cells. Click each of the terms to investigate these differences.

Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

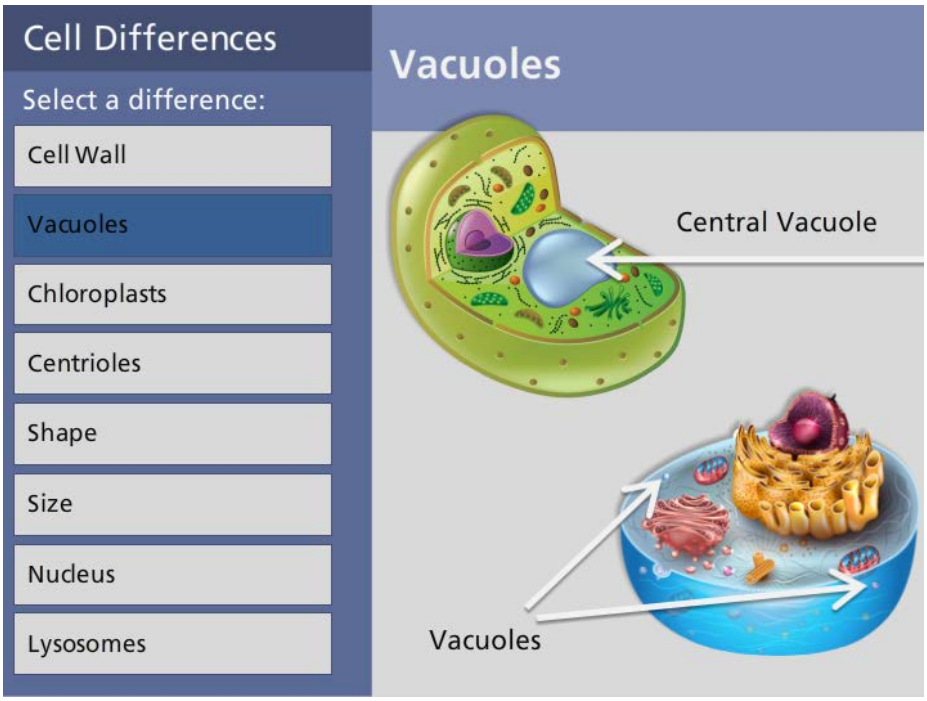
Cell Wall



If you look at both a plant and animal cell without the organelles, you will observe a very noticeable difference. Plant cells have an extra surrounding layer called a cell wall. Animal cells do not contain this rigid barrier. In plants, the purpose of the cell wall is to provide protection and structure. The cell wall is composed of cellulose in plants and chitin in fungi. Both plant and animal cells contain a semipermeable layer surrounding the cytoplasm called the cell membrane.

Module 3: Cell Biology - Structure and Function
Topic 3 Content: Cell Differences Notes

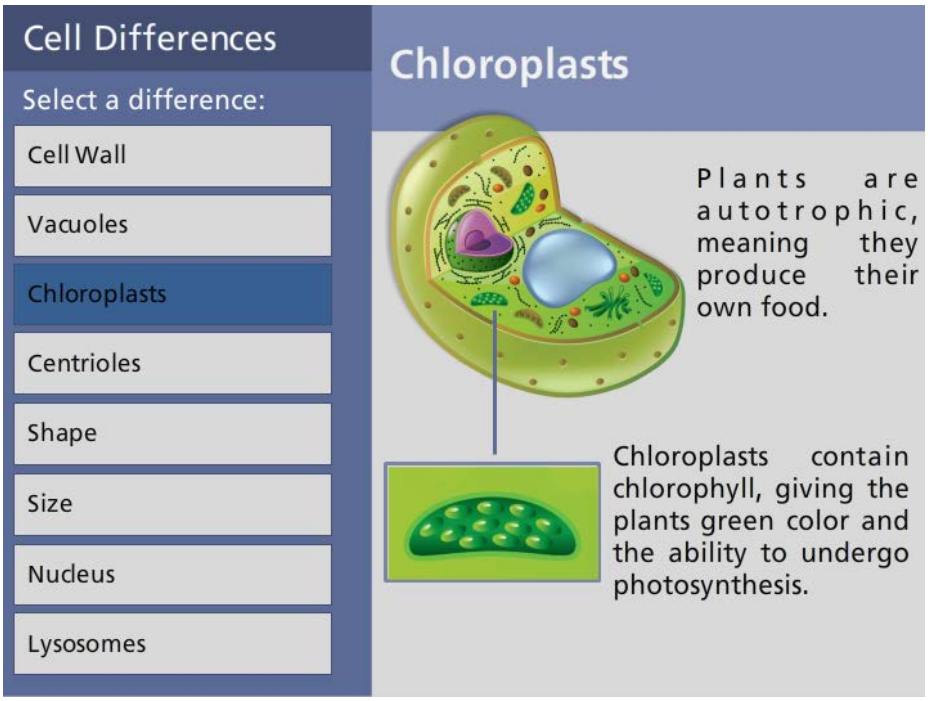
Vacuoles



Plant cells contain one large central vacuole, while animal cells contain several smaller vacuoles. Vacuoles provide storage for water and other nutrients. In plant cells, the larger central vacuole is useful in providing structure for the cell.

Module 3: Cell Biology - Structure and Function
Topic 3 Content: Cell Differences Notes

Chloroplasts

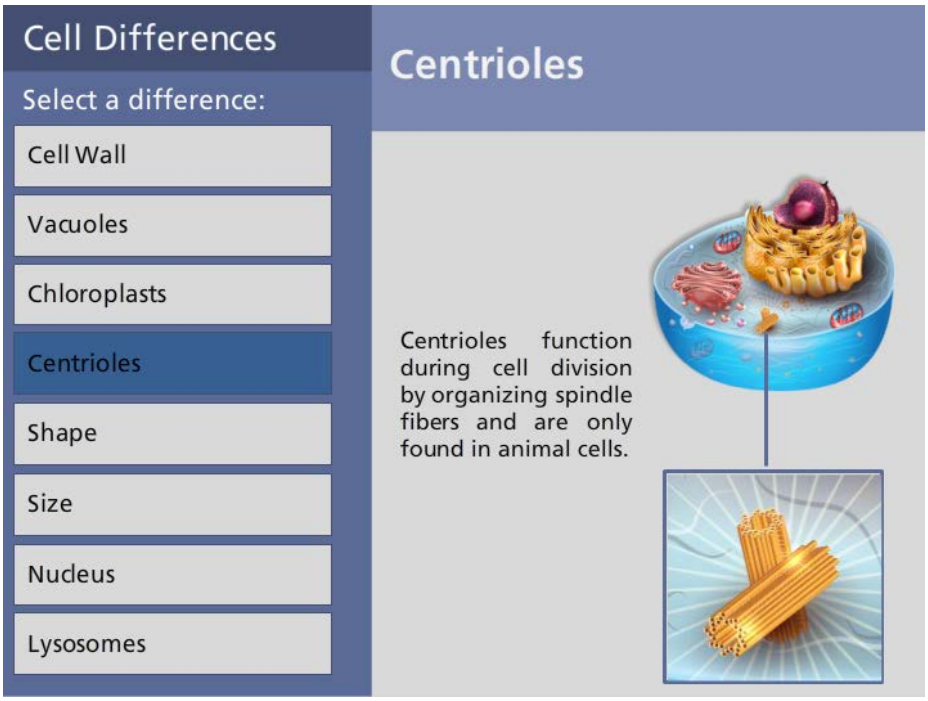


Plant cells are autotrophic, while animal cells are not. This means that plant cells are capable of producing chemical energy from light energy in a process called photosynthesis. This process happens in a special structure called a chloroplast. It occurs in plant cells, some protists (like algae), and bacteria. The chloroplast contains a pigment called chlorophyll, which traps the energy from sunlight. The chlorophyll gives the leaves and stems of a plant the green color.

Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

Centrioles

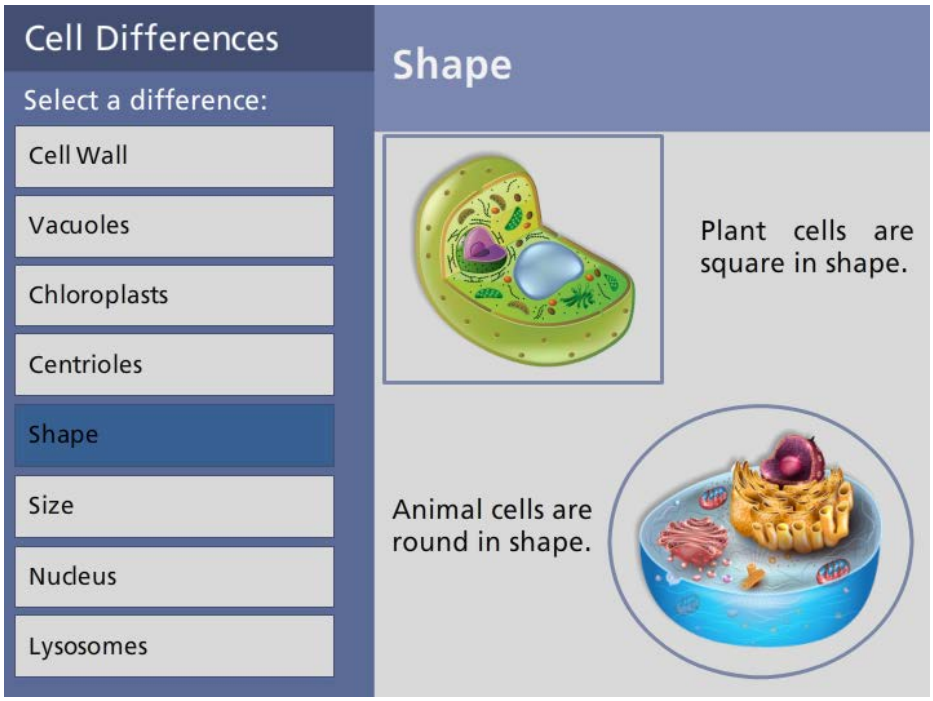


Animal cells, and some protists cells, contain centrioles. Centrioles are formed from microtubules, and are organelles that function during cell division by organizing spindle fibers. They are in the cytoplasm of the cells, usually near the nucleus. Centrioles do not exist in plant cells.

Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

Shape

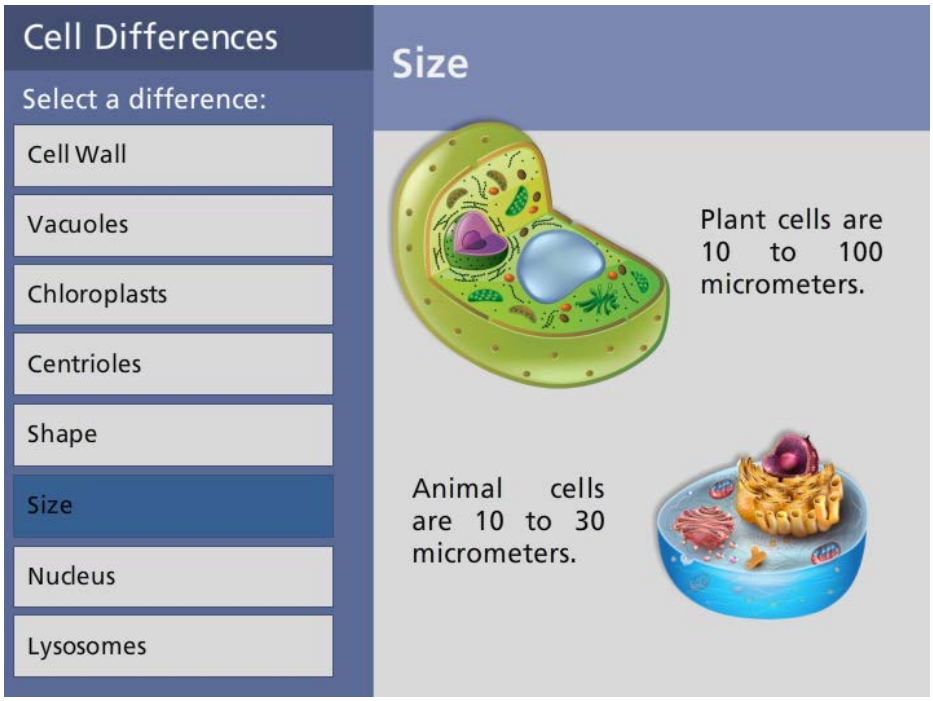


Animal cells are round and irregular in shape while plant cells have fixed rectangular shapes.

Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

Size

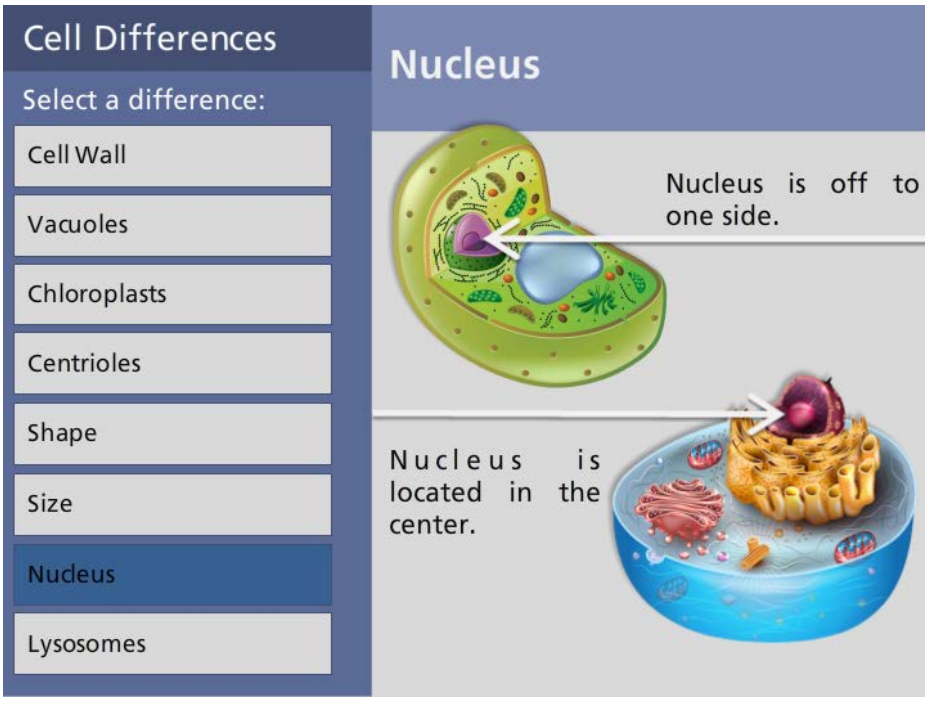


Plant cells are usually larger than animal cells. Plant cells can range from 10 to 100 micrometers. The smaller animal cells range from 10 to 30 micrometers.

Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

Nucleus

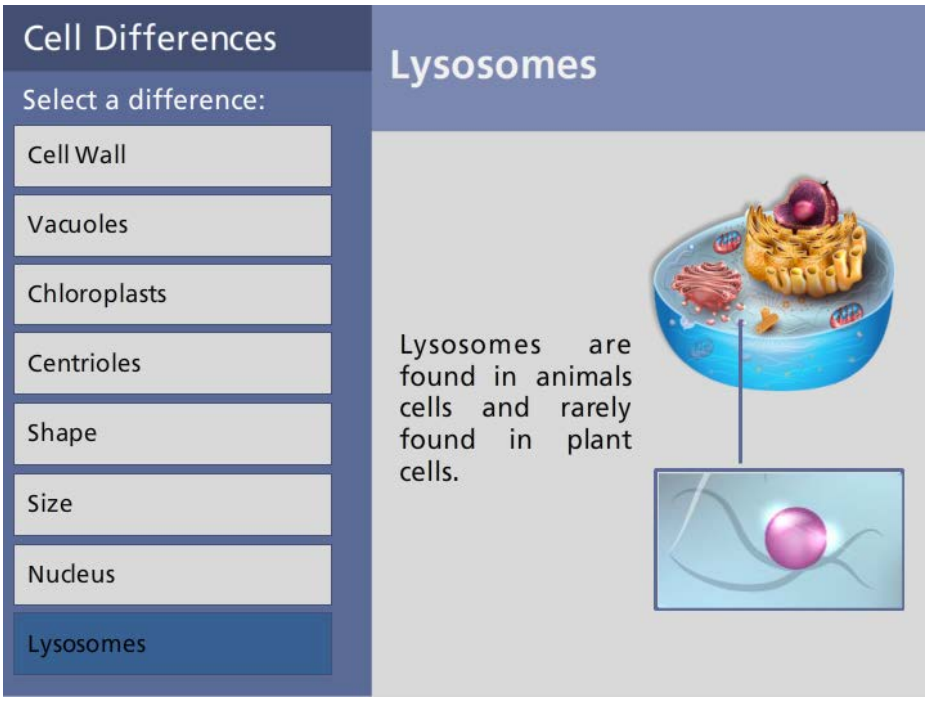


The nucleus lies in the center of animal cells. In plant cells, the nucleus lies toward one side in the cytoplasm.

Module 3: Cell Biology - Structure and Function

Topic 3 Content: Cell Differences Notes

Lysosomes



Lysosomes are found in animal cells and are rarely evident in plants cells. It is suggested that a plant's central vacuole is performing the function of the lysosome, which contains digestive enzymes.