MEETS NATIONAL STANDARDS

Christina examines

Plant Cells and Animal Cells!

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What is a Cell?

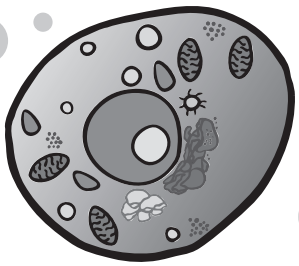
Every living organism on Earth is made up of **cells**. Cells are very small. To see one, you need to look at it using a microscope. Inside cells are even smaller things, all with special jobs.

Cells group together to form "organs," like the heart, skin, and brain. A group of organs becomes a "system," like the nervous system, for instance. The nervous system includes your brain, the organ that tells your hand to move when it touches something hot! Other systems include your muscles (to enable you to move) and your heart, part of a system that pumps blood through your body.

Plants are also made up of many cells, like animal cells, but have differences. Plants are rigid, or stiff, due to special **cell walls**. They need to be stiff because they don't have bones like we do.

The cell's main job is to organize. Humans have more than 200 different kinds of cells—about 10 trillion total! That's a lot of cells! So, if the cell's main job is to organize, it has a **big** job to do!

Cell-a-thon Spell-a-thon!



Fill in the bubblegram with words related to plant and animal cells! Use the letter clues and word list to help.

system	organize	cells
small	walls	organs

1. All living organisms are made up of _____ O _____ _____ _____.
2. Cells are very_____ O _____ _____ _____.
3. Skin, the heart, and the brain are all O_____ _____ _____ _____ _____.
4. A O _____ _____ _____ O _____ is made up of several organs working together.
5. Plant cells have cell O_____ _____ _____ _____, but animal cells don't.
6. A cell's main job is to _____ _____ _____ O _____ _____ _____ _____.

Unscramble the bubble letters above to finish the sentence below!

7. Being small is _____ _____ _____ _____ _____ _____ _____!

Single-Celled Organisms

It's hard to imagine that something can be **single-celled** and live, but **amoebas** are single-celled—and they thrive very well. They live in water and normally can't be seen without a microscope.

Amoebas are fun to learn about because they can do so much with so little. Inside the **cell membrane** of the amoeba is the **nucleus** (the "command center"), and tiny storage units called **vacuoles**. They are all in a gel-like substance called **cytoplasm**.

To move around, an amoeba pushes its cytoplasm out and around like a foot. With no mouth, the amoeba wraps this foot around the food, secretes a chemical that breaks down the food, then digests and stores the food in its vacuoles.

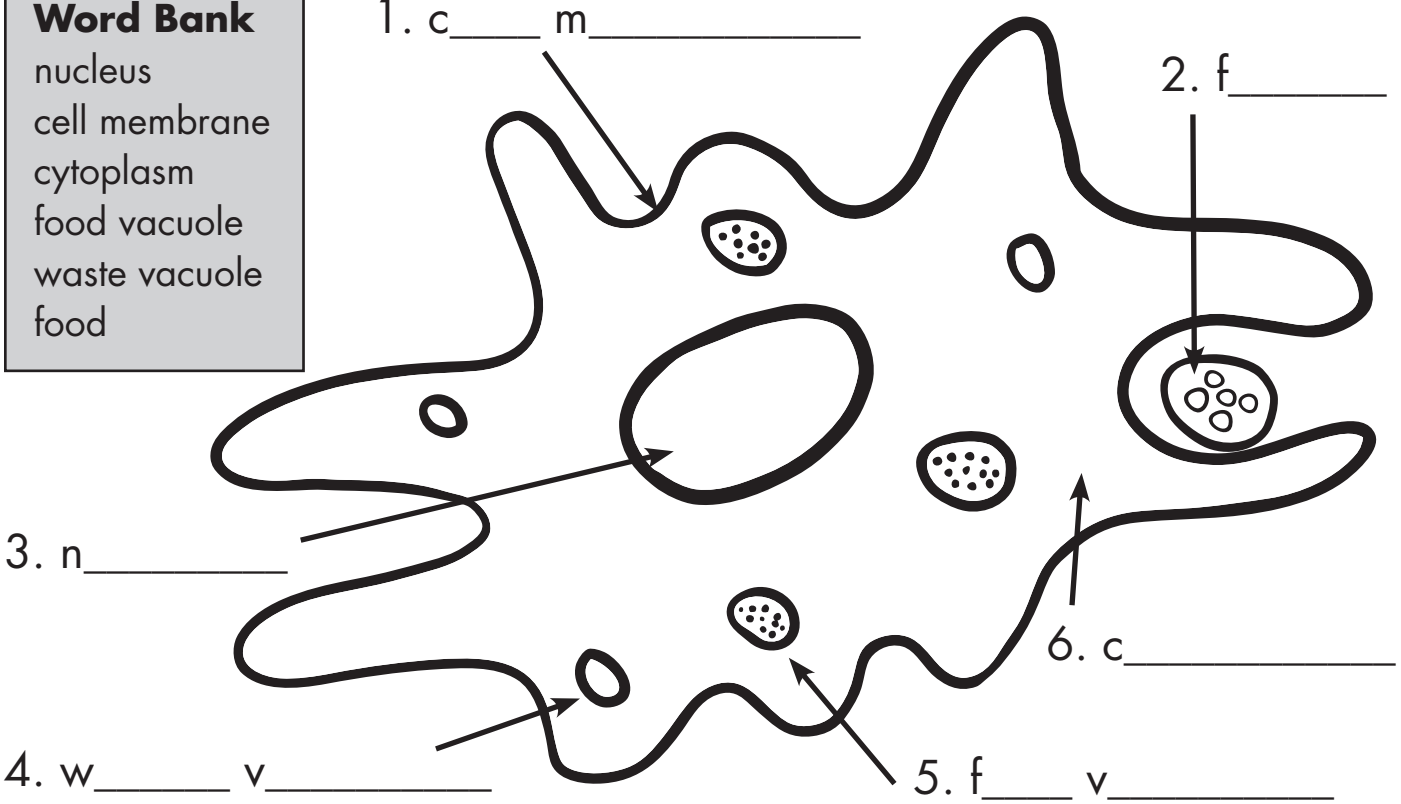
Wastes go out and food goes in—all through the cell membrane!

Scientists used to think amoebas were animals because of the way they move. They are actually organisms called **protozoans**. In the food chain, they are decomposers, meaning they eat decaying plants and animals. Like all living organisms, amoebas must reproduce or they will die out. They do this by splitting in half.

Pieces and Parts!

Look at the diagram of an amoeba below. Label the parts using the word bank.

Word Bank
nucleus
cell membrane
cytoplasm
food vacuole
waste vacuole
food



How Do They Compare?

As you know, cell walls surround plant cells. Under the plant cell wall is a cell membrane, just like that in animal cells.

A **cell membrane** is thinner than a cell wall and not rigid. Cell membranes let water and oxygen enter and leave the cell.

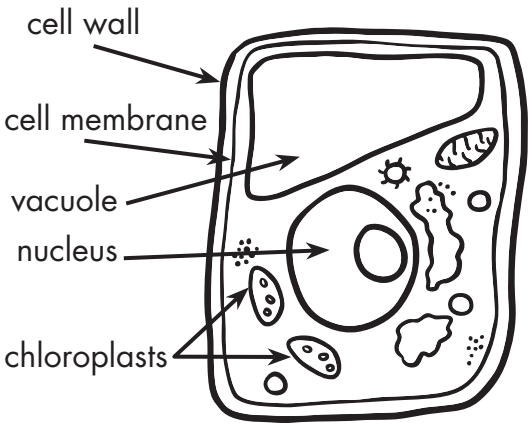
The **nucleus** in both animal and plant cells controls everything that happens in the cell.

Vacuoles handle water and waste storage. Plant cells usually have one large vacuole for storage, while animal cells have smaller ones. When you water a plant, it stands tall because its vacuoles fill up like balloons. When a plant is not watered, it uses up stored water from its vacuoles, causing the plant to wilt.

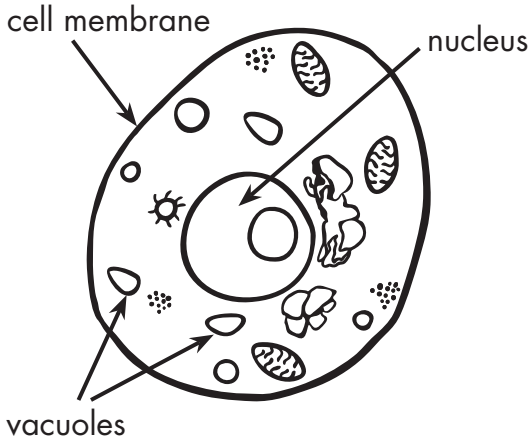
Chloroplasts in plant cells contain a green pigment called **chlorophyll**. This chemical takes the sun's energy, and with carbon dioxide, changes the chlorophyll into sugars. This creates great plant food—in fact, plants are the only living things on Earth that can make their own food! Oxygen is a byproduct of this chemical reaction!

As you can guess, animal cells don't have chloroplasts!

Cross-Section of a Plant Cell



Cross-Section of an Animal Cell



Let's Compare!

Check to see how much you know about the differences and similarities between plant cells and animal cells. Write your answers on the lines below.

1. Name three differences between plant cells and animal cells.
   a. _____
   b. _____
   c. _____

2. Name three things that are the same in both plant cells and animal cells.
   a. _____
   b. _____
   c. _____

3. Why do plant cells have chloroplasts and animal cells do not?
   _____
   _____