

# Chapter 31

## Organelles Part II



HOW DO *CELLS*  
TALK TO EACH  
OTHER?

WITH  
*CELLULAR*  
PHONES!



THE AUTHOR WOULD LIKE TO  
FORMALLY APOLOGIZE FOR ANY  
MENTAL DAMAGE THIS LAST JOKE  
MAY HAVE CAUSED YOU.

# Day One:

Today, you and your child will:

1. Read the text
2. Review the text with your child
3. Complete the student worksheets
4. Collect the materials you will need for days two and three

## National Science Education Standards covered this week:

Cells have storage areas, called vacuoles, where extra water and nutrients can be found. In addition, other organelles, known as Golgi bodies, package chemical messengers to be sent outside the cell membrane to other cells. Special organelles called lysosomes remove waste from inside the cell.

Plant cells contain chloroplasts, the site of photosynthesis. Plants use solar energy to combine carbon dioxide and water into food they can use. This process of photosynthesis provides a vital connection between the sun and the energy needs of living systems.

# Definitions

<b>Lysosome</b>	"lie-so-so-m"; an organelle that gets rid of the waste inside a cell
<b>Golgi body</b>	an organelle that wraps up proteins into a bundle inside a cell
<b>Vacuole</b>	an organelle that stores extra water and nutrients
<b>Cell wall</b>	a stiff structure that surrounds a plant cell and protects it from harm
<b>Chloroplast</b>	special organelles that contain chlorophyll
<b>Chlorophyll</b>	"klor-o-fill"; an organelle found inside chloroplasts that uses sunlight to make food for the cell

# **Sample questions to ask your child after completing the weekly reading.**

**What are two organelles you would never find in an animal cell?**

Cell wall and chloroplasts

**What organelle is very important in sending messages to other cells? What does this organelle do?**

Golgi body; this organelle wraps up messages to be sent to other cells and ships them out of the membrane.

**What is the difference between the Golgi body and the "ER"?**

Although both of these organelles move protein messages for the cell, the "ER" sends messages within the cell only. The Golgi body sends protein messages outside of the cell.

# Answers to worksheet questions:

## Page 1:

Golgi body - an organelle that wraps up proteins into a bundle inside a cell

chlorophyll - an organelle found inside chloroplasts that uses sunlight to make food for the cell

vacuole - an organelle that stores extra water and nutrients chloroplast - special organelles that contain chlorophyll

cell wall - a stiff structure that surrounds a plant cell and protects it from harm

lysosome - an organelle that gets rid of the waste inside a cell

## Page 2:

2 - lysosome

4 - golgi body

1 - vacuole

6 - cell wall

3 - chloroplast

5 - chlorophyll

## Page 3:

"Color the plant cell..."

# Day Two:

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

**The following text will give you the most important items to review for your activity today.**

The chloroplasts within plant cells contain a green chemical called chlorophyll which is used to make food for itself through a process called photosynthesis.

When the chloroplasts are blocked from a light source, their cells cannot produce food for themselves and they will perish.

# Who turned out the lights?

## Objective:

Children will change the patterns of a plant's light source.

## Materials:

small shrub, tree or houseplant

aluminum foil or cardboard

paperclips

scissors

## Procedure:

Find a plant you can use for an experiment.

Cut out random shapes out of the cardboard or aluminum foil that are big enough to cover nearly half of the plant leaf.

Paperclip each shape onto a different leaf.

Have the child predict what will happen to the leaf with these shapes on them.

After three-four days, remove the shapes from the leaves and compare the covered areas with the non-covered areas. Where the child's predictions correct?

## Explanation:

Green plants have the ability to make their own food in a process called photosynthesis. When light strikes the plant leaves, a green pigment called chlorophyll (which is found inside of the chloroplasts) starts making food for the plant.

Blocking the sunlight from a plant's leaves will keep the cells in these areas from making food. Without food, the cells will die. This is what you probably witnessed underneath the shapes attached to the leaves. The color change is due to the huge numbers of dead cells that could not get the resources they need to survive.

# Day Three: Lab Activity

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

**The following text will give you the most important items to review for your activity today.**

The protective peel surrounding an orange is similar to the protective wall that is found surrounding a plant cell.

Both an orange peel and a cell wall allows water and nutrients to enter and leave the structure.



## ESP Activity: Raising and lowering your vitamin C

### Objective:

Students will identify how an orange can float and sink in water.

### Materials:

several oranges (other citrus fruit will do as well)  
container of water (large enough to hold the orange)  
knife (optional)

### Procedure:

Place an orange into the container of water. Record whether it sinks or floats.  
Remove a portion of the skin from the orange.  
Place the orange into the water and record whether it sinks or floats.  
For experimentation, remove more of the peel and test the orange's ability to sink or float.

### Explanation:

An orange is more buoyant as its skin provides a water-tight boundary between the orange and the water. The inside of the orange (which is mostly a mixture of sugary, pulp-filled water) is denser than the water in the container. Without its skin to act as a life-preserver, it sinks to the bottom.

This outer protection is similar to how a cell wall protects the inside of a plant cell. Every orange has a stem on its top. This is where the nutrients from an orange tree can be sent into the orange itself! A cell wall has many similar openings, allowing materials into and out of, the cell!

**Independent variable:** Amount of skin on the orange

**Dependent variable:** Ability of the orange to float

### Hypothesis:

If the amount of skin on the orange is (increased/decreased), then the ability of the orange to float will (increase/decrease).