

3-D Cell Model Project

This project is due by **Monday, September 25, 2017**.

You are to choose **ONE** of the following options to build an animal or plant cell model. Please follow the instructions carefully. Failure to submit the required form of proof for a project = no project (or in other words, a grade of zero).

If you are emailing photos as proof of either of the edible cell models, then now is the perfect time to try out your Henry County Schools-issued email! My email address is monica.hendricks@henry.k12.ga.us.

Remember, be creative, HAVE FUN!!!

Option 1: Sell the Cell

Description/Directions: You have been asked to plan, design, and create a model for the purpose of aiding 5th grade students to understand the structure and function of the organelles of a plant or animal cell. You will choose a functioning system from their everyday lives, construct a 3-D model, and write a description using analogies to compare the parts of that system to the parts of the cell.

Example: The student would make a 3-D model of the school and then relate each part of the school represented in the model to the cell organelles with similar functions. The principal of the school is like the nucleus of the cell. (Creativity makes this limitless!!) You will then give a presentation to convince your audience that your model is a product that they can use to help learn cell structure and function.

Project Requirements:

- ✓ Show a clear relationship between the model and either a plant or animal cell.
- ✓ Model is 3-D.
- ✓ Model contains a representation of all the required organelles (nucleus, cell membrane, cell wall-if applicable, mitochondria, vacuole, cytoplasm, chloroplast-if applicable,
- ✓ The written analogy for each structure must clearly define the function of its associated organelle.
- ✓ The written description should include an explanation of how their representative model is part of the larger world (i.e. a school is part of a school system, a school system is part of the state school system, the state school system is part of the federal school).
- ✓ For each model you must show how materials are moved into and out of the system.
- ✓ Presentation given to class to describe your model and analogies (model must be brought in to class).
- ✓ Choose the appropriate question, based on the model that you built, to answer below:

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Option 2: Edible Cell Model (Animal Cell)

You will be creating a model of an animal cell using a variety of candy. Your task is to decide which candy would best represent the specific organelles, and build the model accordingly. Follow the directions below in order to complete this task. Remember, you must not eat any candy without permission to do so!

Supplies

- 1 fruit roll up
- 1 piece of wax paper
- Toothpicks
- Tape
- Assortment of candy

Directions

1. First, lay out your wax paper onto the desk.
2. Unwrap the fruit roll up and lay it flat on the wax paper. The fruit roll up will serve as the base of the model onto which all your organelles will be built. For our model, the fruit roll up is serving as the cytoplasm!
3. You must now decide what candy can best represent each organelle. Be prepared to explain why you chose each in the lab data chart below. The animal cell must include the following organelles, and each organelle must be labeled:
 - a. Nucleus
 - b. Cytoplasm
 - c. Mitochondria
 - d. Vacuoles (small)
 - e. Cell Membrane
4. After completing your model, you must take a picture of it and email the photo to your teacher.
5. Finally, you must complete the lab sheet below. In order to eat the cell model, all of the following steps must be completed.
 - a. Complete a full cell model with the candy and labels
 - b. Have taken a picture of the model and emailed it to teacher
 - c. Have completely filled out the accompanying lab sheet
 - d. Model checked by a parent/guardian and permission given to eat the candy

Animal Cell Model Data Sheet

In the chart below, fill out what candy you used for each organelle. Then, you need to justify why that candy is a good representation, and explain what the organelle does.

Organelle	Candy Used	Why?	Organelle Function
Nucleus			
Cytoplasm			
Mitochondria			
Vacuoles (small)			
Cell membrane			

What structures are different here than if you were building a plant cell? What might you have used to represent them?

Option 3: Edible Cell Model - Plant Cell

You will be creating a model of a plant cell using a variety of candy. Your task is to decide which candy would best represent the specific organelles, and build the model accordingly. Follow the directions below in order to complete this task. Remember, you must not eat any candy without permission to do so!

Supplies:

- 1 fruit roll up
- 1 piece of wax paper
- Toothpicks
- Tape
- Assortment of candy

Directions:

1. First, lay out your wax paper onto the desk.
2. Unwrap the fruit roll up and lay it flat on the wax paper. The fruit roll up will serve as the base of the model onto which all your organelles will be built. For our model, the fruit roll up is serving as the cytoplasm!
3. You must now decide what candy can best represent each organelle. Be prepared to explain why you chose each in the lab data chart below. The plant cell must include the following organelles, and each organelle must be labeled:
 - a. Nucleus
 - b. Cytoplasm
 - c. Cell Wall
 - d. Mitochondria
 - e. Vacuole (large)
 - f. Chloroplasts
 - g. Cell membrane
4. After completing your model, you must take a picture of it and email the photo to your teacher.
5. Finally, you must complete the lab sheet below. In order to eat the cell model, all of the following steps must be completed.
 - a. Complete a full cell model with the candy and labels
 - b. Have taken a picture of the model and emailed it to teacher
 - c. Have completely filled out the accompanying lab sheet
 - d. Model checked by a parent/guardian and permission given to eat the candy

Plant Cell Model Data Sheet

In the chart below, fill out what candy you used for each organelle. Then, you need to justify why that candy is a good representation, and explain what the organelle does.

Organelle	Candy Used	Why?	Organelle Function
Nucleus			
Cytoplasm			
Cell Wall			
Mitochondria			
Vacuole (large)			
Chloroplasts			
Cell membrane			

What structures are different here than if you were building an animal cell? What might you have used to represent them?
