

**Project FOCUS
Best Lessons
FIFTH GRADE**

Title of Lesson: 3D Animal Cell

Theme: Life Science

Unit Number: 1 Unit Title: Cells and Microorganisms

Performance Standard(s) Covered (enter codes):

S5L3a

S5L3b

S5CS3

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

cells, animal cell, plant cell, cell wall, cell membrane, mitochondria, chloroplast

Learning Activity (Description in Steps)

Abstract (limit 100 characters): Let the students get a hands-on appreciation for the different components which make up a cell.

Details:

Begin the class time by giving a brief explanation about the exercise and begin handing out the materials to each student – letting them all come up and get their own things is usually a dangerous proposition, and you will likely lose a lot of your supplies in the exchange. Then, explain to them the different organelles that correspond to each of the different candy types: gumball – nucleus, jelly beans – mitochondria, rubber bands – smooth and rough endoplasmic reticulum, gummy worm (folded up) – Golgi apparatus, red hots – lysosomes, yarn – microtubules and filaments (should be spread around the outside of the cell). Then, the students will have the rest of the time to glue their organelles onto the Styrofoam cells, and you can move amongst them giving help and answering questions where needed.

Materials Needed (Type and Quantity):

This exercise takes roughly an hour to accomplish depending on the size of the class you are working with and how many different organelles you plan to use in your models. The materials are

also dependent on these factors. As for my lesson, it took about an hour with twenty five students and for each student I also had:

- (1/2) Styrofoam Ball about six inches in diameter works well, but doesn't have to be exact.
- (1) Quarter sized gumball
- (3) Jelly-Beans, the larger the better
- (2) Rubber-Bands, one with dots drawn on it with a sharpie, one not
- About 10 inches of thin yarn
- (1) Gummy worm
- (4) Red-Hots candy

In addition, each student will also need glue for adhering the pieces to the Styrofoam, and a hot glue gun will be your best friend, as other types of glue don't work well.

Notes and Tips (suggested changes, alternative methods, cautions):

Background Information:

This exercise was done towards the end of the unit dealing with plant and animal cells, so before they had a chance to make these models, the students already had a firm grasp of cell structures and even organelle function. This is important because, it makes it easier to run the exercise smoothly when they don't have to ask as many questions about the subject matter, and can concentrate on gluing their organelles together!

Preparation:

In preparation for this exercise, you should cut all the Styrofoam balls in half prior to the class as this takes more time than you would think. They don't have to be cut in perfect halves, but smoothness is important, so if you can't get a smooth cut, get some sandpaper and make sure the surfaces are smooth to facilitate easy gluing. Also, half of the rubber-bands need little dots drawn on them with a sharpie to represent the ribosomes on the rough endoplasmic reticulum. In addition, I made one of the complete models before class so I could show the students an example of the finished product to base their work after if they had any questions.

Assessment:

The exercise will likely take long enough so that the assessment will come during the next teaching session, and so I told my students to take their cells home and show them to their parents and siblings and try to explain to them what each different piece stood for and what it's function was. Then, during the next class period, I asked the same questions and gave out candy to those who got the questions right. Make sure to bring your model back in the next class, because some of the students will undoubtedly lose or leave their models during the interim. The assessment of this exercise is fairly straight forward as all of the questions deal directly with what the students were doing directly, the key is remembering it over the span of several days between classes.

Sources/References:

- 1) Harcourt Science Publishers "Science Grade 5"
- 2)
- 3)