

Animal Cell



Cells:

Understanding a Basic Structural Unit Through its Organelles!

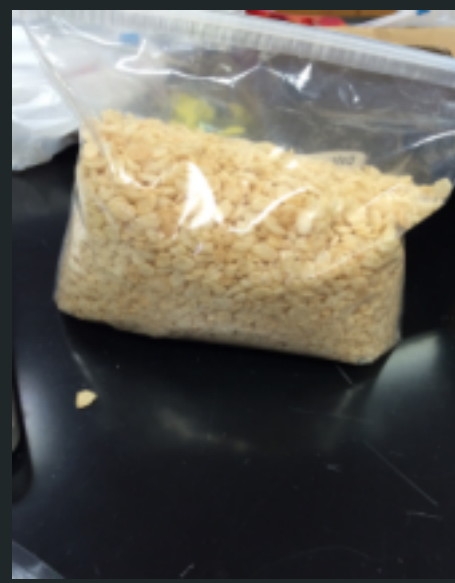
By: Cool Kids

Cell Membrane

Rice Krispies were used to resemble the cell membrane. A cell membrane is there to protect and support the cell. Because it is semi-permeable, it controls the movement of molecules in and out of the cell. The cell membrane moves molecules by diffusion (ion channels), active transport (membrane pumps), endocytosis (into the cell), and exocytosis (out of the cell).

We decided to use Rice Krispies because they are thin and porous. The holes in the cereal allow certain things to pass through it (such as milk) like the cell membrane does. Also, the Rice Krispies hold the animal cell's circular shape.

<http://www.ivyroses.com/Biology/Cells/Cell-Membrane-Function.php>



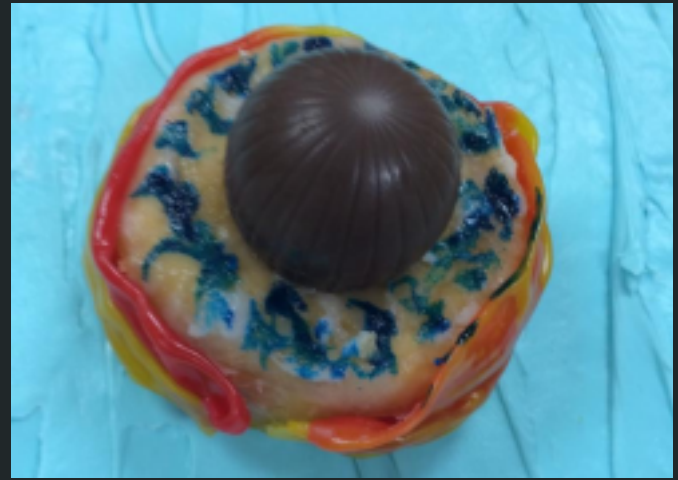
Chromatin

We chose to use a marker with edible ink for the Chromatin within our Nucleus. The function of chromatin is to quickly package DNA into a small volume to fit into the nucleus of a cell and protect the DNA structure and sequence. Packaging DNA into chromatin allows for mitosis and meiosis, prevents chromosome breakage and controls gene expression and DNA replication. Proteins (such as histones) participate in giving the structure of Chromatin its shape.

<http://www.abcam.com/epigenetics/chromatin-structure-and-function-a-guide>

We used the edible-ink marker because DNA sequences are written (5' at the start and 3' at the end). So, we decided to *draw* the Chromatin on the nucleus with the blue marker.

http://www.bioinformatics.nl/molbi/SCLResources/equence_notation.htm



Cytoskeleton

Pull-&-Peel Twizzlers were chosen to show the cytoskeleton in our cell. The cytoskeleton is especially important to an animal cell because it must help the cell membrane keep its structure. The cytoskeleton continually builds and rebuilds. This then leads to forces moving in and out of the cell. These tubes are also responsible for guiding the organelles from place to place, and control the movement of chromosomes from the splitting nucleus to the daughter cell's nucleus.

The reason why we chose these connected twizzlers was that they have a tubular shape. Because the structure of the cytoskeleton contains microtubules (cylindrical tubes), the candy and cell part have a clear resemblance to one another.

<http://hyperphysics.phy-astr.gsu.edu/hbase/biology/cytoskel.html>



Cytoplasm

The cytoplasm is a fluid that fills the cell. The cytoplasm is a gel-like substance held in by the cytoskeleton. According to http://www.biology4kids.com/files/cell_cytoplasm.html, there are many molecules that make up the cytoplasm. These molecules include enzymes, fatty acids, amino acids and sugars. They are dissolved in the solution. Cytoplasm is also responsible for keeping the organelles stable inside the cell.

We used green cookie icing to represent the cytoplasm. Like the cytoplasm, cookie icing is made of a mixture of ingredients. Sugar, water, corn syrup, gum arabic, propylene glycol, alginate, xanthan gum, Green 3, potassium sorbate (preservative), natural and artificial flavor, and citric acid were the ingredients used. If we didn't mention what was in the cookie icing, you would have had no clue what was in that green gel-like icing.



Golgi Body

As you can see in the picture on the right, we used pancakes to make our Golgi Body, or Golgi Apparatus. The Golgi Body can be found in many cells, and is a packaging organelle like the endoplasmic reticulum (ER). It gathers simple molecules and links them together to make complex molecules. Then, it takes those larger molecules and packages them into vesicles, where they are either stored for use in the future or shipped out of the cell. Lastly, the Golgi Apparatus can build the organelles known as lysosomes.

We chose pancakes as the material to make our golgi apparatus not only because http://www.biology4kids.com/files/cell_golgi.html claims that they hold a resemblance, but also because they perform a similar function. The Golgi Apparatus absorbs vesicles from the Rough ER, just like the pancakes absorb syrup when it is poured upon them.

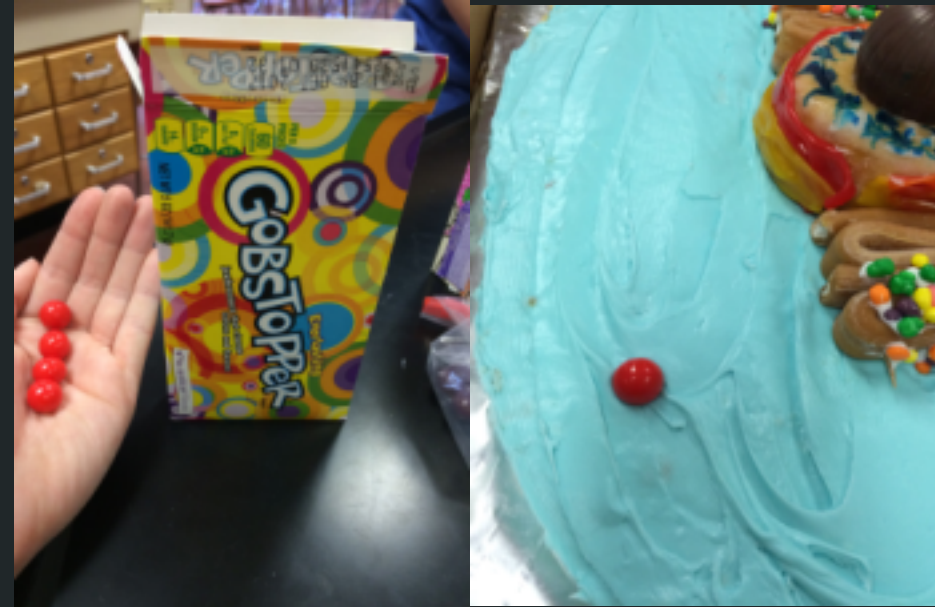


Lysosome

For this project we used Gobstoppers for the lysosome. We picked Gobstoppers because they are small, rounded and are built somewhat with a membrane. In other words, the gobstopper is originally red, but once the outside, or membrane, of it is eaten off, the orange inside it revealed.

Lysosomes are mostly used for removing waste and other materials that are not needed in the rest of the cell. The lysosome contains a digestive acid that helps with the breaking down of the waste.

www.biology4kids.com/files/cell_lysozyme.html



Mitochondrion

For the mitochondria, we chose to use jelly beans. Because mitochondria are bean shaped structures, we thought “What better candy to use than a jelly bean”? So, that was just what we did. We used these because they have a similar structure and/or shape to that of this organelle.

In a cell, the mitochondria are responsible for the production of energy currents. This happens through respiration and also through regulate cellular metabolism. ATP is also something that has a big hold on this because of the citric acid cycle. The citric acid cycle is a series of chemical reactions used by all aerobic organisms to generate energy.

www.biology4kids.com/files/cell_mito.html



Nuclear Membrane

We used a fruit roll-up for the nuclear membrane for a few reasons. From what

https://en.wikipedia.org/wiki/Nuclear_membrane says, the nuclear membrane has two layers and is permeable, which means that it has openings to release gases and liquids. One reason that we used a fruit roll-up for the nuclear membrane is because they are two different colors and we layered them so it looks like there is two layers, which there is in the membrane.

Another reason we used the fruit roll-ups is because it somewhat looks like there are tiny holes in the fruit roll-up, which makes it look like gases or liquids could come out of them.



Nucleolus

For nucleolus we used the chocolate ball because it was in a rounded shape like the nucleolus in a real cell. Another reason why we chose this type of candy was because it is hollow. This was important because inside the nucleolus there are DNA strands. So, we used the chocolate because it was hollow, and could theoretically be filled with genetic material

The nucleolus makes subunits from proteins and ribosomal RNA. After it makes the subunits it will send them to the rest of the cell. The nucleolus is also one for holding the chromosomes that hold your genes. So it is pretty much the blue prints for your body.

www.els.net/WileyCDA/ElsArticle/refld-a0005975.html



Nucleus

We used a glazed donut for the nucleus. We did this for a few reasons. From what http://www.biology4kids.com/files/cell_nucleus.html says a nucleus has pores to release DNA and a donut also has pores to release steam. The nucleus is a very important part of the cell and I think that glazed donuts are very important too. :) The nucleus is almost like the brain of the cell.

Another reason that we used the donut for the nucleus is because the nucleus is circular and so is the glazed donut.



Ribosome

For ribosomes we used Nerds because they are able to mimic how the ribosomes connect to the rough endoplasmic reticulum.

Ribosomes are responsible for making the proteins in all living cells. This happens when RNA is put through protein synthesis. This is the main reason why there are so many ribosomes in a cell.

ma.ucsc.edu/macenter/ribosome.html



Rough Endoplasmic Reticulum

We used a Cow Tale and Nerds for the Rough Endoplasmic Reticulum. From what

http://www.biology4kids.com/files/cell_er.html

says, the rough endoplasmic reticulum has ribosomes on it and we used nerds for the ribosomes. Ribosomes are responsible for the making of proteins in the cell. Rough endoplasmic reticulum packs in proteins and is very important in synthesis. We used cow tales for the smooth endoplasmic reticulum, so we just added nerds as the ribosomes.



Smooth Endoplasmic Reticulum

We used a Cow Tale for the smooth endoplasmic reticulum for a couple of reasons. From what http://www.biology4kids.com/files/cell_er.html says, the smooth endoplasmic reticulum is somewhat flattened. We had to flatten the Cow Tales because they came circular shaped. Another reason we used the Cow Tales was because the middle of the smooth endoplasmic reticulum is a different color than the outside, and the middle of the Cow Tales is white.

The smooth endoplasmic reticulum stores lipids and steroids. These have many purposes in the organism.



Vacuole

We chose to use Gushers for the vacuoles in our Animal Cell. Vacuoles are kind of like the “storage bins” of cells. According to http://www.biology4kids.com/files/cell_vacuole.html, vacuoles store food or any other variety of nutrients that a cell needs to survive. It can also store waste products to keep the cell from getting contaminated. Sooner or later, those wastes would be ejected from the cell. Within the membrane of a vacuole, there is a large mass of fluid. This fluid contains the nutrients and waste products mentioned above.

We thought that gushers would be a perfect fit to be the vacuoles for our cell because it has a similar structure to that of a vacuole. For instance, the gusher has a gummy outside that keeps the fruit-flavored gel within the snack. This is like the vacuole because the organelle also has a thick outside layer, or membrane, that keeps the fluid inside of the structure.

