

## 7<sup>th</sup> Grade Science - Jello 3-D Animal Cell Project Information

The project is due by November 14, 2012, but can be turned in any time before then.

Required:

1. A **write-up** of the process, from the beginning to the end. This should be no longer than one page, but no shorter than a long paragraph. Explain any challenges you had and how you overcame them.

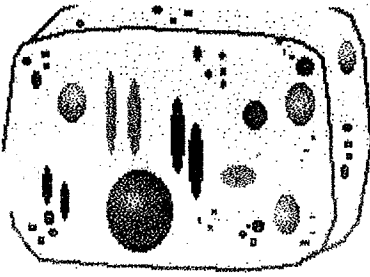
The write-up should include a **parent signature**.

2. A **printed photograph** of you holding your finished 3D Jello Cell (if you cannot print a picture, then draw a full page sketch of your cell).

3. A **list of the ingredients** you used and what they stood for in your model.

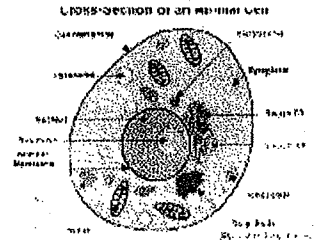
Please staple all three pages together, in the order above.

Both the write-up and the list should be **typed**.



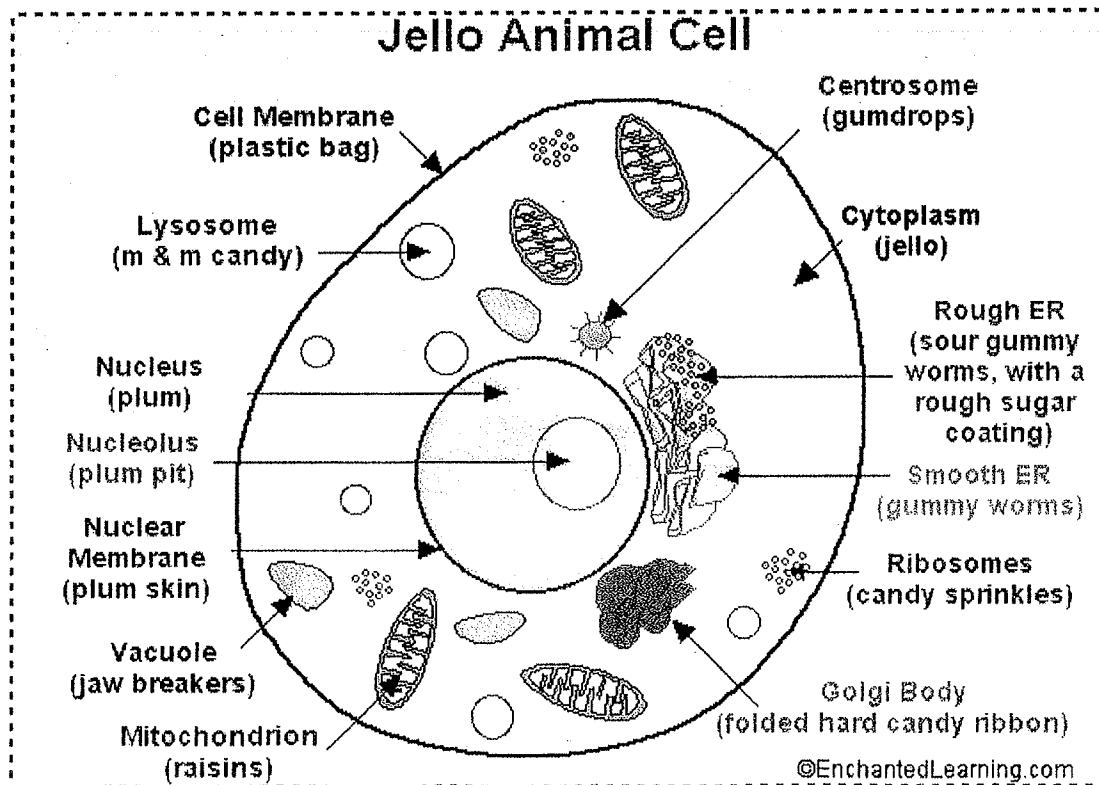
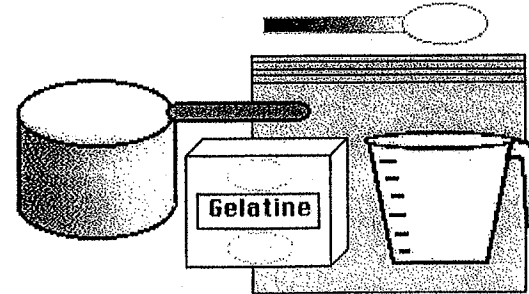
# Jello 3-D Animal Cell Craft

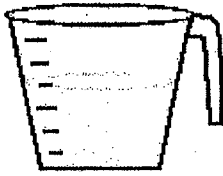
This project lets the student make an edible, 3-D model of an animal cell. The various organelles of the cell are represented by fruits and candies. When you've finished making your cell and writing about it, you can eat it!



## Supplies:

- Gelatin, either a light-colored Jello (like lemon) or unflavored gelatin with sugar or juice added
- Water
- Spoon (to stir the gelatin)
- Microwave or stove (used to heat the water)
- A small but sturdy plastic bag to make the gelatin in (we used 1-gallon ziplock bags)
- Various fruits and candies used to represent the parts of the cell: raisins, gummy worms (plain and sour), gumdrops, gum ball, jelly beans, grapes, mandarin orange sections, sprinkles, M&M's, jaw breakers, a small stone fruit (like a plum), dried fruit, and/or hard candy. Note: marshmallows will float on top of the gelatin, so they don't work well in this craft.
- Refrigerator (used to set the gelatin)

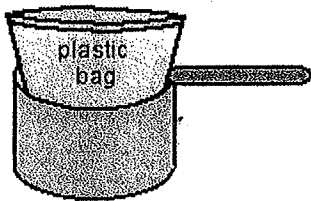




Make the light-colored Jello or gelatin, but make it with a bit less water than the instructions call for (this will make the gelatin a little stiffer and will make the cell components stay in place better). The gelatin will represent the cytoplasm of the cell.

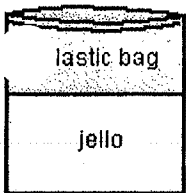
First, heat the water to boiling (use about three-quarters of what is called for in the instructions). Dissolve the gelatin in the hot water and carefully stir it. Carefully add the same amount of cold water.

②



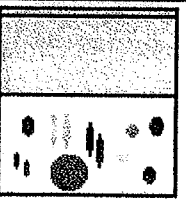
Place an open plastic bag (we used 1-gallon ziplock bags) inside a sturdy container (like a large bowl or pan) - this makes pouring the Jello easier. Slowly pour the cooled gelatin into the bag - make sure that there is room in the bag for all the cell components that will be added later. Seal the bag and put it in the refrigerator.

③



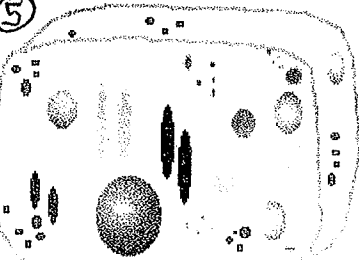
When the gelatin is almost set (this takes about an hour, but depends on the temperature of your refrigerator), open the bag and start adding the components of the cell.

④



Re-seal the plastic bag and refrigerate the gelatin until it is fully set.

⑤



When the gelatin is set, you can examine your 3-D gelatin cell and then eat it.

Cell components (we've included what we used for our model, but you can choose whatever edible parts you like):

**cell membrane** - the thin layer of protein and fat that surrounds the cell. It is represented by the plastic bag.

**centrosome** - a small body located near the nucleus. It has a dense center.

This is where microtubules are made. During cell division (mitosis), the centrosome divides and the two parts move to opposite sides of the dividing cell. It is represented by a gum ball.

**cytoplasm** - the jellylike material outside the cell nucleus in which the organelles are located. It is represented by the gelatin.

**Golgi body** - (also called the Golgi apparatus or Golgi complex) a flattened, layered, sac-like organelle that looks like a stack of pancakes and is located near the nucleus. It produces the membranes that surround the lysosomes. The Golgi body packages proteins and carbohydrates into membrane-bound vesicles for "export" from the cell. It is represented by folded ribbons of hard candy.

**lysosome** - (also called cell vesicles) round organelles surrounded by a membrane and containing digestive enzymes. This is where the digestion of cell nutrients takes place. They are represented by M&M's.

**mitochondrion** - spherical to rod-shaped organelles with a double membrane. The inner membrane is infolded many times, forming a series of projections (called cristae). The mitochondrion converts the energy stored in glucose into ATP (adenosine triphosphate) for the cell. They are represented by raisins.

**nuclear membrane** - the membrane that surrounds the nucleus. It is represented by the plum's skin.

**nucleolus** - an organelle within the nucleus - it is where ribosomal RNA is produced. Some cells have more than one nucleolus. It is represented by the plum pit.

**nucleus** - spherical body containing many organelles, including the nucleolus. The nucleus controls many of the functions of the cell (by controlling protein synthesis) and contains DNA (in chromosomes). It is represented by the plum.

**ribosome** - small organelles composed of RNA-rich cytoplasmic granules that are sites of protein synthesis. They are represented by candy sprinkles.

**rough endoplasmic reticulum** - (rough ER) a vast system of interconnected, membranous, infolded and convoluted sacks that are located in the cell's cytoplasm (the ER is continuous with the outer nuclear membrane). Rough ER is covered with ribosomes that give it a rough appearance. Rough ER transports materials through the cell and produces proteins in sacks called cisternae (which are sent to the Golgi body, or inserted into the cell membrane). It is represented by sour gummy worms.

**smooth endoplasmic reticulum** - (smooth ER) a vast system of interconnected, membranous, infolded and convoluted tubes that are located in the cell's cytoplasm (the ER is continuous with the outer nuclear membrane). The space within the ER is called the ER lumen. Smooth ER transports materials through the cell. It contains enzymes and produces and digests lipids (fats) and membrane proteins; smooth ER buds off from rough ER, moving the newly-made proteins and lipids to the Golgi body, lysosomes, and membranes. It is represented by gummy worms.

**vacuole** - fluid-filled, membrane-surrounded cavities inside a cell. The vacuole fills with food being digested and waste material that is on its way out of the cell. They are represented by jaw breakers.