The Big Cell Project

Here we go again—that crazy Professor Elodea got us in trouble once more. She was experimenting with a top secret Defense Department ray generating device that was supposed to inactivate the atomic spin of the valence electrons of the essential carbon atoms of anything that walked in front of the ray. Of course, no one really knew whether the device was real or virtual—was it a real threat or just another deterrent created by the imaginative professor? Unfortunately, the good professor brought her newest device to the University of Chicago, to in her words, "show it to a bunch of know nothing professors." Of course, the University of Chicago professors, who are serious reality minded types, were skeptical about the viability of her device, so Dr. Elodea brought the device to the Lab Schools; she thought that kids would be more open-minded. The Lab Schools students, in their rush to see the new instrument, walked in front of the running device, and the ray reduced the subatomic spaces that surround each of the carbon atoms that make up the organic molecules in the bodies of the students. In other words—"It Shrunk the Kids!"

You can imagine how worried Mr. Wright was! What would he tell the parents? He started to think that it might be an advantage—the kids would eat less and getting to school would not be a problem—the kids could be mailed to school now. Despite this brilliant idea, Mr. Feldman was still worried that the parents might not appreciate miniature children, so he asked Mrs. Kogelman, and Mr. Wagner to contact the Defense Department to solve the problem. But, as luck would have it, the government was bogged down with worries about the economy and the war on terrorism. No one had time to worry about some shrunken kids. Dr. Elodea was no help at all; she didn’t even know how it all happened.

Until a solution is discovered, students will just have to continue to be small, tiny, and otherwise miniature. Since everyone is small, we can use it to our advantage, and take a field trip to a cell.

In order to prepare you for this virtual cell tour, each group of two to three students will be assigned an organelle. You will research the size of that organelle, and create a three-dimensional model to scale. Of course, you will need to know what the organelle does, what other organelles it interacts with, and how its function is vital to the cell.

How to Make an Organelle:
1. Do research, using your textbook the library and the Internet to find out basic information about your organelle or cell structure. Find out the size, shape, structure and function of the organelle.

2. Get a picture of your organelle.

3. Decide what materials you will need to build your organelle. Remember, it must be three-dimensional.

3. Figure out how big your organelle should be. Use the following formula to help you. See your teacher if you need help on this.

\[ x \text{(the size of your organelle in cm)} = \frac{\text{real organelle size} \times 243 \text{ cm}}{\text{real cell size}} \]

So, for example, if your organelle's real size is 3um, and the real cell size is 10um, you would set up the equation this way:

\[ x = \frac{3\text{um} \times 243\text{cm}}{10\text{um}} \]

\[ x = .3 \times 243 \]

\[ x = 72.9\text{cm} \]

So, the length of the organelle should be 72.9cm

To figure out width, use the same formula.

Show your work on your organelle paragraph.

4. Finally, after your organelle is made, and you have a one paragraph (minimum) written explanation of your organelle, you will bring it to class, and explain your work to the class.

5. We will bring our organelles to the “Big Cell” and try to solve some cell problems together.

**Due Date:** ___________________________