

Please hand in grading sheet with your project or -3pts

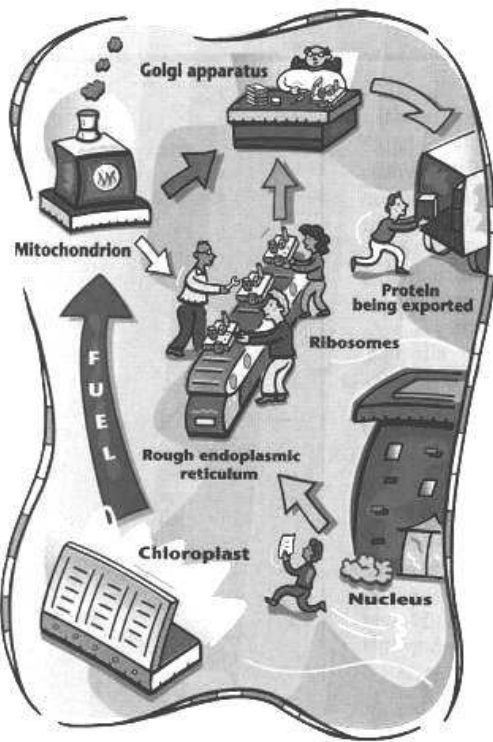
**Cell mini project: Choose one of the following options to complete. This is a 50 point assignment.**

**OPTION A: ( 50-60 pts)**

**Cell City poster**

**The Cell as a Factory – The Cell as a City**

Now that you have read about how each part of the cell functions, let's look at how the cell as a whole works. In some respects, a eukaryotic cell is very much like a factory. Although cells perform many different functions, one of the most important jobs carried out in the cellular "factory" is making proteins. The picture shows how manufacturing proteins in the cell is manufacturing a product in a factory. The walls and roof of a factory building are supported by steel or concrete beams and columns. Some cells also have a supporting structure—the cytoskeleton.



**Directions:**

1. Create a drawing of a “cellular city”.
2. Indicate if you are drawing an animal or plant cell city by giving your city a name.
3. Include at least 10 of the following organelles

- |                 |                       |
|-----------------|-----------------------|
| Chloroplast     | endoplasmic reticulum |
| Chromosomes     | cell wall             |
| Nucleus         | mitochondria          |
| Cytoplasm       | nucleolus             |
| Ribosomes       | vacuole               |
| Centriole       | cell membrane         |
| Golgi apparatus | nuclear membrane      |
| Lysosome        |                       |

**BONUS: +2 each extra organelle shown**

4. Color your drawings, label and identify your work.
5. Include a key so I know what represents each organelle.
6. Explain why you chose each city part to represent that organelle.

**Grading:**

\_\_\_\_\_ City Name ( 1 pts)

\_\_\_\_\_ Creativity/use of color ( 10 pts)

\_\_\_\_\_ Correct science. Make sure you do not create an “it” cell (10 pts)

\_\_\_\_\_ effort/completeness (10 pts)

\_\_\_\_\_ Notes included ( 10 pts)

\_\_\_\_\_ Explanation of why you chose each city part to represent that organelle (10 pts)

Grade:
--------

NAME \_\_\_\_\_

DUE \_\_\_\_\_

**Please hand in grading sheet with your project or -3pts**

**Option B: ( 50-55 pts)  
Organelle want ad:**

Write a want ad for the 8 organelles which you selected on the card I gave you. There is a ninth organelle which you may do for extra credit. (+2) ***You must hand the card in with your want ads.***

In your ad you must include:

- The name of the organelle
- The job description (the function of the organelle)
- The responsibilities of the organelle (what other organelles does it work with and how does it interact with them)
- Where and how to apply (be creative and make this up)
- A salary. (be creative. Make your salary reflect the importance of the organelle.)

**Grading: for each add (Remember, you must do 8! You will lose points in every category if you fail to do 8) –**

\_\_\_\_\_ grammar and spelling & Neatness- typed, or written without cross -outs. NO pencil!  
(5 points)

\_\_\_\_\_ Creativity & where/how to apply salary (10 pts)

\_\_\_\_\_ Job descriptions (functions) correct (24 pts)

\_\_\_\_\_ Responsibilities given (8 pts)

\_\_\_\_\_ Effort (3 points)

\_\_\_\_\_ Bonus +5 if you can format your ads as if it was the want ad section of the newspaper.

**57 points possible:**

Grade:
--------

**Please hand in grading sheet with your project or –3pts**

### OPTION C (51-59 points)

The vocabulary that you need to know for the Living Environment Regents Exam might seem like a foreign language to you. Sometimes, putting some of the technical words into songs that define them will help you remember what they mean. For example:

Technical information: iodine is an indicator.  
It indicates starch by turning blue.

Technical information: Dehydration synthesis is a reaction in which two smaller molecules are joined together by removing 2 hydrogens (H's) and 1 oxygen (O's) from the molecules, thus producing water and a larger molecule.

WE LOVE YOU IODINE  
(to the tune of "We Love You Conrad")

We love you iodine  
Oh yes, we do.  
When you are with some starch  
You're blue...  
You heal our cuts and scrapes

Song: (to the tune of "Yakity-Yak")

Take out the H's and the O's!  
Or you'll get water in your nose.  
It's de-hy-dra-tion syn-the-sis.  
Water's a product, yes it is!  
Yakity-yak, water don't come back.

**Directions:** Your topic is the organelles of a cell. Go back to your notes AND text book. Write a song based on the names of the organelles and their functions. Usually it works well to use an existing tune and put your new lyrics to the known tune (like above "Iodine" song). When you turn in your song, use the above examples as a guide:

- (1) Make notes about the organelles and if they are plant/animal organelles.
- (2) Describe the interactions of the organelles with other organelles.
- (3) write your song.

Include the following organelles

endoplasmic reticulum  
Nucleus  
Cytoplasm  
Vacuole

Chromosomes  
mitochondria  
Ribosomes  
cell membrane

### Grading:

\_\_\_\_\_ Creativity & Effort ( 10 pts)

\_\_\_\_\_ Correct science- Be sure to give the function of each organelle ( 16 pts)

\_\_\_\_\_ Technical notes (10 pts)

\_\_\_\_\_ Relationships between the organelles. How does it interact with other organelles(10 pts)

\_\_\_\_\_ neatness/ grammar/ spelling ( 5 pts)

**Bonus: Perform your song for the class +5 ( +8 if you can get the class to sing along)**

**55- 58 points possible.**

Grade:

**Option D:  
3D model of the Cell- 54 points possible**

Build a 3D model of the cell. ( It must be constructed not a drawing). You may use any materials you want, but you will need to provide them. FYI- jello is often suggested, but it is very hard to work with and I would not recommend it.

1. Include all the following organelles:

Mitochondria

Chromosomes

Nuclear membrane

Cytoplasm

Ribosomes

Lysosome

Endoplasmic reticulum

Cell membrane

Golgi apparatus

Nucleus

Nucleolus

Vacuole

2. Then, decide if you want to make a plant cell **OR** an animal cell and include the cell wall and chloroplast **OR** the centriole. Be sure to make the shape of your cell correct.
3. Build your organelles as realistically as possible. Make them look like they do under the electron microscope.
4. Label the organelles and their functions either on your model or on a separate key.

**Grading: No credit if not 3D**

\_\_\_\_\_ Appearance: organelles look realistic ( like microscope pictures) / shape of the cell /plant cell OR animal(13 points)

\_\_\_\_\_ Science: are the functions correct? (13 points)

\_\_\_\_\_ Completeness: required organelles shown & clearly labeled. Are the functions complete? (13 pts)

\_\_\_\_\_ Notes handed in ( 5pts)

\_\_\_\_\_ effort ( 5 points)

\_\_\_\_\_ neatness/grammar/ spelling of the labels and functions.(5 points)

Grade:
--------

**Option E:****Cell Catalog ( 58 points possible)**

Your catalog must include the following:

1. A **catchy cover** with a *slogan* and your name. \_\_\_\_\_ **3 pts**

2. You must include at least the following organelles

endoplasmic reticulum

Nucleus

Cytoplasm

Vacuole

Chromosomes

mitochondria

Ribosomes

cell membrane

**For each organelle you will need to include**

**\*\* A picture ( Xerox or from the web):** remember footnote. \_\_\_\_\_ **16 pts**

Picture should be accurate, electron microscope image (-8 for no footnotes)

**\*\* Creativity / description of the organelle's function.** This description should include the organelle's job in the cell. It should answer such questions as why is the organelle important? Why would I want to buy one for my cell? **The description should be written creatively so that it reads like a catalog entry.** Remember to be **creative**.

Make your catalog as much like a catalog you would receive in the mail as possible. This is a chance for those of you who are creative to excel! Do not plagiarize (-16 points)

\_\_\_\_\_ **24 pts**

4. Your organelle descriptions should be **typed or written neatly** (no cross-outs) and biologically correct. \_\_\_\_\_ **5 pts**

5. You will need to include a **bibliography** with at least five sources cited. This will be the last page of your catalog. You must use scientific format for your citations. \_\_\_\_\_ **5 pts**  
**Project will not be accepted without bibliography.**

6. **Creativity and effort** \_\_\_\_\_ **5 pts**