**Cell Structure and Function Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Goal: Develop and use a model to describe the function of a cell as a whole, and ways parts of cells contribute to the function.**

Step One: Use the internet, your textbook, and other resources from Mrs. Adams to research the different parts of a cell.

* You MUST research 5 parts of a cell. You may want to think about researching the following parts: Cell Wall, Cell (Plasma) Membrane, Nucleus, Chloroplasts, and Mitochondria.
* And may research any of these parts: Ribosomes, Rough and Smooth Endoplasmic Reticulum, Golgi Apparatus (Body), Cytoskeleton, Vacuole, Lysosome.
* Use the form provided by Mrs. Adams to help you in your research. **Mrs. Adams will collect your notes**. ***You must use at least 3 different resources when researching.***

Step Two: Choose a specific type of cell and research the special function (job) of that cell. Options include:

* Green Plant cell - Nerve cell (in the nose, ear, brain, hands/feet, etc.)
* Muscle cell - White blood cell - Bone cell - Red blood cell
* Other cell you are interested in (with teacher permission) - Amoeba - Bacteria

Step Three: Choose one of the projects below to present the information you learned to Mrs. Adams and the class.

1. **Cell v2.0**

Now days, you can buy almost anything online. What if you could buy the parts of a cell online? Your task in this assignment is to create a webpage that sells cell parts in order to “create your own cell.” Your webpage should sell at least 5 cell parts necessary for the function of the specific type of cell you researched.

1. Your web page must include:
	1. a written description of each part,
	2. a “sales pitch” that gets you to buy all the parts by explaining how they work together.
	3. the price for each part
	4. a full-color diagram to illustrate your “product” (the specific type of cell).
2. **3D Cell Model**

You will be responsible for making a model of the specific type of cell you researched. All models must be made out of materials that will not spoil or fall apart easily. Some materials to consider using: play dough, yarn, aluminum foil, pepper, pipe cleaners, cardboard, paper, glue, etc. Your model must include at least 5 cell parts necessary for the function of the specific type of cell you researched.

1. Your model must:
	1. Have each part of the cell labeled with its name and a description of its job.
	2. Illustrate the relationships between parts (how do they work together?)
	3. Be neat and creative
2. **Cell Funnies**

Design a cell cartoon strip in which each cell part believes it is the most important of all the cell parts. You must include at least 5 cell parts in your cartoon that are important for the type of cell you researched.

1. Your cartoon must:
	1. Provide reasons why each cell part thinks it is better than the others, using information about the job of each part.
	2. Include jokes/debate/discussion that illustrates how the cell parts work together.
	3. Be neat, colorful, and at least 10 frames.
2. **Help Wanted**

A new Cell Factory has moved into town! This has caused a need for immediate openings for all parts involved. Create a help wanted ad for at least 5 cell parts in the form of a newspaper ad.

1. The help wanted advertisements must:
	1. Use 5 parts necessary for the type of cell you researched.
	2. Creatively describe the job of each cell part
	3. Explain how each part must “work well with” other parts of the cell
2. The help wanted ad must NOT:
	1. Include the actual name of the part! Include this information on a separate sheet of paper.

Here is a sample of what your ad might sound like:

*Looking for a great opportunity to lead? Do you enjoy making decisions for others? Is guidance your strong point? If so, we are seeking to fill a managerial position. We are in need of a control center for a cell. Must be able to operate a cell. Should have solid experience reading and decoding DNA. Should exhibit strong leadership skills and work well with factory protein-makers. Benefits include: placement in low-stress arm cells, long life guaranteed…you don’t die, you just divide and multiply! If interested contact The Body 817-8WE-CELL.*

1. **Cell Analogies Poster**

An analogy is a comparison between two things that have similar characteristics but are otherwise different. In this assignment you will be challenged with coming up with an analogy for the type of cell you researched. Think about how this cell is like a school, factory, city, subway, amusement part, football, game, etc. In your analogy you must include at least 5 parts that are necessary for the cell to function.

1. Your poster must include:
	1. People or objects analogous to the parts of the cell you choose to include.
	2. Pictures that match the analogy being made.
	3. Neatly labeled parts and descriptions of the job of each part
	4. An explanation of how the parts work together to allow the cell to function.
2. **Cell Travel Brochure**

Your assignment is to create a travel brochure a new “cell attraction” like a resort, park, island, circus, etc. based on the specific type of cell you researched. Make people want to go to your new fun, relaxing, tourist destination. Your attraction must include at least 5 cell parts necessary for the type of cell you researched. You may be as creative, artistic, and humorous as you like; however, you must clearly show your understanding of the cell and its parts.

1. In your travel brochure make sure you:
	1. Label each cell part and include a description of each parts job.
	2. Describe how different parts of the “attraction” work together to make the (cell) attraction function
	3. Brochures must be easy to read, look professional, and include pictures.
2. **Journey into a Cell**

In this project you will write a creative story about the inner workings of the type of cell you researched.

1. In your story make sure you:
	1. Include at least 5 different parts of the cell that are necessary to its function and survival
	2. Describe how the different parts work together
	3. Have correct spelling, grammar, punctuation, and paragraphing.

Here is a general outline for your story:

* *Introduction* - Describe the setting of your story. How did you get into the cell? What kind of cell are you in? What do you see going on around you?
* *Body 1* – What is happening to you? Begin to develop the plot. What is it like to be inside of a cell? What is the focus of the story? Will you be trying to get out of the cell, or will something happen to you? Is there something wrong with the cell?
* *Body 2* – Continue the adventure. How are you traveling around the cell? How are you reacting to what is happening inside the cell? How are the different parts reacting to you? Can you fix the problem?
* *Conclusion* – Resolve the adventure. How will your story end? How will you leave the cell (if you do)? Tie up all of the loose ends in this section.

In-Class Work dates/times: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Due Date** for project: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rubric for Grading:

**Due Date**: Monday, March 23

**Work times**: you will have 3.5 days in class to work on this project, the rest will be completed at home

**Materials**: Mrs. Adams will provide small materials like, glue, tape, paper, colored pencils, etc. All other materials will have to be found or purchased by you.

**Presentations**: We will have an ‘open house’ that showcases all the work we did for this project before spring break. It will be like walking around the science museum looking at different exhibits.

**Medium**: Projects may be done by hand or on the computer, depending on the type of project chosen. However, ALL projects must be done in a way so that they are presentable to the class in our ‘open house.’

**Grading Rubric:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **4** | **3** | **2** | **1** |
| **Instructions** | All specific requirements given in the instructions (e.g. color, pictures, frames, labels, etc) have been thoroughly fulfilled in the project. | All but 1 specific requirement given in the instructions (e.g. color, pictures, frames, labels, etc) have been fulfilled. | Most specific requirements given in the instructions (e.g. color, pictures, frames, labels, etc) have been fulfilled. | Many specific requirements (e.g. color, pictures, frames, labels, etc) are missing from the project. |
| **Neatness** | The project is especially professional, neat, and has few grammatical or spelling errors. | The project is neat with some messiness and/or grammatical or spelling errors. | The project is lacking in professional quality with messiness and grammatical or spelling errors. | The project has many grammatical or spelling errors and/or is extremely messy. |
| **Information****(x3)** | The project shows a significant understanding of the topic with detail. It includes correct facts and information about structure and function of all the cell parts and how they work together. | The project shows an understanding of the topic with 1-2 errors in information about cell organelles OR there is a lack of details about the relationship between the cell parts. | The project shows some understanding of the topic with 3-5 errors in information about parts of a cell OR there is a lack of details about the structure and function of the parts and how they work together. | The project shows a lack of understanding due to 6 or more mistakes in information OR no details about the structure and function of the organelles are given. |
| **Promptness** | Project was turned in during the class period. | Project was turned in at the end of the day. | Project was 1-2 days late. | Project was more than 2 days late. |
| **Cell Parts**(+1/2 pt for each additional part) | 5 parts of the cell were included in the project | 4 parts of the cell were included in the project | 3 parts of the cell were included in the project | 2 or fewer parts of the cell were included in the project. |

**TOTAL: \_\_\_\_\_\_\_\_\_\_\_\_ / 28**

**Grading Scale:**

**27-28 A**

**26 A-**

**25 B+**

**24 B**

**23 B-**

**22 C+**

**21 C**

**20 C-**

**19 D+**

**18 D**

**17 D-**

**16 and below F**

**Cell Part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Plant Cell Animal Cell Both Other

Location within cell? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number per cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Describe what would happen if the cell did not have this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sketch out a quick model of what this cell part looks like. Label any important features, **like what it is made of**.

**Cell Part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Plant Cell Animal Cell Both Other

Location within cell? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number per cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Describe what would happen if the cell did not have this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Sketch out a quick model of what this cell part looks like. Label any important features, **like what it is made of**.

**Cell Part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Plant Cell Animal Cell Both Other

Location within cell? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number per cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Describe what would happen if the cell did not have this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Sketch out a quick model of what this cell part looks like. Label any important features, **like what it is made of**.

**Cell Part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Plant Cell Animal Cell Both Other

Location within cell? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number per cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Describe what would happen if the cell did not have this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Sketch out a quick model of what this cell part looks like. Label any important features, **like what it is made of**.

**Cell Part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Plant Cell Animal Cell Both Other

Location within cell? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number per cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Describe what would happen if the cell did not have this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sketch out a quick model of what this cell part looks like. Label any important features, **like what it is made of**.

**Cell Part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Plant Cell Animal Cell Both Other

Location within cell? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number per cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Describe what would happen if the cell did not have this part: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sketch out a quick model of what this cell part looks like. Label any important features, **like what it is made of**.

**Type of Cell: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Plant Cell Animal Cell Both Other

Location within organism: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Average number of this type of cell within an organism: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job of this type of cell: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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What are the special parts within this cell that help it accomplish its job? Explain.

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Other important information:

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Sketch out a quick model of what this type of cell looks like. Label any important features.