

Summative 1 – Model Cell

Your Goal: To make a model cell to demonstrate an understanding of the basic structure and function of plant and animal cells. It must include a legend that explains the basic function of each part of the cell.

Overall Expectation(s): 3. Demonstrate an understanding of the basic structure and function of plant and animal cell.

Specific Expectation(s):

8s6	follow established safety procedures for handling apparatus and materials (e.g., wash hands after preparing materials for slides) and use microscopes correctly and safely (e.g., carry the microscope with both hands, place it near the centre of the desk, ensure that the sun cannot be directly focused through the instrument when sunlight is used for illumination, keep both eyes open when viewing to avoid eye strain)
8s10	use appropriate science and technology vocabulary, including organelle, diffusion, osmosis, cell theory, selective permeability, membrane, stage, and eyepiece, in oral and written communication
8s11	use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using the conventions of science, make a labelled drawing of a cell; create a slide show to explain the results of investigations into the processes of osmosis and diffusion)
8s12	demonstrate an understanding of the postulates of the cell theory (e.g., the cell is the basic unit of life; all cells come from pre-existing cells; all living things are made up of one or more cells)
8s13	identify structures and organelles in cells, including the nucleus, cell membrane, cell wall, chloroplasts, vacuole, mitochondria, and cytoplasm, and explain the basic functions of each (e.g., the nucleus holds all the information needed to make every cell in the body)

Part A – The Incredible Cell

- Choose either to make a model of a plant or animal cell. Decide on the items you will use to create the model. All models must be made out of materials that will not spoil.
- Your project must be labelled. You may label each organelle or put the names in the legend.
- Each model must include the following organelles.

a. Nucleus	c. Cell Wall	e. Cytoplasm	g. Vacuole
b. Cell Membrane	d. Chloroplasts	f. Mitochondria	

- Your project must include a legend that explains the basic function of each part of the cell. Example:

Cell Structure	Representative Material Chosen	Cell Function
Nucleus	Balloon	The nucleus holds all the information needed to make every cell in the body.

- Use the following questions to help you develop a good project.

- Is your name on the front of the project?
- Is the cell type identified? Tell if it is a plant or animal cell.
- Is the model a 2D/3D representation of a plant or animal cell?
- Are all the organelles included? (10 for plants cells, 9 for animal cells)
- Are the organelles correctly labelled? Each organelle must be labelled with its name.
- Have you included a legend with each organelles name and function?
- Are the relationships between the parts shown correctly? Plant cell - are the chloroplasts around the vacuole?
- Are the materials acceptable? The materials cannot be food products.

Part B – Explanation Writing Piece

Your Goal: Compose an Explanatory writing piece that explains the basic structure & function of the cell.

- You need to include an Explanatory writing piece that provides the following information:
 - Title (Name of Cell)
 - Definition – What it is (A Cell is ...)
 - Components or parts – What it consists of (structures in the cell)
 - Operations – How it works (functions of the structures in the cell)
 - Application – What it's used for

Name: _____

Due Date: _____

Model Cell Rubric (Part A)

1	2	3	4
Knowledge and Understanding (Knowledge of model or prototype)			
Is missing many elements in the model cell.	Is missing 1 element in the model cell.	Includes all required elements in the model cell.	Includes all required elements in the model cell and some additional elements.
Is missing many elements in the legend.	Is missing 1 element in the legend	All required elements are included in the legend.	Includes all required elements in the legend and some additional elements.
Thinking and Investigation (Use of critical/creative thinking processes, skills, and strategies: Creativity, Application of prior knowledge and skills)			
- Few or no labels were present on the model. - Few or no functions were present on the legend.	- All required elements are labelled with a name. - Most cell functions are correct in the legend.	- All required elements are labelled with a name. - All cell functions are correct on the legend.	- All required elements are labelled with a name. - All cell functions are correct and detailed.
Communication (Expression and organization of ideas and information in oral, visual, and/or written forms)			
Student uses vocabulary and terminology of the discipline with limited effectiveness	Student uses vocabulary and terminology of the discipline with some effectiveness	Student uses vocabulary and terminology of the discipline with considerable effectiveness	Student uses vocabulary and terminology of the discipline with a high degree of effectiveness
The model is distractingly messy or very poorly designed. It is not attractive.	The model is acceptable attractive though it may be a bit messy.	The model is attractive in terms of design, layout and neatness.	The model is exceptionally attractive in terms of design, layout, and neatness.
Application (Transfer of knowledge and skills to unfamiliar contexts: Creativity, Application of prior knowledge and skills)			
Cannot accurately illustrate/explain functions in the cell.	Can accurately illustrate/explain some of the functions in the cell.	Can accurately illustrate/explain the functions in the cell.	Can accurately illustrate/explain the functions in the cell using technical terms.

*Bonus: You could be awarded a bonus (5 extra credit points) if your project is selected to be the Most Scientific, Most Attractive, or Most Disgusting. Students will vote to decide the winner in each category.

Explanation Writing Checklist

	Met	Not Yet Met
Content		
Title is interesting and appropriate.		
Does my first paragraph provide a definition?		
Does my second paragraph explain the operation?		
Details are logically developed and specific.		
Does my final paragraph give the applications?		
Ending leaves the reader with a clear understanding.		
Style and Organization		
Is it all written in an impersonal third person style without using 'I'?		
Nouns are specific.		
Format is clear and easy to read.		
Conventions		
Information is easy to read, with clearly marked divisions.		
Sentences are complete.		
Punctuation is appropriate.		