1. Cells Research and Design (Tier 3)

http://www.biology.ualberta.ca/facilities/multimedia/

(Go to Cell biology)

☐ Animal Cell Mix & Match (check box after each page is studied)
☐ Comparing Prokaryotic and Eukaryotic Cells
☐ Plant Cell Mix & Match

www.cellsalive.com

☐ animal cell model
☐ plant cell model
☐ bacteria cell model

Build Your Own Cell Model

Using image editing software (Microsoft Paint, Photoshop, etc) create your own color diagram of the cell. Use the following guidelines. Turn in your model using a disk, jump drive, or email. Another interesting site is at artpad, where you can paint your cell online and email it to your teacher.

- Identify whether your cell is a plant or an animal (no bacteria)
- All relevant cell organelles and parts must be represented and labeled
- You may NOT cut/paste other models you might find on the web, but you're welcome to use them for ideas.

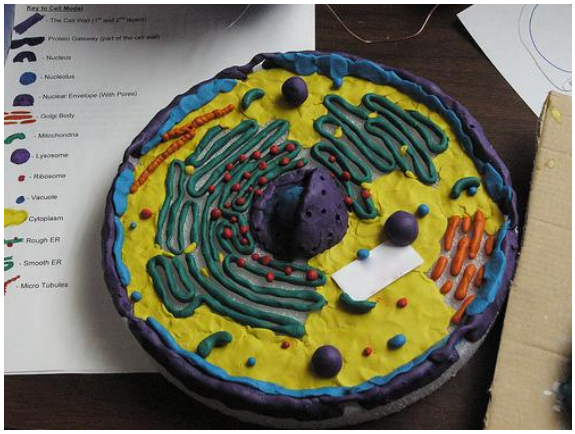
	Found In (check			Function	Sketch
	Animal	Plant	Bacteria		
Nucleus					
Chromatin (DNA)					
Lysosome					
Mitochondria					
Flagella					
Smooth ER					
Rough ER					
Golgi Apparatus					
Cytoplasm					
Ribosome					
Nucleolus					
Cell Wall					
Vacuole					
Chloroplast					

2. 3-D Cell Project (Tier 1, 2, and 3)

Purpose:
The purpose of this project is to make a 3D model of a cell in order to better understand the parts and workings of a cell.

Using household items make a three-dimensional model of a plant or animal cell that meets the criteria listed below. (example items: cereal, balloons, gummy worms, mints, fruit slices, dried fruit, matches, gum balls, Boston peanuts, Christmas lights, peanuts, rope licorice, jelly beans, sesame seeds, other candies, toothpicks, peas in a pod) It can be totally eatable, but after presentations there must be enough for the class and you must bring supplies for sharing it. Choose what type of cell you will build, a typical plant or animal cell. Include this label somewhere on your model. Create a KEY or label in some way each part on your model and its function.
Use the following rubric as a guide to making your cell.

Cell Project Rubric				
Category	Scoring Criteria	Excellent (3 pts)	Satisfactory (2 pts)	Needs Work (1 pt)
Craftsmanship	Model cell is creative and shows effort			
	The model is 3 dimensional			
	Model stays together, is not too messy or cumbersome to move around			
Cell Parts	Type of cell and student name are found on both the key and the model			
	Key, legend, or labeling easy to use to identify the parts on your model			
	Accurate description of the function of each cell part is provided			
	Appropriate material is used (item looks like the cell part)			
	Shape corresponds to the type of cell: plant or animal			
Written word	Grammar, spelling			
Score	Total Points (out of 30)			



3. **Cell-to-Cell Checklist for Investigations and Presentations (Tier 3)**

Assignment #1: Organelles

Students are responsible for researching and developing a presentation for one of the following cell parts:

- Mitochondria
- Nucleus
- Cell membrane and cell wall
- Endoplasmic reticulum and ribosome
- Golgi apparatus and lysosomes
- Cytoplasm and cytoskeleton

Students conduct research and develop presentations during two periods, and teach the class about their organelles on the third day.

Each presentation answers the following questions:

- ☐ In what type of cell is your organelle found?
- ☐ What is the organelle's composition or structure? (include a diagram, photograph, or illustration)
- ☐ What is your organelle's function and why is it important?
- ☐ What are the mechanisms of the organelle's function? How is it regulated?
- ☐ What is the connection between the organelle's function and the cell's function, and what would happen if a cell did not have the organelle?
- ☐ What sources did you use to get pictures and unique information?

Assignment #2: Diseases

Team members assume the role of a medical researcher or reporter/newspaper writer, choose a medical condition or disease process to investigate, and trace the disease process to the cellular level. Final presentations address the following points:

- ☐ Description of the health problem and its processes
- ☐ Explanation of risk and transmission, including whether the disease is infectious and what genetic or environmental factors are involved
- ☐ Description of cellular malfunctions or abnormalities that are characteristic of the disease
- ☐ How the research in the field began
- ☐ Latest research findings and where they are occurring
- ☐ Possible benefits of the research
- ☐ Some of the obstacles faced by researchers
- ☐ Controversial aspects of the research and opposing views
- ☐ Ethical implications of the research
- ☐ How the research can apply to other research in the field

Support your presentation with a newsletter that includes all of the following elements:

- ☐ Sequenced diagram of the disease process at the cellular level from transmission to recovery or death (whichever comes first)
- ☐ Article documenting current disease research and related medicine
- ☐ Individual opinion essays expressing personal beliefs about ethical concerns related to the research (a supported argument)
- ☐ **Bonus: Additional research.** Research the policies governing cell research in other countries. Which countries allow the greatest number of opportunities and incentives for scientists to study the topic? How are scientific investigations funded? Which countries are making the greatest progress?

4.

Cell City Analogy (Tier 3)

In a far away city called Grant City, the main export and production product is the steel widget. Everyone in the town has something to do with steel widget making and the entire town is designed to build and export widgets. The town hall has the instructions for widget making, widgets come in all shapes and sizes and any citizen of Grant can get the instructions and begin making their own widgets. Widgets are generally produced in small shops around the city; these small shops can be built by the carpenter's union (whose headquarters are in town hall). After the widget is constructed, they are placed on special carts which can deliver the widget anywhere in the city. In order for a widget to be exported, the carts take the widget to the postal office, where the widgets are packaged and labeled for export. Sometimes widgets don't turn out right, and the "rejects" are sent to the scrap yard where they are broken down for parts or destroyed altogether. The town powers the widget shops and carts from a hydraulic dam that is in the city. The entire city is enclosed by a large wooden fence, only the postal trucks (and citizens with proper passports) are allowed outside the city. Match the parts of the city (underlined) with the parts of the cell.

1. Mitochondria	_____
2. Ribosomes	_____
3. Nucleus	_____
4. Endoplasmic Reticulum	_____
5. Golgi Apparatus	_____
6. Protein	_____
7. Cell Membrane	_____
8. Lysosomes	_____
9. Nucleolus	_____

** Create your own analogy of the cell using a different model. Some ideas might be: a school, a house, a factory, or anything you can imagine**

5. CELL MART CELL MART CELL MART

Cell-to-Cell Sales (Tier 2)

Welcome aboard! We're glad you're joining our sales team! As you know, Cell-Mart strives to be the one-stop shopping place for all of our customers' cellular needs. We stock the very latest models in membrane components, trendy genes, and subcellular organelles to appeal to a wide eukaryotic customer base. Advertising is an important part of Cell-Mart's activities, and we're excited to have hired some of the top minds in media today to help us put together our 2010 sales campaign.

You will be assigned one organelle to focus on. You will present your advertising suggestions to the Board of Directors. You need to have ready a 3-5 minute infomercial touting the benefits of Cell-Mart's particular brand of organelle, and an advertising brochure to hand out to the Directors. Creativity is welcomed – that's why we hired you! – but be careful not to promise more than our product can deliver. Customer satisfaction is our priority.

The Board will judge your proposals on scientific accuracy, description of the structure of your product, explanation of the function of your particular organelle, at least one example of the organelle's vital role in the cell (if our customers don't think the organelle is necessary, sales will go down!), professionalism, and creativity in presentation. Plenty of background information on our products can be found on the Internet or in various textbooks.

Lysosome, ribosome

nucleus, nucleolus

mitochondria, chloroplasts

endoplasmic reticulum, ribosome

cytoplasm, Golgi apparatus

6. It's Alive, Alive, Alive!!! (Tier 3)

Background: You will be in groups of three, each with your own job. The jobs to choose from are Contractor, Architect, Surveyor. Your job, as a group, is to build the most realistic life-like plant cell the world has ever seen. This assignment can also be done individually with one person do all the jobs.

Problem: What does a 3-dimensional cell look like? What are the various parts of plant cells?

Hypothesis: _____.

Materials: Play-doe, food coloring or tempera paints (red, purple, green, blue, white), 1 pair of gloves, yarn or undercooked spaghetti, pepper, plastic-bubble packing, aluminum foil, plastic wrap, pencil shavings, scissors, 1 large knife, glue.

Procedure:

1. Before we start be aware that on the final day you must present your cell to the class.

2. After you have decided upon your jobs, the Contractor and Architect will collaborate to design the plant cell. The design should be drawn up on a piece of paper that explains what materials will be used for each organelle. It should be colored the same color it will appear when it is built. Take your time and make a good drawing. This should be completed early on day two. Throughout this entire process the Surveyor should be writing down the order in which each organelle was designed and the order in which it will be built. Along with this the Surveyor must make a copy of the design that the group can use when building it. The Surveyor's job is to basically take notes all the way through, so if the final product doesn't come out as planned the Surveyor can look back at their notes and answer why.

3. After you have finished your design, hand it in and your teacher will approve it. If it is approved, you can start to build your cell.

4. Building should be the role of the contractor. Architect's watch the builders to make sure they are doing it exactly as planned. Surveyors should take notes on how it is built and also can assist the Architects to make sure it is being built as planned.

7. Cell Analogies Collage (Tier 2)

1. Choose whether your collage will be about an animal cell or a plant cell.
2. Draw either an animal cell or a plant cell in the middle of your poster. Be sure to leave room around the sides, top, and bottom of your poster for other work.
3. Title your collage Animal Cell Collage or Plant Cell Collage.
4. Choose 8 organelles that you have drawn in your cell. Write an analogy for each organelle. You can use the example below to help you write your analogies. A (organelle) is like a (object). A (organelle) (does what). A (object) (does what).

   Example: A nucleus is like a principal. A nucleus directs the activities of all the other organelles. A principal directs the activities of all the teachers and students.

5. Around your cell, write your 8 analogies and draw the object you mention in each analogy.
6. Draw an arrow from the correct organelle to your analogy.
7. Each organelle over 8 for which you give an analogy will be 2 bonus points.

Criteria	**Not done (0 points)**	**Partially done (1 point)**	**Well done (2 points)**
Neat and organized			
Creative and colorful			
Title stating Plant Cell Collage or Animal Cell Collage.			
Your name is written in the bottom right corner of the poster.			
Drawing of a plant or animal cell with at least 8 organelles.			
Arrows from organelles to analogies.			
8 analogy pictures.			
8 correct analogies.			
Extra credit organelles			

8. Cell Organelle Trading Card Assignment (Tier 2)

Your assignment is to make a "trading card" for each cell organelle (make one for each cell organelle on your Cell Table Handout). The trading card will feature a picture of the organelle on one side and information about it on the other. Then, you will compare the organelle to a part of your school. Here's where you use your Cell Organelle Research Worksheet. The side opposite of the picture should include:

a. The name of your organelle.
b. Where it is found.
c. What it does.
d. Something that performs the same function

PLEASE NOTE: The information that you use for the text part of your trading cards MUST BE IN YOUR OWN WORDS! DO NOT, I repeat, DO NOT cut and paste text. If the text is NOT in your own words, you will get a zero for this assignment. Plagiarism (copying other people's work and claiming it as your own) is NEVER ACCEPTABLE!!!

Making a Trading Card (ONLY ONE ORGANELLE PER TRADING CARD)

1. Click on START. Open Microsoft Word from the PROGRAM file.
2. Choose New from the File menu (you may have to select blank document).
3. Choose TABLE, INSERT, TABLE.
4. Choose 2 columns and 1 row. ACCEPT.
5. Select the table on your document with the cursor.
6. Go to TABLE, TABLE PROPERTIES.
7. Select BORDERS and SHADING.
8. Pick your style for the border. Next, select the style of your border (you can scroll down to see many styles). Click OK - 2 -
9. Place cursor in row on your table and space down 18 returns.
10. Begin to add text and pictures.

Note: You must have **at least** one space between each set of cards. To do this, you must leave **at least** one space between each table.

Adding a Picture to one side

After you have found a picture on the Internet using the websites on the WebQuest, here's how you copy a picture to your file.

1. Right click on the picture.
2. Select "Copy."
3. Go to the side you are going to put the picture on.
4. Click "Paste."

To finish

Here's how you save a copy of your completed trading cards:

• Select Save As.
• Save it on your number.
• Print a copy of your trading cards with teacher help only. Cut them out and fold them in half. Glue them together. **MAKE SURE YOUR NAME IS ON EACH CARD!**

9. The Cell as a School PowerPoint Assignment

(Tier 2)

A cell is like a school. Your assignment is to make a PowerPoint presentation showing how the cell is like our school.

To complete this assignment, you must:

- Produce two slides for each organelle explaining what part of or person in the school is like this part of the organelle.
- One slide must have the picture you've taken, identify which organelle this person/place represents.
- The second slide must have an explanation how this person/place represents the organelle.
- Your presentation must have music that plays over **at least** three different slides.
- You must use **at least** three different slide transitions.
- You must use **at least** three different sound effects.
- You must narrate your presentation to the class.
- Your must write four test questions that could be used on a test.
- Remember, your presentation must be neat, easily read, well organized, and make sense!

The Cell As a School

A cell is like our school. Each part of the cell (and school) has responsibilities that must be done and certain organelles (people or places) to do them. Identify the function of the following parts of the cell. Then, identify which person does the same job (or a place like it) in the school.

Organelle	**Function**	**Part of school that has a similar function**
Cell Membrane		
Cytoplasm		
Golgi Body/Apparatus/ Complex		
Lysosome		
Mitochondria		
Nucleus		
Nucleolus		
Ribosome		
Rough ER		
Smooth ER		
Vacuole		
Cell Wall (plant only)		
Chloroplast (plant only)		
Central Vacuole (Plant only)		

The Cell as a School PowerPoint Rubric

Assignment	30 Points	20 points	10 points
Two slides per organelle.	Has the two slides	Has only one slide	Does not have the correct number of slides for any organelle.
Music	Music plays over at least three slides	Music plays over two slides.	Music plays over only one or no slide.
Slide Transitions	Has at least three transitions.	Has two transitions.	Has one or no transitions.
Sound Effects	Has at least three transitions.	Has to transitions.	Has one or no transitions.
Narrations	Follows and supports the slides on the screen.	Follows and supports most of the slides on the screen.	Does not follow and support slides on the screen.
Neatness	Text and pictures are easily read and seen.	Most text and pictures are easily read and seen.	Few text and pictures can be easily read and seen.
Organization	Presentation is well organized.	Presentation has a few problems but is basically organized.	Presentation is not organized

10.The Incredible, Edible Cell! (Tier 1,2, & 3)

Problem: How can you use gelatin and candy to make a model of a cell?

Hypothesis: _____

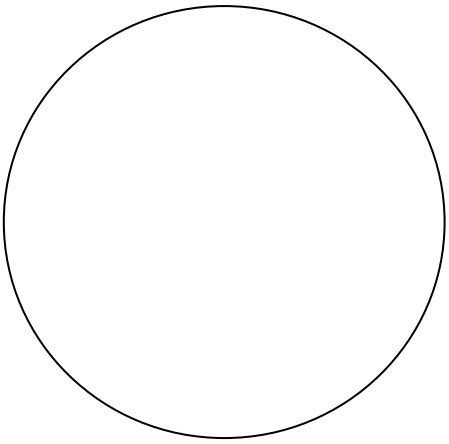
Materials:

* 1 gumball . . Nucleus* 2 blue or green pieces of fruit roll up .. Golgi Bodies * 2 red or yellow pieces of fruit roll up .. Endoplasmic Reticulum * 1 teaspoon of round cake sprinkles .. Ribosomes * 4 hot tamales .. Mitochondria * 4 chocolate covered raisins .. Vacuoles * 1 Jello/Knox mixture in plastic cup * 1 paper plate * 1 small Dixie cup full of cell parts (organelle) materials * 1 plastic knife * 1 plastic spoon

Procedure:

1. Getting the Jello Ready (Bill Cosby Impressions are encouraged!) Follow the package directions to mix up batches of Jello gelatin mix. Pick a light colored flavor. Every 6 oz package will make up 4 or 5 cells. Add some unflavored Knox gelatin to the Jello to make it set up a little stiffer (just regular Jello fell apart during our first test). Pour the Jello/Knox mixture into individual 9 oz Solo brand plastic cups until they are about two-thirds full. Put them into a refrigerator to set. This is the end of today's work. Make sure to label your cups! You are going make cells (one animal cell and one plant cell.)
2. Day Two time to eat! Remove the Jello from the plastic cup onto the paper plate. We had some problem with this. The students may need to run the knife around the very outside edge of the Jello to loosen it. There are some suggestions that you might spray the cup with Pam or some other non-stick material. We did not get a chance to try this yet. Running warm water over the cup may also loosen the Jello.
3. Cut the Jello/Knox in half and remove the top half. Turn over the top and set it on the plate beside the bottom half
4. Use the spoon to dig out a hole in the bottom half of the Jello/Knox cytoplasm. Just pushing the food pieces into the Jello causes it to crack and come apart, making for a very messy cell. Place the gumball in this hole to represent the nucleus of the cell.
5. Using the spoon to make spaces and your diagram as a guide, place the other cell parts into the cell. Parts can be put into both the top and bottom half of the Jello/Knox cell
6. Take the top part of the cell and carefully place it on the top. If the cell feels soft, you can put the parts back into the plastic cup, and then turn it over onto the paper plate. Then carefully remove the plastic cup.
7. After reviewing the parts one final time, those students who wish to can feast on their cell. Please use clean spoons in case the spoon you were working with fell on the floor or the table.

Data: *Draw your cell and label its parts.*



Conclusion:

1. What are organelles?

2. What organelles are found in plant cells?

3. What organelles are found in animal cells?

4. Give the function of these organelles:
    - Nucleus
    - Ribosomes
    - Endoplasmic reticulum
    - Golgi body
    - Mitochondria
    - Vacuole

11. Cells Library Quest (Tier 1)

Part I. Use the website http://www.cellsalive.com/cells/cell_model.htm

to answer the questions about animal and plant cells.

Click on "Animal Cell" underneath the diagram to view an animal cell.

1. Click on "Nucleus." What is found within the nucleus?

2. Click on "Return to Cell Diagram." Click on "Cytosol." What is the cytosol mostly made up of?

3. Click on "Return to Cell Diagram." Click on "Golgi." What is the Golgi apparatus important for?

4. Click on "Return to Cell Diagram." Click on "Lysosome." What do lysosomes contain?

5. Click on "Return to Cell Diagram." Click on "Cell membrane." What type of molecule makes up the double layer in the cell membrane?

6. Click on "Return to Cell Diagram." Click on "Mitochondrion." Mitochondria produce ATP. What is ATP?

7. Click on "Return to Cell Diagram." Click on "Smooth Endoplasmic Reticulum." What different functions does smooth ER play?

8. Click on "Return to Cell Diagram." Click on "Rough Endoplasmic Reticulum." Why does the rough ER appear pebbled?

9. Click on "Return to Cell Diagram." Click on "Ribosomes." Ribosomes are the site of what process?

Click on "Plant Cell" underneath the diagram to view a plant cell.

1. Move your mouse over the plant cell to see the names of the organelles. Name five organelles found in a plant cell that were also studied in the animal cells questions above.

2. What two organelles are found in the plant cell that you did not see in the animal cell?

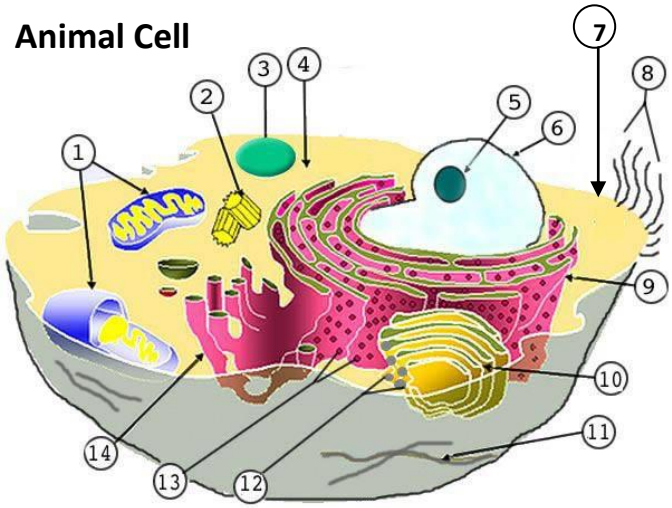
3. Click on "Cell Wall." What molecule makes up cell walls?

4. Click on "Return to Cell Diagram." Click on "Chloroplast." What substance inside the chloroplast makes it green?

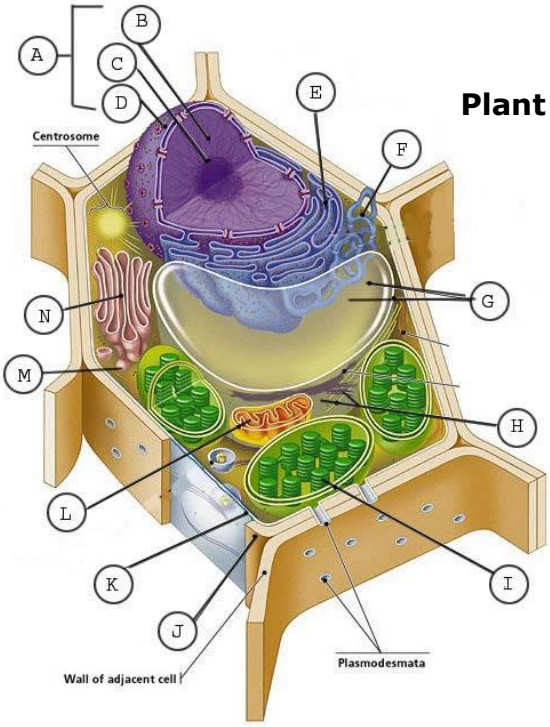
Part II. Use a reference book to help you label the following cells and find the function of the following organelles. Then, compare each organelle to an everyday object and explain why they are similar.

1. _____
2. ___Centrioles_____
3. _____
4. _____
5. _____Nucleolus_____
6. _____
7. _____
8. ___Cilia_____
9. _____
10. _____
11. _____Cytoskeleton_____
12. ___Golgi vesicles_____
13. _____
14. _____

Animal Cell



Plant Cell



A. A._____
B. _Skip_____
C. _Skip_____
D. _Skip_____
E. _____
F. _Skip_____
G. _____
H. _Skip_____
I. _____
J. _____
K. _____
L. _____

M._____

N._____

Organelle	**Job**	**Compare to an everyday object** **(Use a complete sentence. Follow the example.)**
Nucleus		A nucleus is like a _____ because
Cell Membrane		
Endoplasmic Reticulum		
Golgi Body		
Ribosomes		
Mitochondria		
Lysosome		
Cytoplasm		
Vacuole		
Chloroplast		
Cell Wall		

12.Cell Comic Book (Tier 1 & 3)

Objectives:

Design an original cartoon character based on something to do with a cell.

Understand parts of the cell and their function.

Design a comic book based on the cell parts and their functions.

Materials:

scrap paper, graph paper, pencils, erasers, colored pencil, markers, final draft paper, templates

Introduction/Motivation:

Brainstorm favorite cartoons (include TV, comic book, movies, comic strips)

Look at main characters and analyze personality, plot, and characteristics of comic character

I.e.: hero, clutz, nerd, shy, boastful, popular, cute, brave, funny

Brainstorm possible character types for original cartoon character

I.e.: animals, babies, teenagers, elderly, teachers, athletes, aliens

Procedure:

Research cells, their parts and functions and use that information to create a comic book. Write out a written description of your main character. What is the characters name? What type of character will it be? Describe the personality and what type of events or circumstances the character might be involved in. Will the character have a supporting cast or a side-kick? Will the character have props or a special environment that they live in?

Begin making thumbnail sketches of what the character might look like. Take one idea and continue to develop the character showing both a frontal and side view. Include the full body and any props the cartoon will need. Add color and detail.

Look at the different sizes and shapes of comic books. Create a rough draft book. Include the title, character, background, props, captions, etc. Transfer ideas to the final draft. Draw lightly in pencil, add color and finish in marker. The final design should include details such as a bar code, price, and other details found in a real comic book.

Closure:
Share comic book with the class and create school display.

Evaluation: teacher rubric, self evaluation

Cartooning Unit Self Evaluation

1. All parts are turned in

_____ Original writing, thumbnails, rough drafts

_____ Original character in full color – 2 views

_____ Comic book full color

_____ This self evaluation!

2. Your character's name _____

3. Describe the personality of your character or any special powers it has:

_____

4. Do you feel your cartoon character is original and creative? 5 4 3 2 1

5. Do you feel you cartoon character took some effort and challenged you? 5 4 3 2 1

6. Circle any you did: full color, marker outline, detail, border, background setting or situation for you character, supporting cast of characters or side-kick character, cool title lettering, realistic book details, title panel, full color, marker outline, detail, backgrounds, supporting cast of characters or side-kick character, bubbles or narrative captions.

7. Craftsmanship 5 4 3 2 1

8. Effort and Creativity 5 4 3 2 1

9. Use of class time 5 4 3 2 1

13. CELL R.A.F.T. (Tier 2)

Choose **three** organelles (role) and follow the instructions. Be sure to mention the function of the organelle.

R A F T

Role	Audience	Format	Topic
Chloroplast	Sun	Invitation	Come over..
Ribosome	RNA	Recipe	How to make protein…
Nucleus	Future Cell	Resume'	Job Search
Cell	Mitochondria	Thank you card	For all the hard work…
Cytoplasm	Protein	Travel Guide	How to Travel through a Cell…
Mitochondria	Oxygen	Love Letter	How much I need you…
Cell Membrane	Cell	Complaint Letter	Working too hard to allow macromolecules (large compounds) in…..
Nucleus	Endoplasmic reticulum	Job Description	Looking for a new 'ER' to help construct…

14. Cell Children's Book (Tier 1)

Create a book on a 5th or 6th grade level that illustrates and includes all of the parts and functions of both the plant and the animal cell.

15. Cell Organizer (Tier 1) Graphic Organizer Rubric

CATEGORY	20	15	10	5
Accuracy	9 or more organelle functions are accurately described.	Most (8-6) organelles functions are accurately described.	Most (5-3) organelle functions are accurately described.	1-2 organelles function is accurately describe.
Completeness	9 or more cell organelles are included in the organizer.	8-6 cell organelles are included in the organizer.	5-3 cell organelles are included in the organizer.	1-2 cell organelles are included in the organizer.
Creativity	9 or more organelles contain a picture that relates to the function of the organelle.	8-6 organelles contain a picture that relates to the function of the organelle.	5-3 organelles contain a picture that relates to the function of the organelle.	1-2 organelles contain a picture that relates to the function of the organelle.
Creativity	Used different color and options on the Organizer	Used some different options.	Used a few different options	Used only one different options.
Neatness	All Ideas are clear and easy to read.	8-6 Ideas are clear and easy to read.	5-3 Ideas are clear and easy to read.	1-2 ideas are clear and easy to read.

TOTAL GRADE ON ORGANIZER: _____

Students will design a graphic organizer on cell organelles and there functions for both the plant and the animal cell. The graphic organizers will have the word "cell" and what type of cell it is in the middle bubble. The students will create eleven bubbles extending from the middle bubble. Then the students will enter the labels of the organelles and their functions into their graphic organizer. This will enable students to become comfortable with the program. Then students must illustrate each of the cell parts.

16. Cell Rap/Song (Tier 1)

Students will create a song or rap using the plant and animal cell parts and functions. The song or rap will be performed the last week of school before Winter Break. You may make combine the 2 cells or make 2 separate songs.

17. Who Am I Riddles (Tier 1)

Students will create "Who Am I Riddles" using each of the cell parts for both the plant and animal cells and their functions or something important about the cell parts.

Example: I'm a real "powerhouse."

That's plain to see.

I break down food

To release energy

Who Am I? _____

Who Am I Riddle Rubric

4

- Focused on topic
- Good understanding of poetic devices
- Used stanza form (5 Lines), Rhymes
- Few or no spelling errors
- Handwriting is legible

3

- Focused on topic
- Average understanding of poetic devices
- Used stanza form (4 Lines), Rhymes
- Few or several spelling errors
- Handwriting is legible

2

- Somewhat focused on topic
- Poor understanding of poetic devices
- Used stanza form, but only 3 lines, somewhat rhymes
- Frequent spelling errors
- Handwriting is legible

1

- Not focused on topic
- Poor understanding of poetic devices
- Used stanza form, but only 2 lines or it does not rhyme at all
- Many spelling errors
- Handwriting needs improvement

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18. Cell Part Stories (Tier 1)

Students must create a story as a plant cell and then one as an animal cell using the parts and functions within the story. It needs to be creative and 1 ½ pages for each story. (3 pages all together)

Short Story Rubric

CATEGORY	4	3	2	1
Writing Process	Student devotes a lot of time and effort to the writing process (prewriting, drafting, reviewing, and editing). Works hard to make the story wonderful.	Student devotes sufficient time and effort to the writing process (prewriting, drafting, reviewing, and editing). Works and gets the job done.	Student devotes some time and effort to the writing process but was not very thorough. Does enough to get by.	Student devotes little time and effort to the writing process. Doesn't seem to care.
Introduction	First paragraph has a "grabber" or catchy beginning.	First paragraph has a weak "grabber".	A catchy beginning was attempted but was confusing rather than catchy.	No attempt was made to catch the reader's attention in the first paragraph.
Neatness	The final draft of the story is readable, clean, neat and attractive. It is free of erasures and crossed-out words. It looks like the author took great pride in it.	The final draft of the story is readable, neat and attractive. It may have one or two erasures, but they are not distracting. It looks like the author took some pride in it.	The final draft of the story is readable and some of the pages are attractive. It looks like parts of it might have been done in a hurry.	The final draft is not neat or attractive. It looks like the student just wanted to get it done and didn't care what it looked like.
Focus on Assigned Topic	The entire story is related to the assigned topic and allows the reader to understand much more about the topic.	Most of the story is related to the assigned topic. The story wanders off at one point, but the reader can still learn something about the topic.	Some of the story is related to the assigned topic, but a reader does not learn much about the topic.	No attempt has been made to relate the story to the assigned topic.
Organization	The story is very well organized. One idea or scene follows another in a logical sequence with clear transitions.	The story is pretty well organized. One idea or scene may seem out of place. Clear transitions are used.	The story is a little hard to follow. The transitions are sometimes not clear.	Ideas and scenes seem to be randomly arranged.
Spelling and Punctuation	There are no spelling or punctuation errors in the final draft. Character and place names that the author invented are spelled consistently throughout.	There is one spelling or punctuation error in the final draft.	There are 2-3 spelling and punctuation errors in the final draft.	The final draft has more than 3 spelling and punctuation errors.

13. Cell Game (Tier 2) Computer Cell Game (Tier 3) Computerized Cell Movie (Tier 3)

Students must create a game or a computerized movie using both the plant and animal cell and their parts and functions. Be creative and pay attention to the rubric.

	Beginning	***Developing***	***Accomplished***	***Exemplary***	***Score***
Utility	**0** The game or movie doesn't seem to fit a well defined need in a realistic context	**1** There are several mismatches between the goals, audience, context and approach used.	**2** There are one or two mismatches between the goals, audience, context and approach used.	**4** The game or movie seems to address a well described, plausible need in a way that the target audience would actually play.	
Design Details	**0** It's not at all clear what the game will look like or exactly how it would be played or the movie is not clear on detail.	**3** There are many missing details about interface, game rules, and the overall structure of the game or movie.	**6** There are a few missing details about interface, game rules, and the overall structure of the game or movie.	**9** All aspects of the game or movie design are clearly described and illustrated graphically.	
Motivation	**0** The game or movie's motivational elements are unclear or unconvincing.	**3** There is some uncertainty about the effectiveness or rationale behind the motivational elements chosen.	**6** There is a little uncertainty about the effectiveness or rationale behind the motivational elements chosen.	**9** The game or movie would motivate its intended audience. The theory based used is well described.	
Design Process	**0** There is no account of the thought process used in putting the game or movie together.	**1** The process used to design the game or movie is sketchily described.	**2** The process used to design the game or movie describes only the final result, not enough about the options considered and rejected.	**3** The design process is completely and interestingly described, including rationale, dead ends, and minority reports.	

14. Cell Skit/Play (Tier 2)

Students must create a skit using the plant cell and the animal cell and their parts and functions within the skit. It needs to be creative and 3 pages all together.

15. Student Demonstrations (Tier 2 & 3)

Students must find 4 science demonstrations that they can perform in front of the class. They must be related to the cell and its functions and they must be approved by the teacher. You must write up 1 page for each demonstration explaining what you are doing and why to the class. (4 pages total)

	NOT SO GOOD 0-1	OK 2	GOOD 3	EXCELLENT 4
Knowledge	No knowledge about the demonstration	Very little knowledge about the demonstration	Has some knowledge of the demonstration.	Shows a genuine knowledge of the experiment.
Demonstration	No interaction	Very little interaction	Somewhat interactive demonstration	Wonderful interactive demonstration
Creativity	No creativity	Very little creativity	Somewhat creative	Very creative

16. Cell Web Quest (Tier 3)

http://mrscienceut.net/CellWebquest.html

Cell Organelle Research Worksheet

Use this website and this print off to complete the webquest.