



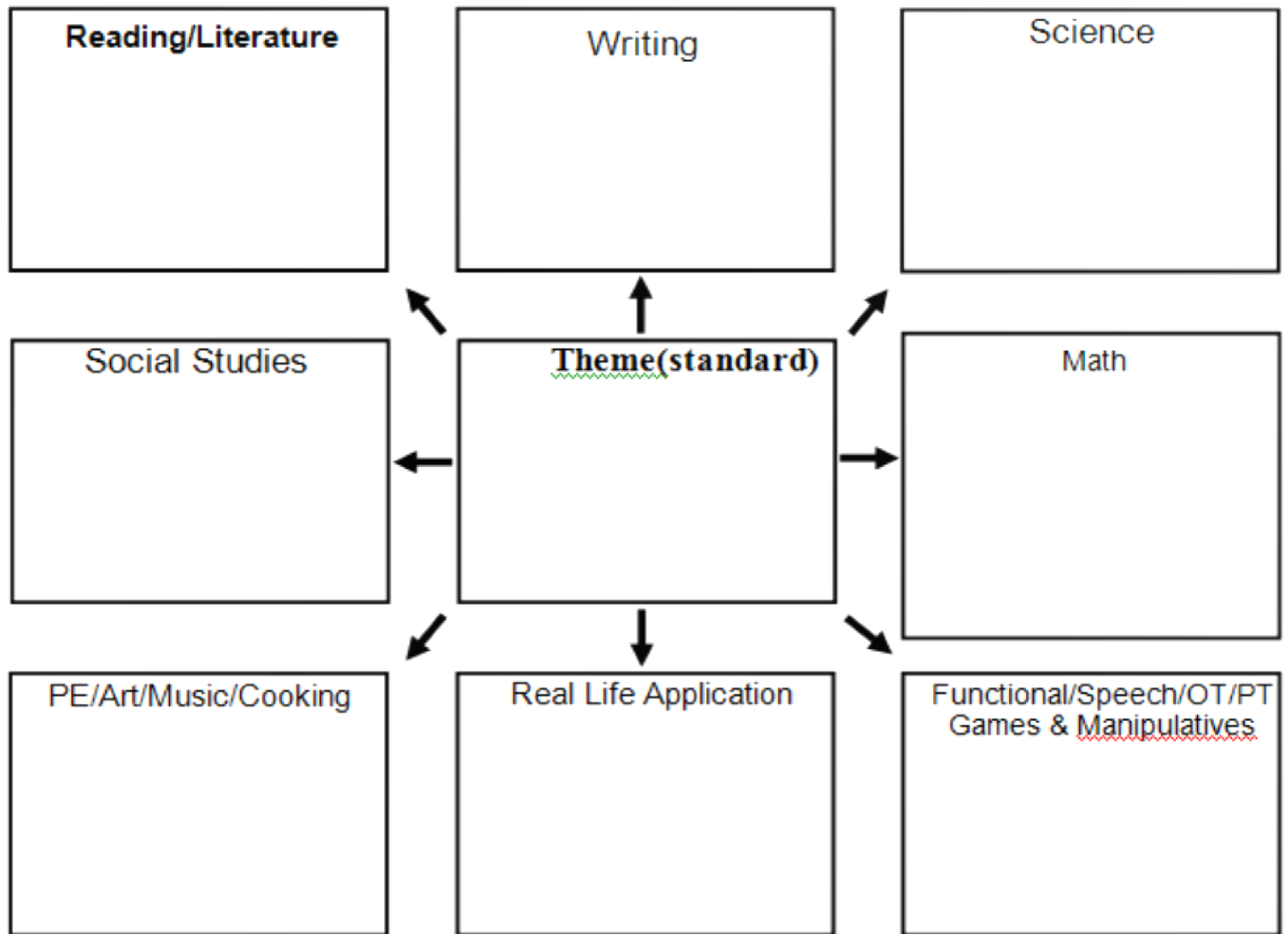
"Cell"-ebrate Science Without Worksheets

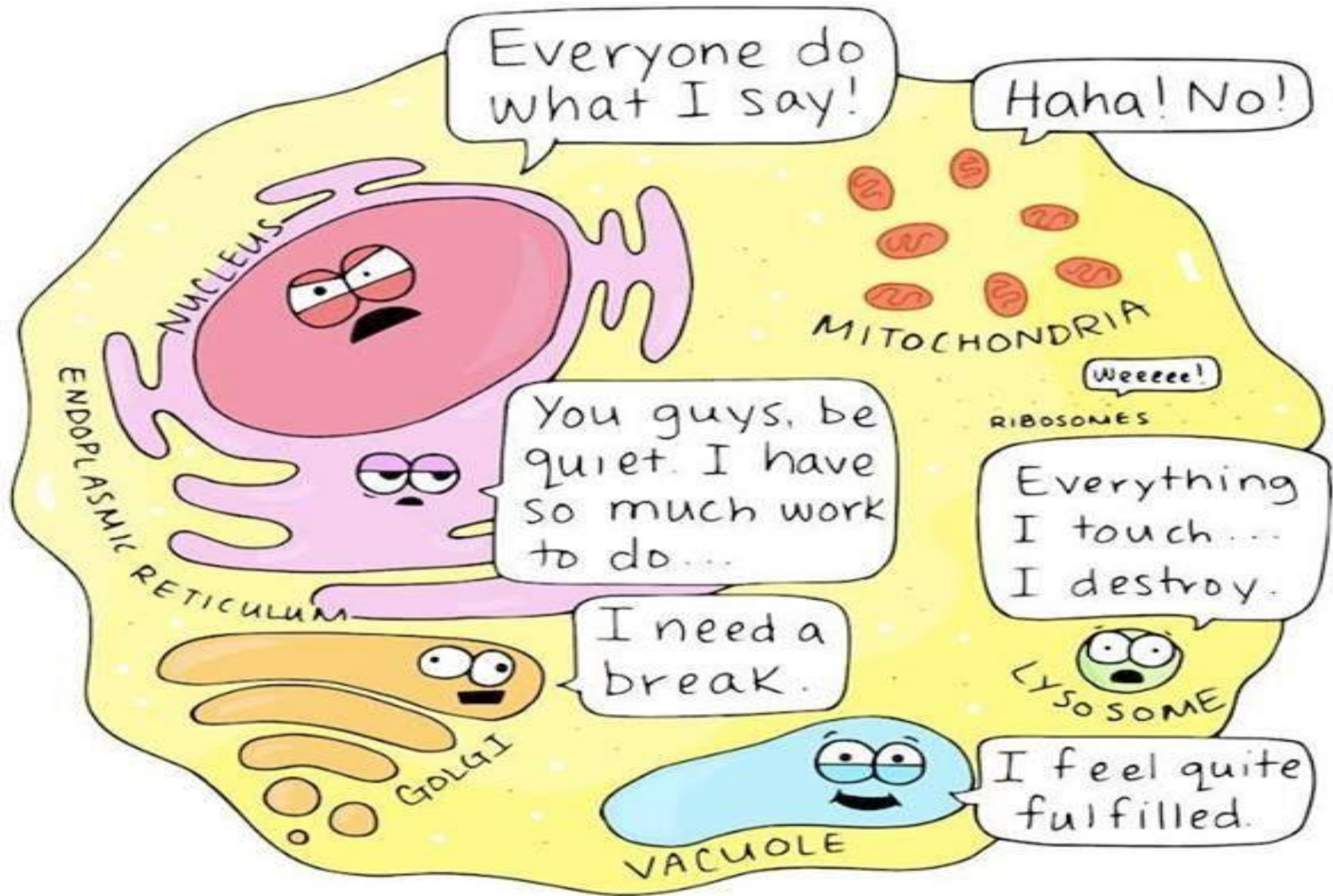
Juanita Pritchard, Consultant
Rachel Pritchard, Bulloch County
IDEAS June 2014

Learning objectives:

As a result of this activity, participants will be able to:

- 1. identify *2 resources* for supporting active student learning in science
- 2. Describe *3 hands-on activities* related to cell organelles.
- 3. create an *integrated unit* for teaching about cells.





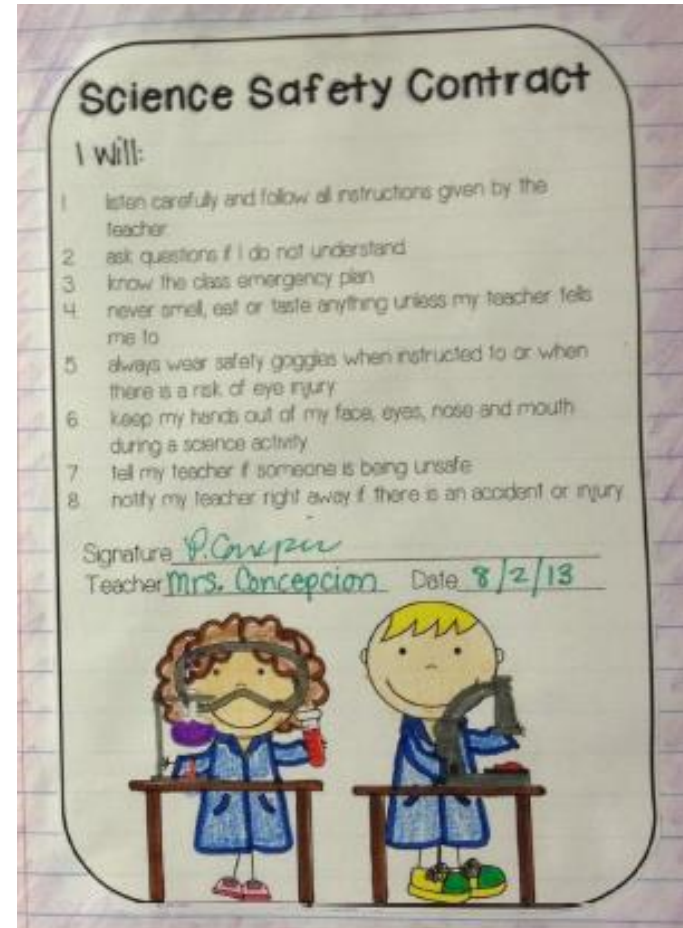
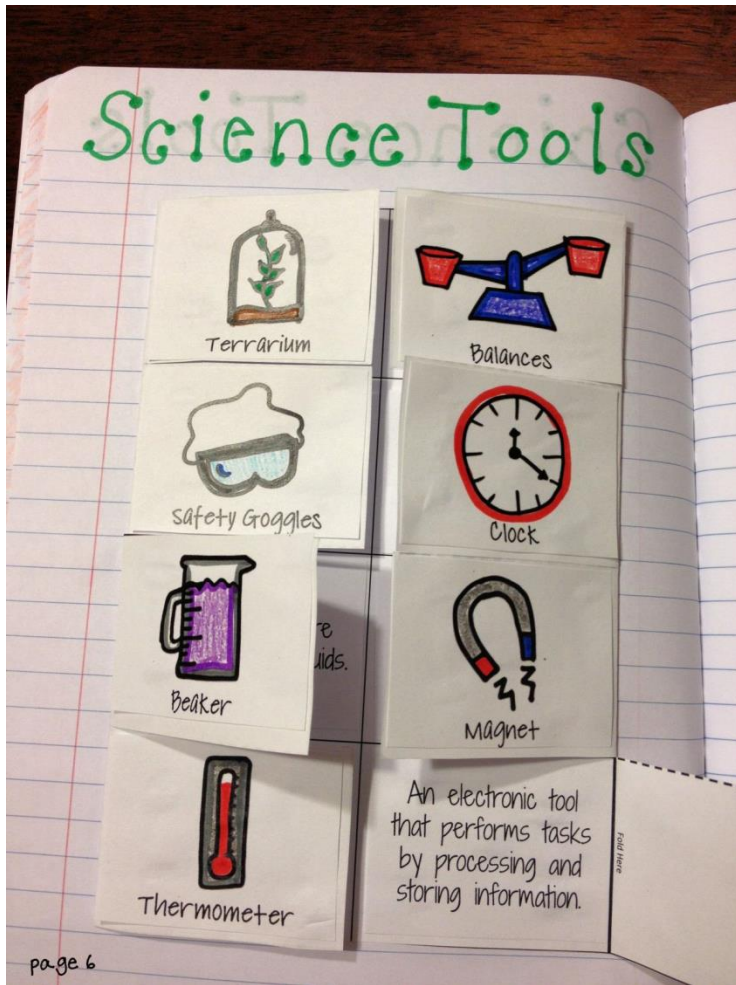
If organelles could talk.

Beatrice the Biologist

Characteristics of Science

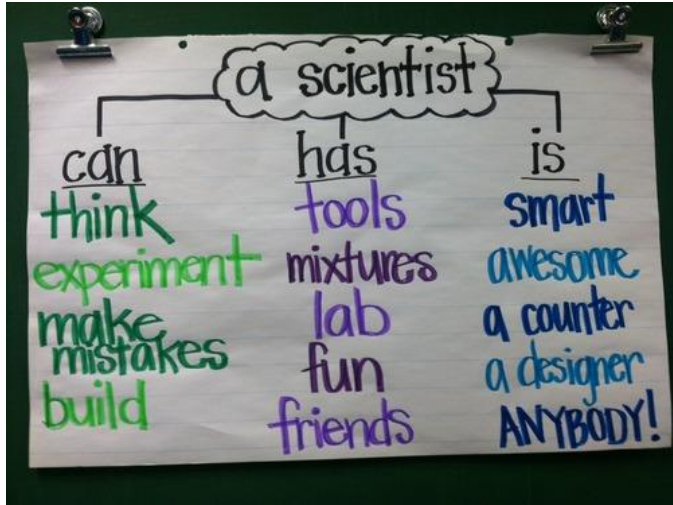
part of science instruction – not added on

- – Records investigations clearly and accurately LAB REPORT
- – Uses scientific tools** MICROSCOPE
- – Interprets graphs, tables, and charts Comparing plant/animal cells
- – Writes clearly LAB REPORT
- – Uses proper units
- – Organizes data into graphs, tables, and charts
Comparing plant/animal cells
- – Analyzes scientific data via calculations and inference
- – Uses models Creating a cell model
- – Asks quality questions Teach scientific process - questioning
- – Uses technology
- – Uses safety techniques Goggles, apron, SAFETY CONTRACT**
- – Recognizes the importance of explaining data with precision and accuracy



Purchase from TPT Science Interactive Journal Unit 1: What is a Scientist?
 Teacherific in 2 grade

What is a scientist?



A Scientist Can...

- experiment
- observe
- solve problems
- measure
- record
- discover
- test

I am a Scientist

- I am a scientist.
- I can ask questions.
- I can explore.
- I can measure.
- I can learn.

What is a **SCIENTIST**?

SCIENCE A scientist is a person who...

- Records experiments
- Collects
- observes
- wonders
- Invents tests
- guesses
- thinks
- Discovers
- measurements
- ask questions
- classifies
- sorts

A scientist is **YOU**

Setting up for Science

- *Microscope*
- *Table cloth*
- *Review safety:*
Aprons & Goggles



SB1 Students will *analyze* the nature of the relationships between structures and functions in living cells.

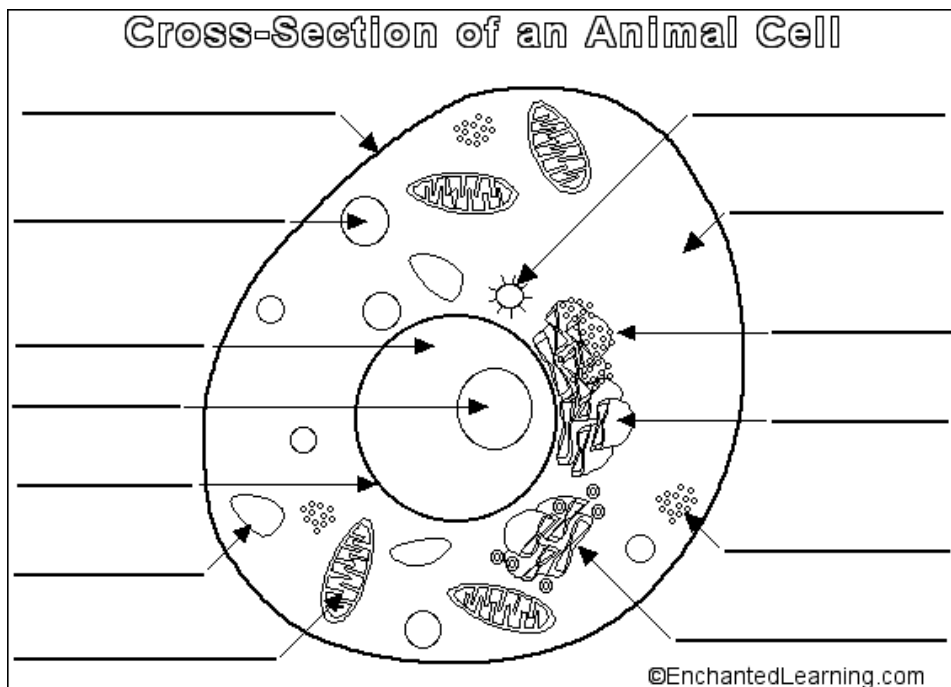
- a. *Explain the role of cell organelles* for both prokaryotic and eukaryotic cells, including the cell membrane, *in maintaining homeostasis and cell reproduction.*

Before student can discuss the role of cell organelles in maintaining homeostasis and cell reproduction, they must be able to identify cell organelles and the function of those organelles.

Prokaryotic & Eukaryotic cells?

The cytoplasm of **eukaryotic cells** is filled with a large, complex collection of organelles, many of them enclosed in their own membranes; the **prokaryotic** cell contains no membrane-bound organelles which are independent of the plasma membrane. (ex: bacteria)

PRETEST



LABELS

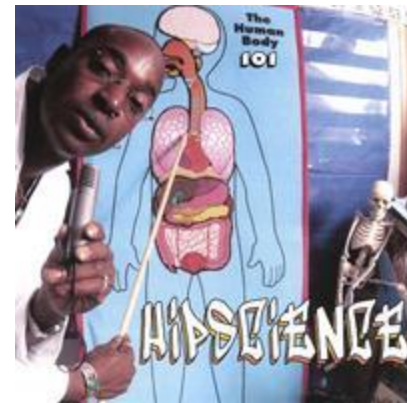
Cell Rap

First things first, there's two different types



<https://www.youtube.com/watch?v=-zafJKbMPA8&feature=share>

<http://www.cdbaby.com/cd/hipscience>



Step 1: Know the subject

What are organelles? VERY BASIC

- *Cell membrane - layer of fat & protein that **protect** the cell - **the outside** - the city limits*
- *Nucleus - **controls** the functions - brain of cell, "boss"*
- *Cytoplasm - **jelly like** substance that **cushions & protects** organelles*

Cell organelles continued

- *Mitochondrion- **creates energy** for cell*
- *Lysosomes - **digestion** - waste disposal & recycling*
- *Ribosomes- makes proteins needed to run the cell*
- *Golgi apparatus (like the post office) is used for shipping things created by ER & ribosomes to rest of cell*
- *Endoplasmic Reticulum (ER) is the road system within the cell - transports materials within the cell*
 - *Smooth & Rough*

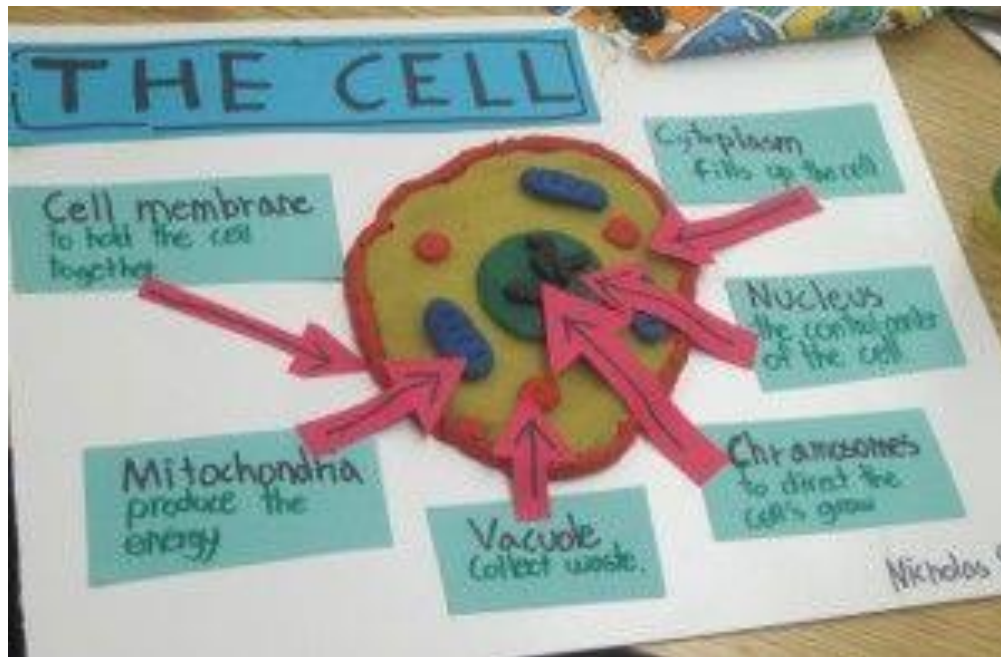
Step 2: Background knowledge



<http://board.mfwbooks.com/viewtopic.php?f=24&t=3923>

Step 3: Make learning fun

Demonstrate & create with materials students can experience



<http://www.myinspiredclass.com/create-3d-animal-cells-with-play-doh/>



Notice diagram in background

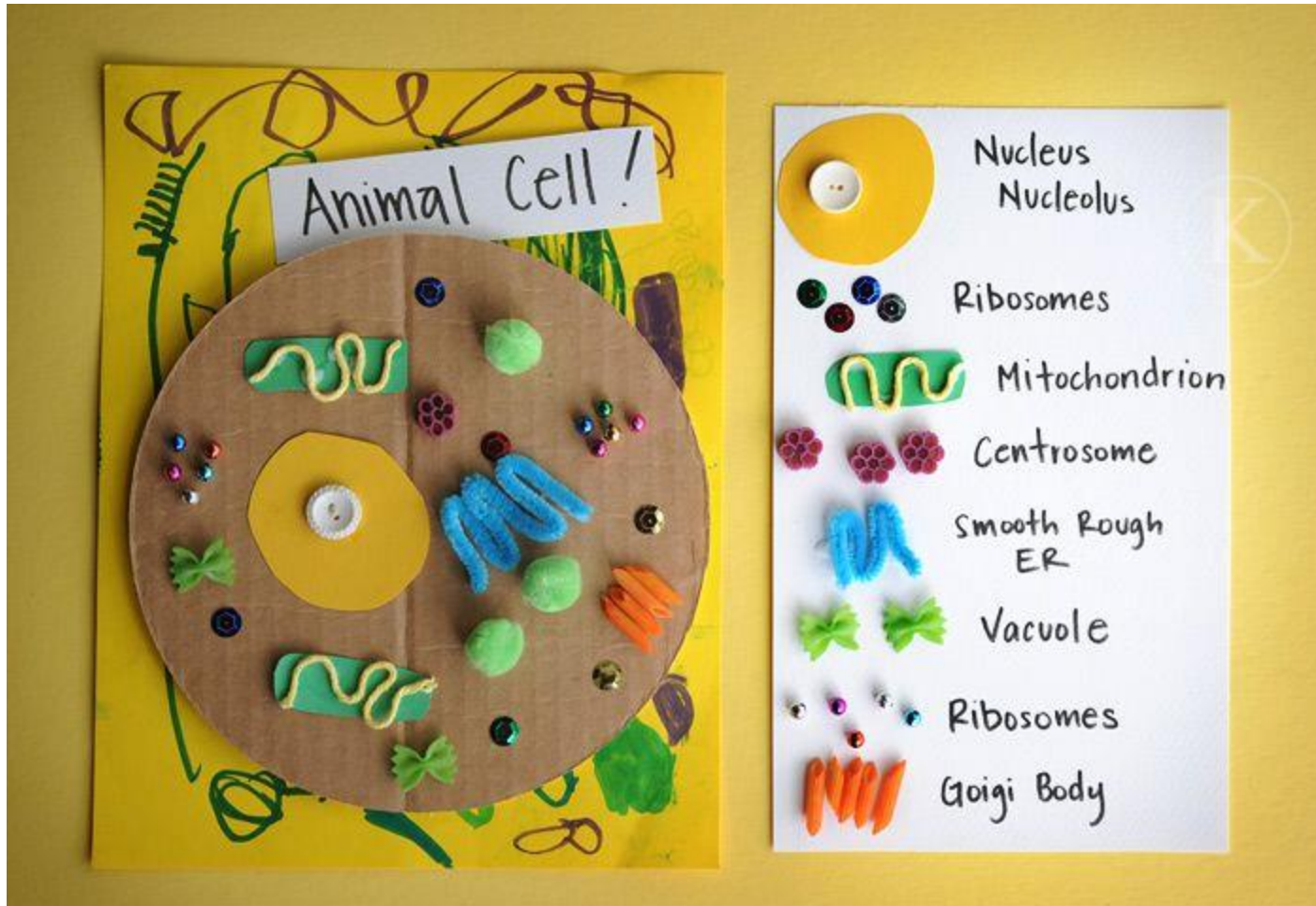


3 D Cell - this is a standard project for entry level biology classes, where students design a three dimensional cell.

5 creative ways to learn @ cells
[creative-ways-to-teach-the-cell/](http://www.biologycorner.com/2012/10/27/5-creative-ways-to-teach-the-cell/)

[http://www.biologycorner.com/2012/10/27/5-](http://www.biologycorner.com/2012/10/27/5-creative-ways-to-teach-the-cell/)

Hands-on activities



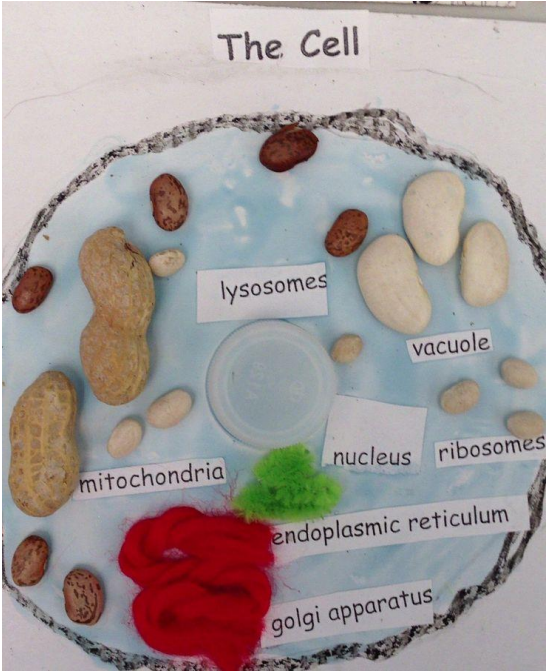
Paper Plates



FELT



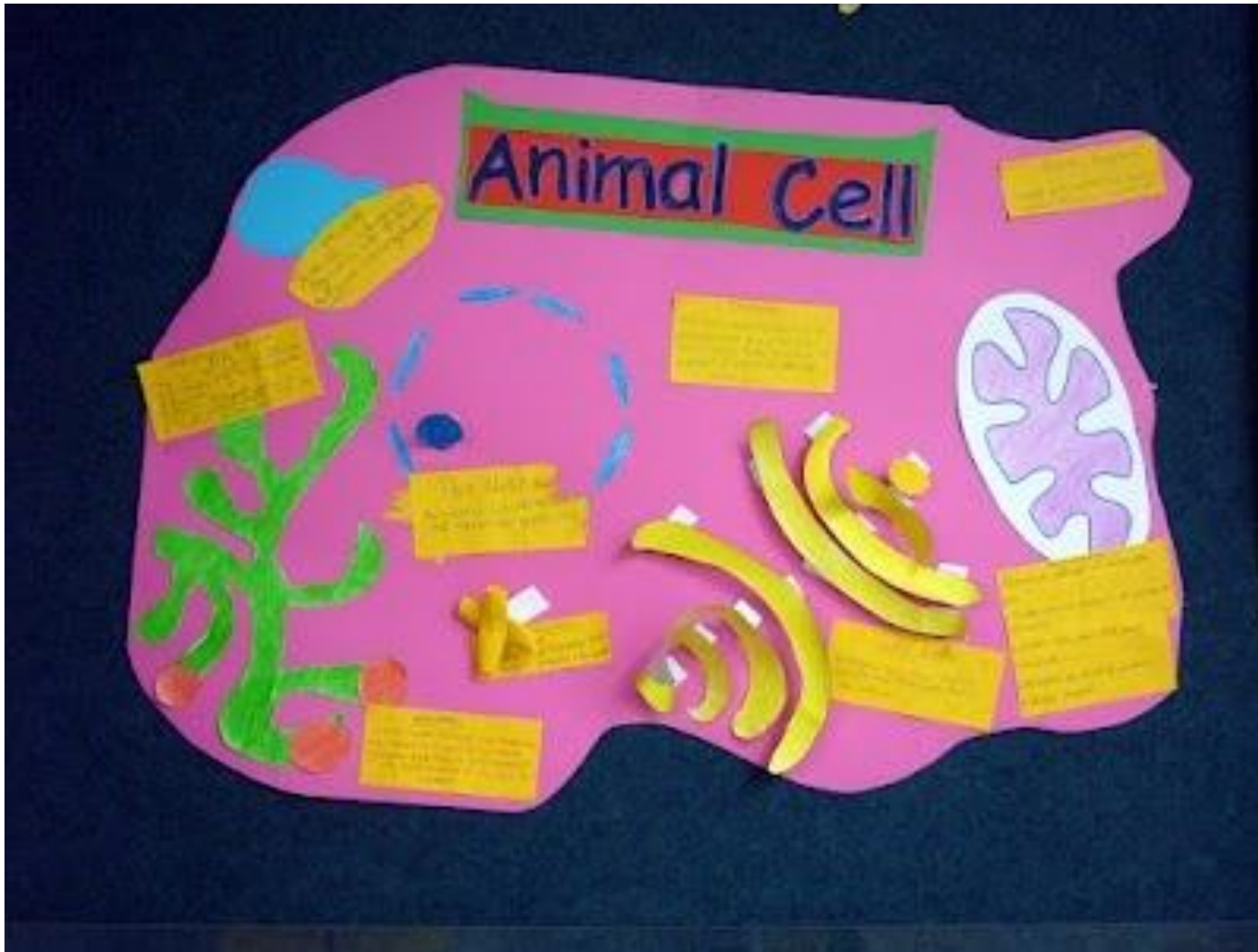
Tactile Elements



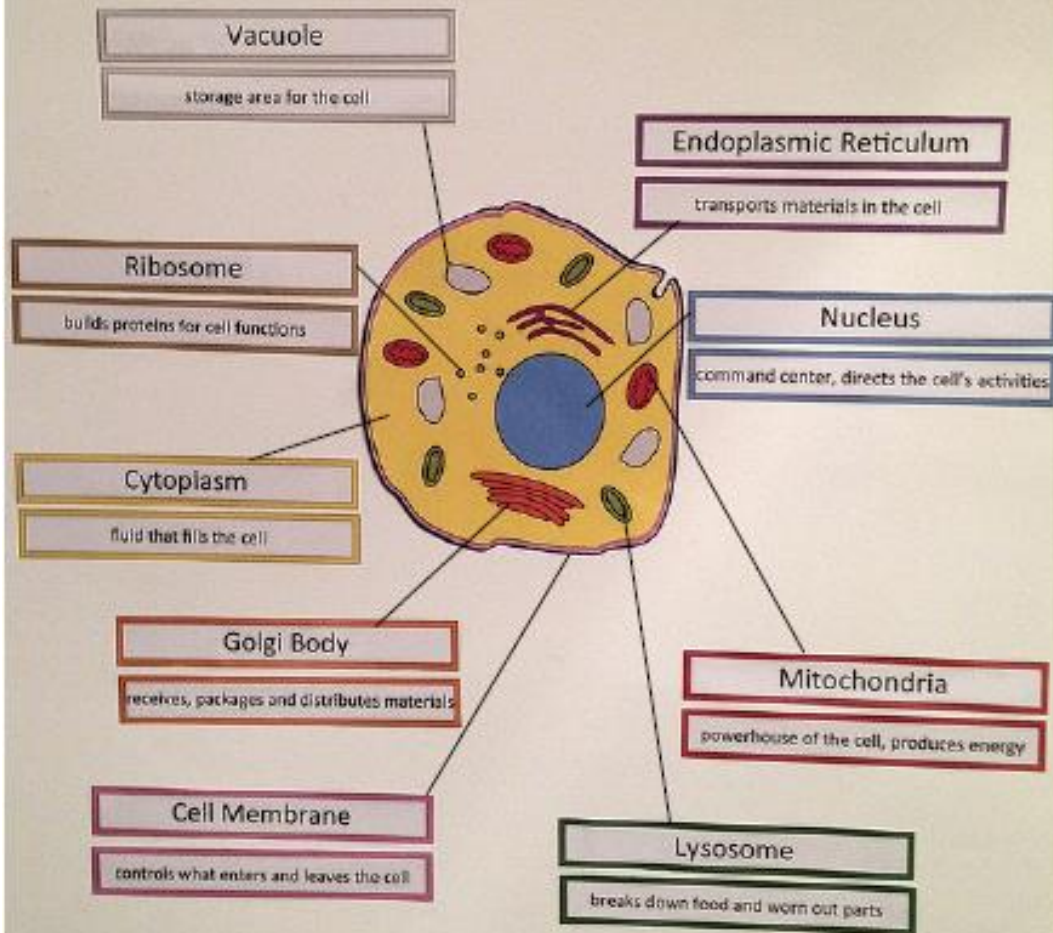
Tactile Elements



Interactive Posters




Animal Cell





Animal cell


Sydney McCord - 6th Period





 Cytoplasm

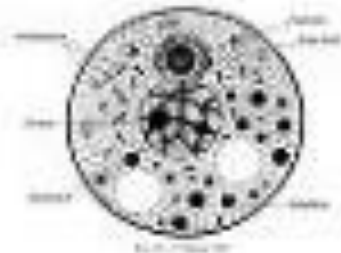
 Cell Membrane

 Nucleus

 Chromosomes

 Mitochondrion

 Vacuole



Parts of a Cell

By: Dr. Mark Jones
1st Grade Science
Teacher's Copyright © 2008

The **CELL MEMBRANE** is where we begin, it lets things out, and keeps things in.

The **CYTOPLASM** is sort of like jelly, it fills the cell and it keeps it steady.

The **NUCLEUS** controls the cell, with the Chromosomes it works quite well.

MITOCHONDRIA makes energy, with food, and oxygen that all cells need.

Parts of a Cell



cells

The basic structures of all living things.



cell membrane

The thin filmlike outer layer that holds the cell together and separates it from its environment. It works like a gatekeeper allowing certain substances in and out.



cytoplasm

A jellylike material made mostly of water. It fills the cell, and the other parts of the cell float in it.

©spelloutloud.com

Step 4: Provide lots of repetition



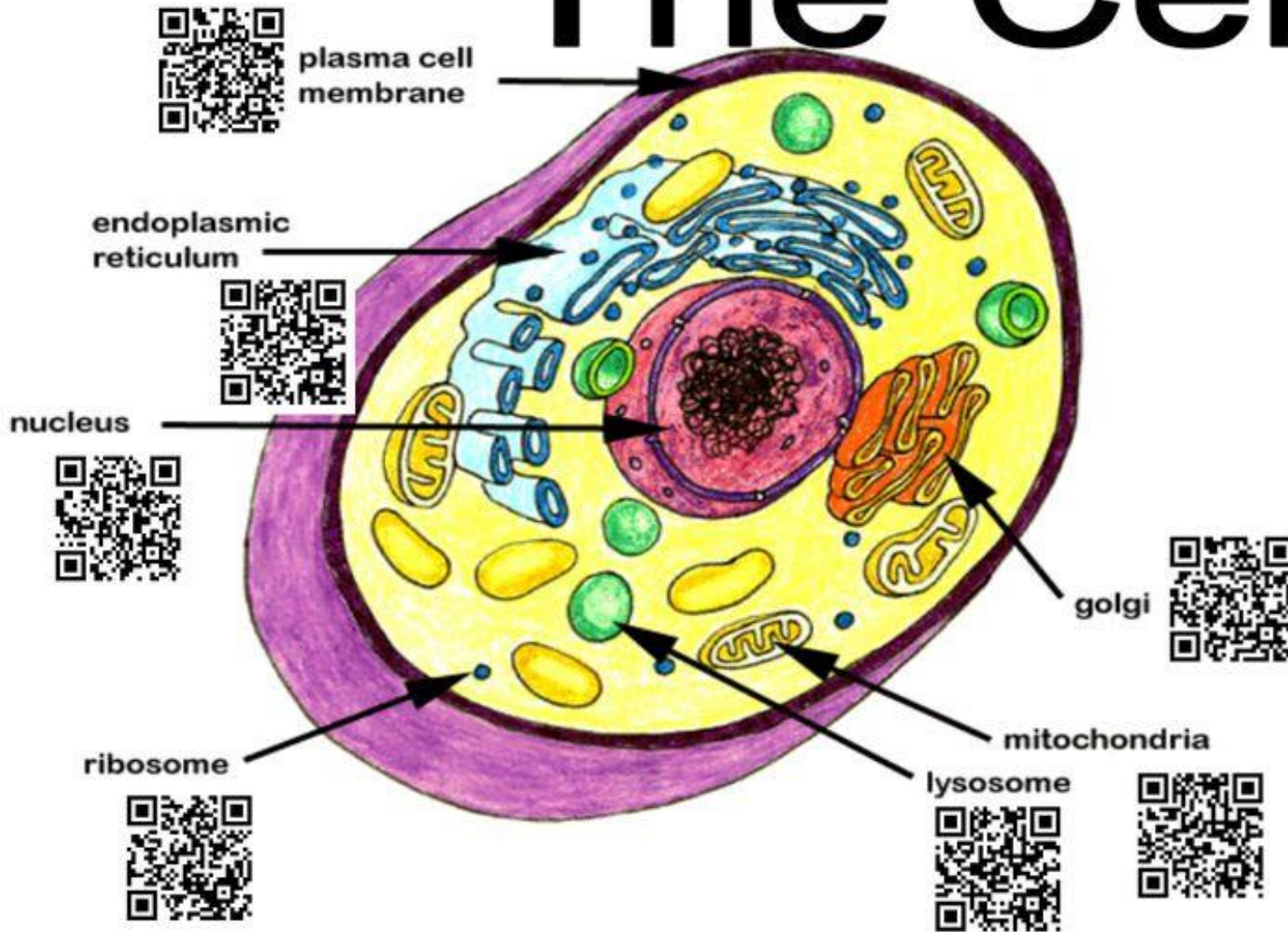


Fabric model of cell <http://project365-ujomi.blogspot.com/2010/09/cell-262365.html>

1. Cell Membrane – *braided cording*
2. Cytoplasm – *yellow felt*
3. Mitochondrion – *orange foam with jumbo yellow rick rack*
4. Ribosomes – *green tubular beads*
5. Lysosome – *teal felt*
6. Golgi Body – *red & gold wired ribbon*
7. Nucleus – *purple felt*
8. Nucleolus – *bottle cap with diamond glittered top.*

The cell is attached to a backing of stiff white felt and the banner is hanging by orange yarn attached to a wooden dowel.

The Cell



<https://sites.google.com/site/alicekeelerqr-codes/qr-posters/biology---cell>



Post- IT Cell - this model can be build in class using post it notes. The post-its can be drawn on, labeled or cut to particular shapes.

5 creative ways to learn @ cells <http://www.biologycorner.com/2012/10/27/5-creative-ways-to-teach-the-cell/>



<http://createteachandshare.blogspot.com/2013/11/things-that-i-love-and-catching-up.html>

Plant Cell Model Using a Shoe Box



-  Shoe box covered with green paper
-  Cotton (Cytoplasm)
-  Clay rolled into a rope (Cell Membrane)
-  Black paper ball (Nucleus)
-  Green, clay disc with beads (Chloroplast)
-  Yellow cotton ball (Vacuole)
-  Orange, oval shaped clay ball (Mitochondria)
-  Thick yarn (ER & Golgi)
-  Yellow, tiny clay ball (Ribosome)

Edible and non-edible in a shoe box

<http://www.buzzle.com/articles/how-to-make-a-plant-cell-model.html>



<http://www.howtogrowyourgeek.net/2012/01/12/htgyg-show-121-jimi-isaac-school-project-materials-and-having-a-good-craft-closet/>

Made with glycerin soap

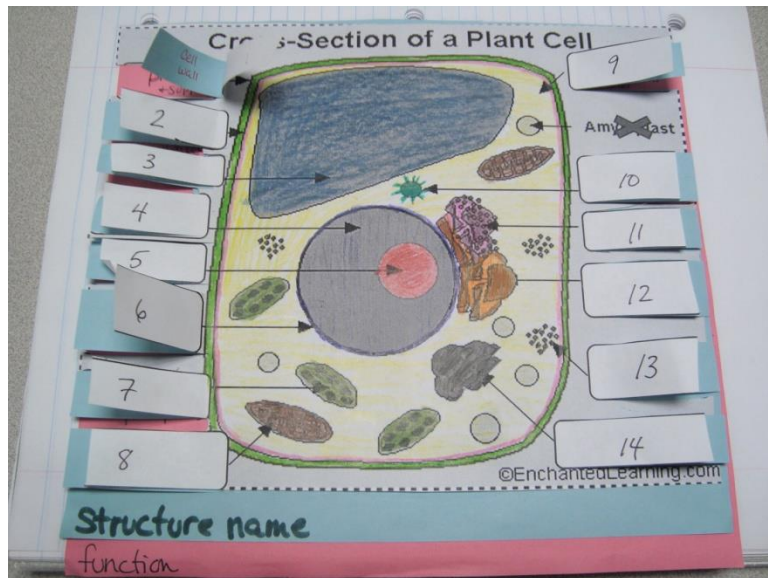
3D cell project

<http://mrsphillipsiscaughtinthemiddle.blogspot.com/2012/01/cells-freebie.html>

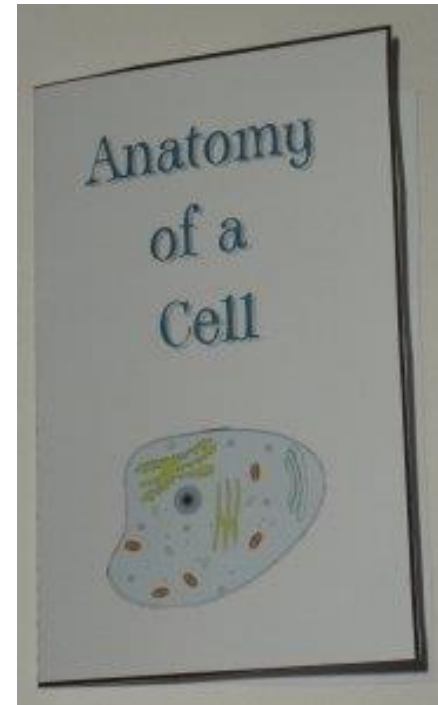
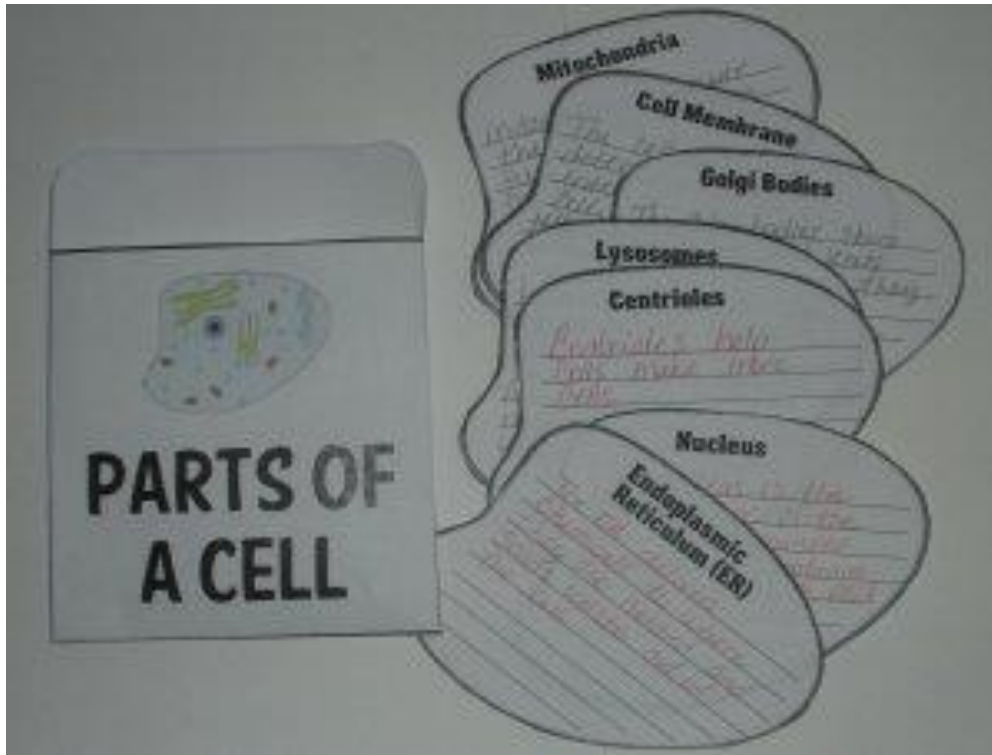


Making paper interactive

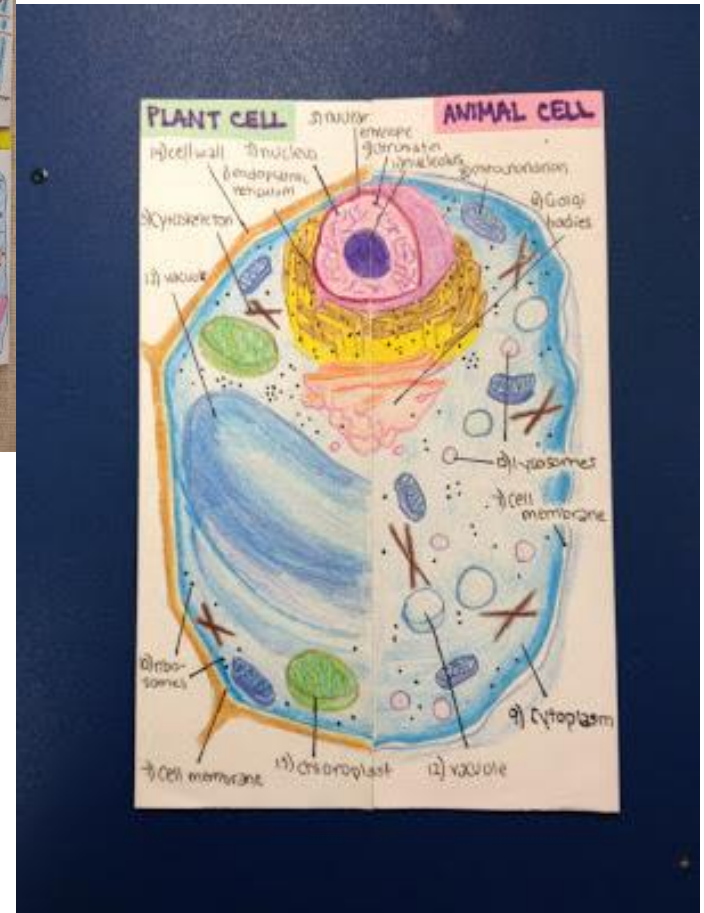
- Foldables



<http://mccarterbiology.edublogs.org/assignments/chapter-7-cells/>

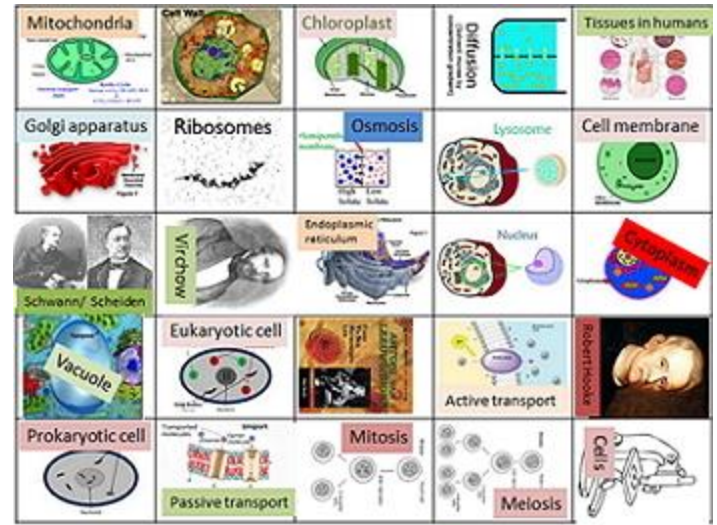
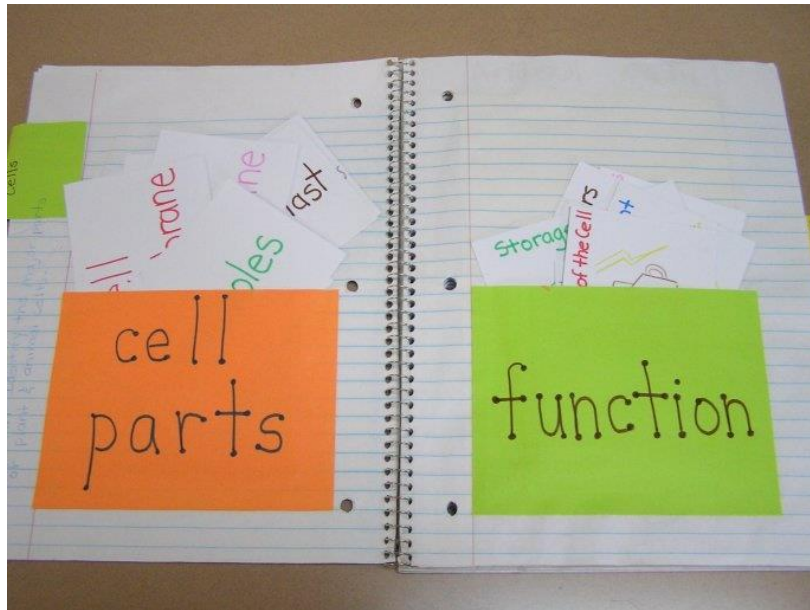


<http://www.cyncesplace.com/Journal/anatomy-lapbook-cells/>



Cell foldable Diagram & rubric downloaded

<http://cardsandcardigans.blogspot.com/2013/03/cells-foldable.html>



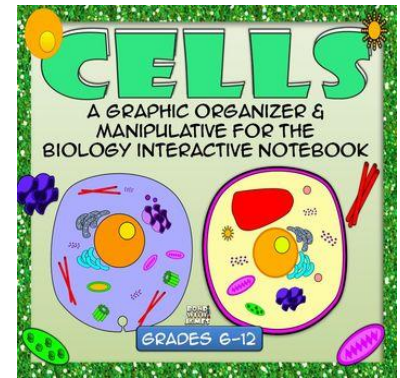
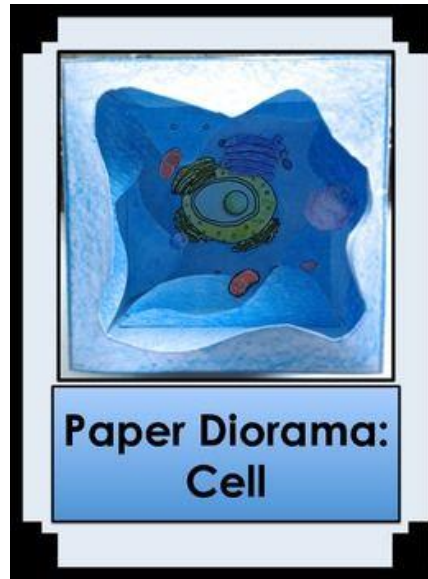
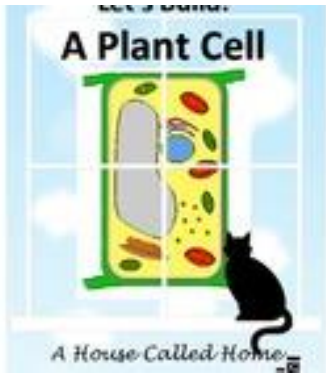
Cell Bingo



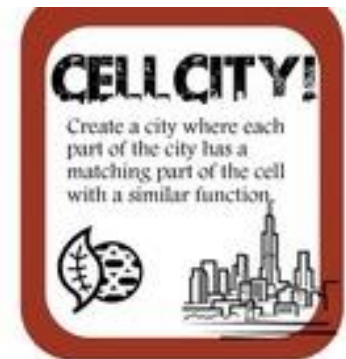
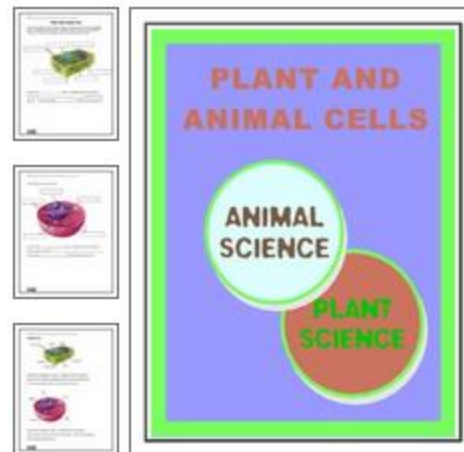
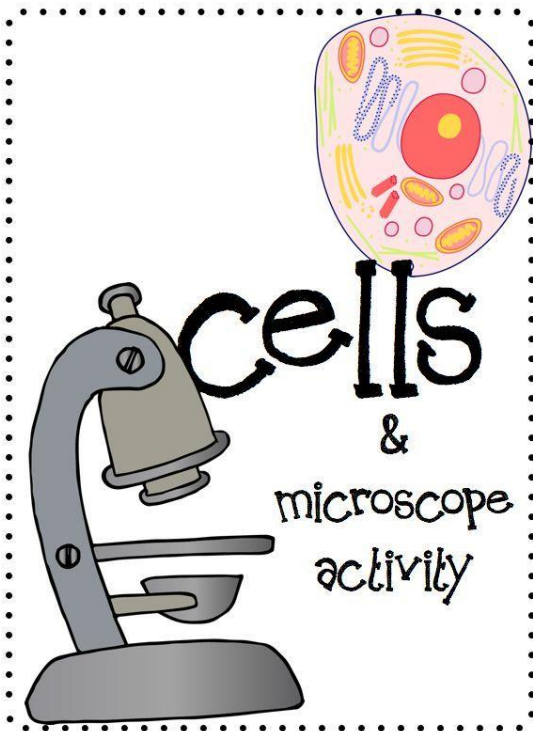
Identifying Cell with cell phone template

<http://sciencenotebooking.blogspot.com/2013/01/cell-phone-attempt.html> no template on site
 Cell phone is plant cell because of it's shape
 Other shape is animal cell - note flaps lift

Some TPT activities - for purchase



Not purchased but good



More for teacher background knowledge

Technology and websites



Spongelab.com

Online drag & drop for animal cell – errorless



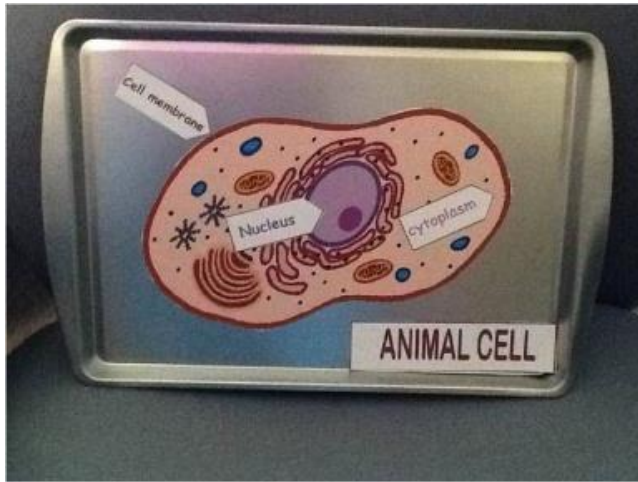
Science Online

Science Resources ▼



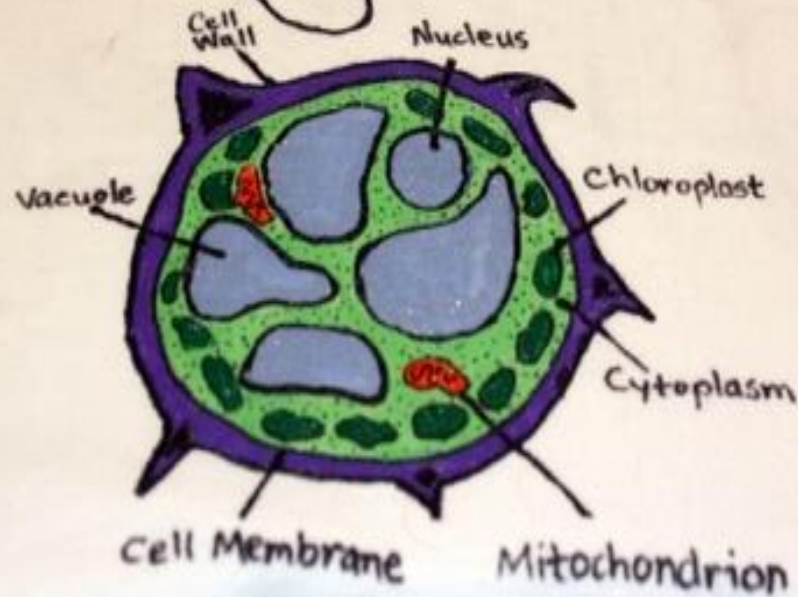
<http://classroom.jc-schools.net/sci-units/cells.htm>

Step 5: Let them show you what they learned (ASSESSMENT)



<http://www.myinspiredclass.com/create-3d-animal-cells-with-play-doh/>

Cell-cebrate Science

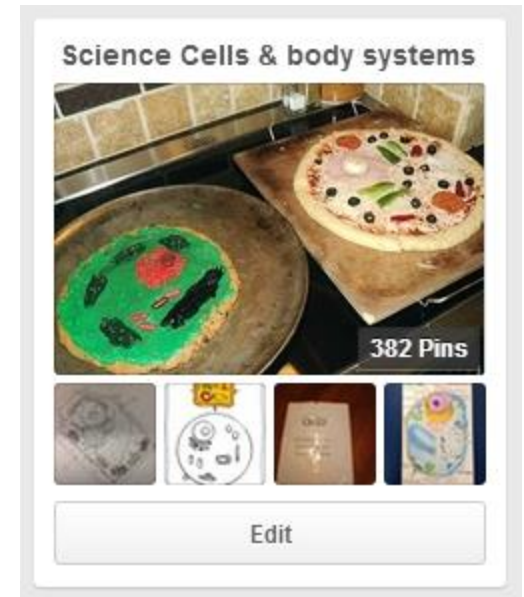


<http://www.sciencewear.net/>

Resources

- Pinterest = Juanita Pritchard

Pinterest



EDIBLE CELLS

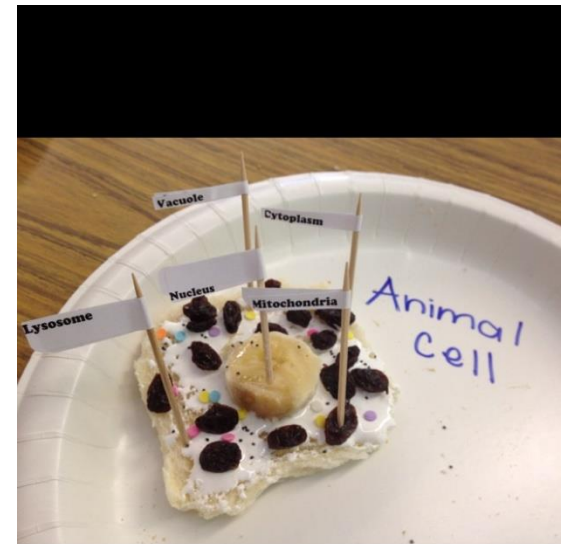


<http://www.pinterest.com/pin/188377196887802399/>

<http://www.pinterest.com/pin/188377196887802407/>



Video of process:
<https://www.teachingchannel.org/videos/sixth-grade-biology-lesson>



Edible Cells



No directions – cell in a baggie



Directions from book – Apologia
Anatomy



Great edible cell activities – good site

<http://www.se7en.org.za/2010/04/17/se7ens-edible-cell-biology-fun>



Making cells out of candy:
<http://teachingrealscience.com/2013/02/14/valentine-s-day-treat-candy-cells/>





Crust edge = cell membrane
Sauce & cheese = cytoplasm
Salami = nucleus
Mushroom = nucleolus
Onion = endoplasmic reticulum
Green pepper = golgi body
Red pepper = mitochondria
Pepperoni = vacuoles & centrioles
Olives = ribosomes & lysosomes

<http://ourjourneywestward.com/cells-and-dna/>



Online test for readers – higher -

<http://www.myschoolhouse.com/courses/O/1/70.asp>

Prezi that compares plant cell to a school:

<http://prezi.com/36hg5mx0bd31/cell-analogy-project/>

<http://prezi.com/mukrkgdenvmd/cell-analogies-project/> Prezi that compares
plant cell to a city

<http://www.kathimitchell.com/cells.html>

<http://waynesword.palomar.edu/lmexer1a.htm>

Study cells and cell parts by making models:

Make a Giant Cell - <http://www.fi.edu/tfi/activity/bio/bio-3.html>

http://www.accessexcellence.org/AE/AEC/AEF/1994/hopkins_cells.html

<http://www.crayola.com/lesson-plans/giantsize-cell-model-lesson-plan/>

Sketches - <http://www.childrensmuseum.org/sites/default/files/files/%20TCM%20BIOTECH%20UOS.pdf> (pages 30-33)

Plant and Animal Cells - play dough etc.-

http://www.edu.pe.ca/gray/class_pages/rcfleming/cells/demos.htm

Cell Theory - http://www.edu.pe.ca/gray/class_pages/rcfleming/cells/notes.htm

Three dimensional - <http://www.cal.org/siop/lessons/LPPA.html>

<http://www.ofcn.org/cyber.serv/academy/ace/sci/cecsci/cecsci082.html>

http://www.standards.dfes.gov.uk/schemes2/secondary_science/sci07a/07aq3?view=get

Karo Syrup Cells <http://sciencenetlinks.com/lessons/cells-1-make-a-model-cell/>

(see also) <http://sciencenetlinks.com/lessons/cells-2-the-cell-as-a-system/>

http://library.thinkquest.org/19037/making_a_cell.html

http://www.ehow.com/how_7855958_make-human-cell-5th-grade.html

Incredible Edible Cell (directions to make them)

<http://www.teach-nology.com/worksheets/science/bio/lab1/>

<http://www.accessexcellence.org/AE/ATG/data/released/0251-NickHoffman/>

<http://home.apu.edu/~skinnes/k12lifeK-7/cells.htm> (scroll down)

<http://www.childrensmuseum.org/themuseum/biotech/ediblecellcookie.htm>

<http://www.childrensmuseum.org/themuseum/biotech/ediblecellpuddingcup.htm>

<http://www.umaine.edu/NSFGK-12/images/PDFs/cookie2.pdf> (cookie, jello, pizza cells)

Vanderbilt Edible Cell

<http://teachers.net/lessons/posts/2580.html>

Various Jello Cell Activities:

<http://eduref.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Biology/BIO0035.html>

http://www2.nau.edu/~lrm22/lessons/edible_cell/edible_cell.html

<http://www.teach-nology.com/worksheets/science/bio/lab1/>

http://www.ehow.com/how_6344684_instructions-making-jello-cell.html

<http://www.enchantedlearning.com/subjects/animals/cell/jello/>

http://jan.ucc.nau.edu/~lrm22/lessons/edible_cell/edible_cell.html

Interactive Cell Diagrams - X Marks the Spot - click on the part to see a description

<http://www.uen.org/core/science/sciber/sciber7/stand-3/celldiag.shtml>

Clickable Plant Cell - <http://koning.ecsu.ctstateu.edu/cell/cell.html>

<http://www.purchon.com/biology/plant.htm>

<http://www.wellesley.edu/Biology/Courses/Plant/plant.html>

Animal Cell - <http://www.wellesley.edu/Biology/Courses/110/Animal/animal.html>

<http://www.wisc-online.com/Objects/ViewObject.aspx?ID=AP11403>

<http://www.purposegames.com/game/animal-cell-organelles-labeling-interactive-game>

Model Neurons and Brains - <http://faculty.washington.edu/chudler/chmodel.html>

Pictures - http://sps.k12.ar.us/massengale/edible_cell_pictures.htm

([directions for making cells](#))

<http://www.scapa.fcps.net/Display/baxterprojects/cells/>

<http://www.squidoo.com/3d-cell-model#module153172956>

Animations and Movies of cells -

<http://publications.nigms.nih.gov/multimedia/searchresults.asp?search=Cell Biology>

Plant and Animal Cells Hotlists -

Plant or Animal? <http://www.kn.pacbell.com/wired/fil/pages/listcomparinmr2.html>

Plant and Animal Cells <http://www.kn.pacbell.com/wired/fil/pages/listcellsr1.html>

Cellville Webquest - <http://www.kn.att.com/wired/fil/pages/webcellsmr.html>

Cells Sampler - <http://www.kn.pacbell.com/wired/fil/pages/samcellsl1.html>

Test Your Cell Knowledge <http://www.kn.att.com/wired/fil/pages/samcellstrje.html>

Sweet Links on Animal Cells <http://www.kn.pacbell.com/wired/fil/pages/listtheanimer.html>

Cell Treasure Hunt <http://www.kn.att.com/wired/fil/pages/huntcellsst.html>

<http://www.kn.att.com/wired/fil/pages/huntbuildingmi1.html>

Cell Inspector - <http://www.harcourtschool.com/activity/cell/cell.html>

Learn About Cells:

Biology Project from the University of Arizona - Cell Biology - descriptions and pictures

http://www.biology.arizona.edu/cell_bio/tutorials/pev/main.html

Cell information

Animal Cell printout and glossary: <http://www.enchantedlearning.com/subjects/animals/cell/index.shtml>

Plant cell picture and glossary -

<http://www.enchantedlearning.com/subjects/plants/cell/>

Cell - <http://gslc.genetics.utah.edu/units/basics/>

Cell notes - http://www.edu.pe.ca/gray/class_pages/rcfleming/cells/notes.htm

http://www.biologycorner.com/anatomy/cell/chap3_notes.html

Great Color Drawings of Cells:

Animal - <http://micro.magnet.fsu.edu/cells/animalcell.html>

Plant - <http://micro.magnet.fsu.edu/cells/plantcell.html>

Bacteria - <http://micro.magnet.fsu.edu/cells/bacteriacell.html>

Virus - <http://micro.magnet.fsu.edu/cells/virus.html>

Mitosis - <http://micro.magnet.fsu.edu/cells/mitosisjava/mitosisjava.html>

Cells Alive! <http://www.cellsalive.com/>

Plant cells http://www.cellsalive.com/cells/cell_model.htm

Animal cells http://www.cellsalive.com/cells/cell_model.htm

Bacterial cell <http://www.cellsalive.com/cells/bactcell.htm>

Plant and Animal Cells - <http://www.purchon.com/biology/cells.htm>

Comparison of Plant and Animal Cells
with hyperlinked labels

<http://waynesword.palomar.edu/lmexer1a.htm#plant>

Studying the

Cell <http://users.adelphia.net/~lubehawk/BioHELP!/cell.htm>

[Bacteria](#), [Plant Cells](#), and [Animal Cells](#) from I Can Do That!

<http://www.eurekascience.com/ICanDoThat/index.htm>

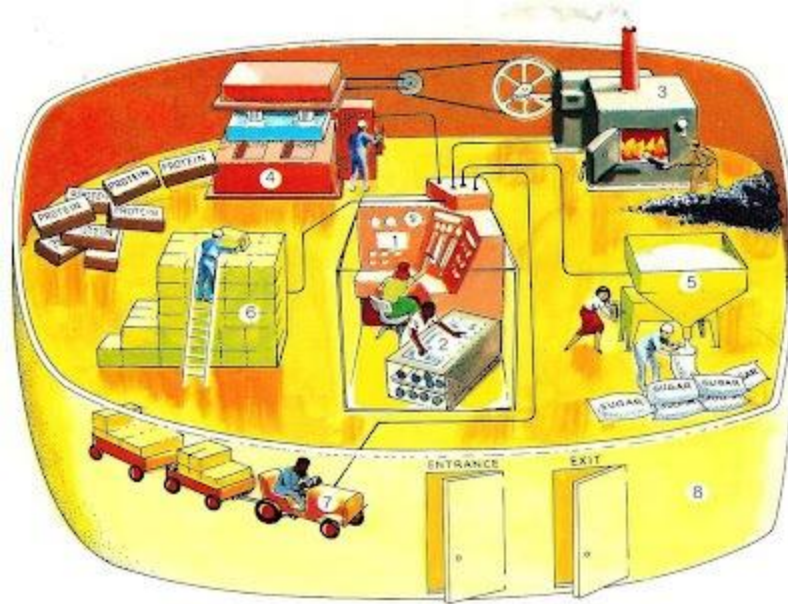
The Microbe Zoo -

<http://commtechlab.msu.edu/sites/dlc-me/zoo/>

I teach 7th grade Biology and we have a huge unit on cells. We do a lot of activities such as making 3-D models, posters of plant and animal cells, but my favorite activity is that we make cell brochures. They have to create a brochure that would sell a trip through a cell. They have to include all the parts of the cell that they would visit on their trip and what that part would be doing. These are creative and fun, I require them to be colorful and the more creative the better. Let me know if you want more info.

http://www.proteacher.org/a/14960_Cells_for_7th_grade.html

- On this site foldable and comparing cell to factory
<http://cavalierscience.blogspot.com/2009/04/cell-structures-and-functions-foldable.html>



- Another site for comparing to factory:
<http://www.biologyexams4u.com/2013/03/cell-analogy-cell-as-factory.html#.U3lkJdJdUVA>