

CBL BIOLOGY: LIFE SCIENCE OPTION
BSCS Green Version 10th edition
Biology An Ecological Approach
 Lesson Plan Quarter 2, Week 1, Day 1



Outcomes for Today

Standards Focus: 1acegij 4d

PREPARE

1. Background knowledge necessary for today's reading.

This chapter begins with an introduction to the cell theory. Explain that, like many concepts, scientists create artificial models to make sense of and help explain complex systems. Explain that we are now moving into what has been called the *levels of complexity* in living things. Explain this in terms students can understand related to their world.

2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

cell theory tissue organ system unicellular

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

Biological molecules combine to form proteins which combine to form amino acids which can combine to form genetic material.

Sugars and proteins are arranged to form cells.

4. Read directions for investigation/activity.

5. Read text. Ch 5 *The Cell* pp. 18-124 (Introduction and Section 5.1)

- Shared Reading RRP: Read, React, Predict every 2-3 pages
 Tape Partner Choral Silent Round Robin Reading

setting	Characters	pages
all living things ponds trees human body	cells algae cells maple cells nerve cells trachea cells	122

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text. Clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

All organisms are made up of tiny active units of life called cells.
 There are many different types of cells.
 Many cells are specialized for specific functions.
 Cells are the “basic units of life.”
 This is known as the cell theory.
 Theories serve as a model to describe systems.

7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity:

Read the information on the development of the cell theory on page 123. Robert Hook (1635-1703) first used the word cell because the tiny cells he observed with his primitive microscope in the bark of a Cork Oak reminded him of the rooms in a monastery. In order to create a visual picture of cells for students before any cell observation with a microscope, try this activity:

Try to identify all of the physical structures in and around the classroom that might be considered cells. For example, file drawers, cubicles, student desks, and more. If possible take a local walk with students pointing out the various structures which are composed of subdivided small structures. Examples might include tiles on the floor, closets, and any related structures. Have students list these various sub-groupings. Students could draw their “cells.”

Bring in some bottle corks of natural cork (getting harder to find) and, if possible, some bark from a Cork Oak for students to handle. If possible, use a razor blade to shave a thin layer of cork for students to observe with the aid of a microscope. (You won't need much magnification.)

Other possible activities for a class group or individual

- Bookmark Open Mind Portrait g6 Graphic Organizer
 g7 Main Idea Graphic Organizer c1-12 Cubing Postcard Prop
 Poster Ad Map Retelling Reader's Theatre Cartoon Rap

Key Questions

What does unicellular mean in your own words?
 Where are cells found?
 Explain the cell theory to an elementary school child.
 For that matter, what is a theory?
 What is a hypothesis?

Remember to ask literal structural idea craft author literature life
 evaluate and inference questions every day.

Bridge to a language building activity

Key Paragraph

All the organisms scientists have examined are made up of tiny, highly active units called cells. Some organisms are unicellular. Each one consists of only a single cell that carries out all the activities of the organism. Others are multicellular and may be composed of trillions of cells.

EXTEND**11.** Prompt every student to write a short product tied to today's reading

Think of yourself as a single cell and part of a larger organism. This "organism" could be your friends, family, or other group associated with you. Draw a diagram of how you (the cell) fit into this larger "organism." Write a short description of this organism addressing the following questions:

What do you, the cell, do for the larger group?

What does the larger organism or group do for you?

Who gets the best deal here?

12. Close with a short summary.

Extend the reading to the students' lives or to the world.

CBL BIOLOGY: LIFE SCIENCE OPTION
BSCS Green Version 10th edition
Biology An Ecological Approach
Lesson Plan Quarter 2, Week 1, Day 2



Outcomes for Today

Standards Focus: 1acegij 4d

PREPARE

1. Background knowledge necessary for today's reading.

The concept that living things are formed from cells was not possible until the development of the first light microscopes. Explain that as technology improves, scientists have been able to explore smaller and smaller units of life and matter.

2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**illuminate
microscope**

**magnify
electron microscope**

light microscope

phase contrast

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

Cells were not described before microscopes.

Plant cell walls were described first and named because they reminded the scientist of the walls of rooms in a building.

Each cell is a living, reproducing unit of life.

4. Read directions for investigation/activity.

5. Read text. Ch 5 *The Cell* Section 5.2 pp. 124-125

- Shared Reading RRP: Read, React, Predict every 2-3 pages
 Tape Partner Choral Silent Round Robin Reading

setting	Characters	pages
human mouth	cheek cells	124

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text. Clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

The microscope was invented a long time ago.

Before the invention of the microscope, we did know of the existence of many small living things.

Most cells are individually transparent.

The electron microscope is the most powerful type of microscope.

7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity:

If you do not have microscopes, you might want to work with students in a build-your-microscope project. Materials are rather inexpensive. Information and instructions are available through these links:

http://www.funsci.com/fun3_en/ucomp1/ucomp1.htm

and

<http://www.mos.org/sln/sem/myomicro.html>

If you do have some microscopes, introduce students to proper use utilizing this resource:

http://www.eduref.org/Virtual/Lessons/Science/Process_Skills/SPS0201.html

Another option is to go to Investigation A2.2 in the text, page 733. This is a very good (although somewhat more detailed) introduction to proper microscope use.

Other possible activities for a class group or individual

Bookmark Open Mind Portrait g6 Graphic Organizer

g7 Main Idea Graphic Organizer c1-12 Cubing Postcard Prop

Poster Ad Map Retelling Reader's Theatre Cartoon Rap

Key Questions

How do each of the following microscopes work? Explain and use a diagram:

Light microscope

Phase contrast microscope

Electron microscope

List them in order of their power (magnification).

Why are dyes used with the light microscope?

What is the disadvantage of using dyes?

Remember to ask literal structural idea craft author literature life
 evaluate and inference questions every day.

Bridge to a language building activity

If possible, have students answer the discussion questions on page 736.

Key Paragraph

Biologists began to study cell structure and function in detail as the cell theory developed. To do so, they used different tools and technologies. The light microscope, based on microscopes invented hundreds of years ago, is still used in laboratories for many basic tasks.

EXTEND**11. Prompt every student to write a short product tied to today's reading**

The first cells viewed through a microscope were the cell walls of a plant. They reminded the person who named them of small rooms like those found in a monastery or jail. Let's suppose you were "doing time" in a jail cell. How is your jail cell similar to a plant cell? Write a short paragraph from the perspective of inside your cell.

12. Close with a short summary.

Extend the reading to the students' lives or to the world.

CBL BIOLOGY: LIFE SCIENCE OPTION
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Lesson Plan Quarter 2, Week 1, Day 3



Outcomes for Today

Standards Focus: 1acegij 4d

PREPARE

1. Background knowledge necessary for today's reading.

This is the lesson in which we will begin to study the cell in detail. You may want to talk about differentiation and specialization in various systems. Use systems that students might be familiar with, such as families, schools, and various job situations. Explain that the larger a system, the greater the need for individual specialization. For example, you could compare a one room schoolhouse with a large university.

2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

prokaryotes eukaryotes organelles organ nucleus

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

Cells are the "basic units of life." The cell theory was developed to explain

1. Individual cells are the basic unit of structure and function.
2. All cells come from other cells.

4. Read directions for investigation/activity.

5. Read text. Ch 5 *The Cell* Section 5.3 pp. 125-128

Also see the supplemental information (The Cell As a Factory) attached to this lesson plan.

- Shared Reading RRP: Read, React, Predict every 2-3 pages
 Tape Partner Choral Silent Round Robin Reading

setting	Characters	pages
generalized plant cell	cell wall, chloroplasts, vacuoles	127
generalized plant and animal cells	cell membrane, nucleus, cytoskeleton, golgi apparatus, cytoplasm, endoplasmic reticulum, mitochondria	126& 127
generalized animal cell	centrioles, lysosomes	126

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text. Clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

There are two groups of cells known as **prokaryotes** and **eukaryotes**.

Prokaryotes are a very simple primitive group of cells and include **bacteria**.

Eukaryotes contain many smaller parts known as **organelles**. Organelles are like "mini organs" in each cell, each with at least one specific function. An example of an organelle is the nucleus which serves as the "brain" of the cell and contains the genetic material. Prokaryotes are very small cells while eukaryotes are generally larger and more complex.

7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity:

The cell has often been compared to a “mini-factory” with many different individual functions performed by various groups of workers (organelles). Have students read the supplement at the end of this lesson plan and then carefully design and draw their own cell factory. Have them describe the purpose and give it a personalized name. Creativity should be encouraged and supported. These fine works of art should be added to the word and knowledge walls.

Another version of this can be found in activity 5.3 in the Student Study Guide (page 43). You may want to do both or divide the class into two groups depending on the time available.

Other possible activities for a class group or individual

- Bookmark Open Mind Portrait g6 Graphic Organizer
g7 Main Idea Graphic Organizer c1-12 Cubing Postcard Prop
Poster Ad Map Retelling Reader's Theatre Cartoon Rap

Key Questions

List the two major groupings of cells and characteristics of each.

What are organelles and why are they important?

Use the diagrams on pages 126 and 127 to answer:

1. What are some of the differences between plant and animal cells?
2. What are some of the similarities?
(Note: A Venn diagram would work well for explanation purposes.)
3. List at least five organelles and their functions.

Remember to ask literal structural idea craft author literature life
evaluate and inference questions every day.

Key Paragraph

Profound differences in the structure of cells separate all known living organisms into two groups: prokaryotes and eukaryotes. Cells of prokaryotes (bacteria) do not have a membrane enclosing their DNA. Cells of eukaryotes (plants, animals, and fungi, for example) usually have at least one membrane-enclosed structure, the nucleus, which contains DNA.

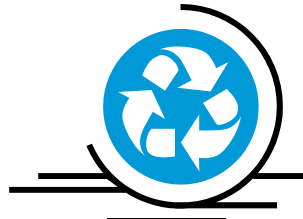
EXTEND**11.** Prompt every student to write a short product tied to today's reading

Students have now been introduced to the cell. Have them write a little rap to address one or more of the following topics:

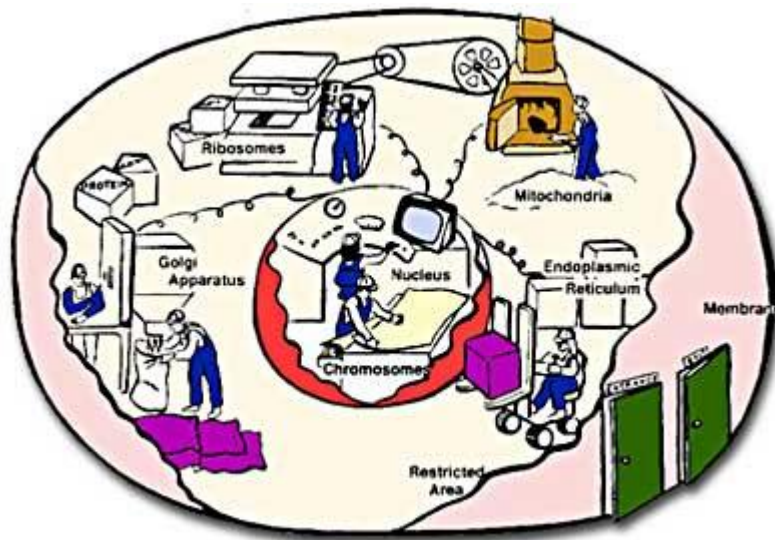
1. The differences between plant and animal cells
2. Prokaryotes and eukaryotes
3. Cells and organelles

12. Close with a short summary.

Extend the reading to the students' lives or to the world.



Supplemental Student Investigation/Activity
The Cell as a Factory *Model Drawing*



A cell can be thought of as a "factory" with different departments, each performing specialized tasks.

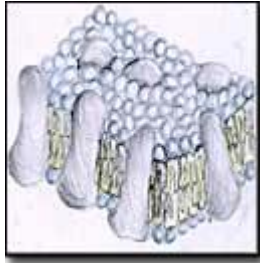
Imagine a busy factory manufacturing the latest must-have gadget. Whether they make bicycles, cell phones, or automobiles, most factories are set up in essentially the same way.

All factories have exterior walls that protect and support them and interior walls that create separate work areas. They usually have some kind of production line where a product is assembled and an executive department that decides what product is made. A finishing department processes and prepares the product for shipping, and a packaging department wraps the product.

In addition, a factory has a receiving department that brings in the components it needs to make its product, a communications department that allows it to contact suppliers, and a power plant that provides the energy it needs to run. Finally, a custodial staff keeps everything clean and in good working order.

Cells are very similar to factories. To stay alive and function properly, cells have a division of labor similar to that found in factories. Here, we will examine cells as protein-producing factories.

Cell Structure: A summary



A cell's plasma membrane regulates what enters or leaves the cell.

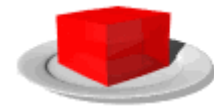
All eukaryotic cells are composed of a plasma membrane, a nucleus, and cytoplasm. These structures can be compared with a factory's departments.

The **PLASMA MEMBRANE** regulates what enters or leaves the cell. It is analogous to the shipping and receiving department of a factory. The plasma membrane also functions as the communications department because it is where the cell contacts the external environment.

The **NUCLEUS** (or the executive department) runs the cell factory and controls all cell activity. It determines what proteins are to be made and stores all the plans for any proteins the cell currently

makes or has made in the past.

The **CYTOPLASM** includes everything between the cell membrane and the nucleus. It contains various kinds of cell structures and is the site of most cell activity. The cytoplasm is similar to the factory floor where most of the products are assembled, finished, and shipped.



Cytoplasm is the gelatin-like material that is found inside the cell membrane.

Why is it so important for the cell to be a busy factory? Remember how the second law of thermodynamics states that all things tend to be moving toward a state of disorder? Life, and the cell in particular, beats these odds by continuing to take in "ordered" supplies. It creates more ordered products from raw supplies. It also replaces old and degraded supplies. A cell accomplishes all these tasks by utilizing energy converted from the sun.

The cell "factory" on this tour contains many interesting departments, all of which are directly or indirectly powered by solar energy. Without energy from the sun, no life could exist.

Activity

Using these principles and the information found in section 5.3 of the text, you can now create your "cell factory" drawing.

CBL BIOLOGY: LIFE SCIENCE OPTION

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Biology An Ecological Approach

Lesson Plan Quarter 2, Week 1, Day 4



Outcomes for Today

Standards Focus: 1acegij 4d

PREPARE

1. Background knowledge necessary for today's reading.

You have been spending time reading and studying about the cell. It is now time to get some "hands on" time. In order to do this, you will need to carefully read the supplemental investigation attached to this lesson plan. This is one that will require some preparation. You will need to prepare the play-dough, and you will need to prepare the students. Depending on how they have worked or can work together, modify the process as needed.

2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

3-dimensional 2-dimensional play-dough organelles visualize

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
 - Point to the concept chart as you quickly review it.
- Use this time to review all of the information studied on the cell to date, including but not limited to:
- The cell theory and how it was developed
 - The origin of the word cell
 - The importance of the microscope in the discovery and study of cells
 - The two basic types of cells (prokaryotic and eukaryotic)
 - The various parts of the cell (organelles)
 - The differences and similarities between plant and animal cells

4. Read directions for investigation/activity.

5. Read text. Section 5.3 pp. 126-127

- Shared Reading RRP: Read, React, Predict every 2-3 pages
 Tape Partner Choral Silent Round Robin Reading

setting	Characters	pages
the student-made cell model	cytoplasm (plain play-dough) endoplasmic reticulum (yarn or spaghetti) ribosomes (pepper) mitochondria (purple play-dough) vacuole (plastic bubble packing) lysosome (red play-dough) chloroplasts (green play-dough) cell wall (aluminum foil) cell membrane (plastic wrap) nucleus (blue play-dough) nuclear membrane (plastic wrap)	Attached student investigation 5.3

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text. Clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

Visualizing often depends on the person looking. Three-dimensional is not flat. I'm not sure if we can do this because I have not played with play-dough since I was a kid. I am not sure if this is going to turn out. Can we eat this stuff?

7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity:

Constructing a Cell Model

There are several web sites that can help with this. It is suggested that you visit these first and then begin the process. You will need some lead time to organize materials.

<http://www.biologylessons.sdsu.edu/classes/lab7/lab7.html>

or

<http://www.cellsalive.com/cells/3dcell.htm>

This one can be used if you have a projector to show the cell parts.

Other possible activities for a class group or individual

Bookmark Open Mind Portrait g6 Graphic Organizer

g7 Main Idea Graphic Organizer c1-12 Cubing Postcard Prop

Poster Ad Map Retelling Reader's Theatre Cartoon Rap

Key Questions

How has your understanding of the cell changed since constructing your model?

How are plant and animal cells different? How are they similar?

What was the most difficult part of constructing your model cell?

Remember to ask literal structural idea craft author literature life
 evaluate and inference questions every day.

Key Paragraph

Many students have trouble visualizing cells as three-dimensional units, containing several different parts, working together. As they study pictures in the text (pages 126-127), they can get the impression that cells are flat, two-dimensional units.

EXTEND

11. Prompt every student to write a short product tied to today's reading

Let's suppose that through some stroke of magic, your cell "comes alive" overnight when everyone is gone. It begins to talk to other cells. Write a paragraph from the

perspective of this cell about how you and your group worked together to construct the cell.

12. Close with a short summary.

Extend the reading to the students' lives or to the world.



Supplemental Student Investigation 5.3 Student-Constructed Cell Models

INTRODUCTION:

Many students have trouble visualizing cells as three-dimensional units, containing several different parts, working together. As they study pictures in the text (pages 126-127), they can get the impression that cells are flat, two-dimensional units.

PURPOSE:

The purpose of this activity is to provide students with a hands-on activity which will enhance their understanding of the 3-D characteristics of cells while reinforcing their knowledge of plant and animal cell structure. It can serve as an excellent introduction to cells and cell theory.

OBJECTIVES:

Students will be able to:

1. Compare and contrast the cell structures of plants and animals.
2. Demonstrate and understand the three-dimensional aspect of cell structure.
3. Identify the various parts of plant and animal cells.

RESOURCES/MATERIALS: Play-dough, food coloring or tempera paints (red, purple, green, blue), one pair disposable gloves, yarn or undercooked spaghetti, pepper, plastic-bubble packing, aluminum foil, plastic wrap, pencil shavings, scissors, one large knife (watch this one), glue

Cell structure list and possible materials for each group:

1. Cytoplasm -- play-dough (plain - approx. 260g or 8oz)*
2. Endoplasmic reticulum -- yarn or cooked spaghetti
3. Ribosomes -- pepper
4. Mitochondria -- play-dough (purple - approx. 7g)**
5. Vacuole -- plastic-bubble packing
6. Lysosome -- play-dough (red - approx. 5g)
7. Chloroplasts -- play-dough (green - approx. 10g)

8. Cell wall -- aluminum foil (approx. 12" X 7")
9. Cell membrane -- plastic wrap (approx. 12" X 16")
10. Nucleus -- play-dough (blue - approx. 20g)
11. Nuclear membrane -- plastic wrap (approx. 3"X6")
12. Chromosomes -- pencil shavings

* Play-dough recipe: This makes about 850g (30oz) - enough for 3 groups.

- 1 C. baking soda
- 1 C. flour
- 1 C. corn starch
- 4 t. cream of tarter
- 2 T. oil
- 1-3/4 C. water

Stove top method:

Mix and cook until the dough leaves the side of pan. Cool on plate with wet cloth on top.

Oven method: Bake @ 150 F. overnight.

** To color play-dough use food coloring or tempera paints. (Using rubber or disposable gloves is a good idea.)

ACTIVITIES AND PROCEDURES:

1. After studying cell structure, divide the class into small groups.
2. Gather all materials and have them laid out according to the number of student groups. (See materials list below.)
3. Distribute materials and lists of cell structures to each group.
4. Inform groups they will be making two cells -- one plant cell and one animal cell. When they finish, each cell will be about the size of a tennis ball. The first part of the class period will be spent making the cell structures themselves. Instruct students to wait before putting the cells together until you can explain the procedure. Have group leaders assign responsibility for each cell part, to the group members. (The cell structure list also includes possible materials which could be used. These materials could be expanded or substituted.)

5. Have the "cell membrane people" cut the large piece of plastic wrap in half and place each piece on the table.
6. Have the "cytoplasm people" form two balls using the plain play-dough or clay. Lay one ball on each piece of plastic wrap and press each into a "pancake" about 6" in diameter.
7. Instruct them to designate one pancake "animal cell" and the other "plant cell."
8. Have members of each group find the supplies they need to represent their cell structures, then cut, form, fold, paste, etc. until their structure is simulated. Then place the finished structures in a pile on the center of the appropriate pancake (exception -- cell wall).
9. When all of the cell parts are completed and in place, have someone in each group "gather up" the pancake carefully cupping it around its "topping" and seal all of the edges together forming a ball. Next have the "cell membrane people" wrap the plastic wrap around the cytoplasm and have the "cell wall people" wrap the aluminum foil around the plant cell.
10. Depending on the length of time available, cells may be set aside for the next class period or each may be cut in half with a large knife right away.

PUTTING IT ALL TOGETHER:

The students are excited to see their parts in the cell and this leads to an excellent opportunity for students to share ideas, reasons, and information with the groups and the class. This is also an ideal opportunity to compare the similarities and differences of the two types of cells. These should be put on display. Several could be saved for future years. The play-dough will harden. This activity works equally well as a structured, teacher-directed activity, or a creative small group or individual endeavor; the students' own experience and knowledge are the only determinants.

CBL BIOLOGY: LIFE SCIENCE OPTION

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Biology An Ecological Approach

Lesson Plan Quarter 2, Week 1, Day 5



Outcomes for Today

Standards Focus: 1acegij 4d

PREPARE

1. Background knowledge necessary for today's reading.

Why study cells? Understanding cells and cell functions is key to understanding all living things. Each cell is a “mini universe” of the living world. The cell is the first step towards organization of living things. It goes like this: cell, tissue, organ, system, and on to the individual living organism.

2. Vocabulary Word Wall.

Introduce five important, useful words from today's reading.

**multicellular
apparatus**

**cell membrane
vesicles**

endoplasmic reticulum

golgi

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

A small unit of life is known as a cell. Cells were named and studied in detail after the invention of first the light microscope and then the electron microscope.

The two major types of cells are prokaryotes and eukaryotes. The primary difference between plant and animal cells is the presence of a cell wall in plant cells.

4. Read directions for investigation/activity.

5. Read text. Ch 5 *The Cell* Section 5.4 pp. 128-129

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- Shared Reading RRP: Read, React, Predict every 2-3 pages
 Tape Partner Choral Silent Round Robin Reading

setting	Characters	pages
inside plant and animal cells	cell membrane	128
	endoplasmic reticulum	129
	golgi apparatus	129
	vesicles	129

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text. Clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

Each cell within a living organism has a specific function. Humans have at least 200 different kinds of cells. The outer "skin" of a cell is the cell membrane. Material moves in and out of the cell through the cell membrane. The liquid within the cell is called cytoplasm. One of the "mini organs" in a cell (organelle) is the endoplasmic reticulum. It helps with the making of fats. The golgi apparatus serves to package and export from the cell materials manufactured in the cell. The cell membrane is important because it controls the flow of materials in and out of the cell.

7. Post information on the billboard. Add new information to ongoing class projects on the wall.

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity:

Osmosis through a semi-permeable membrane

This is a simple activity designed to show how liquids move through a membrane such as the cell membrane.

The student will use a test tube containing a starch solution covered with cellophane to simulate a cell. The "cell" will be inverted into a beaker of water that contains iodine. When starch comes into contact with iodine, it turns a bluish-black color. This color change will allow the students to observe the movement of the water, which contains iodine, into the "cell." In addition, this simulation allows students to visualize how the cell membrane controls what moves in and out of the cell. For example, if the particles are too large, as the starch molecules are, they will not be allowed to enter or exit the cell.

The student will then be asked to record whether the water moved into or out of the cell. The position of the bluish-black color will allow the student to determine which way the movement occurred. Using the steps of the scientific method, ask students to write a lab report stating their hypothesis, using drawings to show the set-up, and writing out a conclusion. They enjoy this lab because they can actually "see" it work.

Other possible activities for a class group or individual

- Bookmark Open Mind Portrait g6 Graphic Organizer
- g7 Main Idea Graphic Organizer c1-12 Cubing Postcard Prop
- Poster Ad Map Retelling Reader's Theatre Cartoon Rap

Key Questions

Why is the cell membrane so important in the functioning of the cell?

What is cytoplasm?

What is the function of the organelle known as the endoplasmic reticulum found in each cell?

What purpose does the cell membrane serve to each cell?

Remember to ask literal structural idea craft author literature life evaluate and inference questions every day.

Key Paragraph

Each type of cell found in a multicellular organism has a specific role in making it possible for the organism in a changing environment. In a large animal such as a human, there are at least 200 different types of cells. The main types of cells have a similar basic pattern. Depending on their roles, however, they may differ in some details.

EXTEND**11.** Prompt every student to write a short product tied to today's reading

Have you ever heard of the term “bouncer”? (Ask around if you have not.) In a way, the cell membrane serves as a bouncer selecting who (what) is allowed in or out of the cell. Write a short job description of the “cell bouncer.” Draw a picture as well to go along with your paragraph.

12. Close with a short summary.

Extend the reading to the students' lives or to the world.