

Project 2: Movement and Music in the Plant Cell

Animal and Plant Cells • Relationships/
Parts of a Whole/Comparison



Project Essential Questions

- What are the functions of the various plant cell organelles?
- How can I use movement and music to help me learn the different functions of each plant organelle?

PROJECT DESCRIPTION

This lesson introduces the various organelles in a plant cell (chloroplast, cytoplasm, cell wall, cell membrane, nucleus). Students create riddles for the various organelles. Students then explore applying rhythms and movements to the organelles that support the function.

LEARNING TARGETS

“I Can...”

- Identify and label the various parts of a plant cell
- Interpret the function of the different organelles
- Use movement and rhythm to help me learn the different functions of each organelle in a plant cell

www.artsnowlearning.org

Units provide differentiated ideas and activities aligned to a sampling of standards.

The units do not necessarily imply mastery of standards, but are intended to inspire and equip educators.

Produced through the U.S. Department of Education: Arts in Education—Model Development and Dissemination Grants Program
Cherokee County (GA) School District and ArtsNow, Inc.

DURATION: 2 days

Lesson Description	Learning Targets
<p>This lesson introduces the various organelles in a plant cell (chloroplast, cytoplasm, cell wall, cell membrane, nucleus). Students create riddles for the various organelles. Students then explore applying rhythms and movements to the organelles that support the function.</p>	<p>“I Can...”:</p> <ul style="list-style-type: none"> ● Identify and label the various parts of a plant cell ● Interpret the function of the different organelles ● Use movement and rhythm to help me learn the different functions of each organelle in a plant cell

ESSENTIAL QUESTIONS

<ul style="list-style-type: none"> ● What are the functions of the various plant cell organelles? ● How can I use movement and music to help me learn the different functions of each plant organelle?
--

STANDARDS

Curriculum Standards	Arts Standards
<p>S5L3. Students will diagram and label parts of various cells</p> <p>a. Use magnifiers such as microscopes or hand lenses to observe cells and their structure</p> <p>b. Identify parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus) and determine the function of the parts</p> <p>S5P1. Students will verify that an object is the sum of its parts</p> <p>b. Investigate how common items have parts that are too small to be seen without magnification</p>	<p>M5GM.8. Understanding relationships between music, the other arts, and disciplines outside the arts</p> <p>D5FD.4. Understands and applies music concepts to dance</p> <p>b. Exhibits and creates variety in movement qualities in response to a variety of musical selections and instruments</p> <p>c. Demonstrates musicality while performing dance phrases</p> <p>D5CO.4. Demonstrates an understanding of dance as it relates to other areas of knowledge</p>

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none"> ● Chloroplast ● Cell wall ● Cytoplasm ● Nucleus ● Cell membrane 	<ul style="list-style-type: none"> ● Tempo ● Non-locomotor movement ● Note values (music class)

TECHNOLOGY INTEGRATION

- Song: *Cells* by They Might Be Giants (<https://www.youtube.com/watch?v=ZK6YP1Smbxk>)

ASSESSMENTS

Formative	Summative
<ul style="list-style-type: none">• Teacher’s anecdotal notes during the Choral Movement/Rhythm Responses	<ul style="list-style-type: none">• Cell Function Riddle: Students create and display their own riddle to be shared with the class.• Written Reflection (see Downloads)

MATERIALS

“Cell Function Riddles,” Rubric (see Downloads)

Activating Strategy (5-10 min)

- Cell Diagram will be on board (labeled) and the song *Cells* by They Might Be Giants can be found at <https://www.youtube.com/watch?v=ZK6YP1Smbxk>.
- Teacher will ask students to talk in small groups about what they think each part’s function is based on the labeled cell diagram.
- Teacher will keep student-led list for each cell organelle.

Main Activity

Part 1:

- Review the quarter note, eighth note, and half note. Demonstrate how quarter notes can be tapped or clapped to the syllables in each word. Go through all of the organelles and apply rhythms to them.
- After the 5 plant cell organelles are taught, the teacher will lead the students in developing motions for each of the cell organelles. (Ex. NUCLEUS = 3 quarter note pats (syllables) on the top of the head.) The dance movements should reflect the function of the cell to help with associating the function with the movement. For instance, the “Nucleus” is the boss of the cell. Encourage students to create a movement that they may see a boss character do.

Part 2:

- After the students have developed a class list of motions, students will get into small groups and be given an organelle. Each small group is asked to create a riddle for the organelle assigned.

Part 3

- Lead the class in reviewing the choreography and rhythm assigned to each organelle.
- Teacher demonstrates this by modeling 5 different teacher-made riddles as the class responds. (Refer to “**Cell Function Riddles**” in Downloads.)

Part 4

- Each small group is asked to go to the front of the class and read their riddle.
- The class will then try to guess the organelle by using the motion assigned for that specific organelle.

Part 5

- Students will use a piece of colored construction paper to write their riddles on.
- They will fold the sheet in half, write the riddle on the front cover, then write the answer under the flap.
- Take the student-created riddles and showcase them somewhere specific in the classroom.
- Create an interactive display where the students can go to read the riddles and then flip display to view the riddle's answer and the organelle.

REFLECTION

Reflective Strategies

Teacher will allow students reflection time using the following prompts that students can either discuss or provide feedback using the **Written Reflection Form** (see Downloads).

Specific reflection questions for class discussion:

- What were the artistic choices I made? Why did I pick the specific movement and rhythm for my organelle?
- Why is it important to know the function of each plant cell organelle?
- Think back on the choreography created by you and your classmates. Describe the role of the below organelles:
 - nucleus
 - cell membrane
 - cell wall
 - cytoplasm
 - chloroplasts

DIFFERENTIATION

Below Grade Level:

- Students may be provided with a list of the names of individual organelles and randomized list of functions for visual matching ability.

Above Grade Level:

- Individual subgroups of students can create different motions for the various functions of the organelles, instead of sharing in a classroom set of dance motions and musical beats.
- Students write their own riddles for the specific functions of all of the organelles instead of just the one assigned to their group.

EL Students:

- Consider going over the science vocabulary words ahead of time using colorful diagrams and small group discussions. Do this ahead of time so students grow more familiar with the words.

APPENDIX

- Cell Function Riddles
- Written Reflection Sheet Project 2

CREDITS

U.S. Department of Education
Arts in Education--Model Development and Dissemination Grants Program
Cherokee County (GA) School District and ArtsNow, Inc.
Ideas contributed and edited by: Taylor Stewart, Danny Arnett, Jessica Espinoza, Richard Benjamin
Ph.D., Michele McClelland