

**Integrating Arts into Science: Structure and Function of Living Things**  
**Chapter 1, Lesson 1: Cells**  
**Creating Animal vs. Plant Cell Models**

<b>Lesson Title:</b> Creating Animal vs. Plant Cell Models	
<b>Central Focus or 'Big Idea' for set of lessons that includes this Lesson:</b> Plants and animals are made of cells. Cells are the smallest units that can carry out life processes and are made of organelles.	
<b>Grade:</b> 5 <sup>th</sup> Grade	<b>Content Area:</b> Science, Art
<b>Time Allotted:</b> 1.5 hours (Roughly 1.5 class periods)	<b>Classroom organization:</b> Whole group, either rows or table groups
<b>Resources and materials:</b> <b>Teacher Resources/Materials:</b> Chapter 1, Lesson 1 (page 26) in <i>California Science</i> textbook. © 2008 by Mcmillan/MacGraw-Hill Education 8 -10 colors of construction paper – 2 larger pieces (this is a great opportunity to use scraps!) Partially completed teacher model Whiteboard or chart paper – to write directions Glue stick Black felt tip pen/marker Cells Rap: <a href="https://youtu.be/-zafJKbMPA8">https://youtu.be/-zafJKbMPA8</a>	
<b>Student Materials:</b> Science textbook (open to page 26) and/or interactive text Science notebook (or whatever students use to take science notes) Glue stick Black felt tip pen/marker Construction paper – 8-10 different colored pieces—they can share larger pieces with a partner	
<b>California Content Standard(s):</b> <b>Standards:</b> Science: <b>5.LS.2.a.</b> Students know many multicellular organisms have specialized structures to support the transport of materials.  VAPA: <b>5.0 CONNECTIONS, RELATIONSHIPS, APPLICATIONS</b> Connecting and Applying What Is Learned in the Visual Arts to Other Art Forms and Subject Areas	
<b>Specific Learning Objectives:</b> <ul style="list-style-type: none"> <li>• Students should be able to describe the functions of cell structures in plants and animals and understand that plant cells have structures that differ from animal cells.</li> <li>• Students should be able to create a visual model of both an animal and plant cell that includes the structures and functions of the respective organelles.</li> </ul>	
<b>Prerequisites:</b>	

- *Students need to understand that there is a difference between plant and animal cells structures and functions.*
- *Students need to have a basic understanding of the organelles within plant and animal cells.*
- *This lesson addresses multiple learning styles as it is hands on and students are able to create their own learning tool.*

- **Key ELD Standard(s):** *(if applicable) Considerations for varying levels of English Language ability will include SDAIE strategies, such as visual models, explicit directions and guidance from classmates and the teacher.*

**Academic language demands:**

Lesson specific vocabulary: cells, organelle, cell membrane, cytoplasm, nucleus, mitochondria, vacuole, cell wall, chloroplast, animal cell, plant cell, structures, functions, similarities, differences

**Access to the curriculum / modifications:**

- Modifications include: precut and/or help cutting construction paper
- Identifying specific colors of construction paper for each organelle
- Providing definitions of the vocabulary words for students to use

**Assessment:**

- Informal evidence will be collected by observing students while working and their ability to answer questions/participate in class discussion
- The visual models of the plant and animal cells will be collected as formal evidence.

**Instructional Sequence**

1. Prep an area with construction paper sorted by color (not necessary, but makes it easier)
2. Class discussion
3. Guided practice
4. Independent work
5. Whole class review

**Set or introduction:**

**Note:** This lesson is best taught after students have pre-read lesson and had prior exposure to the lessons.

Prior to starting the lesson, I like playing the Cells Rap listed above. It is rather catchy and fun watching the kids singing it in their heads while creating their models.

Ask: Who wants to tell me something they read about in the text last night? (allow time for students to share, I often record notes on the board)

What are plants and animals made out of? (Cells)

Are plant cells the same as animal cells? (No)

Lets go further...

What are the structures in both plant and animal cells called? (organelles)

Lets name the organelles. (Call on various students until all are mentioned. I write them on the board as they are stated)

**Plant:** cell wall\*, cell membrane, cytoplasm, mitochondria, vacuole, mitochondria, nucleus, chloroplasts\*

**Animal:** cell membrane, cytoplasm, mitochondria, vacuole/s, nucleus

Ask: what are plants able to do that animals are not? (Produce their own food)

\*Plants are able to produce their own food because they have chloroplasts that enable them to go through photosynthesis. Plants convert sunlight energy into sugar (food), which is why they have chloroplasts.

\*Plants have a cell wall outside of the cell membrane to provide structure and protection from elements.

Lets go through and review the function of each organelle (see attachment on website)

Any questions?

Today, you will be creating visual models for both plant and animal cells, one at a time.  
(show model)

Directions:

- When I dismiss you, you will be gathering 5 different colors of construction paper for your animal cell.
- You need to label and define each organelle on your cell. You may use your science text and/or notebook. If the organelle is too small, you draw an arrow and right the definition next to it.
- I like to create my own definitions to help me remember them (i.e. Nucleus: “the boss” controls all of the activities in the cell, when it’s time to break down food, to grown, to die)
- Cut the largest piece first (cell membrane in an animal cell), so that you can easily glue down the smaller organelles.
- Once complete, make sure your name is on the back and turn it in.
- Then, you may begin work on you plant cell

You will be given the rest of today and our next science period to work on it.

(call on a student to repeat directions)

(hang up models on the front board)

(allow time for questions)

**Checks for Understanding/ On-going informal assessment:**

*Ask students questions and/or to explain certain ideas. Walk around during lesson to observe students actively learning and to answer questions as they arise.*

**Closure:**

*Display animal and plant cells. Review with students what they learned.*

**Plan for Reflection on Students’ Learning and Your Teaching, including next steps:**

*Next steps: Lesson 2 – From Cells to Organelles*