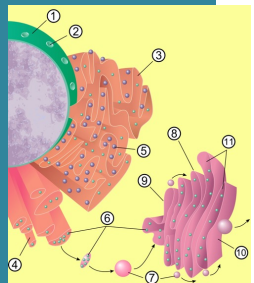
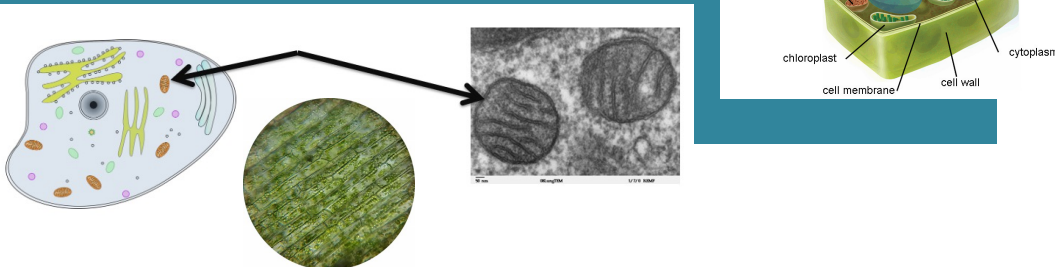


# Cellular Organelles

## High School 5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



# Complete Teacher Instructions



## Cellular Organelles - 5E Lesson

| Cellular Organelles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ongoing Lesson (5-7) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>Lesson Objective:</b><br>Students will learn about the following: <ul style="list-style-type: none"> <li>• Function of Cells</li> <li>• Animal vs Plant Cells</li> <li>• Cell Components and Organelles</li> <li>• Cytoplasm</li> <li>• Cell Membrane</li> <li>• Nucleus</li> <li>• Mitochondria</li> <li>• Endoplasmic Reticulum</li> <li>• Golgi Bodies</li> <li>• Vacuoles</li> <li>• Cell Wall</li> <li>• Chloroplasts</li> <li>• Photosynthesis Introduction</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |
| <b>Possible Student Misconceptions:</b> <ul style="list-style-type: none"> <li>• All cells have the same organelles - Students may think all cells contain the same set of organelles.</li> <li>• Organelles don't interact with each other.</li> <li>• Cells have only one of each type of organelle.</li> <li>• Bigger organelles are more important.</li> <li>• Organelles are static structures and don't move around.</li> <li>• All cells contain mitochondria.</li> <li>• The endoplasmic reticulum (ER) and Golgi apparatus are the same.</li> <li>• Vacuoles are only for storage.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |
| <b>Materials:</b> <ul style="list-style-type: none"> <li>• 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 students</li> <li>• A means of projecting a presentation</li> <li>• Internet access</li> <li>• General classroom objects</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |
| <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>➢ The presentations as well as the student notes are in Google and Office format which can easily be used in class or online</li> <li>➢ All videos can be accessed directly from the presentation. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If it doesn't for some reason, right-click on the image and click <b>Edit Hyperlink</b> or something similar.</li> <li>➢ I've created a video walkthrough if needed. It can be accessed here - <a href="https://youtu.be/oCIKIP9SaDQ">https://youtu.be/oCIKIP9SaDQ</a></li> <li>➢ I don't believe in long lessons. If you feel your students are losing their focus, don't force it. Stop the presentation and give them a 5-minute break. If you'd like to show a quick video, I recommend my video collection here - <a href="http://www.teachwithfergy.com/science-videos/">http://www.teachwithfergy.com/science-videos/</a>. There are tons of brain-break videos to choose from all grouped by category.</li> </ul> |                      |

## Cellular Organelles - 5E Lesson

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Engagement Phase</b><br>Your students will complete 'Engagement - Cellular Organelles Questions.'<br><br><b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>- The students will watch a short video introducing cell organelles and answer questions related to the video. This is an excellent way to introduce the topic to your students.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Duration: 20 minutes</b><br><br>Teacher Role - Facilitate learning and guide student understanding<br><br><b>Goals</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Connect student's experiences</li> <li><input type="checkbox"/> Create interest</li> <li><input type="checkbox"/> Ask questions</li> <li><input type="checkbox"/> Understand the objectives of the lesson</li> </ul>               |
| <b>Exploration Phase</b><br><b>Exploration - Lab Station Activity</b> <ul style="list-style-type: none"> <li>• In groups of 2-3, have your students complete 'Cellular Organelles - Lab Station Activity'. Once they're done, they will submit their passport to you.</li> </ul> <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>• The complete instructions for my Lab Station activity can be found in the <i>START HERE - Instructions</i> file.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                   | <b>Duration: 1 hour</b><br><br>Teacher Role - Facilitate learning and guide student understanding<br><br><b>Goals</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students receive real experience with the topic</li> <li><input type="checkbox"/> Students use and develop creative thinking skills</li> <li><input type="checkbox"/> Students make</li> </ul>                                         |
| <b>Explanation Phase</b><br><b>Lesson</b> <ul style="list-style-type: none"> <li>• Complete the lesson 'Cellular Organelles Lesson - Cell Structure and Function.'</li> <li>• In the lesson, there are multiple embedded videos and an opportunity to engage, interact and check for your student understanding throughout the lesson.</li> </ul> <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>• All videos can be accessed directly from the presentation. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, click the image and select Edit Hyperlink or something similar.</li> <li>• I've created a video walkthrough if needed. It can be accessed here - <a href="https://youtu.be/oCIKIP9SaDQ">https://youtu.be/oCIKIP9SaDQ</a></li> </ul> | <b>Elaborate Phase</b><br>'Cell Organelles - Device-Based Scavenger Hunt Activity'<br><br>This phase involves the students completing an activity or assignment that forces them to expand their thinking and knowledge of the topic.<br><br><b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>- Students will work individually or in small groups</li> <li>- Students will need one device per group</li> </ul> |
| <b>Evaluate Phase</b><br>Have your students complete one or both of the following activities. <ol style="list-style-type: none"> <li>1) 'Cells and Organelles - Digital Interactive Notebook Bundle'</li> <li>2) 'Cell Organelles Card Matching Activity - Middle and High School'</li> </ol> Your students will demonstrate their understanding and evaluate their own progress                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Duration: 1 hour</b><br><br>Teacher Role - Facilitate learning and keep students focused<br><br><b>Goal</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students use their newly obtained knowledge to propose solutions and extend their learning to new situations</li> </ul>                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Duration: 1-3 hour(s)</b><br><br>Teacher Role - Distribute and collect.<br><br><b>Goal</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students are given the opportunity to demonstrate their understanding and evaluate their own progress</li> </ul>                                                                                                                                               |

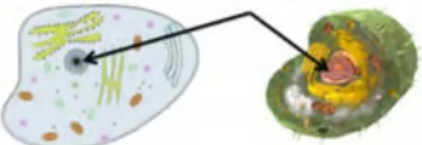
Each phase is clearly described

# Complete Lesson

TWF

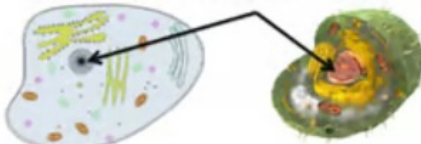
## Nucleus

- The cells "brain"
- Contains DNA (genetic material) that tells the cell what to do
- Usually, 1 per cell and is spherical in shape



## Nucleus

- \_\_\_\_\_
- Contains DNA (genetic material) that tells the cell what to do
- Usually, 1 per cell and is spherical in shape

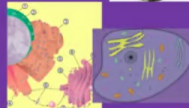


Videos embedded  
directly in your slides

TWF

## Cell Organelles Lesson

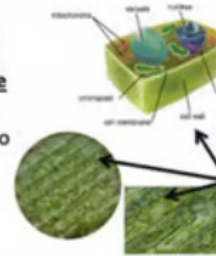
- Function of Cells
- Animal vs Plant Cells
- Cell Components and Organelles
  - Cytoplasm
  - Cell Membrane
  - Nucleus
  - Mitochondria
  - Endoplasmic Reticulum
  - Golgi Bodies
  - Vacuoles
  - Cell Wall
  - Chloroplasts
  - Photosynthesis Introduction



TWF

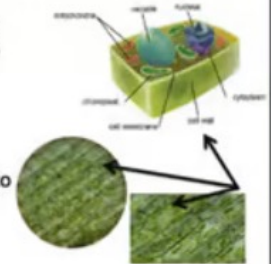
## Cell Wall

- Found just outside the cell membrane
- Very hard structure made of cellulose
- Provides strength to the cell as well as protection



## Cell Wall

- Found just outside the cell membrane
- \_\_\_\_\_
- Provides strength to the cell as well as protection



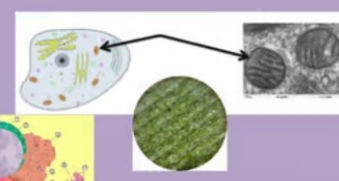
TWF

Teacher and Student versions of each  
slide to keep your students engaged

# Interactive and Engaging Activities

**TWF**

## Cellular Organelles Lab Station Activity



**Station 1**  
Get Hands-On — Draw a plant cell using the organelles provided. Your cell should be circular and fill the available space on your passport. Each organelle's location and structure are provided.

**Station 5**  
Annotate the organelles on the cell diagram.

7 Lab Station Activities to get students out of their seats and engaged in learning.

## Cell Organelle Matching Game

**Grades 7-12**

|                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cytoplasm</b><br>The site where many reactions occur, including photosynthesis, which is the initial step of cellular respiration, and various enzymes. Cytoplasm contains many organelles involved in energy production and nutrient processing.            | <b>Main Location:</b><br>The gel-like substance that fills the entire interior of the cell, surrounding the vacuole. It is found in both eukaryotic and prokaryotic cells, serving as the medium in which many cellular activities take place. |
| <b>Cellular Metabolism:</b><br>The site where many reactions occur, including photosynthesis, which is the initial step of cellular respiration, and various enzymes. Cytoplasm contains many organelles involved in energy production and nutrient processing. | <b>Storage of Nutrients:</b><br>Stores essential nutrients and molecules required for cellular processes, such as glucose, amino acids, ions, and other small molecules.                                                                       |
| <b>Cellular Transport:</b><br>Provides a medium for the movement of organelles and molecules within the cell.                                                                                                                                                   | <b>Cellular Support and Shape:</b><br>Provides structural support to the cell and helps maintain its shape. It allows the cell to resist mechanical forces and maintain its integrity.                                                         |

**TWF**

A fun and interactive way to learn and review cellular organelles. Perfect for grades 7-12 as you can use whichever cards best fits your classroom.

## Cells and Organelles Digital Interactive Notebook

Chapter 1 – The Cell Theory  
Chapter 2 – Animal Cells  
Chapter 3 – Plant Cells

**100% Digital and Interactive**

**Build**

**Build**

Includes: Label, Video, and more interactive content.

## Device-Based Scavenger Hunt Cell Organelles

Includes:

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

- 100% Digital
- Simulations
- Quizzes
- Videos
- Games
- Word Scramble
- and more



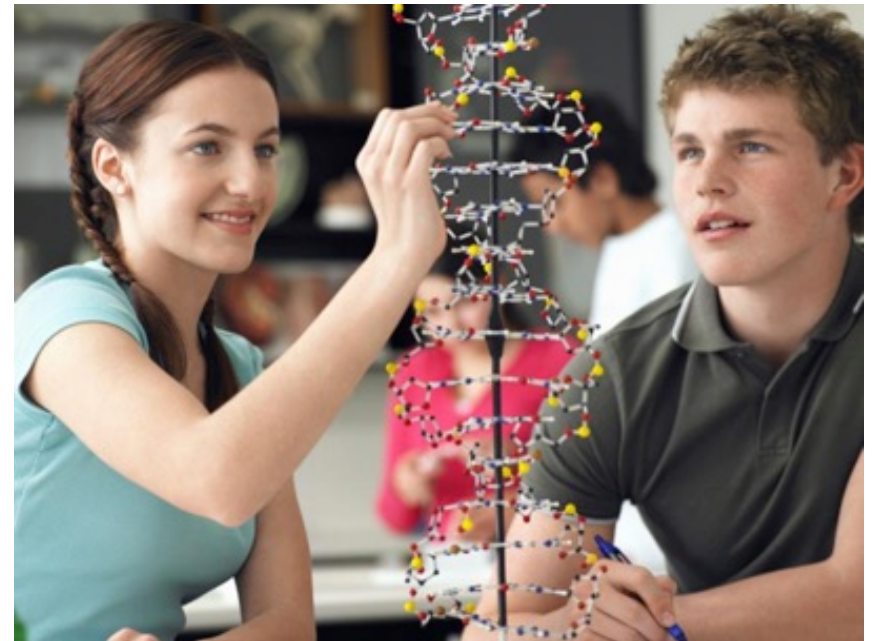
# Get away from tired practices and unengaged students



**TWF**

# Provide a Scientifically-Proven means of instruction

**TWF**



# Incorporate Technology and Increase Collaboration



**TWF**

