

# Mitosis and The Cell Cycle

## 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

## Mitosis and the Cell Cycle 5E Lesson

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| <b>Grades 8-11</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Mitosis and the Cell Cycle</b> | <b>Ongoing</b> |
| <b>Lesson Objective:</b><br>Students will: <ul style="list-style-type: none"> <li>Investigate, through inquiry, the stages of the cell cycle</li> <li>Describe the importance of mitosis for the growth and repair of</li> <li>Become introduced to DNA, genes, and heredity</li> <li>Be able to draw and describe the major phases of mitosis</li> <li>Become familiar with the names of structures involved in mitosis</li> <li>Better understand the causes of cancer</li> </ul>                                                                                                                                                                                                                                                                                                                                                     |                                   |                |
| <b>Possible Student Misconceptions:</b> <ul style="list-style-type: none"> <li>Students assume that organisms grow because their cells get numerous</li> <li>Once a cell is formed, it remains for the rest of the person's life.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                   |                |
| <b>Materials:</b> <ul style="list-style-type: none"> <li>1 device (smartphone, Chromebook, laptop, tablet, or computer)</li> <li>A means of projecting a PowerPoint presentation</li> <li>Internet access</li> <li>Cue cards, 11X14 white paper, ruler</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                |
| <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click on the image and click <b>Edit Hyperlink</b> or so</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 interest, stop the PowerPoint and give them a 5-minute break. If you'd like, I recommend my video collection here - <a href="http://www.teachwithfergy.com">http://www.teachwithfergy.com</a> are tons of brain-break videos to choose from all grouped by category</li> </ul> |                                   |                |

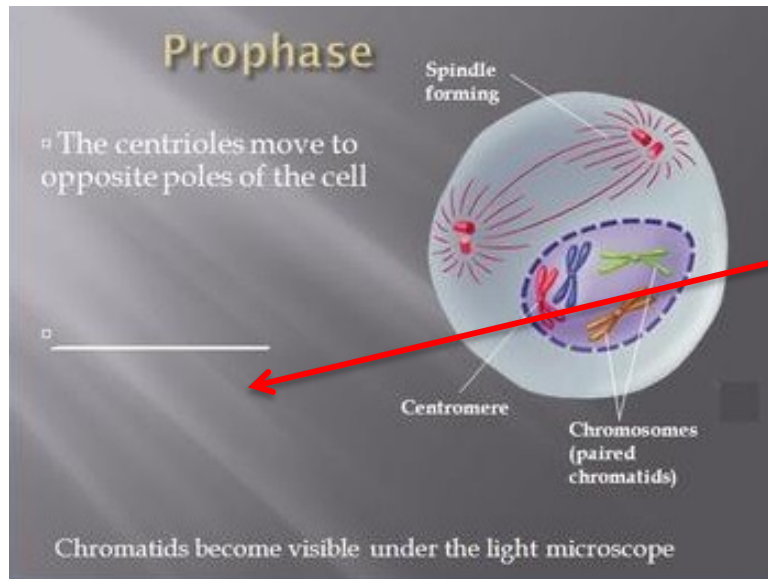
### Mitosis and the Cell Cycle – 5E Lesson

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| <b>Engagement Phase</b><br><b>Mitosis</b> <ul style="list-style-type: none"> <li>While watching the video, describe as clearly as you can, what is happening during the following phases (the phases are written on the bottom)               <ol style="list-style-type: none"> <li>Prophase</li> <li>Metaphase</li> <li>Anaphase</li> <li>Cytokinesis</li> </ol> </li> <li>The video – <i>Mitosis</i> It can be accessed here - <a href="http://www.teachwithfergy.com/mitosis/">http://www.teachwithfergy.com/mitosis/</a></li> <li>Once it's done, ask your students to review their answers with the person beside them for two minutes</li> <li>Prompt students to describe what they saw in each phase</li> <li>Use their answers to create a class discussion</li> </ul> <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>The video is about one and half minutes long</li> <li>If for some reason the video doesn't play, go to <a href="http://www.youtube.com">www.youtube.com</a> and type in "The Stages of Mitosis HybridMedical" to locate it. "</li> </ul> | <b>Duration: 15 min.</b><br><br><b>Teacher Role</b> – Facilitate learning and guide student understanding<br><br><b>Goals</b> <ul style="list-style-type: none"> <li>Connect student's experiences</li> <li>Create interest</li> <li>Ask questions</li> <li>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 <i>Exploration – Lab Station Activity</i>. 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 <a href="#">START HERE – Instructions</a> file.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Duration: 1 hour</b><br><br><b>Teacher Role</b> – Facilitate learning and guide student understanding<br><br><b>Goals</b> <ul style="list-style-type: none"> <li>Students receive real experience with the topic</li> <li>Students use and develop creative thinking skills</li> <li>Students make observations, record results, and make connections</li> </ul> |
| <b>Explanation Phase</b><br><b>Explanation – Mitosis and the Cell Cycle</b> <ul style="list-style-type: none"> <li>This lesson is designed to be completed over two days and can be found in the folder – <i>Explanation - Lesson</i></li> <li>There are many embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lessons</li> <li>The lesson covers the following topics:               <ul style="list-style-type: none"> <li>The cell cycle</li> <li>Genetic material</li> <li>Genes</li> <li>Genetic features</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Duration: 2-4 hours</b><br><br><b>Teacher Role</b> – Explain the concepts by presenting the material found in the presentation.                                                                                                                                                                                                                                  |

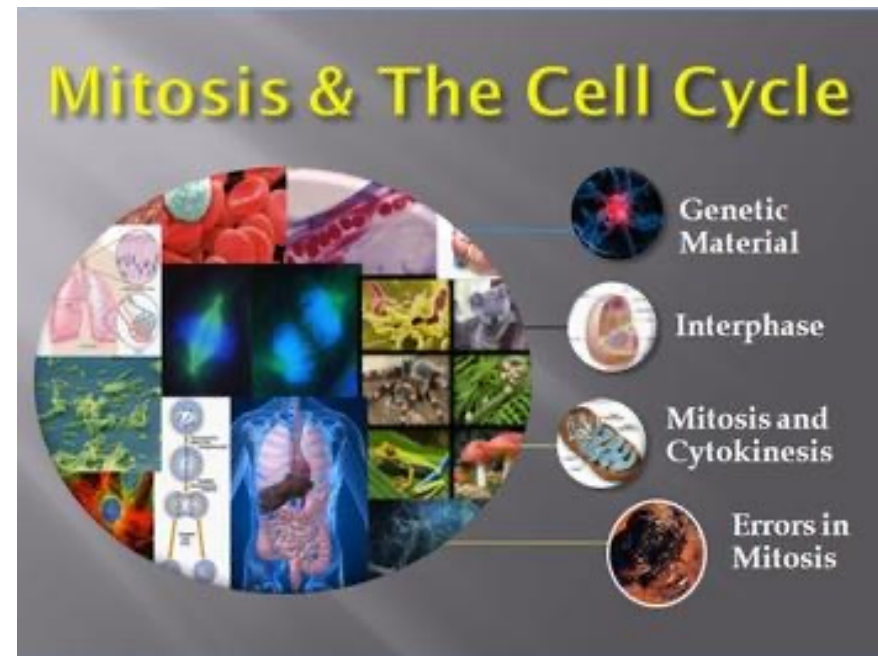
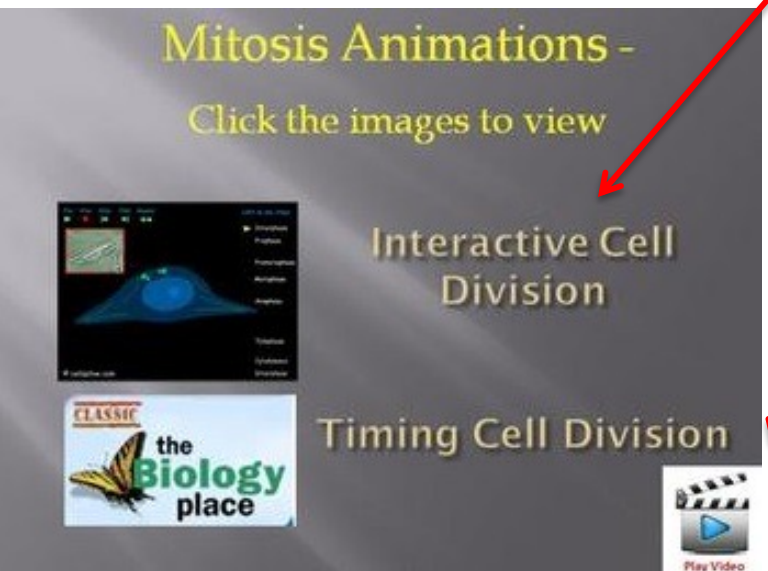
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| <ul style="list-style-type: none"> <li>Interphase</li> <li>Mitosis and it's stages</li> <li>Cytokinesis</li> <li>Errors in mitosis</li> </ul> <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-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> <li>I have also enclosed a .PDF version of both the teacher and student versions</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             | <b>Goals</b> <ul style="list-style-type: none"> <li>Students develop understanding of the content</li> <li>Observations and experiences are discussed and critiqued</li> <li>Students develop vocabulary</li> <li>Students are able to connect the content presented to previous experiences</li> </ul> |
| <b>Elaborate Phase</b><br><b>Elaborate – Scavenger Hunt Activity</b><br>Your students will complete – <i>Elaborate - Scavenger Hunt Activity</i> . This activity will require your students to move beyond what was covered directly in the lesson and apply their knowledge.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Duration: 1 hour</b><br><br><b>Teacher Role</b> – Facilitate learning and keep students focused<br><br><b>Goal</b> <ul style="list-style-type: none"> <li>Students use their newly obtained knowledge to propose solutions and extend their learning to new situations</li> </ul>                    |
| <b>Evaluate Phase</b><br>Have your students complete - <i>Evaluate – Mitosis Flip Book</i> <ul style="list-style-type: none"> <li>The Mitosis Flip Book Activity is designed to get kids really looking at the process of mitosis in a hands-on way</li> <li>Many students struggle with this concept as they have a difficult time remembering all the phase names and what occurs in each. This activity will solve these issues by getting your students creatively engaged and interested in the process of mitosis.</li> <li>Furthermore, it will provide them with a fantastic study tool, as well as the practice and review needed to fully comprehend the topic</li> </ul> <b>Teacher Notes:</b> <ul style="list-style-type: none"> <li>When I introduce the assignment, I give them the entire period and one, 11"X14" piece of paper to begin a rough copy</li> <li>Although it seems like marking might be time-consuming, it really isn't. The assignment comes with a rubric and to mark, I simply flip through the flipbook while marking the phases. It takes me about 30 – 60 seconds per book.</li> </ul> | <b>Duration: 1 hour in class plus time at home</b><br><br><b>Teacher Role</b> – Distribute and collect evaluation<br><br><b>Goal</b> <ul style="list-style-type: none"> <li>Students are given the opportunity to demonstrate their understanding and evaluate their own progress</li> </ul>            |

# Each phase is clearly described

# A Complete Lesson



**Student copies with blanks**  
**Simulations and Videos**  
**embedded right into your**  
**slideshow**



# An Interactive and Engaging Lab Station and Scavenger Hunt Activity

## Mitosis and Cell Division Lab Station Activity



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

## Device-Based Scavenger Hunt Mitosis and Cell Division

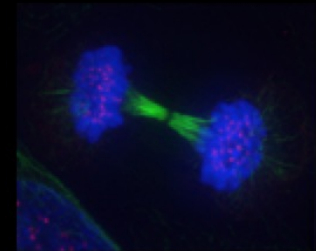


Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

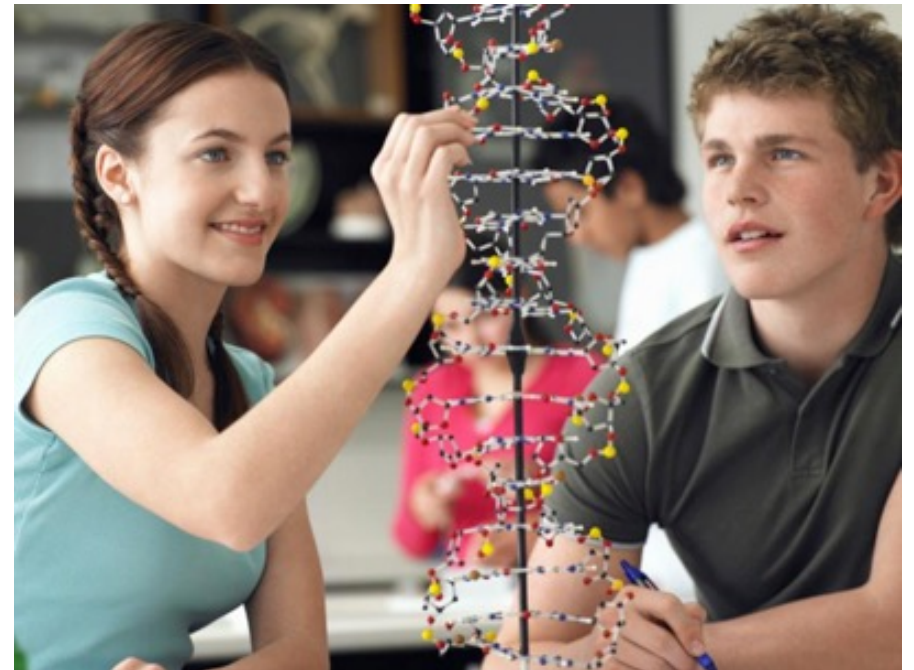
- 100% Digital
- Simulations
- Quizzes
- Videos
- Games
- Word Scramble
- and more



# Get away from tired practices and unengaged students



# Provide a Scientifically-Proven means of instruction



# Incorporate Technology and Increase Collaboration

