

5.3 – Cell Growth and Division

10/27/05

Purpose / rationale:

The purpose of this lesson is to introduce students to the cell cycle. The class will explore why the cell cycle is necessary, the process through which it occurs (interphase and mitosis), and the general phases of mitosis (prophase, metaphase, anaphase, telophase).

SOLs:

LS. 2. Students will investigate and understand that all living things are composed of cells. Key concepts include: d) cell division (mitosis). Students should recognize that cells go through a life cycle known as the cell cycle. The phases of the cell cycle are interphase, mitosis, and cytokinesis.

NSES C Students should develop an understanding of the structure and function in living systems. This includes the knowledge that cells carry on the many functions needed to sustain life. They grow and divide, thereby producing more cells.

Materials and Resources:

PowerPoint lesson file (Cell Growth and Division.ppt)

Computer hooked to television monitor

Activity sheet

Safety:

There are no specific safety guidelines for this lesson.

Procedures:

Engage

1. **M.O.S.** – Pretend that a doctor has just told you that you have a rare condition in which your body no longer makes new cells. In a few sentences, explain what effect this may have on your health. Could you survive, why or why not? Even if you are unsure, make an educated guess!

Explore

2. Students will share with the class how they answered the M.O.S. question and will review some basic information with the teacher before beginning the 'Explain' activity.

Explain

3. Students will answer/ask questions and fill out the handout that corresponds to the PowerPoint lesson on cell growth and division. This handout should be kept in their notebooks for future reference (study for tests, etc.).

Elaborate

4. Students will fill in the blanks with the correct mitosis stage on the bottom of the cell growth and division handout.

Evaluate

5. The teacher will take up students' handouts at the conclusion of class. They should have completed the handout up to the point reached in class. Anything not completed can be taken home and turned in the next day for grading.

Grading Scale:

Section of Handout	Number of Questions	Total Points Possible
Fill-in-the-blank notes	6	30
Table completion	6	60
Fill-in-the-blank follow-up	5	10
		100

Name _____
Date _____
Period _____

5.3 - Cell Growth and Division Activity Sheet

1. Why do you need new cells? **(5 points each)**
 - a. To _____ old cells.
 - b. To _____.
2. The _____ is the process by which cells grow and reproduce. **(5 points)**
3. Name the 2 stages of the cell cycle: **(5 points each)**
 - a. _____
 - b. _____
4. The stage of _____ makes up 90% of the cell cycle. **(5 points)**
5. Fill in the following chart on the stages of the cell cycle: **(10 points each)**

Cell Cycle Stage	What Occurs During This Stage
Interphase	
Mitosis	

6. Fill in the following chart on the phases of mitosis: **(10 points each)**

Prophase	
Metaphase	
Anaphase	
Telophase	

7. Write out the correct stage of mitosis for each of the following descriptions. Use the table provided in question #6 for assistance. **(2 points each)**

- _____ a. Centromeres line up in the center of the cell.
- _____ b. Each chromosome moves to opposite sides of the cell.
- _____ d. Nuclear membrane breaks apart.
- _____ e. Nuclear membrane forms around chromosome sets.
- _____ f. Nuclei and cytoplasm divide to produce two identical cells.