Name _____ Date _____

Cell Cycle Internet Activity

Introduction:

How do cells grow and reproduce? When do our bodies know that it is time to create more cells? The following internet activity will provide you with an interactive activity to help you better understand the production of new cells in your body and how cells "decide" whether or not the new cells are "usable." Go through the tutorial and game- good luck as you attempt to be the "Cell Division Supervisor" that controls the cell cycle!

Part 1

Directions:

1. Go to the following website: http://nobelprize.org/medicine/educational/2001/index.html
2. The page that comes up should be title "Nobelprize.org" and the opening screen for the activity "Control of the Cell Cycle" should appear.
3. Click on "Play the Control of the Cell Cycle Game"
4. Click "Enter" to begin the interactive activity.
5. Read through EVERYTHING and answer the questions below as you go through the tutorial and the game about the cell cycle. There are questions that are answered through the game!

Questions:

1. When do cells divide?

2. How many cells are replaced in our bodies every minute?

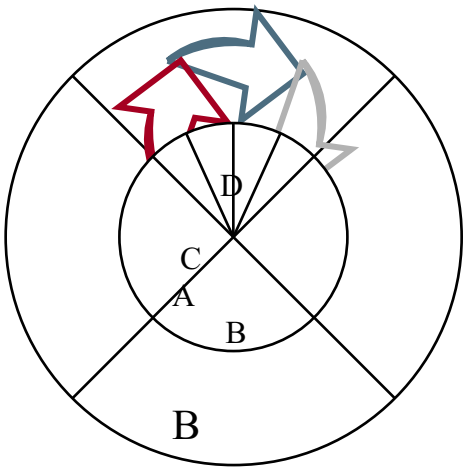
3. List 2 kinds of cells and describe how often each kind divides.

4. What signals a cell to start dividing?

5. At this point, you should be looking at an image depicting the cell cycle (letters A-D- for now, ignore the divisions within section D). Label the picture below and provide descriptions for each part of the cycle with each label.

D: _____

C: _____ A: _____



B: _____

6. What are 2 key molecules that help to control and coordinate cell division?

7. As you play the game, note down where the three checkpoints occur (during what phase) and what the cell looks for during each checkpoint. Then label the checkpoints on the diagram above.

Checkpoint 1:

Checkpoint 2:

Checkpoint 3:

8. Why is it important for the cell cycle to be strictly controlled?

9. If damaged cells are not repaired, what happens to them?

10. What problem can develop if the cell cycle is not controlled?

Part 2

Directions

In this activity, you will calculate the lengths of the various phases of the cell cycle in an onion root tip. First you will view some slides and graphics of onion root tips provided by the Molecular Expressions Photo Gallery. Then you will complete the online activity provided by the Biology Project at the University of Arizona.

Use your browser to go to Online Onion Root Tips at http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/assignment.html.

Begin by reading the description of the five major cell phases. You will need to keep this information in mind during the activity.

Make a copy of the data sheet that appears on the second page (provided). You will need it to answer the questions.

Proceed through the activity, identifying the phase for each cell you are shown. Pay attention to the hints if you misidentify a cell at first.

To calculate the percentage, use the online calculator at www.calculator.com/
Example:

$$\frac{\text{Number of cells in the Phase}}{\text{36 (Total Number of Cells)}} \times 100$$

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ONION ROOT TIPS AND THE CELL CYCLE
When you have completed the activity, answer the following questions:

	Interphase	Prophase	Metaphase	Anaphase	Telophase	Total
Number of cells						
Percent of cells						

When you have completed the activity, answer the following questions:

1.What percent of cells were in interphase?

2.What percent were in mitosis?

3.Which phase of mitosis takes the longest?

4.During which stage is the nucleolus visible as a dark spot?

5.How can you recognize a cell in metaphase?