Onion Root Tip Activity NAME:_____ TA:_____

QUESTION: How often do the stages of the cell cycle occur in an onion root-tip? Which event occurs the most? The least?

Stages of the cell cycle are Interphase, Mitosis and Cytokinesis. Interphase is the stage where cells carry out functions. Mitosis is when the contents of the nucleus are divided into equal parts. Mitosis has four phases: Prophase, Metaphase, Anaphase and Telophase. Cytokinesis separates the two nuclei and cell contents into two equal parts. Interphase is the longest part of the cell cycle. Mitosis is the shortest,

Procedure:

Part 1:

1. Make sure the microscope stage is completely lowered and the objective lens is at low power. Place the onion root tip slide on the stage of the microscope and focus on the tip of the root.

2. Change the objective lens to medium power and refocus using the fine adjustment knob.

3. Change the objective lens to high power and refocus using the fine adjustment knob carefully.

4. Try to identify a few cells in interphase and the four stages of mitosis (prophase, metaphase, anaphase, and telophase). You might not be able to see all of them, but try your best.

5. At this point, change the microscope back to the low power and lower the stage completely using the coarse adjustment knob. Carefully remove the glass slide and place back in the slide container.

6. Using the pictures in your activity kit, draw ONE cell in each of the stages of the cell cycle below. Let the lines of the box represent the walls of the cell. Label the chromosomes and the spindle fibres.

Drawings of each phase you are searching for:

1) Interphase

2) Prophase

3) Metaphase

4) Anaphase

5) Telophase

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Part 2:

1.Using the picture titled “Cell Cycle Stages in an Onion Root Tip”, count the number of cells in each phase and fill out the “FREQUENCY” column in the table below.

2. Count how many cells there are in total and use it to calculate the percentage of cells in each phase. (Example: 6 cells in prophase and 50 total cells would be 6 ÷ 50 × 100 = 12%)

CELL CYCLE EVENT DATA

CELL CYCLE EVENT	**DATA**	
	FREQUENCY (Number of Cells)	**PERCENTAGE (frequency ÷ Total X 100 = ?)**
Interphase		
Prophase		
Metaphase		
Anaphase		
Telophase		

QUESTIONS:

1. Which event of the cell cycle is the longest? Is this what you expected? (hint: look at the information given at the beginning of the activity)

2. How can you tell that the cell cycle is a continuous process?