

Mitosis Lab

Name _____

Modeling the Phases of the Cell Cycle

In a growing root, the cells at the tip of the root are constantly dividing. Because each cell divides independently of the others, a root tip contains many cells at different phases of the cell cycle. This makes a root tip an excellent tissue in which to study the cell cycle. In this investigation, you will identify and describe the phases of the cell cycle in root tip cells.

Problem

What do the phases of the cell cycle look like in a typical plant cell?

Materials

scissors

glue / tape

craft materials: yarn, beads, buttons, pipe cleaners

Procedure

1. Observe the picture of the onion root tip cells provided. Notice the different phases of mitosis being represented in each cell. Select one cell from the picture whose chromosomes are easily visible. Sketch the cell in the space labeled **cell sketch #1**. Provide the phase name and label any parts that you can identify.
2. Using your craft materials construct a model of the cell on the index card provided. Once again, be sure to provide the phase name and label any parts that you can identify. Bring this to me for a grade as soon as you complete it.
3. Select 4 more cells whose internal appearances are different from the first cell you sketched. Make a sketch of each of these cells in the spaces labeled **cell sketch #2 – cell sketch #5**. Provide the phase names and label any parts that you can identify.
4. Look at the onion root tip picture provided. Record the number of cells in each phase in the data table below. Also record the main event that is occurring during each phase into the data table below.

Phase	# of Cells	Main Event
Interphase		
Prophase		
Metaphase		
Anaphase		
Telophase		

Cell Sketch #1	Cell Sketch #2
Cell Sketch #3	Cell Sketch #4
Cell Sketch #5	

Post Lab Questions

1. Put the following in the correct order: metaphase, telophase, interphase, cytokinesis, prophase, anaphase.

2. **Drawing Conclusions** What evidence did you observe that shows mitosis is a continuous process, not a series of separate events?

3. **Applying Concepts** Cells in the root divide many times as the root grows longer and thicker. With each cell division, the chromosomes are divided between two daughter cells, yet the number of chromosomes in each cell does not change. What process ensures that the normal number of chromosomes is restored after each cell division? During which part of the cell cycle does this process occur?

