

Mitosis Lab

Name _____ Per. _____

[Refer to textbook, pg. 248-252]

Problem How long do onion root tip cells spend in each phase of the cell cycle?

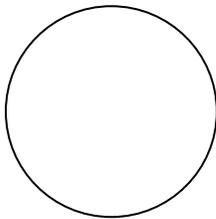
Hypothesis Write down a hypothesis that would show an educated guess as to which phase will be represented the most and which would likely be the least. Only consider Interphase and the 4 phases of Mitosis.

Objectives

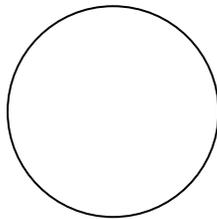
- Identify the phases of cell division by viewing both animal and plant cells through a microscope
- Determine the relative amount of time a cell spends in each part of the cell cycle

Procedures

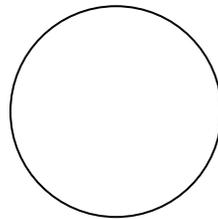
- Examine prepared slides of onion root tips. Look at the area just behind the tip. This is where cells are actively dividing. Adjust fine focus and move slide around to see different phases of cell division.
- Examine prepared slides of whitefish cells. Adjust fine focus and move slide around to see different phases of cell division.
- Using your microscope on high power, with whitefish cells, sketch, **in detail**, one cell that you observe from each phase of cell division. Draw the entire cell inside the circles shown below. Fill up the space.



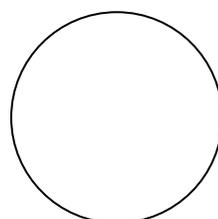
Interphase



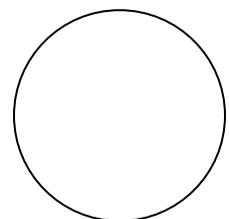
Prophase



Metaphase



Anaphase



Telophase

- Get from your teacher a Mitosis card showing onion root tip cells in various stages of mitosis. Record the card number in the data table. Observe each cell on the card and count the number of cells in each stage of cell division. If there is no nucleus, then count it in Interphase. Record the counts in the data table on the back of this sheet for yourself. There should be a total between about 100 and 150 cells depending on the card you were given.
- Collect data from your partner. You should have similar total numbers. Record these numbers in the space for your partner.
- Complete the remainder of the table, making calculations as needed.

- Draw a pie chart to illustrate the number of degrees in a circle graph, including each phase. Use the circle below the data table. Make sure you show a *complete* graph.
- Complete all the analysis and conclusion questions below. This paper is your lab report.

Data Table

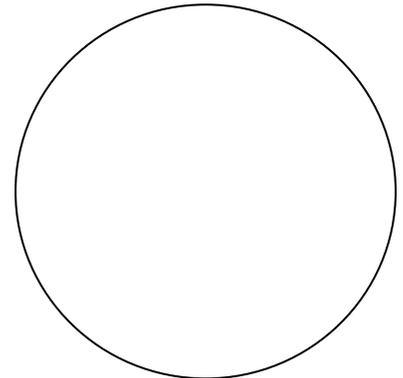
No. of cells in:	Interphase	Prophase	Metaphase	Anaphase	Telophase	Totals
Your card #						
Partner's card #						
Total						
Fraction of cells in phase (Phase total / grand total)						
Percent (fraction x 100)						
No. of degrees in a circle graph (fraction x 360)						360

Analyze and Conclude

Pie Chart

1. In which phase of the cell cycle does a cell spend most of its time?
Why?

The least time? Why?



2. How do your results compare to your hypothesis?
3. Explain why your microscope slides (or pictures) of onion root tips can be used to estimate how much time a living cell spends in each phase of the cell cycle.
4. What evidence did you observe that shows mitosis is a continuous process, not a series of separate events?
5. 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 maintained for each cell and for mitosis? During which part of the cell cycle does this process occur?