

Mitosis Cell Cycle Microscope Lab

Biology A

Name _____ Period _____

Purpose:

To observe and sketch 5 stages of the cell cycle and to determine the relative amount of time elapsed for each stage.

Procedure:

1. Obtain a slide of an onion root tip. Place the slide under scanning power so that when you look through the scope the root tip appears to be pointed down.
2. Locate the region of cell division (ROCD). See Figure 1. Move the slide so that the ROCD is in the center of the field of view (FOV).
3. Focus perfectly and move to low power. Again, center, focus and move to high power.
4. Under high power, locate and sketch cells at each of the following phases in the cell cycle:
 - a. Interphase
 - b. Prophase
 - c. Metaphase
 - d. Anaphase
 - e. Telophase
5. You may use Google image search to help you to identify phases.
6. Be sure to use the Sheldon Sketch Criteria®. Sketches should represent the cells at the size you see them. You may combine separate fields of view to include multiple phases in one sketch. Sketches will be placed on the templates at the end of this handout.
7. In your sketches, label the following cell parts (in the appropriate stages where the parts are visible):
 - a. Cell membrane
 - b. Nuclear envelope
 - c. Spindle fibers
 - d. Chromatin
 - e. Chromosomes
 - f. Chromatids
 - g. Cell plate

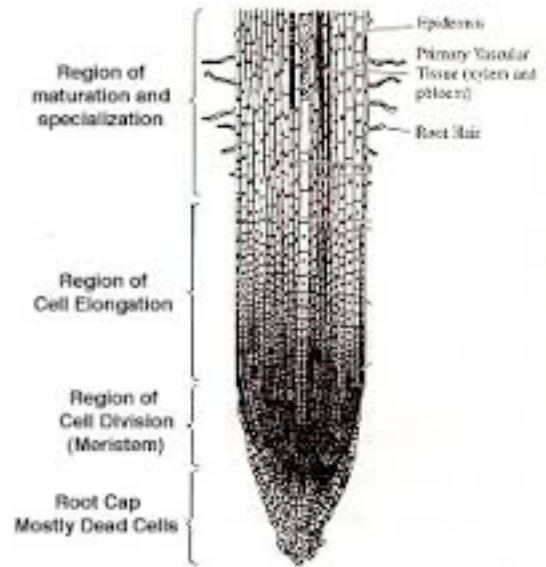


Figure 1: Sagittal section of an onion root.

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8. Compare the length of time for each of the cell cycle stages. To do this: while looking at the ROCD under high power, count the total number of cells within your FOV (without moving the slide) in each of the phases. Fill in the table below.

Title: _____

Phase	Number of cells visible

9. Obtain a slide of **one** of the following: whitefish, Ascaris, grasshopper testes.
10. Locate cells at each of the stages and repeat steps 4 – 7. Substitute *cleavage furrow* for *cell plate* in your labels.

Analysis:

1. Describe the differences in the cell division of plant and animal cells. What might account for those differences?

2. Based on the data from your table from step 8 in the procedure, what can you infer about the length of time a cells spends in each stage of the cell cycle?

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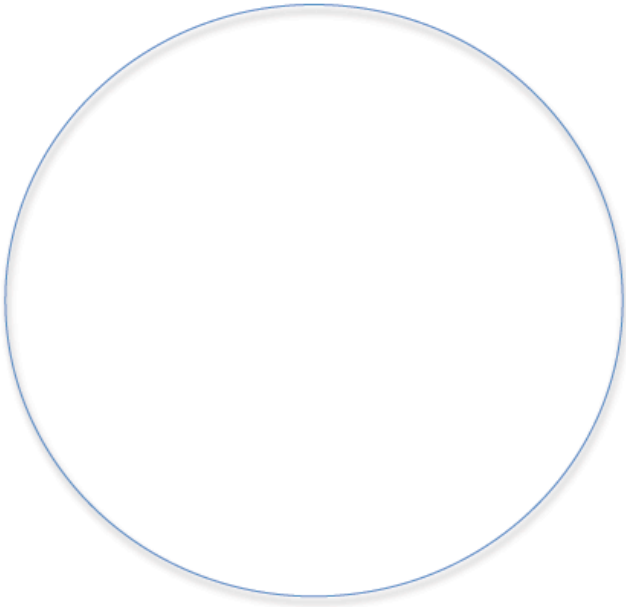
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3. What experimental error is probable in the data used to answer the previous question?

4. How could you minimize the error?

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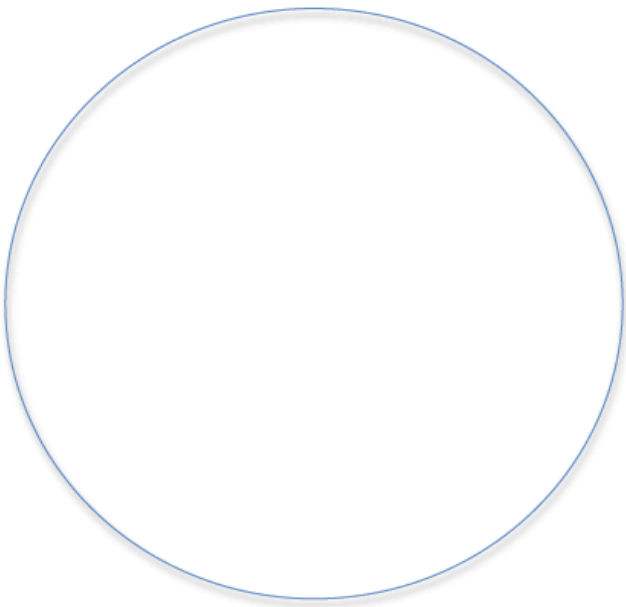
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Total Magnification: _____

Estimated width of one cell: _____

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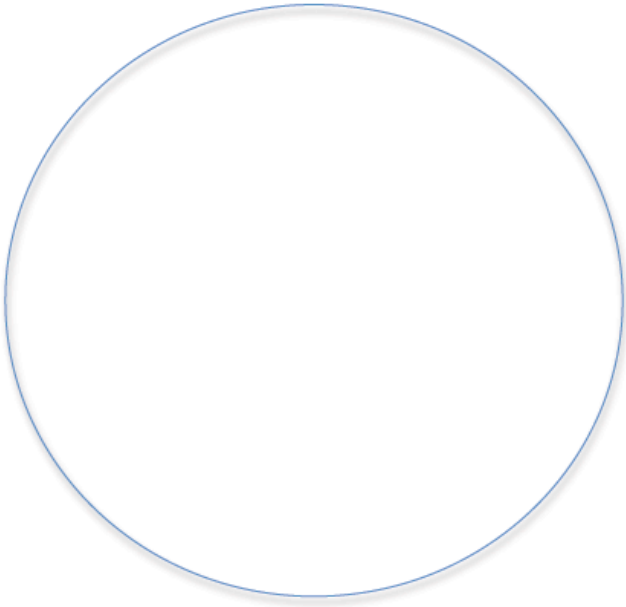


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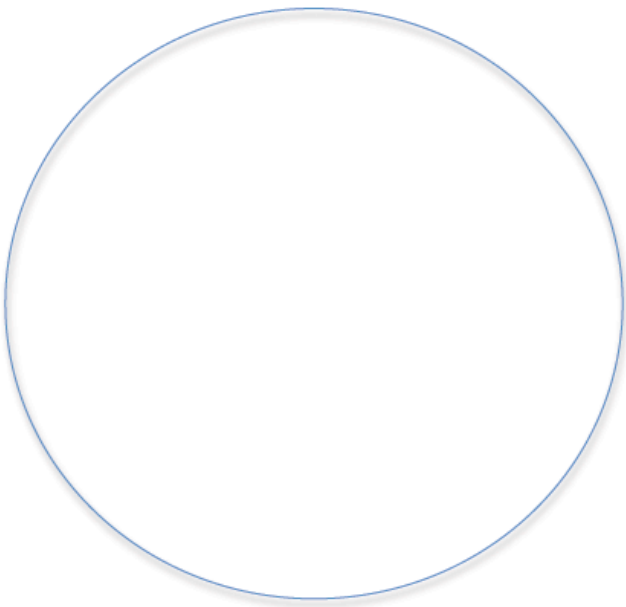
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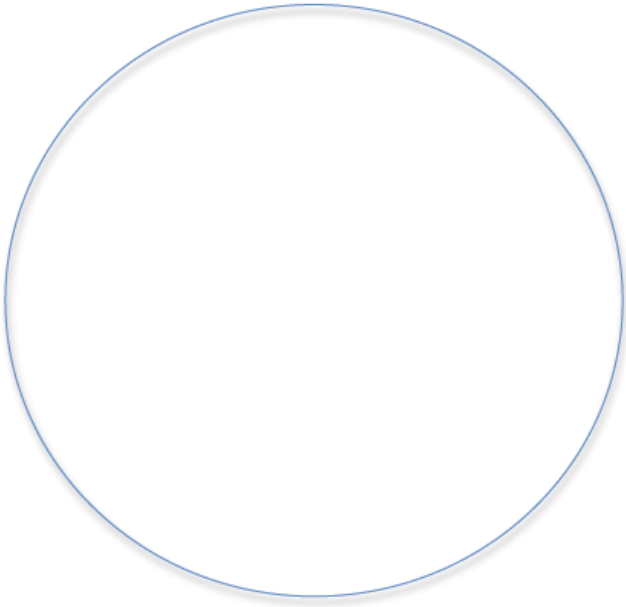


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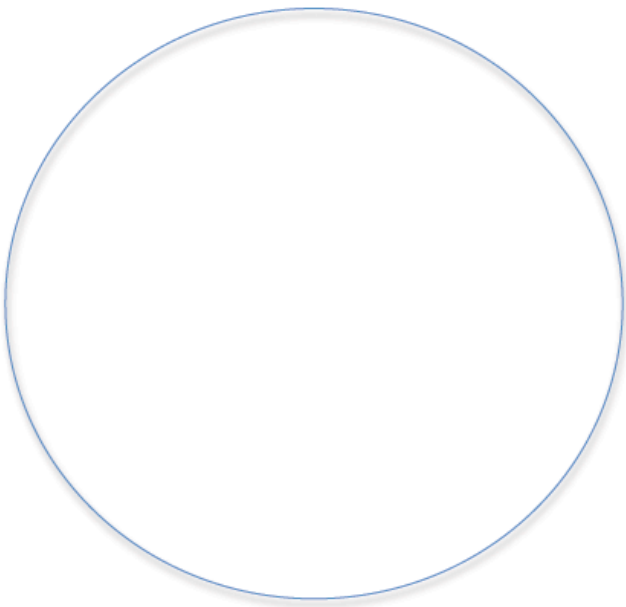
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