

## Mitosis Cell Cycle Microscope Lab

### I. Introduction

Purpose: [read the lab and then write a purpose in your data book]

### II. 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 Fig. 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.
4. Under high power, locate and sketch cells at each of the following phases in the cell cycle. (be sure to use the Sheldon Science Sketch Criteria®). Sketches should represent the cells at the size you see them. If you want to draw the cells big, you need to draw a correspondingly large field of view. You may combine separate fields of view to include multiple phases in one sketch). For help identifying phases, use the resources suggested by your teacher [See texts on the lab table]
  - a. Interphase
  - b. Prophase
  - c. Metaphase
  - d. Anaphase
  - e. Telophase
5. In your sketches for #4 above, you should have labeled (in the appropriate stages where the parts are visible) the following cell parts: cell membrane, nuclear envelope, spindle fibers, chromatin, chromosomes, chromatids, cell plate.
6. 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. Be sure to give the table a descriptive title.

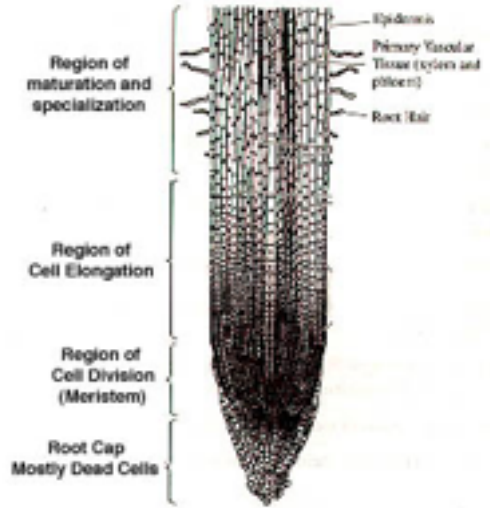


Figure 1. Sagittal section of an onion root.

Table 1. [give this table a descriptive title in your data book]

Phase	Number of cells visible

7. Obtain a slide of **one** of the following: whitefish, Ascaris, or grasshopper testes. Locate cells at each of the stages and repeat steps 4 and 5 using the animal slide (use the correct title for the observation sheet). Substitute cleavage furrow for cell plate in your labels.
8. Describe differences in the cell division of plant and animal cells. What might account for those differences?

### III. Results:

<Sketches>

### IV. Analysis

- A. No hypothesis so no conclusion needed
- B. Error questions in discussion; see questions below.
- C. Write the following questions and answer them in your report
  1. Based on the data in your table from step 6 in the procedure, what can you infer about the length of time a cell spends in each stage of the cell cycle?
  2. What experimental error is probable in the data used to answer the previous question?
  3. How could you minimize the error
  4. Compare the stages of mitosis in both animal and plant cells