

Topic: Onion Root Tip Lab

Summary: Students will see plant cells in the different phases of the cell cycle including interphase, mitosis, and cytokinesis. Microscope skills include focusing and field of view.

Goals & Objectives: Students will be able to visually see the different steps in the plant cell cycle. Students will be able to draw and label interphase, mitosis and cytokinesis.

Standards: CA Biology 2a. *Students know* that meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type.

Time Length: 40 minutes

Prerequisite Knowledge: Plant cell cycle and how to focus the microscope

Materials:

- Compound microscope
- Surge protectors or electrical plugs available for the microscope
- Prepared Allium root microscope slides that are stained with iodine

Procedures:

1. Group two students as lab partners. Each group will be assigned to a microscope. Students get the prepared slides and go to their microscope.
2. Students first focus on low power, then medium power. Students need to move the slide each time before switching power so that they have the correct field of view. Once students have focused on high power, they need to move the slide around so that they can see all of the phases of mitosis. It is important that students can focus and move the slide to change the field of view.
3. Students then draw what they see in the slide. Students should draw the cells in detail. After all of the cells are drawn, students should draw lines from the labels on the left to their corresponding cells in the circle. Students then describe the features of each phase they used to predict which cell was in which phase.

Accommodations: Students who are not able to participate or have an IEP can draw just a few cells either from the microscope or from their partner's handout.

Evaluation: The drawing is worth 8 points. The labels with correct lines are worth 1 point each, for a total of 6 points. The descriptions of the phases are worth 1 point each, for a total of 6 points. This assignment is worth 20 points.

Name: _____ Row: _____

Date: _____ Period: _____

Onion Root Tip Lab

Draw a section of the root tip in the circle below on *high power*. Once focused, move the slide so that you can see all the phases of mitosis. The tip of the root has the most cells undergoing mitosis.

Draw arrows from each phase to the corresponding cells.

Interphase

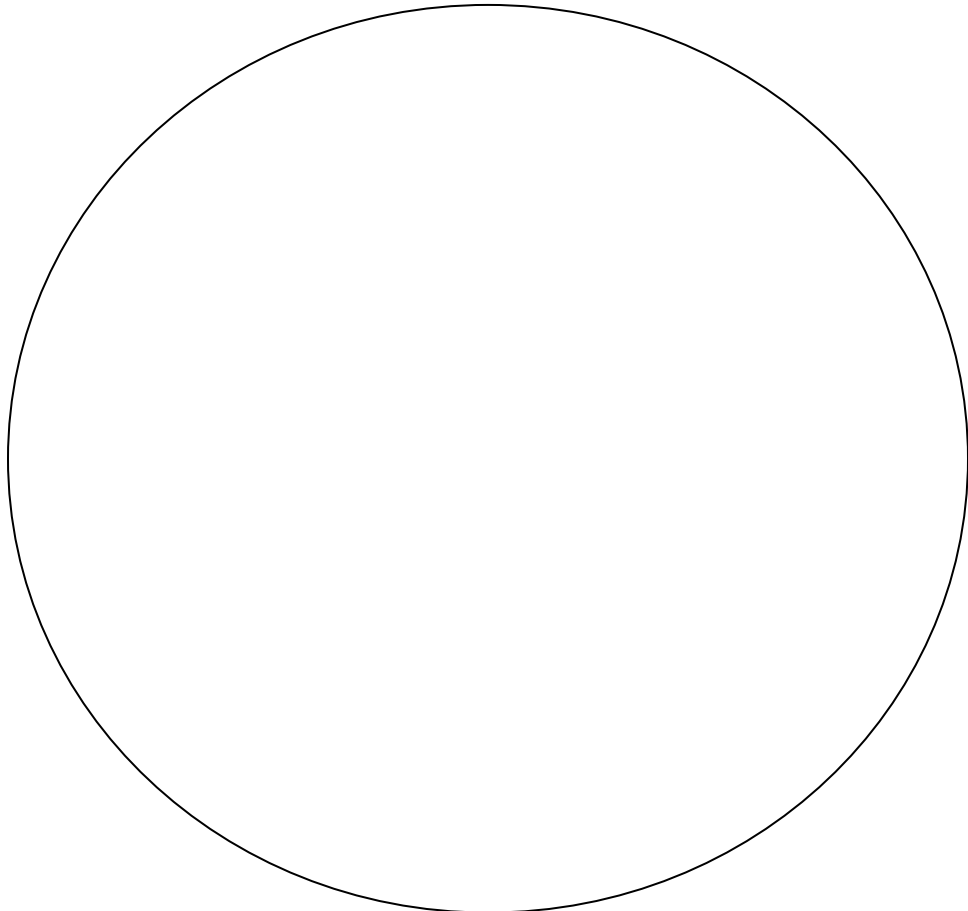
Prophase

Metaphase

Anaphase

Telophase

Cytokinesis



Describe the features you used to select the correct label for each phase.

Interphase: _____

Prophase: _____

Metaphase: _____

Anaphase: _____

Telophase: _____

Cytokinesis: _____