

Topic: Mitosis Microscope 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.

NGSS Standards: *HS-LS1-4.* Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

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 make the connection between the cell cycle and stem cells in the meristematic tissue in the root tip.

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.

Editable DOCX File and Answer Key:

Available at www.ngsslifescience.com

Mitosis Microscope 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. Draw at least 20 cells representing the different phases of mitosis.

Draw arrows from each phase to the corresponding cells.

Interphase

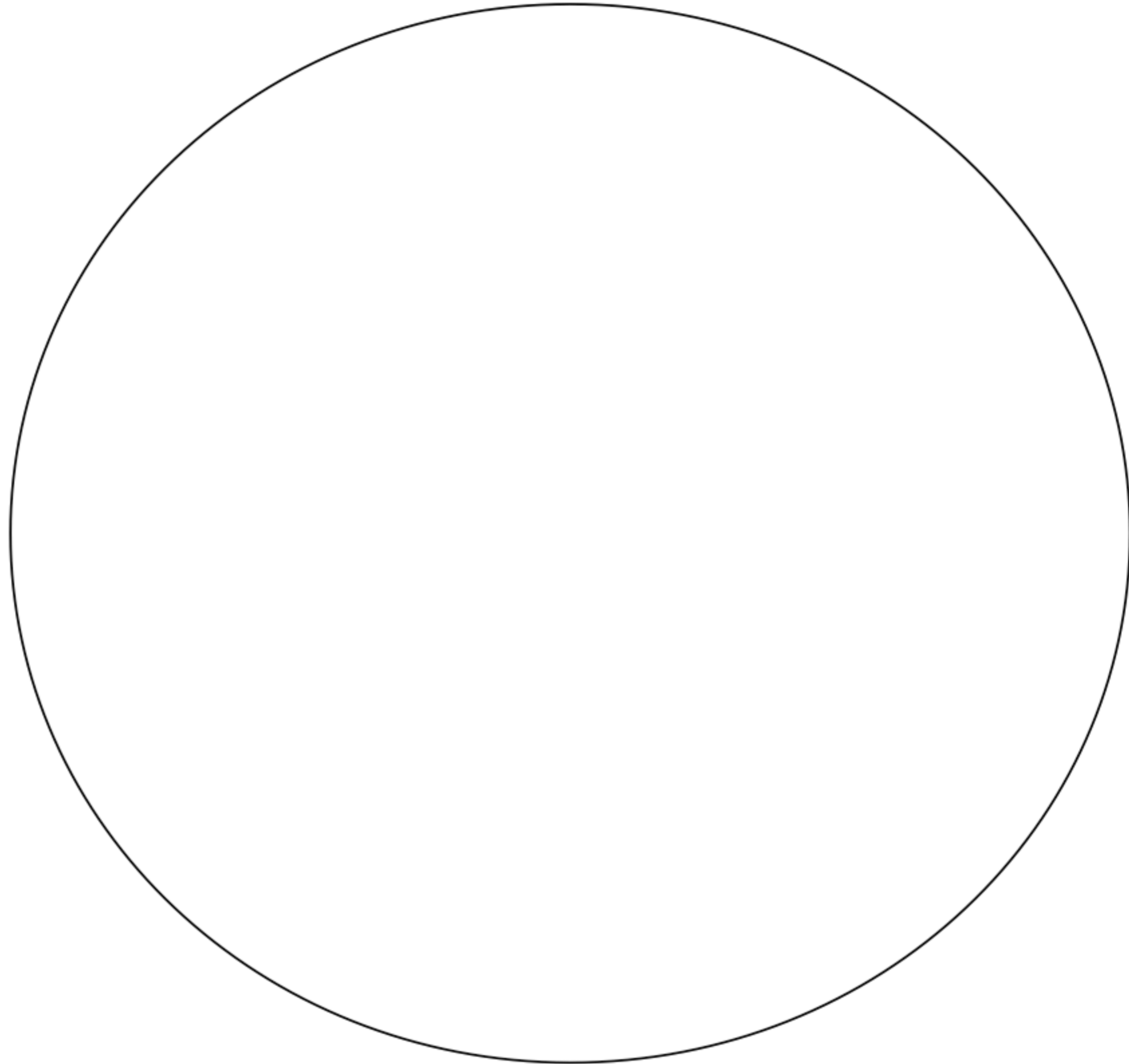
Prophase

Metaphase

Anaphase

Telophase

Cytokinesis



1. The cells performing cell division in the onion root tip are found the in meristematic tissue. What type of cells (performing cell division) are found in the meristematic tissue? _____
2. All of the cells that are not performing cell division are in what phase of the cell cycle? _____
3. Make a prediction why the meristematic tissue is located near the tip of the root?
