

Deep Dive into the Cell Investigation Guide

Name

Date

Part A: Compare Animal Cells and Plant Cells

Directions: Use the table below to keep track of cell structures, their locations, functions, and which type of cell they are found in. Then use your notes and the paragraphs on each infographic to answer the questions that follow.

Structure	Location	Function	Plant / Animal?

Synthesis Question: Write a claim about how the plant cell's additional organelles help it to function. Support your claim with evidence from what you know about plants and their unique abilities.

Part B: Investigation to Compare Cells and a Non-Living Item

Directions: Follow the steps below to investigate an animal (you!), plant (onion) cells, and a third non-living item of your choice. Use your observations to answer the questions that follow.

Materials:

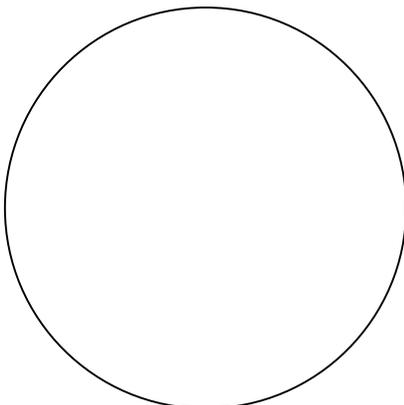
- 2 clean slides
- 2 clean slide covers
- Toothpick
- Small cup of Bromothymol blue
- Small cup of Iodine
- 2 eye droppers
- Compound/ light microscope

Procedure:

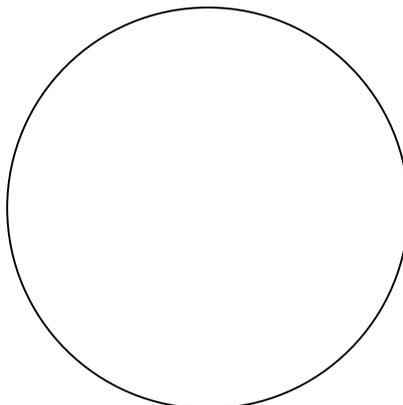
Onion Cell:

1. Obtain a small piece of onion skin from your teacher.
2. Place the onion skin on a clean slide and use one of the eye droppers to place a small drop of iodine on the onion skin.
3. Carefully place the slide cover over the iodine and onion. Do your best to avoid trapping air bubbles under the slide cover.
4. Set your microscope to the lowest power (4x, smallest lens) and place the slide on the microscope. Draw what you see in the 4x circle below.
5. Turn the microscope lens to the next higher powers (10 x, middle lens, and 40x, largest lens). **Note: Do not use the coarse focus knob when microscope is on the highest power.** Focus on one cell and draw your observations below. Add labels for cell structures that you can identify.

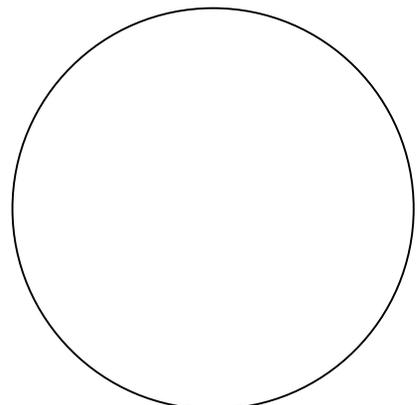
4x



10x



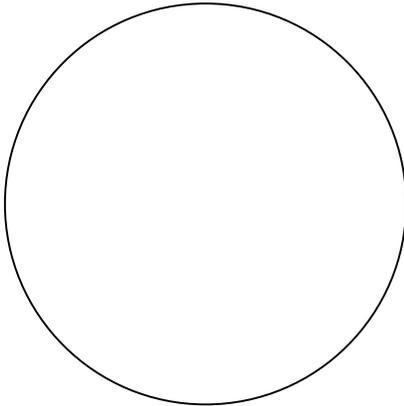
40x



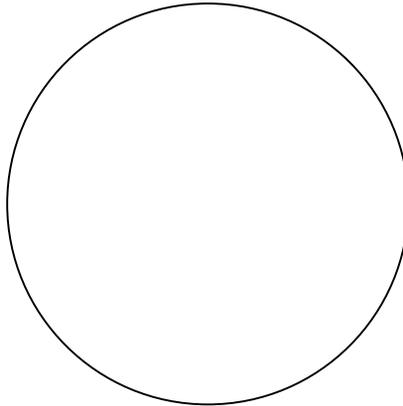
Cheek Cell:

1. One member of your group should use the clean toothpick to carefully rub the inside of their cheek.
2. Rub the end of the toothpick in the middle of a clean slide. Use the clean dropper to place one drop of Bromothymol blue on the slide.
3. As above, carefully place a clean slide cover over the cheek swab sample and Bromothymol blue. **Note: Do not push the slide cover down on the slide.**
4. Repeat Steps 4 and 5 that you completed for the onion cell and use the circles to draw what you see at all three microscope powers:

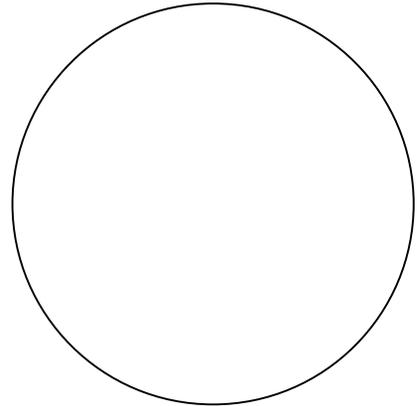
4x



10x



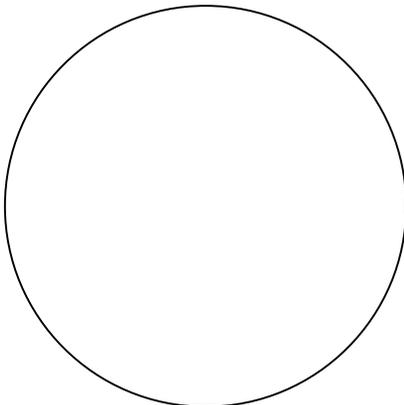
40x



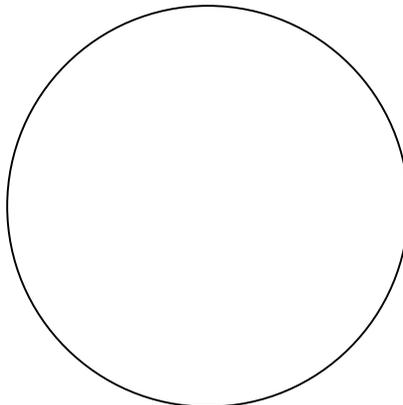
Non-Living Item

1. Choose a small item that you think is not alive. Your teacher may provide options for you to choose from, or pick something from around the classroom, your backpack, or outside. **Note: make sure that the item will easily fit under your microscope lens.**
2. Draw your observations at all three microscope powers:

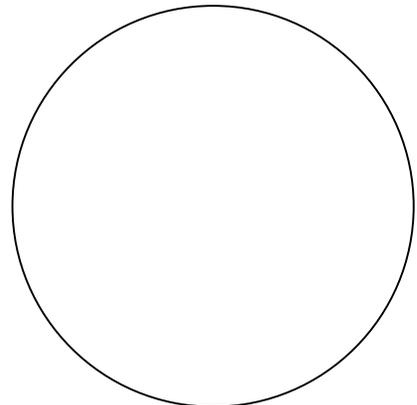
4x



10x



40x



Synthesis Questions:

1. Why was it necessary to use the microscopes to observe the onion and cheek cells?
2. Based on what you learned about plant organelles in Part B, why did the onion cells you observed not contain chloroplasts?

3. Use your observations from all three items as evidence to support the following claim:

Claim: Living things are made of cells.

4. Investigation Design:

- What other data would you want to collect to provide further evidence to support this claim?
- What additional tools would you need to collect the data?
- Explain how the data would help to support the claim.