

Red Onion Lab Analysis Questions

- 1. Your onion cells, like most plant cells, contain specialized organelles called plastids. Your onion cells have only one of the three different types. What type of plastid appears to be present in the cytoplasm of your onion cells? Explain your choice.**

The onion cells appear to have chromoplasts. Chromoplasts are responsible for the creation of pigments in a cell, and there are green and pink pigments in the onion cell. As for the other types of plastids it might make sense that there could be leucoplasts in the onion cells, but it is improbable because there is little starch in an onion. It is also improbable that they have chloroplasts, because they do not go through photosynthesis.

- 2. Which of the three types of plastids are obviously not present? Explain your choice. Explain why they are not present.**

Chloroplasts are obviously not in the onion cells, because the onion does not need to go through photosynthesis, because it does not need to make its own energy—the main onion plant can do that and provide the energy.

- 3. Compare the onion cells before and after the addition of salt water. What changes took place? What do you think caused these changes to take place?**

Before the addition of salt water, the cells looked like normal (plant) cells—there were cells pushed up against each other, with their cell walls touching and the cell membrane taking up the entire space of the cell. After the addition of salt water, the cell membrane shrank, peeling away from the cell wall (but the cell wall kept its shape). All the organelles and cytoplasm became concentrated in a small part of the cell, and the cytoplasm turned a bright pink from all the concentrated chromoplasts and pigments. I think this took place because the salt absorbed the water out of the cells, causing the amount of water in the cell to lower and the membrane to shrink.

- 4. Compare the size of the average onion cell before and after the addition of salt water. Did the overall size of the cell change much? If so, did the size of the cell increase or decrease and why does this change make sense? If the overall size did not change much, does this make sense and why?**

The size of the cell (held by the cell wall) did not change—only the cell membrane shrank. This makes sense, because the cell wall is built rigid to prevent the bursting or implosion of the cell when there is an abundance or lack of water in the cell. It did its job here by keeping its shape (and size).

- 5. The onion cell, like all plant cells, have two barriers that separate the inside of the cell from the outside. What are these two barriers? Explain the differences in their function.**

- a. Cell membrane:** This is a flexible, inner barrier that regulates the substances coming in and out of the cell. It has transport and receptor proteins that allow certain substances in and out, and allows for exo- and endocytosis (the importation or exportation of vesicles into and out of the cell).
- b. Cell wall:** This is a rigid outer barrier that will withstand osmotic pressure, so that the cell will not burst when there is too much water nor implode when there is too little, such as when we poured salt water on it.