Plant Parts and Functions Lab Answer Key

Stomata Observation

1. Compare the concentration or abundance of stomata on each leaf. Why might this be different for different types of plants?

   Some leaves may have a high concentration of stomata because they live in a wet climate where transpiration is not an issue because water is readily available to the plant. Another possibility is that the leaf is from a fast-growing plant and needs a lot of stomata to assist in material exchange for photosynthesis. Plants in a dry and arid desert climate have fewer stomata because this translates to less water loss through transpiration.

2. What time of day would stomata likely be closed? Why?

   Stomata would usually be closed during the hot part of the day to prevent water from escaping through open stomata.

Chloroplast Observation

1. Why are the chloroplasts green?

   Chloroplasts are green because of their chlorophyll, which is the pigment that captures the sunlight energy for photosynthesis.

2. Were the chloroplasts moving or stationary in the cell? Why?

   The chloroplasts were moving because they are floating in the cytoplasm of the cell, which is constantly moving.

3. What is the function of the chloroplasts?

   Chloroplasts are the organelles found in plants, and are the site of photosynthesis.

4. Would you find chloroplasts in an animal cell? Why or why not?

   No, animal cells do not have chloroplasts because animals do not perform photosynthesis.

5. What does a plant need in order to perform photosynthesis?

   Plants need carbon dioxide, water, and sunlight for photosynthesis.

6. What does a plant produce from photosynthesis?

   Plants produce oxygen and food as a product of photosynthesis.

7. Write the equation for photosynthesis.

   The balanced equation for photosynthesis is:

   $6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$ Where: *$6CO_2$ = six molecules of carbon dioxide*
   $6H_2O$ = six molecules of water
   Arrow = required light energy
   $C_6H_{12}O_6$ = glucose (food for plant)
   $6O_2$ = six molecules of oxygen