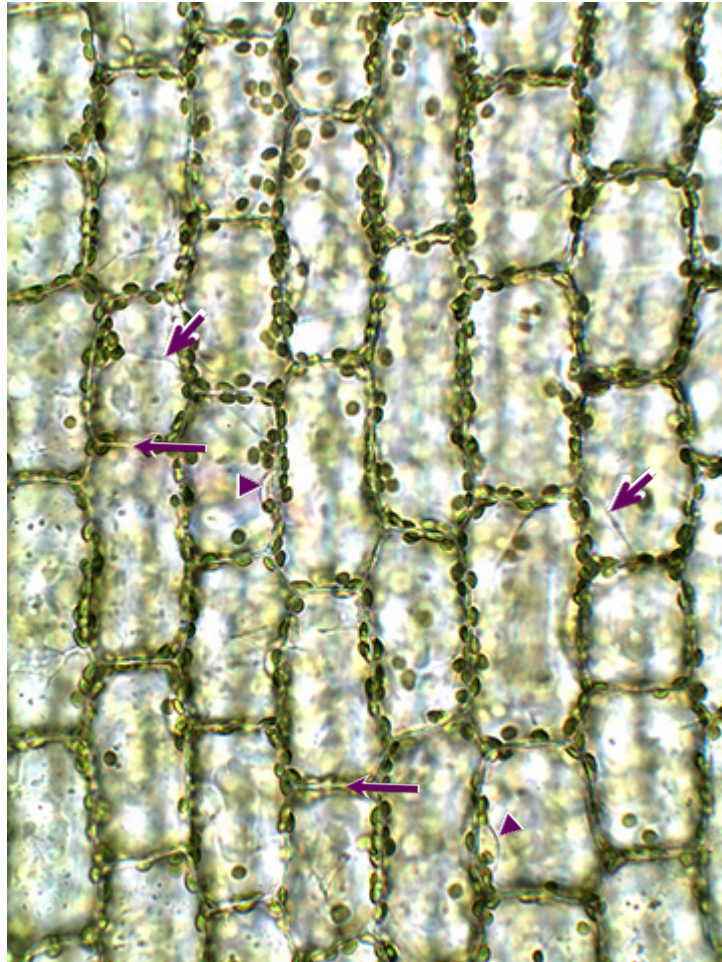


PST-cell-1: *Elodea* Cell Visual Microscopy Kit



This is an unstained whole mount of an *Elodea* leaf, coverslipped in pond water at 400X. *Elodea* is an aquatic plant. Two of each of the following arrows are overlaid on this image:

- ➡ Indicates visible cell walls
- ▶ Indicates visible, although unstained, nuclei
- ➡ Indicates cytoplasmic strands

Each of the green dots is a chloroplast. These are abundant in these cells.

The central vacuoles are not visible in this photo. They are detectable when viewing cytoplasmic streaming, because they are the clear areas the chloroplasts do not enter. When streaming, some chloroplasts do cross through more clear areas, but they do so along cytoplasmic strands. Such movement would be over or under the vacuole.

For all Cell Zone®, Inc. posters

General Instructions:

- Move from room to room or maintain in one location
- Hang on any permanent or removable hook by the grommet
- Use a dry erase marker on the frame; erase the same day to ensure clarity
- Store multiple posters by stacking so that the grommet cannot scratch the front of a neighboring poster

Advantages with using posters:

- Hanging real cell micrographs makes your classroom or lab space look like a place where real science is done
- The posters can be hung as art or for learning
- The posters can be paired with microscopy or used separately
- You will always have a good example of what you want your students to see

Lessons for this specific poster

1. In combination with the Dynamic Cell Models from Cell Zone®, Inc., any student or group of students can choose one cell from within this poster to model. Once they have assembled their *Elodea* cell model, they can then describe/defend their model to their classmates or to you.
2. Lessons when pairing the use of this poster with microscopy:
 - Put the microscope pointer on something within the microscope field and ask them to find something similar on the poster and identify it with their classmates.
 - Indicate something on the poster by pointing or drawing on the frame with a dry erase marker and have your students find a similar thing in their microscope field; each student can do this or groups of students can do this and you can check.
 - If your students are able to see cytoplasmic streaming, ask them if the chloroplasts seem free to move anywhere or if they are restricted in their movement in any way. They will usually figure out that there is something blocking the center of the cell, and will eventually realize it is the central vacuole. For a better chance of seeing cytoplasmic streaming, take the healthiest leaves from the tips of the shoots (the smallest, newest leaves) and warm them under the light of the microscope.
3. Hand your students a dry erase marker and have them identify every part of a plant cell that they can see clearly in the photomicrograph by writing on the poster frame. Either leave it open ended (thus giving them an option to identify things that they cannot see like the ER or ribosomes) or give them a specific list.
4. Have your students compare this image to the standardized drawing or model of a typical plant cell. Ask them if they look the same. Have them identify all the things that they can see in both and figure out why they cannot see so many of the items indicated in the drawing or model; the reason is that those other items are too small for light microscopy to resolve.

