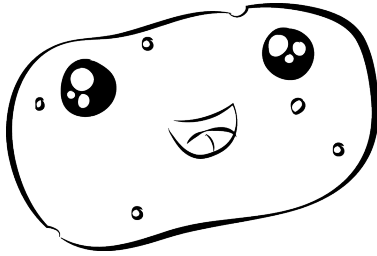


# Lab Assistant: Discovering Plant Cells



## Student Lab Objectives:

- Students investigate vegetables with Meeka the microscope to see that plants are made of cells
- Students visually see how cells connect to make living organisms and that cells have organelles inside them.
- Students will be able to identify cell walls, the nucleus of a tomato cell, and vacuoles in potato cells.

## Lab Prep:

1. **Samples** – Bring 2 potatoes (peel them before the lab), 2 tomatoes, and another fruit or vegetable that you choose
2. **Room Prep** – Prepare three veggie sample prep stations for student use during the lab. Each of the three sample prep stations should consist of; one trash bag table cloth (3 total), one veggie peeler (three total), one dropper bottle of methylene blue dye (3 total), one dropper bottle of red iodine dye (three total), some vegetables or fruit (potatoes, tomatoes, and another type of fruit or veggie).
3. **Bring Microscope cart to class with one microscope per student, and print student lab sheets. Bring Petri dishes for sample viewing.**

## Running the Lab Activity:

1. Show class movie “Discovering Cells” <http://www.stemtaught.com/discoveringcells>  
While you prepare the sample prep stations.
2. Review veggie peeler safety: Peel away from you, thin peels are best for viewing.
3. Remind students that 1 small drop of dye is all they need to use.
4. Remind students to use the bottom light on the microscope so that light can shine through and illuminate the cells.
5. Demonstrate how to prepare a sample for viewing: Peel 3 slices of potato, place them in a petri dish, drop one drop of blue on one slice, one drop of red on another slice, and leave the third natural with no dye. Now they are ready to view in the microscope.
6. Ask students to draw the cells they see on their lab sheet.
7. Let students do the lab. They peel their own peelings, use the dye, and observe their samples with 2X and 4X objective lens settings and bottom lighting.

## Discussion:

- **“Did you see anything inside the cells?”** In the tomato cells the nucleolus is visible as a red-orange ball within the clear cytoplasm. The potato cells were full of organelles called vacuoles which hold and store starch for the potato.
- **“What did you see? How were the cells shaped? Were they flat or did they have a volume?”** It’s amazing to see how much volume the plant cells have, they are 3 dimensional, not flat. They are full of fluid, cytoplasm and organelles.
- **“Were the cells connected?”** You can see in all the different plant types that cells are connected to form the larger structure of the plant. Plants cells have rigid cell walls so that they can support their high growth
- **“What did the red and blue dye do? How did they make viewing cells better?”** The Methylene Blue dyes the outside of the cell walls making them easy to see. The Red Iodine gets inside the cells and dyes the organelles and cytoplasm. Without any dye it can be more difficult to make see individual cells.

## Journal Writing:

Have students write about their discoveries.

