



Speaking Volumes!

Version 100825

In this activity, student pairs will each use a 2–20 μL micropipette to add 10 μL of two different color dyes to a common tube, then draw up 20 μL from the combined tube. If the tube is empty and there is no air gap in the tip, they have correctly used their pipettes.

Laboratory Safety

1. Wear lab coats, gloves, and eye protection as required by district protocol.

Materials Required

Set up for 12 workstations, with students working in groups of 2

Item	Quantity needed for 12 workstations
2 - 20 μL micropipette	12
Pipette tips	40
0.65 mL microcentrifuge tubes	36
Diluted food coloring, 2 colors	150 μL



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GelGreen is a trademark of Biotium. MiniOne is a registered trademark of C.C. IMEX.
Patents issued: US 10,641,731 B2, US 20110253541 A1, US 11879118-B2, US 12,384,994,
US 11,879,117, US 11,879,118

Teacher Preparation

1. Dilute your color dyes
2. Dispense 20 μL of your color dye #1 into twelve 0.65 mL microcentrifuge tubes
3. Dispense 20 μL of your color dye #2 into twelve 0.65 mL microcentrifuge tubes

Student workstations to include:

- 1 tube of color dye #1
- 1 tube of color dye #2
- 1 empty 0.65 mL microcentrifuge tubes
- 2-20 μL pipette, set to 10 μL

Pipette tips

Student Instructions

1. Student 1 - check that your 2-20 μL pipette is set to 10 μL .



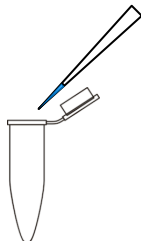
2. Add a tip to the end of the pipette, draw up 10 μL of color dye #1.



3. Observe how much liquid is in your tip, the first mark is 10 μL .

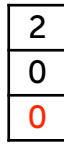


4. Add to the empty microcentrifuge tube, and dispose of the tip.



5. Student 2 - repeat steps 1 - 3 using color dye #2, then adding to the tube with color dye #1 in step 4.

6. Set the pipette to 20 μL , add a fresh tip.

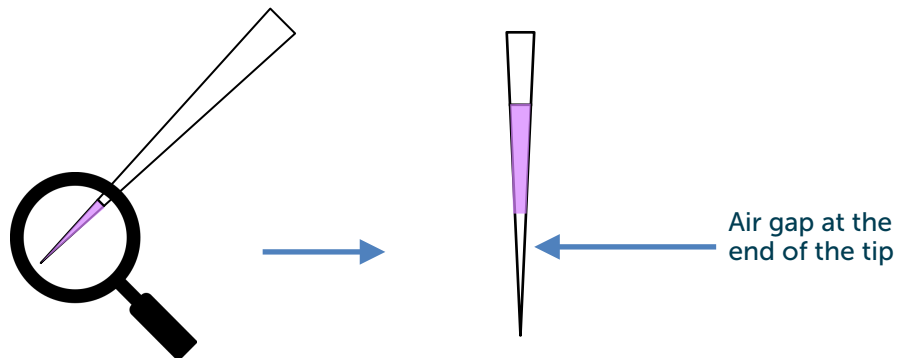


7. Draw up the liquid in the microcentrifuge tube with color dye #1 and 2



8. Look into your microcentrifuge tube that had both color #1 and #2, is there any liquid left?

9. Look carefully at the end of the tip, is there any air in the tip?



10. If your tip looks like the one on the left, "Good job!" Now repeat steps 1-9 but let your partner draw up the 20 μL .

11. Try it again only use different volumes (remember, they should add up to 20 μL) So you could try 15 and 5, or 13 and 7.