

Micropipetting

Measure and move small amounts of liquid!!



1. Hold the pipette like you are going to shake hands with it.

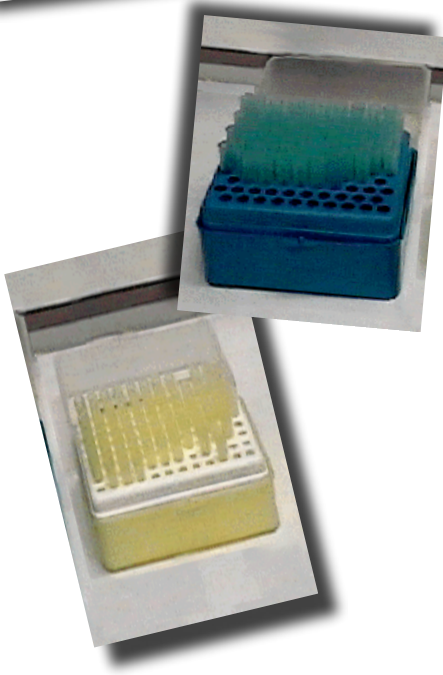
2. Place a **blue tip** on **purple pipette** or **yellow tip** on **pink, yellow or red pipettes**.

**Note: the colors are specific to a brand of micropipettes and tips.

3. Push top button down to first stop and place tip in water.

4. Let go of button and bring pipette out of water.

5. Over the tube or tray press down on the top button to move the liquid out.



Volume Decoder:

$1\text{ L} = 1,000\text{ mL} = 1,000,000\text{ }\mu\text{L}$

$1\text{ mL} = 1,000\text{ }\mu\text{L}$

$\mu\text{L} = \text{microliter}$ $\text{mL} = \text{milliliter}$

$\text{L} = \text{Liter}$

Press down here to move liquid. First stop for drawing liquid in and all the way down to push liquid out!

Ejection Button for Tip!

Tells the amount of liquid the pipette is set to measure!

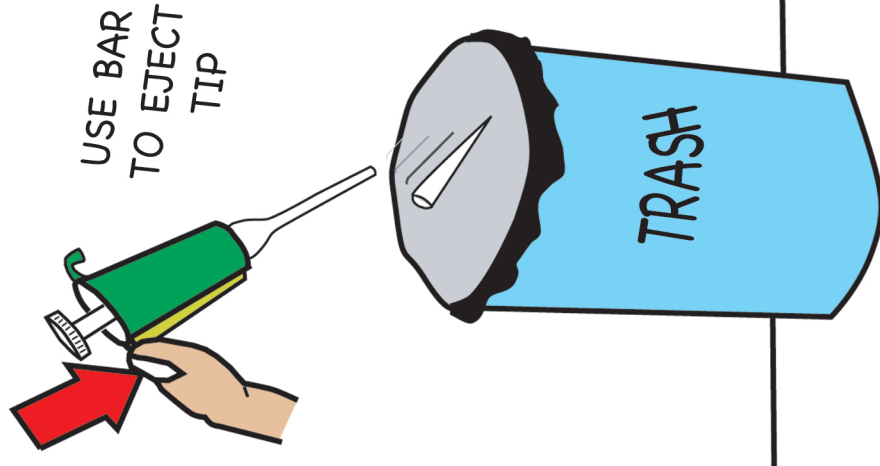
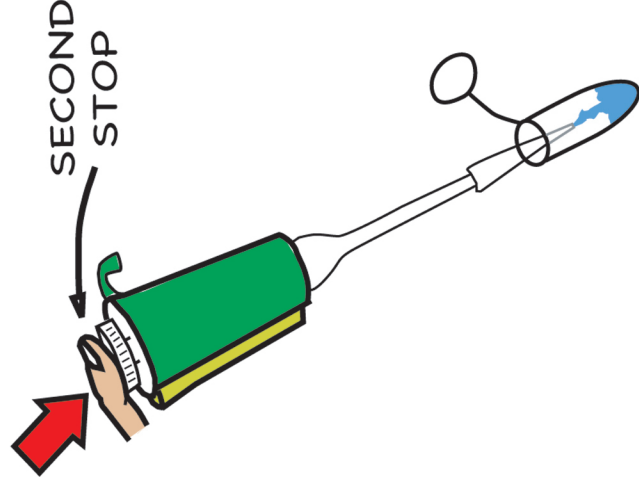
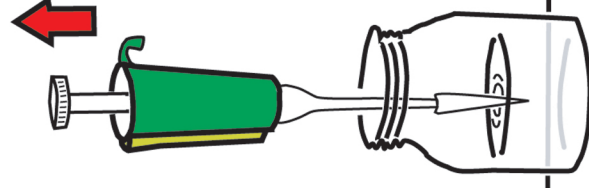
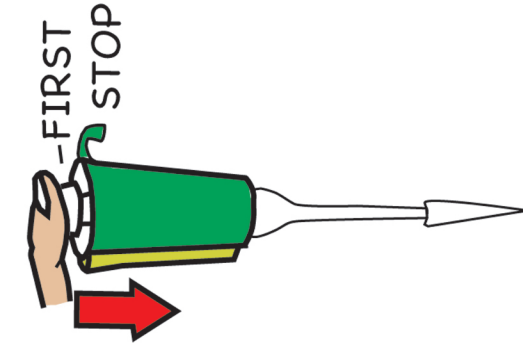
Put hand here like shaking hands with the pipette to hold!

Put tip here in order to use!



**About the
Micropipette!**

HOW TO USE Micropipettes



Micropipetting

Set up: a table with 10 micropipettes on the micropipette rack; have clear plastic cups with water colored with the four different food dyes: red, green, blue, yellow; have racks of yellow tips and blue tips; have microtiter plates and 1.5 ml tubes and racks for the tubes. You'll also want sponges to clean up messes.

As people come by, have a micropipette in each of your hands, and extend one to one person and ask, "Would you like to try these?"

"These are micropipettes."

"They cost about \$200 each."

"What do you think they are used for? M&M — measure and move."

They're used to Measure and Move small amounts of liquids, like blood or DNA or milk, in a clinic or lab or dairy.

"There are different colors. What are some other differences and similarities that you notice?"

"Which one is bigger?"

"Which one has the wider barrel?"

"Can you find the range of your micropipette?"

Show them with yours, "See the range — it's marked on the handle of the micropipette."

"What is the range of the insert color name one?" Go through this for each of the colors

The range for purple is: 200 to 1000 microliters

The range for the pink one is: 40 to 200 microliters

"Let me show you how to hold the micropipette." (use page 3 for assistance)

"You hold it like this: with the knuckguard over the knuckle, and facing away from you."

"And your thumb goes on the white thumb-button."

"And the thumb-button goes up and down."

"There are two stops on the way down: the first stop and the second stop."

"Can you feel the two stops?"

"When you start at the top and push down to the first stop, what are you pushing out?"

"And if you've pushed out a measured amount of air, what can you then suck up?"

"Yep, a measured amount of water."

"Show me that you can go down to the first stop."

"See the gap between the thumb-button and the base of the micropipette?"

"The first stop is also a 'soft stop'."

"Now 'grunt' and push harder and go all the way to the second stop."

"Show me the second stop."

"Now, let me give you a tip:"

"First, always use a tip."

"There are two sizes of tips: the bigger blue tip and the smaller yellow tip."

"ALWAYS, ALWAYS, ALWAYS use a tip."

"If you don't use a tip, then you suck liquid up into the barrel, and it can jam the micropipette. Jam is good for sandwiches, but it is bad for \$200 micropipettes."

"Put the tip on by gently applying pressure as you slide the tip on the end of the micropipette."

“Now I’m going to show you the right way to do it, and then I’ll show you the wrong way to do it, and then we’ll go through the right way again, and then you can play.”

Talk through the steps as you go through them in real speed.

1. “First, hold the micropipette like this: with the knuckleguard over your knuckle, pointing away from you, and with the thumb on the thumb-button. Don’t hold it like a syringe.”
2. “Next, with the tip out in the air, push the thumb-button down to the first stop. Where? In the Air. Do not put your tip first in water, then press down on the thumb-button — if you do, you’ll put air bubbles in your liquid, and that may not be good.”
3. “Now with the thumb-button at the first stop, put the tip of the micropipette barely in your cup of water. Don’t put the tip in really deep or really hard, or you could jam the tip or break the bottom of a cup. So put the tip barely in the water.”
4. “Next, draw your thumb up nice and slow — take two seconds. Don’t fling your thumb up — if you do, you may fling water into the barrel of the micropipette and jam the barrel. Jam is good for sandwiches, but it is bad for \$200 micropipettes.”
5. “Move the micropipette to an empty tube and push the thumb-button down to the first stop and then to get the last little bit out, grunt and push down to the second stop to push out the last little drop.”

“So you can now use a \$200 micropipette to Measure and Move small amounts of liquids.”

Allow them to try independently as long as you would like them to. Watch for proper form and remind them how to use it through showing and gently coaxings.

“You can’t take the micropipette home, but you can take home a couple of 1.5 ml plastic tubes with the colorful water, if you like.”