Carolina Quick Tips®

Carolina® Skill Check! Practice Pipetting

Using a micropipette to measure, dispense, and mix liquids accurately is an essential STEM lab skill for careers in biotechnology. It can be challenging for students to develop proper techniques and intimidating when the success of a lab depends on your skills! This demonstration provides 3 unique practice activities that will develop students' skills and give them confidence to use a micropipette with excellence.

Materials Required

Parts 1 & 2

Practice Pipetting Stations Kit (211145)

Carolina® Economy Pipettors (214721)

Yellow Pipette Tips, Rack of 96 (215052)

Part 3

How to Use a Micropipette (Carolina Lab Skills handout)

Transparent sheet protectors

Activity Procedure

Part 1

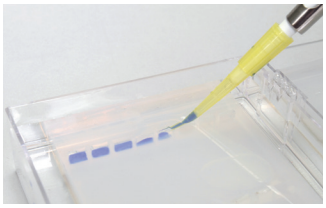
Learn how to pipette by creating a simple picture composed of drops of colored water.

1. The instructor will provide a picture template and a transparency grid. Place the transparency over the template.
2. Obtain a P20 micropipette and attach the appropriate yellow tip. **Note:** Carolina pipettes are color-coded to make tip selection easier in the classroom.
3. Adjust the volume of your pipettor by turning the plunger so it reads 9 µL. Reference "How to read a P20" on the back page to check your work.
4. Create a picture by placing 9 µL drops of the appropriately colored water into each of the designated squares. Reference steps for drawing and releasing liquid on the back page to perform the correct technique when doing so.

Part 2

Practice using a micropipette for performing gel electrophoresis.

1. Obtain a micropipette from your instructor and attach the appropriate colored tip.
2. Adjust the volume of your pipettor so it reads 10 µL or 15 µL.
3. Obtain a sample of loading dye from the instructor and prepare to load your sample into the well of the practice pipetting station.
4. Open the cap of the sample tube and while holding the pipette almost vertically, gently depress the plunger until it stops. While holding it in that position, insert the tip into your sample and slowly release the plunger to draw up your sample.
5. Carefully insert the tip of the pipette into the well and very slowly depress the plunger completely, beyond the first stop, and continue to hold.



6. While still holding the plunger, pull the pipette out of the well, release the plunger slowly, and remove your tip before loading the next sample.

Part 3

Perfect measuring and dispensing different volumes.

1. Obtain the "How to Use a Micropipette" handout and place it inside of a transparent sheet protector.
2. At the bottom of the page, fill each of the bubbles with the labeled volumes. Correct pipetting will create a droplet that is approximately the same size as the bubbles.

Practice Pipetting Stations Kit
Item No. 211145

Additional Information

View more information, content links, and products related to this activity at www.carolina.com/takeaways.

CB671622601

CAROLINA
UNLEASH LEARNING™

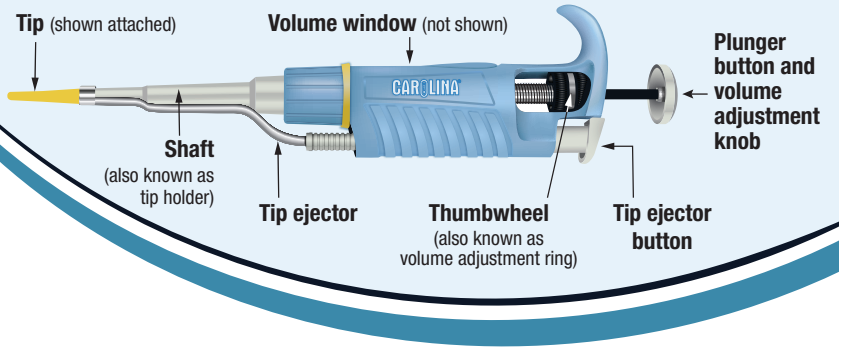
How to Use a Micropipette

Scan QR code or go to knowledge.carolina.com/labskills for videos and more!

Micropipette Structure & Function

Micropipettes transfer small volumes of liquids in microliters (µL), which are 1/1000th of a milliliter (mL)!

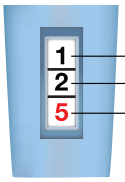
The name of a micropipette represents the maximum volume it can transfer. For example, a P20 can transfer up to 20 µL and a P1000 can transfer up to 1000 µL.



▶ How to set volume

Turn the micropipette plunger button or thumbwheel to adjust the volume shown on the volume window.

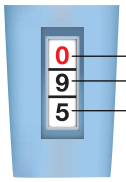
▶ Read the volume window from top to bottom



How to read a P20

- 1 — Tens place
- 2 — Ones place
- 5 — Tenths place

The pictured pipette reads 12.5 µL.

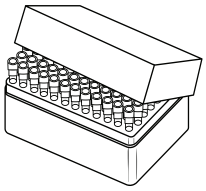


How to read a P1000

- 0 — Thousands place
- 9 — Hundreds place
- 5 — Tens place

The pictured pipette reads 950 µL.

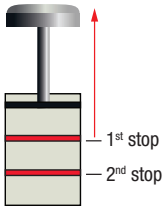
Ready to pipette?



Attach a tip.

~~P20 > 20 µL~~
~~P1000 > 1000 µL~~

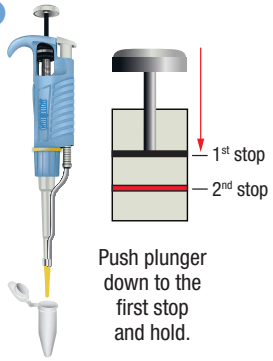
Never set beyond maximum volume.



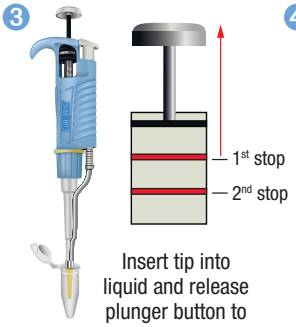
The plunger button has 2 stops. Know which stop to use and when.

Drawing (aspirating) liquid:

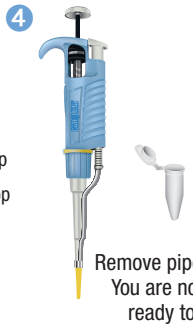
1. Set desired volume and attach a tip.



2. Push plunger down to the first stop and hold.



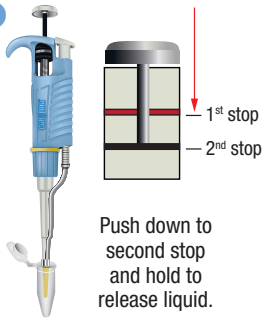
3. Insert tip into liquid and release plunger button to draw liquid.



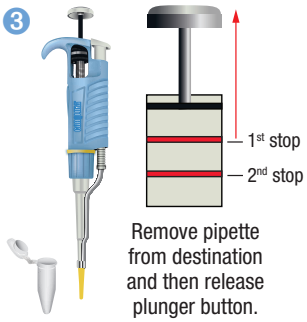
4. Remove pipette. You are now ready to transfer liquid.

Releasing (dispensing) liquid:

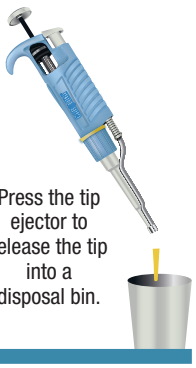
1. Insert tip into transfer location.



2. Push down to second stop and hold to release liquid.



3. Remove pipette from destination and then release plunger button.

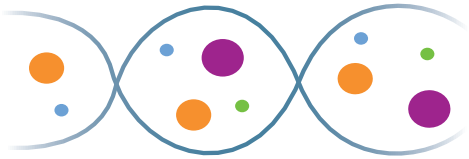


4. Press the tip ejector to release the tip into a disposal bin.

Practice your skills

Fill each of the bubbles (right) with the labeled volumes. Correct pipetting will create a droplet that is approximately the same size as the bubbles. (Note: Place a transparency over this handout to perform the activity.)

- 2 µL
- 5 µL
- 15 µL
- 20 µL



CAROLINA UNLEASH LEARNING™