

On Your Mark, Get Set, Pipette!

Understanding how to use a micropipette properly and with precision is often a challenge for students. Why not turn teaching this essential lab skill into a fun, hands-on competition? This workshop provides unique activities that will support your students toward excellence in micropipetting technique!

Materials Required

Part 1

Practice Pipetting Stations Kit (211145)
Carolina® Research Pipettors (214539, 214540, 214542)
Yellow Pipette Tips, Rack of 96 (215052)

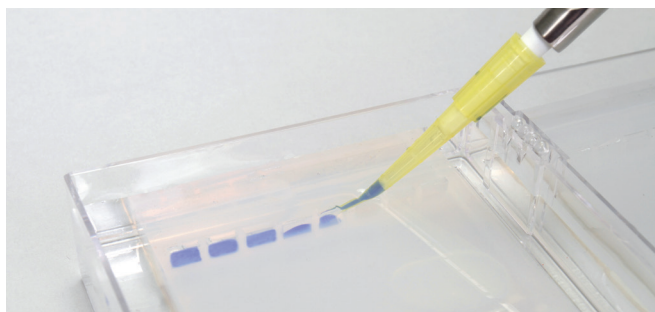
Part 2

Microscope Slides (631920)
Carolina™ Stopwatch (962106)
Colored Water or Loading Dye

Activity Procedure

Part 1

1. Obtain a micropipette from your instructor and attach the appropriate colored tip. **Note:** Carolina™ Pipettes are color-coded to make tip selection easier in the classroom.
2. Adjust the volume of your pipettor so it reads 10 µL or 15.0 µL.
 - a. For practice, read the volumes off various size pipettors. (See the back of this sheet for details.)
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 vertical, 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 2

Now it's time to introduce a little healthy competition.

1. Pull out 1 microscope slide and place a tip on a micropipette; set it to 10 µL.
2. Obtain a sample of loading dye or colored solution from your instructor.
3. Your goal is to put 20 equal drops of the sample on 1 microscope slide as quickly as possible. Avoid having the drops touch to practice your control.
4. Use a stopwatch to time yourself during the exercise.
5. Start the timer and begin placing the drops on the slide. Stop the timer once all 20 drops are complete.
 - a. For an added challenge, measure the weight of the slide before and after the activity to verify you are dispensing precise volumes.
6. Record your time (in minutes) and number of touching drops in the table below.

	Run 1	Run 2	Run 3
Time			
Drops Touching			

7. Using the table below, assign yourself a ranking to determine if you are a master of speed, precision, or both. Feel free to repeat the exercise to improve your time or to challenge your friends.

Ranking	Time (Minutes)	Number of Dots Touching
Master	<2:00	0
All-Star	<2:30	<2
Amateur	<2:45	<4
Rookie	<3:00	<6
Help!	≥3:00	>6

Additional Information

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



Pipetting Tips to Remember

- Understand the volume of 1 μL and the conversion process:

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

$$1 \mu\text{L} = 0.001 \text{ mL} = 0.000001 \text{ L}$$

- Pipettes are calibrated to a specific volume range; choose the right pipette for the job. Do not adjust pipettes beyond their specified range because it will damage the internal mechanisms.
- Always place a tip on a micropipette prior to use. Choosing the correct tip is key.
- Keep the pipette vertical during liquid transfer to avoid contaminating the sample and/or damaging the unit.
- Practice reading the dial on each pipette to ensure proper handling.



Guide to Reading Dials

Model:	p10	p20	p200	p1000
Range:	0.05–10 μL	2.0–20 μL	20–200 μL	100–1,000 μL
Tip Color:	Clear	Yellow	Yellow	Blue

Dial Display:

1	Blank	Blank	0
0	1	1	5
0	5	5	0
0	0	0	0

Dispensed Volume:

10 μL

15 μL

150 μL

500 μL



**Practice Pipetting
Stations Kit
Item #211145**



**Carolina® Research
Pipettors
Item #214539**



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