

## Reviewing Micropipets 1

Name \_\_\_\_\_

1. Set pipet volume **only within the range** specified for that micropipet.
2. Be sure to always **use a disposable tip** on the micropipet before touching any liquid.
3. Always keep the micropipet in a **vertical position** when there is fluid in the tip.
4. Use your thumb to **control the speed** at which the plunger rises after taking up or ejecting fluid. Quick movements cause inaccurate measurements.
5. **Remember:** The first stop is for drawing up liquid and the second stop is for expelling liquid.
6. When expelling liquid, be sure that the plunger stays at the second stop while you remove the pipette. **Don't allow your thumb to release the plunger until the tip is out of the liquid.**

### MATERIALS:

4 tubes of colored solutions, three marked "X", "Y", and "Z"		
p20 micropipet	rack for tubes	PCR or other tubes
p200 micropipet	waxed paper	paper towels to clean tubes
yellow tips	waste container	

### ACTIVITY:

1. Check to see that you have the p20 micropipet. Dial 20  $\mu\text{l}$ . What will the three digits read, top to bottom? \_\_\_\_\_ Push the plunger to the first, then the second stop. Notice that the two stops are very easily "felt."
2. Now dial 2  $\mu\text{l}$ . What will the three digits read, top to bottom? \_\_\_\_\_ Push the plunger to the first, then the second stop. Notice that the second stop is difficult to distinguish from the first!
3. With the p20 set at 2  $\mu\text{l}$ , put a plastic tip on the pipet. Slowly push the plunger to the **SECOND** stop and withdraw a sample of the colored solution. (Yes, this is the INCORRECT procedure. We are doing this so you can see the result of this error) Look at the volume in the tip. Draw an accurate picture of the tip and mark the level of liquid in it.
4. Deliver this incorrect volume to one spot on the waxed paper. Draw the actual size of the drop.
5. With the p20 set to 2  $\mu\text{l}$ , put a plastic tip on the pipet. Slowly push the plunger to the **FIRST** stop and withdraw a sample of the colored solution. Look at the volume in the tip. Draw an accurate picture of the tip and mark the level of the liquid in it.
6. Deliver this correctly measured drop to the waxed paper. Draw the actual size of the drop.
7. If this second drop is actually 2  $\mu\text{l}$ , estimate how many  $\mu\text{l}$  are in the first "incorrect" drop. \_\_\_\_\_
8. With the p20 still at 2  $\mu\text{l}$ , correctly remove 2  $\mu\text{l}$  from the "incorrect" drop and place it elsewhere on the waxed paper.
9. Remove a second and third 2  $\mu\text{l}$  sample from that original "incorrect" drop and place them along side the first. Continue this procedure until you have measured all the liquid in this drop.

10. What is your more accurate estimate of the volume of the “incorrect” drop? \_\_\_\_\_
11. If 2µl represents a 100% sample, what % was represented by your incorrect drop? \_\_\_\_\_
12. Use the pipet correctly to sample 5, 9, and 10 µl of sample. One partner will place the sample into a PCR tube, the other partner will remove the same volume and place the sample on waxed paper.
13. Write the three digit representation of each volume. \_\_\_\_\_ Draw three pipet tips showing the above volumes. Draw three PCR tubes showing the above volumes.
14. Now try your accuracy with the p200 micropipet. Set the pipet to 50µl. What will the three digits read, top to bottom? \_\_\_\_\_ Push the plunger to the first, then the second stop.  
Notice that the two stops are very easily “felt.”
15. Place a plastic tip on the micropipet and **accurately** withdraw a 50µl sample. Place it into a PCR tube. Notice the level!! Have your partner remove 50µl exactly.

**TEAM WORK:**

16. Work in groups of four. Obtain one each of tubes X, Y and Z. Place waxed paper over the table below and each person will pipet the designated amounts onto the grid in the proper position. Compare the sizes to check if the volume is the same. If not, repeat and/or ask for help.

<b>NAMES:</b>	<b>9µl tube “X”</b>	<b>10µl tube “Y”</b>	<b>31µl tube “Z”</b>
<b>Person 1</b>			
<b>Person 2</b>			
<b>Person 3</b>			
<b>Person 4</b>			

17. Pipet one set of liquid from the waxed paper and place it into your PCR tube: 9µl, 10µl, and 31µl. How much sample should be in the tube? \_\_\_\_\_ Set the appropriate pipet for that volume and check to see if that is the volume you have. If not, repeat until you are accurate.
18. Clean out used tubes with paper towels. Leave materials as instructed.