

How to Use a Micropipettor

Adapted from: <http://www.bio.davidson.edu/Courses/Bio111/Bio111LabMan/Preface%20D.html>

Background:

The micropipettor is used to transfer small amounts (< 1 ml) of liquids. The scales on micropipettors are in microliters (1000 μ l = 1 ml). The brand of micropipettors we will be using is made by Biorad. These are very expensive, delicate instruments costing \$250-300 apiece. The micropipettors come in two sizes which are capable of pipetting three ranges of volumes:

P20 = 0.5- 20 μ l

1 μ l=0.001mL

P200 = 20-200 μ l

Procedure:

1. Never exceed the upper or lower limits of these pipettors.

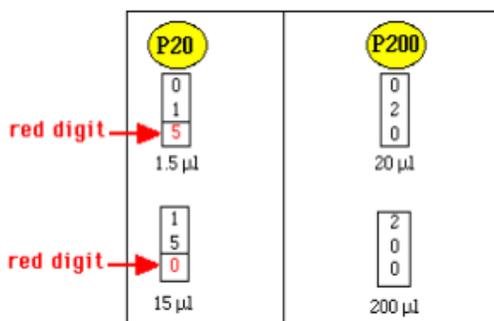
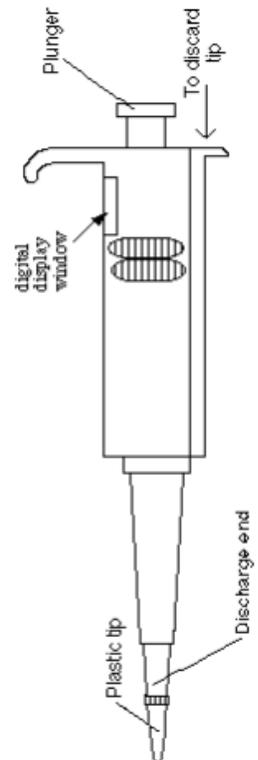
The limits are:

P20: 0.5 to 20.0 μ l

P200: 20 to 200 μ l

2. Set the desired volume by turning the centrally located rings clockwise to increase volume or counterclockwise to decrease volume. Lock the rings in place with the lock setting.

- P20: Maximum volume 20 μ l. Accurate between .5 μ l and 20 μ l. Numbers on the micropipettor (typically black-black-red) are read as XX.X μ l. The change in color indicates the position of the decimal point.
- P200: Maximum volume 200 μ l. Accurate between 20 μ l and 200 μ l. Numbers on the micropipettor (one color) are read as XXX μ l.



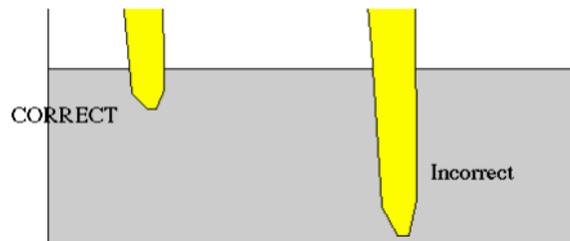
3. Place a tip on the discharge end of the pipettor. NOTE: If sterile conditions are necessary do not allow the pipet tip to touch any object (including your hands).

4. The plunger will stop at **two different positions** when it is depressed.

The first of these stopping points is the point of initial resistance and is the level of depression that will result in the desired volume of solution being transferred. Because this first stopping point is dependent on the volume that is being transferred, the distance you have to push the plunger to reach the point of initial resistance will change depending on the volume being pipetted.

The second stopping point can be found when the plunger is depressed beyond the initial resistance until it is in contact with the body of the pipettor. At this point the plunger cannot be further depressed. This second stopping point is used for the complete discharging of solutions from the plastic tip. You should not reach this second stop when drawing liquid into the pipettor, only when expelling the last drop. Before continuing, practice depressing the plunger to each of these stopping points until you can easily distinguish between these points.

5. Depress the plunger until you feel the initial resistance and insert tip into the solution, just barely below the surface of the liquid and not as deep as possible.



6. Carefully and slowly release plunger. NOTE: If the solution you are pipetting is viscous (thick), allow the pipet tip to fill to final volume before removing it from solution to avoid the presence of bubbles in the plastic tip which will result in an inaccurate volume.

7. Discharge the solution into the appropriate container by depressing plunger. This time, depress the plunger to the point of initial resistance, wait one second, and then continue pressing the plunger as far as it will go in order to discharge the entire volume of solution.

8. Remove tip by pressing down on the tip discarder over the waste container

NOTES:

- Never point a pipettor up. This may cause liquid to run down into the pipettor destroying it.
- When withdrawing liquids with the pipettor, always release the plunger slowly. This prevents liquid from rushing into the end of the pipette and clogging it up. This is especially important with large volume pipettors (200-1000 μl).
- Be sure you use the proper size tip for each pipettor.
- Always use **a new tip** for each **different liquid**.
- Use the correct pipettor for the volume that is to be dispensed. Never use the 20-200 μl pipette to dispense volumes below 20 μl . Going below or above the range of the micropipettor may damage the instrument.