How to use micropipetters

Just about every molecular biology lab uses micropipetters. These machines can be a pleasure, making the delivery of up to 1 ml liquid fast and easy. But they are TREACHEROUS. The numbers on micropipetters tend to lull the unwary into a false sense of security, encouraging the belief that those numbers tell you the volume being delivered. They should, but all too often they do not. DON'T BE A VICTIM! Develop an intuition as to what volumes look like and use that intuition every time you use a micropipetter.

How not to break a micropipetter

These machines are EXPENSIVE. To avoid becoming a lab pariah:

1. Do NOT dial a pipetter below 0
2. Do NOT dial a pipetter above their maximum value
3. Do NOT drop a pipetter
4. Do NOT submerge the shaft of a pipetter in liquid
5. Do NOT pound the pipetter into a tip like you're eviscerating a buffalo
6. DO think about what you're doing and DO use common sense!

Use and varieties of micropipetters

Each micropipetter works in pretty much the same way. In brief, a sterile tip is affixed to the end of the pipetter. To take up liquid, the plunger is depressed to the first stop, and the tip is submerged in the liquid. The plunger is released, allowing the liquid to be sucked up. To deliver liquid, the plunger is depressed past the first stop to the second stop.

Micropipetters come in several varieties. Here are three that are common:

P20: Maximum volume 20 µl. Accurate between 2 µl and 20 µl. Numbers on the micropipetter (typically black-black-red) are read as XX.X µl. The change in color indicates the position of the decimal point.

P200: Maximum volume 200 µl. Accurate between 20 µl and 200 µl. Numbers on the micropipetter (one color) are read as XXX µl.

P1000: Maximum volume 1000 µl (= 1 ml). Accurate between 200 µl and 1000 µl. Numbers on the micropipetter (typically red-black-black) are read X.XX ml. Note that this micropipetter reads milliliters while the other two read microliters.

Nonsterility of micropipetters

Putting a sterile tip on a micropipetter does not make the rest of the micropipetter sterile! You may rightly assume that the pipetter itself is as filthy as the people who handle them. Put only the tip, not the pipetter, in sterile containers. If the container is too large to poke just the tip in and still reach the liquid, then use a conventional pipet. Whenever possible, tip the container so that dirt falling from the pipetter or your hand cannot drop into the tube.

SQ4. Do you already feel comfortable using micropipettors?