

## How to use micropipettors

Just about every molecular biology lab uses micropipettors. 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 micropipettors 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 micropipettor.

### How not to break a micropipettor

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

1. Do NOT dial a pipettor below 0
2. Do NOT dial a pipettor above their maximum value
3. Do NOT drop a pipettor
4. Do NOT submerge the shaft of a pipettor in liquid
5. Do NOT pound the pipettor 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 micropipettors

Each micropipettor works in pretty much the same way. In brief, a sterile tip is affixed to the end of the pipettor. 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*.

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

- P20: Maximum volume 20  $\mu\text{l}$ . Accurate between 2  $\mu\text{l}$  and 20  $\mu\text{l}$ . Numbers on the micropipettor (typically black-black-red) are read as XX.X  $\mu\text{l}$ . The change in color indicates the position of the decimal point.
- P200: Maximum volume 200  $\mu\text{l}$ . Accurate between 20  $\mu\text{l}$  and 200  $\mu\text{l}$ . Numbers on the micropipettor (one color) are read as XXX  $\mu\text{l}$ .
- P1000: Maximum volume 1000  $\mu\text{l}$  (= 1 ml). Accurate between 200  $\mu\text{l}$  and 1000  $\mu\text{l}$ . Numbers on the micropipettor (typically red-black-black) are read X.XX ml. Note that this micropipettor reads milliliters while the other two read microliters.

### Nonsterility of micropipettors

Putting a sterile tip on a micropipettor does not make the rest of the micropipettor sterile! You may rightly assume that the pipettor itself is as filthy as the people who handle them. Put only the tip, not the pipettor, 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 pipettor or your hand cannot drop into the tube.

**SQ4. Do you already feel comfortable using micropipettors?**