

Three Essential Micropipette Fabrication Instruments

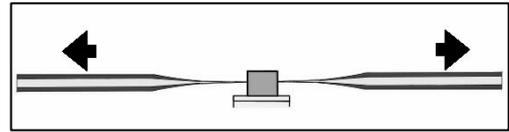
We discuss the three essential instruments which produce varied types of micropipettes: Micropipette Puller, Microforge and Microgrinder.

What are the Instruments Used for?

Glass needles (glass pipettes) are essential to conduct research such as patch clamp recordings, ES cell microinjection, ICSI, etc. The pipettes are processed out of glass capillaries. The three essential micropipette fabrication instruments comprising micropipette puller, microforge and microgrinder serve the purpose of producing the micropipettes used in various researches.

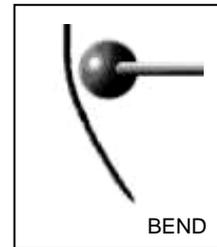
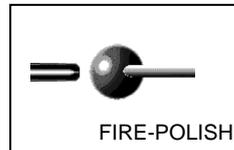
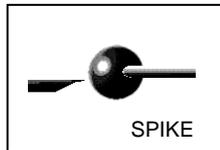
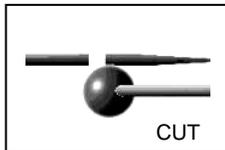
PULLER

This instrument pulls a glass capillary, by applying heat, into a micropipette with the tip diameter of as small as a few micrometers.



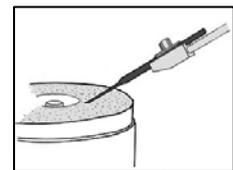
MICROFORGE

This instrument processes the tip of a micropipette. It applies heat on the micropipette to cut or bend while observing the tip through the built-in microscope. It is also used to produce a spike on the tip or polish the tip (fire-polish).



GRINDER

This instrument grinds the tip of a micropipette. Not only does it grind the tip flat, but it grinds it at a bevel. The pipette tip shapes an angle to help penetrate cells with hard or thick walls.



< Bits of Knowledge >

Here are some examples of pipettes which can be produced with the micropipette fabrication instruments.

For patch clamp recordings / slice patch clamp recordings.

Make a pipette with a puller, then fire-polish its tip with a microforge.

For intracellular recordings Use a pipette as it is pulled by a puller.

For microinjection (ICSI, ES cell injection, etc.)

Make a pipette with a puller and cut its tip at a required diameter with a microforge. Then, grind the tip at an angle with a microgrinder and again use a microforge to produce a spike on the angled tip. Lastly, bend the pipette body at a desired angle to finish.

For microinjection (adherent cell etc.) Use a pipette as it is pulled by a puller.