

## Setup of a Micromanipulation System for ICSI –4

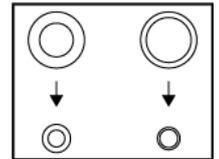
The final issue of this series discusses micropipettes to be used for ICSI.

ICSI micropipettes are available from varied pipette suppliers. However, while their prices are usually high, their features may not always fulfill your demands perfectly. It is possible to make your own micropipettes from glass capillaries by using pipette making equipment called puller, microforge and microgrinder.

### Glass Capillary

Narishige glass capillaries are all made of borosilicate. Five types of glass capillaries are available to choose from: ordinary glass capillary, capillary with filament, thin-wall capillary, sterilized capillary and sterilized capillary with filament. Capillaries with filament are basically used for electrophysiology experiments which require a smaller pipette tip, whereby the filament helps bring fluid to the very small tip with the aid of capillary action. A capillary with filament is not suitable for ICSI purposes since it only narrows the inner diameter of the capillary. For ICSI purposes, choose an ordinary, sterilized or thin-wall capillary.

In general, capillaries used for making ICSI pipettes are 1mm in outer diameter. To reduce damage to an egg, use a thin-wall capillary which has a smaller outer diameter than that of an ordinary capillary when compared to the same inner diameter. You may experience difficulty in making a pipette from a thin-wall capillary more than you would with an ordinary capillary.



### Puller

A puller is equipment used to pull a capillary to a pipette. Injection pipettes and holding pipettes are needed to perform ICSI. The Narishige PC-10 puller is able to make both types of pipettes by adjusting parameters.

#### ■ For Injection Pipettes

Use the two-step pull mode. It makes a pipette which has high parallelism to the pipette tip. The pipette tip is then cut to a desired diameter with the aid of a microforge. Injection pipettes are commonly 4  $\mu$  m to 6  $\mu$  m in inner diameter.

#### ■ For Holding Pipettes

Use the one-step pull mode to make a larger tip diameter than that of an injection pipette. This can result in a pipette tip with edges. This is not a problem since the tip can then be polished with the aid of a microforge.

### Microforge

The microforge is equipment for processing a pipette tip in varied ways. The Narishige MF-900 Microforge allows cutting, fire-polishing, bending and making a spike. It is suitable for making varied pipettes for microinjection experiments.

#### ■ For Cutting

Look into the built-in microscope of the microforge and cut a pipette tip at a desired diameter referring to the graduated scale provided.

#### ■ For Fire-polishing

Polish a pipette tip of a holding pipette. A polished pipette can be attached closely and firmly to an egg without damaging it.

#### ■ For Bending

Heat a pipette in order to bend. ICSI pipettes are commonly bent around 30 degrees. WebNews No.003 discusses reasons why a pipette should be bent. A pipette is bent after it has been beveled and a spike has been made.

#### ■ For Making a Spike

Make a sharp edge on a pipette tip to get better penetration of an egg.

### Microgrinder

Microgrinder is equipment for beveling the tip of injection pipette in order to get better penetration of an egg. The Narishige EG-400 Microgrinder is equipped with a microscope that allows you to check a pipette tip while beveling.

#### ■ For Beveling

Narishige showrooms are available for you to experience using the above mentioned pipette making equipment.

**If you have any questions or need further information, please contact us.**

Narishige Group Website

URL: <http://narishige-group.com>