NARISHIGE WEB NEWS

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Micromanipulators Required For Microinjection

Narishige offers a variety of micromanipulation products to meet as many researcher's requirements as possible. However, the variety of products seems to confuse those who are looking for suitable products for their particular application. In this news, we sum up the key points for choosing products for microinjection.

◆ What is the size of the cell to be handled ? ◆

Small (～μm)

・ES cell, Nucleus, Sperm, Cultivated Cell, etc.

High Magnification (higher than x100 in total)

・Inverted microscopes or upright microscopes (x100～x400)

Micromanipulators are fixed to a microscope using a suitable mounting adaptor (Type B/B2)

Big (～mm)

・Egg of Xenopus, Zebrafish, Killifish, Chicken, etc.

Low Magnification (lower than x100 in total)

・Stereomicroscopes (～x100)

Manipulators are installed with a suitable mounting adaptor (Type A) or a magnetic stand.

◆ Floating cell or adherent cell ◆

Microinjection to floating cell

・ES cell microinjection

・Nuclear transfer

・ICSI, etc.

◇Installed on both sides of the microscope◇

As the targeted cell is floating, a set of micromanipulation products is required respectively for injection and for holding the targeted cell. The microinjection work requires high precision of movement. An oil hydraulic type with joystick controller is preferred because three-axis remote-control ability does not transfer vibration during operation and offers quick and precise movement where the user's operation is precisely reflected.
A coarse manipulator is also used in combination with a fine micromanipulator in order to complement the ability for setting a pipette within the optical axis.

Ref: Recommended Models

Microinjection to adherent cell

・Cultivated cell, etc

◇Installed on one side of the microscope◇

As the targeted cell is attached to the petri dish, a set of micromanipulation products is required for injection work only. The microinjection work requires high precision of movement. The oil-hydraulic type which offers precise remote-control ability is preferred, used in combination with a coarse manipulator.
When the offered movement is only vertical and horizontal, the pipette contacts the cell at an angle and results in giving stress to the cell. A one-axis oil-hydraulic micromanipulator for extra axis is often added to the combination to reduce stress to the cell.

*Please refer back to web news No.002.

Microinjection with stereomicroscope

・Egg of Xenopus, Zebrafish, Killifish

・Chicken egg

◇Installed on one side of the microscope◇

The targeted cell is comparatively big. Many researchers do not use a manipulator for holding the cell but often make a platform using prepared slides or a mesh that is available on the market.
The required movement is not as precise as that for high magnifications, therefore three-axis manual manipulators are often used .
On the other hand, a one-axis oil-hydraulic manipulator is preferred in combination with the manual manipulator for eliminating vibration and for reducing stress of the cell at the time of injection.

Ref: Recommended Models

*Please refer back to web news No.002

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