Zebrafish (*Danio rerio*) are rapidly gaining in popularity as bio-medical research subjects because of the ability to generate high resolution, *in vivo* images of the embryos. Zebrafish are easy to maintain and produce a large number of offspring. Additionally, the embryos have a nearly transparent skin, making their development easily visible. These fish are used for a variety of disciplines, including neuroscience, genetics and aging studies.

Serving scientist for over 45 years, WPI offers a variety of instruments for microinjection including pumps, pipetters, microscopes and more. One of our most popular pumps for microinjection is the PV820 Pneumatic PicoPump.

The PV820 and PV830, Pneumatic PicoPumps, were designed to simplify intracellular injection. You get repeatable microinjection in volumes ranging from picoliters to nanoliters. PV820 offers eject and hold pressure. The hold pressure prevents backfilling of the pipette by capillary action. In addition, the PV830 also has vacuum pressure which allows you to securely hold a cell with one pipette while you inject it with another. The volume injected is controlled by the inside diameter of the glass tip, the pressure and the time.

Recently, WPI introduced its customizable Microinjection System with everything you need to get started. The basic system is shown here. On the next page you will find many options and accessories you may use to customize your system.
Designed to simplify intracellular injection and a variety of other microinjection tasks, WPI's PicoPumps use carefully regulated air pressures for securing cells and injecting them with fluid. Injected volumes range from picoliters to nanoliters.

**INJECTOR**

✱ PV820 Pneumatic PicoPump with Hold Pressure
• PV830 Pneumatic PicoPump with Hold Pressure and Vacuum
• Nanoliter2010
• UMPIII UltraMicroPump

The system depicted on the cover and at left includes components often favored by researchers, indicated with ✱ in the list below: PV820 Pneumatic PicoPump, PUL-1000 Micropipette Puller, M10 magnetic stand on a 5052 steel base plate (not shown), M3301L micromanipulator, 5430-ALL PicoNozzle Kit with a µTip, FD35-100 Fluorodish, PZMTII microscope with lighted base and articulating mirror (optional), E210 micropipette storage jar, 504156 Regine tweezers #5, 14003 Vannas spring scissors, glass capillaries, 77020 glass tweezers.

Whatever your needs, WPI offers a range of equipment to fill your requirements

**ELECTROPORATOR**

• CUY21-EDIT-11 Electroporator

CUY21-EDIT-II Electroporator is a combination square wave and exponential wave form generator with single and dual pulse modes. It has single and dual pulse modes for square and decaying pulses. You can set pulses emitting constant current (mA) as well as voltage (V) and generate multiple waveforms. It offers built-in resistance measurement and a measured output recorder.

**MICROSCOPE**

✱ PZMIII-MI Microscope with lighted base and articulating mirror
• PZMIII Precision Stereo Zoom Microscope

PZMIII-MI LED Lighted Microscope Base with articulating mirror and variable light intensity. Dual reflection lens/mirror system provides transmitted brightfield/psuedo-darkfield illumination.

PZMIII Precision Stereo Zoom Microscope, available in binocular and trinocular (shown).

For more information, see www.wpiinc.com/microinjection
**PULLERS**

- PUL1000 Microprocessor-controlled 4-Step micropipette puller
- PMP-102 Programmable Multipipette Puller

**MANIPULATOR**

- M3301 Manual Micromanipulator
- KITE Manual Micromanipulator
- DC3001 Motorized Micromanipulator
- SN-PCZ-50 Miniature Piezo Micromanipulator with controller
- M4C Microscope Stage Adapter

**LIGHTS**

- Z-LITE-186 Fiber optic illuminator with (500186) Bifurcated Light Guides
- ROF-UV LED ringlight for UV
- LED-Lite Modular LED Light Source with Exchangeable LEDs
- 504134 LED Ring light

**ACCESSORIES**

- Nanofil Microliter syringes
- MicroFil for backfilling glass needles
- Glass capillaries
- Pipetters
- MicroTip pre-pulled pipettes
- E2XX Micropipette Storage Jar
- 801566/801963 Vacuum Pump for use with the PV830
- Fluorodish Optical glass bottom dishes
- M10 or M-3 Manipulator base
- Z-MOLDS Microinjection and Transplantation Molds
- Many surgical instruments

**PUL-1000** is a microprocessor controlled horizontal puller for making glass micropipettes or microelectrodes used in intracellular recording, microperfusion or microinjection. It offers programmable sequences of up to four steps with heating, force, movement and cooling time. This allows graduated cycles for applications like patch clamp recording.

**Z-MOLDS** Microinjection and Transplantation Molds (4 per kit) are designed for zebrafish research. The molds are turned up-side-down and placed in liquid agarose gel and are easily removed once it has solidified. Pipette the embryos into the grooves. The embryos self-align.
Microinjection System

ZEBRAFISH REFERENCES

Referenced in 1567 peer reviewed publications


