Electrophysiology of rat brain cells

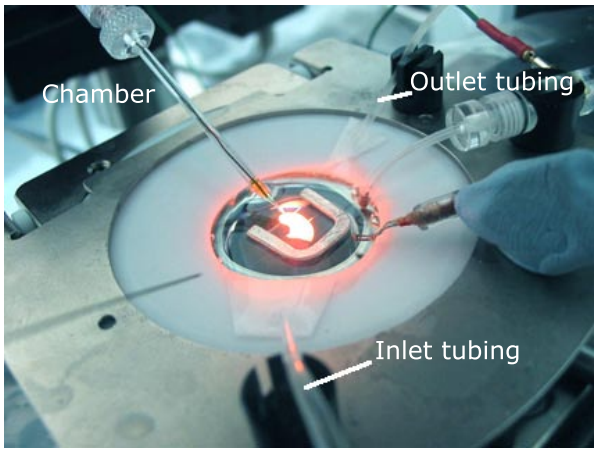
To measure electrical signals and intracellular calcium concentrations of neuronal cells at the same time, Mr. Kwang-Hyun Cho, PhD, a postdoctoral researcher from the College of Medicine at the Catholic University of Korea, uses a microscope focusing on a perfusion chamber drained by a **Minipuls 3**.

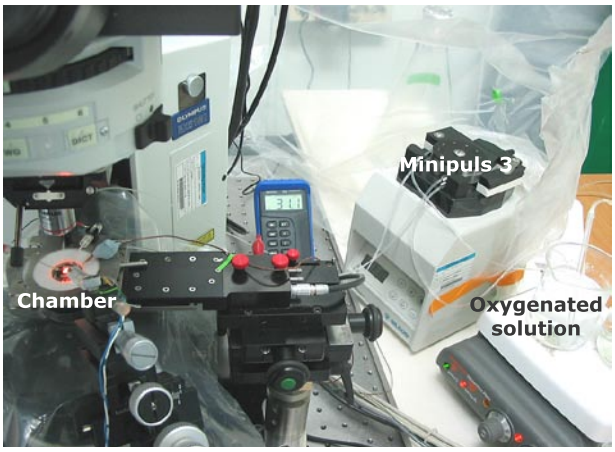
The neuronal cells come from a rat brain slice bathed in a buffer inside the chamber. This buffer is an oxygenated saline solution that ensures the viability of the neuronal cells, which are very sensitive to oxygen.

The pumping system is composed of a **Minipuls 3** peristaltic pump that delivers the saline solution into the chamber through an inlet tubing at a flow-rate of 2 to 3 mL/min. At the same time, the same volume of saline solution is pumped out of the chamber to keep the buffer at a constant level and is recycled. The high torque, adjustable stepper motor maintains the pump's speed stability to +/- 0.5 % providing an exact reproducible flow rate from one tubing to another.

"*The Minipuls 3 is very convenient for the re-circulation of solutions*" says Doctor Kwang-Hyun Cho when referring to a key benefit of the pump. Engineered with a 10-roller rotor, the **Minipuls 3** produces smooth pulse-free flows, which eliminate siphoning or clogging phenomenon, a significant advantage when circulating sensitive neuronal cells.

Its compact design saves space and the tubing can easily be loaded into the pump which makes it simple to integrate into the perfusion system. Furthermore, a multichannel pump head can be selected for continuous circulation of up to 4 perfusion chambers.





Field of Application	Required *Minipuls 3* products	Reference
Medicine	Minipuls 3 control module	F155001
	R2, 2-channel pump head	F117800
	Peristaltic tubing PVC 1mm ID	F117938

Typical customers

Research Laboratories