

The Optopatcher



Patch Clamp Micropipette Holder with integrated fiber optic

The Optopatcher provides unmatched accuracy in applying optical stimulation to an in-vivo patch-clamp protocol, integrating the fiber optic within the same microelectrode being used to make the electrode recording.

Contents

One Optopatcher	One fiber-optic (<i>already installed</i>)
One 1.25mm Diameter Mating Sleeves	Replacement seals
One Holder care instruction sheet	

Instructions

The Optopatcher consists of a main body, with two threaded side bodies. One side body contains the fiber optic base (ferrule) and light guide; the other a silver wire and pin connector designed for use with a common headstage connectors. The bodies are interchangeable, so the user can decide if the headstage connector is parallel with the micropipette and the light fiber path is angled through the optopatcher, or if the light fiber path through the body is straight and the headstage connector is angled. The side bodies can simply be repositioned, provided care is taken when re-inserting the light fiber or the silver wire into the main body's internal ports.

When shipped, the light fiber installed in the optopatcher is of considerable length; most likely it is longer than required for use. End users need to determine the final length they require based on their typical pipette length and trim the fiber accordingly. Optimum performance is obtained the closer the end of the light fiber is to the pipette end. Cutting the optical fiber to length is a simple task, provided you have access to an ultra sharp knife (such as the A-M Systems Fiber Optic Scribe - Product 677500), is used to score/snap the fiber. Additional polishing of the fiber end is not typically necessary. This process can be performed with the fiber optic remaining inside the optopatcher. Should the fiber optic need to be removed/replaced, reinsertion can be challenging. Routing the fiber optic around the junction of the internal optopatcher ports can be aided by slowly rolling the base end of the fiber (the white ceramic ferrule end) between your thumb and index finger while inserting the fiber into the optopatcher body.

The light source fiber is attached to the Optopatcher by the provided 1.25mm ID split mating sleeve.

The outside of the Optopatcher should be wiped dry before insertion into the headstage. No electrolyte should be allowed to accumulate on the external surfaces and that no air spaces exist in the current path. To maximize Optopatcher life, it should be blown dry after use, wiped dry on external surfaces and stored without touching each other, in a dry atmosphere. Alcohol or other solvents are not suitable for cleaning. Use distilled water to soften and remove deposits.

The use of opaque coating materials to reduce light leakage from the pipette can be beneficial if needed. Suggested materials include acrylic paint, nitrocellulose-based lacquers and non-toxic nail-polish. For best results, the coating should reach the very tip of the electrode (within a few microns) but can lead to poor patching if it interferes with the tip surface. By manually painting the pipette you can get close to the tip but this procedure will have high variability and most be done carefully under the microscope to reach <1mm resolution.