

Automated internal perfusion with the Port-a-Patch

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Nanion Technologies introduces the Internal Perfusion System for the Port-a-Patch; a completely unique device for rapid, continuous and automated exchange of internal solutions during patch clamp recordings.

Using the internal perfusion system, ion channels regulated by internal binding sites for second messengers can be easily modulated or compounds acting on the internal side of the membrane like e.g. hERG active substances can be directly applied internally.

Planar patch clamp chips offer the possibility to perfuse the extracellular as well as the intracellular side of the cell membrane. With conventional patch-clamping, the latter is commonly very difficult, due to the laborious set ups required and the diffusion limited perfusion within the long tapered shaft of a patch pipette.

“The Internal Perfusion System for the Port-a-Patch offers unprecedented possibilities for patch clamp investigations of substances affecting a cell from the inside. High quality whole-cell recordings can be collected during perfusion of the cell’s internal membrane side. This device is totally unique in its experimental possibilities and ease-of-use.” says Andrea Brüggemann, CSO and managing director, Nanion Technologies.

The automated Internal Perfusion System is an add-on to the Port-a-Patch with a dedicated chip holder containing fluidics and a specially designed shielding compartment with an inverted electrode arrangement for bath and reference electrode. The Internal Perfusion System is a “plug-and-play” device, fully compatible the Port-a-Patch as well as Nanion’s 8-channel perfusion system.

The Internal Perfusion System for the Port-a-Patch has been used for the internal administration of compounds to different ion channel types, for example hERG, Kv1.3. Also, the system has been used for bilayer recordings of gramicidin, investigating the changes of current amplitudes as a response to changes in solution compositions. Some of the collected data can be found in NanionNotes7, available on our website at www.nanion.de/pdf/NanionNotes7.pdf

The ability to change the internal solution several times, along with long lasting and stable whole cell or bilayer recordings possible with the Port-a-Patch, opens up to new experimental possibilities for a broad range of ion channel studies and will prove to be a useful tool in ion channel research.

To check out and learn more about the new Internal Perfusion System for the Port-a-Patch, please come by our booth 469,471

at the Biophysical Meeting in Baltimore, MD, USA! See you there!

Nanion Technologies (Germany) is a spin-off from the Center for Nanoscience (CeNS) of the University of Munich and is dedicated to providing flexible and customized solutions for ion channel research both in industry and academia. With the miniaturized NPC[®]-1 port-a-patch [®], Nanion offers the world's smallest patch-clamp workstation. This innovative drug discovery technology makes patch clamp available also to non-electrophysiologists. The NPC[®]-16 patchliner [®], which is available as a 2, 4 and 8 channel version additionally addresses the higher throughput requirements for ion channel screening.

Nanion Technologies
Erzgiessereistr. 4
80335 Munich
Germany
Tel: +49 89 218997972
Fax: +49 89 218997960
info@nanion.de
www.nanion.de

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