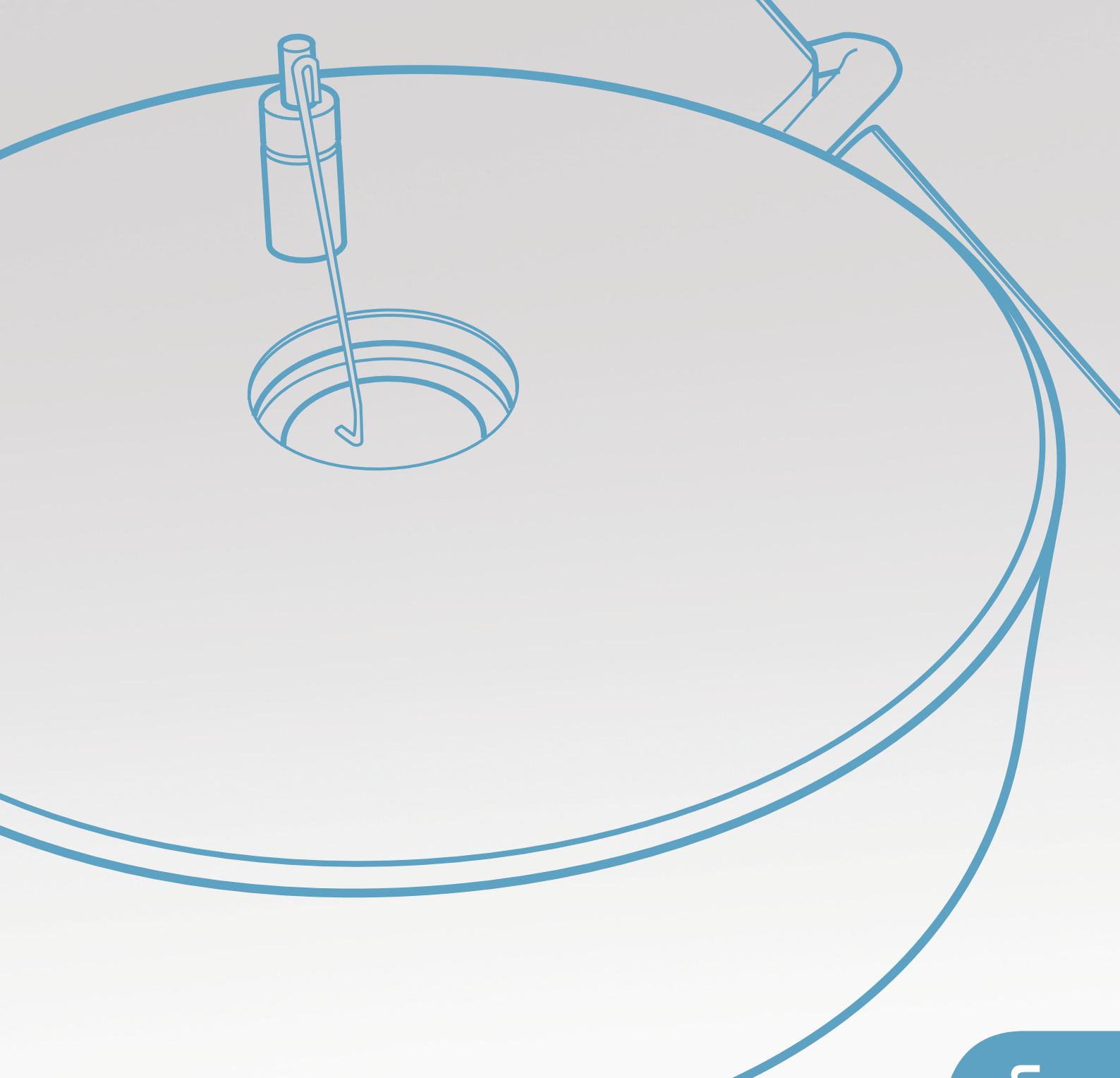


External Perfusion

Port-a-Patch® – reliable and fast perfusion.



- Fast and continuous perfusion
- Computer control
- Synchronization between perfusion and data acquisition
- Integrated vacuum for waste removal
- Also available as stand-alone system

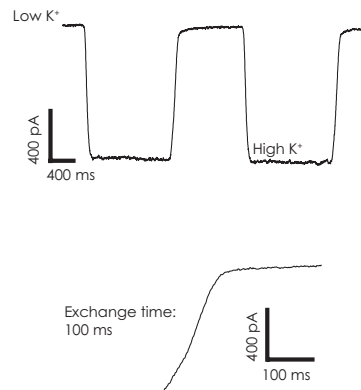


The External Perfusion System for the Port-a-Patch® is comprised of a computer controlled magnetic pinch valve panel, and a dedicated flow chamber for the Port-a-Patch®. Up to eight different solutions can be handled by the magnetic valve panel. Switching of solutions can either be controlled manually or automatically. The latter allows synchronization of data acquisition with solution exchange, as well as tagging the collected traces with relevant information such as compound and concentration.

Two different flow chambers are available for the External Perfusion System. The Laminar Flow Chamber is included with the standard system. For ultrafast perfusion, there

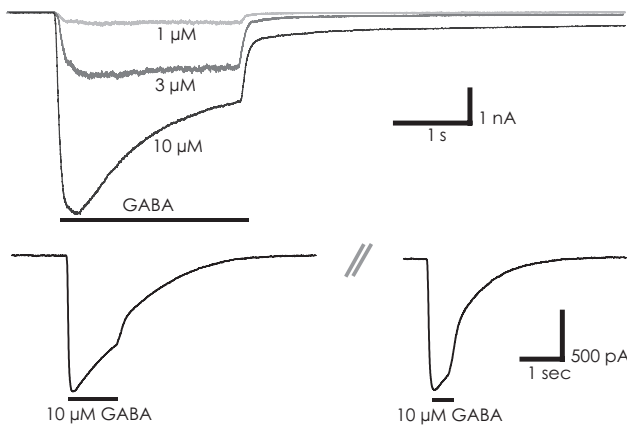
is an additional perfusion chamber allowing solution switch times down to 15 ms (0-100%) in the whole cell configuration. The External Perfusion System is thereby ideal for studies of both ligand and voltage gated channels. Temperature control is also available in combination with the External Perfusion System.

External Perfusion



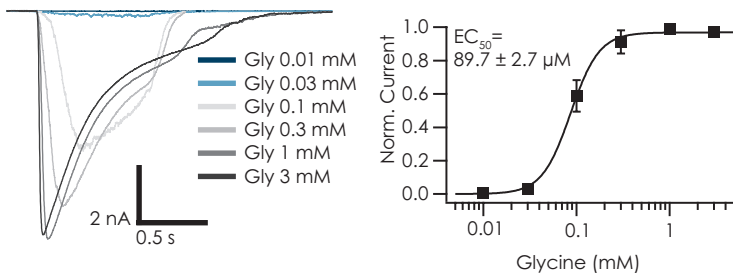
External solution exchange.

Currents of RBL cells endogenously expressing K^+ permeable channels (-100 mV) were measured. The external K^+ concentration was changed using the Perfusion System and the standard, Laminar Flow Chamber. Time constant for solution exchange was approximately 100 ms. Low K^+ (4.5 mM K^+), high K^+ (143 mM K^+).



Reliable compound application.

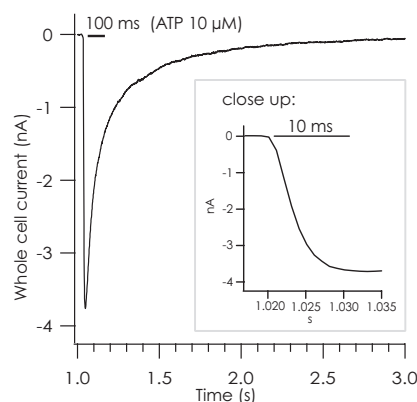
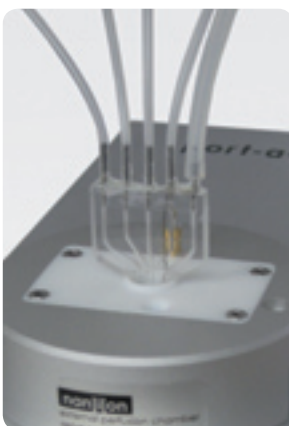
Ligand dependent activation of $GABA_A$ receptors can be recorded with the Laminar Flow Chamber, allowing a solution switch time of approximately 100 ms for 10 μ M GABA. Concentration dependent activation and desensitization of $GABA_A$ ($\alpha 1\beta 2\gamma 2$) receptors was obtained by applying 1, 3 and 10 μ M GABA for 2.5 s at a time interval of 20 s. The lower picture shows data traces obtained by exposing the cell to 10 μ M GABA for 1.2 s and, in the following sweep (interval 30 s), for 500 ms.



Pharmacological experiments on hGlyR $\alpha 1$.

The Laminar Flow Chamber can also be used for studying glycine receptors. The pharmacology of the hGlyR $\alpha 1$, expressed in a mouse fibroblast cell line (L-tk), was investigated. The EC_{50} for glycine was determined as $89 \pm 2.7 \mu$ M ($n = 10$) which is in accordance with the literature.

Cells were kindly provided by AstraZeneca, Sweden.



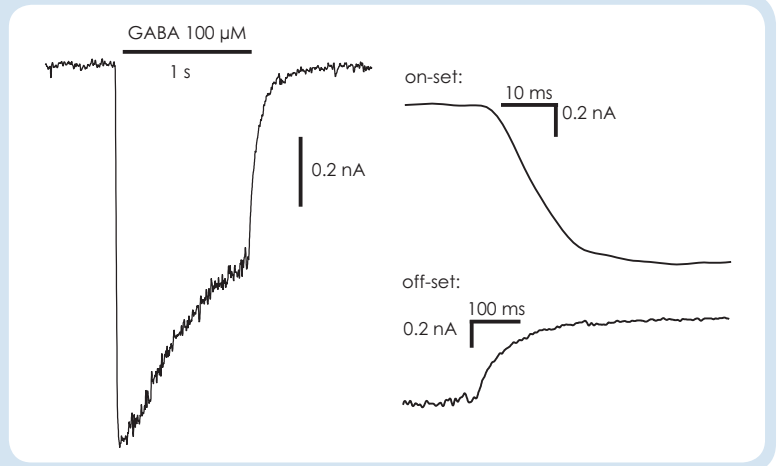
Ultrafast perfusion and short exposure times.

With the Fast Perfusion Chamber, solution exchange times down to 12 ms could be obtained in the whole cell configuration. In this example, P2X3 channels were challenged with 10 μ M ATP (100 ms), evoking a very fast on-set of the whole cell current. As seen from the close up, the peak response was obtained within 12 ms.

Cells were kindly provided by Evotec, Hamburg, Germany.

Ultrafast perfusion of GABA.

Using the Fast Perfusion Chamber GABA_A ($\alpha 1\beta 2\gamma 2$) channels were challenged with 100 μM GABA, eliciting a fast on-set of the whole cell currents (holding potential -80 mV). Peak current amplitudes were reached within 20 ms.



Product Number	Specification	Size & Weight
02 1001	External Perfusion System with Laminar Flow Chamber <ul style="list-style-type: none"> • Valve Control Panel (analog, digital and USB-ports for computer control) • Laminar Perfusion Chamber • Manifold with accessories • Perfusion System starter kit with 50 ml syringes, Reagent Kit, tubing, connectors, waste bottle etc. • Stand with syringe holder 	Valve Control Panel Size (l x w x h): 40 x 5.8 x 13 cm Weight: 2.45 kg
02 1002	External Perfusion System without perfusion chamber <ul style="list-style-type: none"> • Valve Control Panel (analog, digital and USB-ports for computer control) • Perfusion System starter kit with 50 ml syringes, tubing, connectors, waste bottle etc. • Reagent Kit • Stand with syringe holder 	Valve Control Panel Size (l x w x h): 40 x 5.8 x 13 cm Weight: 2.45 kg
02 1003	Laminar Flow Chamber Kit including: <ul style="list-style-type: none"> • Laminar Flow Chamber • Manifold and accessories 	
02 1004	Port-a-Patch Fast Perfusion Kit including: <ul style="list-style-type: none"> • Fast Perfusion Manifold • Fast Perfusion Chamber • Fast Perfusion starter kit with tubings, Reagent Kit and accessories 	