

## Launch of the Dynamic Clamp unit for the Patchliner – the Dynamite<sup>8</sup>

**Munich, Germany, October 1<sup>st</sup> 2019: Nanion is pleased to announce the launch of Dynamite<sup>8</sup>, a Dynamic Clamp unit for the multichannel automated patch clamp system, the Patchliner. The Dynamite<sup>8</sup> is a Patchliner Add-On which simulates ion channel currents in cells in real-time during patch clamp experiments. This approach will allow higher throughput recordings with higher quality from cardiac action potentials, and thus be a valuable tool for checking drug side-effect early in the drug discovery pipeline. The Dynamite<sup>8</sup> has been developed in collaboration with the UMC Utrecht.**

Human iPSC-derived cardiomyocytes (hiPSC-CM's) have become an indispensable tool for safety pharmacologists in recent years for a variety of different assays. We developed a new predictive patch clamp assay in line with the aims of the Comprehensive In Vitro Proarrhythmia Assay (CiPA) initiative by fully integrating the dynamic clamp functionality in the 8-channel Patchliner system for the analysis of cardiac action potentials of hiPSC CM's.

Crucial endpoints for the development of this unit have been Giga-Ohm seals and stable recordings with acceptable success rates on commercially available hiPSC-CM's. Simulating the  $I_{K1}$  ion channel and thus allowing to record from more adult ventricular-like shaped Action Potentials in a higher throughput format was one of our main goals.



The Patchliner is a fully automated planar patch clamp instrument that records from up to 8 cells simultaneously. With its vast experimental freedom and Giga-Ohm seal data quality, the Patchliner is one of the most versatile patch clamp instruments, predominantly used in cardiac safety studies in the pharmacological industry and in basic ion channel research at Universities and Institutes. The Dynamite<sup>8</sup> is an Add-on of Patchliner.



"A Dynamic Clamp unit for our automated patch clamp platform, Patchliner, has been desired from our existing customers and contacts for a long time. The Dynamite<sup>8</sup> unit will enable them to obtain reliable IC<sub>50</sub> curves from cardiac action potentials and to focus on evaluating drugs and check for cardiac side effects before ex vivo or in vivo studies." says Dr. Niels Fertig, CEO and founder of Nanion Technologies.

Dr. Teun de Boer, UMC Utrecht, adds: „The essence of dynamic clamp is that a hybrid model is created by connecting a real cell with a computer simulation of (parts of) a cell. For this, a computer simulation running in real-time - simultaneously with the experiment on the real cell - is necessary. With Nanion's Dynamite<sup>8</sup> unit, we have developed a remote-controlled dynamic clamp system integrated in the automated patch clamp device, the Patchliner, in order to increase throughput and develop new predictive assays using hiPSC-CMs that are in line with the aims of the CiPA initiative. “



### About Nanion Technologies:

Nanion Technologies is a leading provider of instrumentation for ion channel drug discovery and screening. Founded in 2002, Nanion has grown over the last 17 years to a company with over 100 employees worldwide. With headquarters in Munich, Germany, Nanion has subsidiaries in the USA, Japan, China and Denmark, as well as distribution partners in seven other countries.

Nanion's team has developed and successfully established four generations of automated patch clamp instruments for sophisticated and high throughput applications in ion channel research and drug discovery (Port-a-Patch, Patchliner and SyncroPatch product families). Further product lines are for cell monitoring and cardiotoxicity screening (CardioExcyte 96), for parallel bilayer recordings (Orbit family), and for parallel membrane transporter protein recordings (SURFE<sup>2</sup>R).

For more information, please visit [www.nanion.de](http://www.nanion.de)

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**About UMC Utrecht:**

UMC Utrecht is a leading international university medical center generating, testing, sharing, and applying knowledge on health, illness, and health care for the benefit of patients and society.

The Department of Medical Physiology is part of the Division of Heart & Lungs of the University Medical Center Utrecht. Since 2003 the head of department is prof. dr. Marc Vos. Our department operates much along the lines of the physiology we study; showing tight integration between research topics and our teaching roles in various bachelor, master and graduate school courses. The main topic of our research is cardiac physiology and remodeling of the heart in disease.

An important aspect of work in De Boer's group is the development of real-time simulations of ion channels, the so-called dynamic clamp technique. The most important application is to simulate cardiac I<sub>K1</sub> channels that are missing from stem cell-derived cardiomyocytes (iPSC-CM). Current focus is to enhance the throughput of this approach, which resulted in the establishment of a fully automated dynamic clamping system, which is now introduced as the Nanion Dynamite<sup>®</sup>.

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