

Cardiac Researchers at National Heart Centre Singapore Acquire First SyncroPatch 384/768PE in Asia

Munich, Germany, February 10, 2015; Scientific Director Dr. Winston Shim and his research group aim at restoring compromised heart tissue by using stem cell therapies. To promote their research they recently invested in several Nanion platforms for patch clamped-based ion channel screening, characterization, and cardiotoxicity screening.

The SyncroPatch 384/768PE is an advanced robotic screening platform that is used to investigate the effects of chemical compounds and toxins on ion channel function. The instrument supports high quality recordings from up to 768 cells simultaneously, allowing high throughput screening of ligand- and voltage-gated ion channels expressed in cell lines, stem cells or patient-derived cells.

The SyncroPatch 384PE/768 PE combines high versatility and data quality by offering fast solution exchange, brief compound exposure, internal perfusion and minimal cell usage. The minimal cell usage application improves cost efficiency while allowing screening capabilities with cells of limited availability such as primary cells or otherwise rare and expensive stem cells or patient-derived cells.

Nanion's Patchliner, a high quality, automated patch clamp platform recording from eight cells in parallel, and the CardioExcyte 96, a 96-well plate based platform for contractility and electrical activity measurements from cellular networks, are acknowledged for their utility in cardiac safety and toxicity screening.

Dr. Winston Shim, Principal Scientist, National Heart Centre Singapore, says:

"I find the performance and technical capabilities of the SyncroPatch 384/768PE convincing. In particular, the fact that stem cell-derived cardiomyocytes can be measured with reasonable success rates, and the optimized cell handling procedure, which reduces input cell numbers, is appealing when working with patient-derived cardiomyocytes and other clinical samples. Additionally, Nanion's Patchliner that supports automated current clamp recordings at physiological temperatures is highly attractive when investigating action potentials and drug-induced alterations. In combination with the CardioExcyte 96, it opens the possibility to investigate acute and chronic effects of chemical compounds on beating cardiac syncytium from our work on cardiac maturation. Going forward, I believe that such enabling platforms will galvanize our work in human cardiomyocytes from disease modeling to drug discovery and regenerative medicine."

The CiPA initiative, commenced by HESI and the FDA, aims at expanding the mandatory cardiac ion channels from two to five in safety screening efforts, thus demanding higher throughput capabilities and the ability to use stem cell-derived cardiomyocytes in cardiotoxicity screening. Here, Nanion's APC platforms the SyncroPatch 384/768PE and the Patchliner, constitute an excellent complement to the CardioExcyte 96 covering the range from in vitro cellular network studies to in-depth ion channel safety studies.

About Nanion Technologies

Nanion Technologies was founded in 2002 as a spin-off from the University of Munich, Center for Nanoscience (CeNS). Over the last 13 years it has grown to a strong company with over 80 employees worldwide. Nanion has its headquarters in Munich, Germany, and has daughter companies in the USA, Japan and China, with distribution partners in 7 other countries, including Singapore. Nanion has been recognized for its quality and innovation by being twice nominated for the Federal President's Award for Technology and Innovation (Deutscher Zukunftspreis) in 2007 and 2014. The company has become known for its high quality instruments for ion channel research (Port-a-Patch, Patchliner and SyncroPatch product

families) and has over the years expanded its product range to include cardiotoxicity screening (CardioExcyte 96), parallel bilayer recordings (Orbit 16), and parallel membrane transporter protein recordings (SURFE2R). Since 2014, Nanion carries Axion's multi-electrode array (MEA) systems in Europe and China.

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About Dr. Winston Shim, National Heart Centre Singapore

Dr Shim has extensive experience in cardiac electrophysiology and regenerative medicine for ischemia and heart failure. He was among the first in the world to demonstrate ex vivo differentiation of human mesenchymal stem cells into cardiomyocytes. His major interest is in cardiac developmental biology and physiology of human cardiomyocytes. His team has extensive experience in the generation of human induced pluripotent stem cells, characterization of human cardiomyocytes and cardiogenic pathways and his group conducts annual hands-on workshops for the stem cell community in Singapore. His group was the first to demonstrate restorative therapy for long QT syndrome 2 in human cardiomyocyte model. In his capacity as Principal Investigator of the National Heart Research Institute Singapore (NHRIS), he established the induced pluripotent stem cell program, cardiac tissue engineering program, regenerative medicine program and launched platform technologies in cardiac electrophysiology, experimental animal modelling, tissue and plastic histopathology, cardiac ultrasound and hemodynamic imaging to spearhead cardiac research in Singapore.

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