

Nanion and Axiogenesis present parallel patch clamp recordings of action potentials from Cor.At cardiomyocytes

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Stem cell derived cardiomyocytes were analyzed using Nanion's automated patch clamp systems, the Patchliner and the Port-a-Patch to validate ion channel composition, the presence of action potentials and the effect of compounds on cardiac ion channels.

Stem cell derived cardiomyocytes have tremendous potential for cardiac safety testing of drug candidates. By offering an authentic cellular environment they are closer to the actual physiological situation compared to cell lines with over-expressed ion channels. Axiogenesis is a provider of pure mouse embryonic stem (ES) cell derived cardiomyocytes (Cor.At[®]), which now have been evaluated with Nanion's automated patch clamp platforms, the Port-a-Patch and the Patchliner. Expected currents were obtained (K, Ca, Na) under voltage clamp conditions, as well as action potentials recorded in current clamp mode. Effects on action potentials of compounds with known effect on cardiac channels were successfully investigated using Nanion's platforms.

Ralf Kettenhofen, Senior Scientist at Axiogenesis, Cologne, Germany, says:

"Nanion's enabling products allow for a wide range of experiments including current clamp recordings of action potentials from our Cor.At[®] cardiomyocytes. The possibility for not only high quality voltage clamp recordings, but also action potentials is a truly unique feature. Such recordings reflect the total effect of drug action on the cardiac ion channel ensemble rather than effects on individual ion channel species. This is important for investigations of compounds exhibiting chronotropic or arrhythmic effects by either direct action on ion channels or humoral regulation of eg. G-protein coupled receptor agonists."

Niels Fertig, CEO of Nanion Technologies continues:

"The Cor.At[®] ES cell derived cardiomyocytes in combination with voltage and current clamp recordings provide physiologically relevant information about cardiac drug safety. Our automated patch clamp platforms are known for their flexibility and versatility, which is reflected by the combined voltage- and current clamp measurements used in this study."

The Patchliner and the Port-a-Patch also support temperature control which will be used in further studies of the Cor.At[®] mouse ES cell derived cardiomyocytes. The Port-a-Patch and the Patchliner are the only automated patch clamp platforms on the market supporting current clamp recordings.

Axiogenesis will present more information about the obtained results at the Ion Channel Retreat Meeting in Vancouver, Canada, June 29th - July 1st.

About Nanion:

Nanion Technologies GmbH is a German Private Limited Company and was founded in 2002 as a spin-off from the Center for Nanoscience (CeNS) of the University of Munich. Nanion's team has developed and globally established two highly successful automated patch clamp instruments (Port-a-Patch and Patchliner) as enabling tools for sophisticated and high throughput applications in ion channel research and drug discovery. This year Nanion is introducing their its system, the SyncroPatch 96, a high quality, HTS patch clamp platform.

Nanion's instruments use planar patch clamp chips which replace the traditional glass pipette used in the technique of patch

clamping. Nanion was nominated in 2007 for Germany's most prestigious innovation award the Deutscher Zukunftspreis (German Future Prize, Federal President's Award for Technology and Innovation).

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About Axiogenesis

Axiogenesis is an innovative and productive biotechnology company located in Cologne, Germany. It was founded in 2000 and was listed on the German stock exchange in 2007. The primary focus of Axiogenesis is the generation and production of pure in vitro differentiated cells that display normal physiological properties. Axiogenesis can either use murine embryonic stem cells (mESC) or human induced pluripotent stem cells (hiPSC) as a source. These cells are then used to develop novel assays for pharmacology and safety screening in the pharmaceutical, chemical, and cosmetics industries.

Pure mouse ES-derived cardiomyocytes (CorAt®) are available in unlimited amounts, can be shipped frozen overnight, and are quality controlled showing no lot-to-lot variation. Protocols and applications include but are not limited to cardiac specific cytotoxicity, electrophysiology, GPCR functionality, siRNA transfection and hypertrophy induction. The cells express and use all essential ion channels and K, Na, and Ca currents have been recorded in patch clamp experiments. In addition, the expected effects of known ion channel modulators and cardio toxic substances are observed. Measurements have been validated on most instruments available.

Using its technology Axiogenesis has consequently designed a Clinical Modeling (CM) platform that is able to accelerate drug development. Axiogenesis is further offering exclusive customization services of cell lines and in house production of cardiomyocytes, endothelial cells, hepatocytes and neuronal cells.

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