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Short and long-term cytotoxicity investigations in stem cells for primary and secondary assays with an all- inclusive approach

In recent years, human stem cell-derived cardiomyocytes (hiPSC-CMs) have proven to represent a relevant human *in-vitro* system for modeling and interrogating complex biological processes, phenotypic profiles and disease models. Chip-based approaches allow parallel patch clamp recordings without compromising data quality or technical sophistication. We present high-throughput ion channel recordings in hiPSC-CMs using Nanion's automated patch clamping systems. The CardioExcyte 96 is a hybrid screening instrument that combines impedance with MEA-like extracellular field potential (EFP) recordings. In the light of the new Comprehensive . Proarrhythmia Assay (CiPA), a FDA directed initiative to improve guidelines and standardize assays and protocols, the use of hiPSC-CMs may become critical in determining the proarrhythmic risk of potential drug candidates. In accordance with the CiPA guidelines, we present pharmacological investigations of short- and long-term effects of compounds from each risk category, in hiPSC-CMs. This approach strengthens the importance of testing compounds in assays complementary to patch clamp electrophysiology, to provide a more complete safety profile.

Speaker Biography

Corina T Bot obtained her PhD in Applied Physics from New Jersey Institute of Technology in 2010. Next, she worked for two years as a Post-doctoral Associate in Cardiology, at Cornell University, Weill Cornell Medical College. In her current position as a Senior Scientist at Nanion Technologies, she provides technical and scientific support for cell-based electrophysiology and toxicology assays, and automated patch clamp screening. Together with her colleagues at Nanion, she is participating in the FDA-directed Comprehensive *in vitro* Proarrhythmia Assay (CiPA) initiative, which aims to replace the preclinical hERG current assay required under the ICH S7B safety pharmacology guidelines and clinical TQT study.

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