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Impedance and extracellular field potential for cardiac safety assays: A combined approach for non-invasive screening of iPS cells

The CardioExcyte 96 is a hybrid screening instrument that combines impedance with MEA-like extracellular field potential (EFP) recordings. Changes in the impedance signal indicate effects on cell contractility and overall shape, whereas the field potential parameters provide information about the electrophysiological activity of the beating network of cells. The ongoing Comprehensive *in-vitro* Proarrhythmia Assay (CiPA) is a FDA directed initiative to improve guidelines and standardize assays for determining the proarrhythmic risk of potential drug candidates. In agreement with the CiPA initiative, standard protocols and SOPs were created for the CardioExcyte96, as well as automated data analysis on required endpoints. Workshop presents the workflow of utilizing the CardioExcyte96 for the assessment of acute/chronic cardiotoxicity in cultured iPSC cardiomyocytes. Cytotoxic responses of cell monolayers involve metabolic or biochemical changes that affect the morphology of the cells, or reduce their overall viability. In that regard, effects of reference compounds tested for long-term cytotoxicity in hepatocyte-like cells will be presented.

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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