"Outstanding electrophysiology service on all levels. Working with innoVitro was such a streamlined experience. The dedicated team offers a friendly service with professional advice during every stage of the project. Very responsive and delivered as promised."

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Modeling Atrial Fibrillation – Human Cell-Based Assays for AFib

in cooperation with

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The Atrial Fibrillation Preclinical Issue

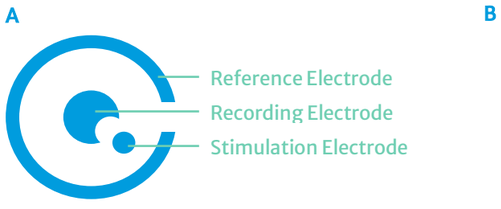
Atrial fibrillation (AFib) is the most common cardiac arrhythmia, affecting millions worldwide and significantly increasing the risk of stroke and heart failure. Conventional preclinical systems for AFib, including animal models and acute cell assays, often lack human-specific electrophysiology and fail to replicate the progressive electrical remodeling observed in patients, limiting their ability to predict clinical outcomes.

Our Solution

innoVitro's human cell-based AFib model addresses this gap, using chronic tachypacing to induce electrical remodeling in atrial human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs, axoCells™ Human iPSC-derived Atrial Cardiomyocytes from Axol Bioscience).

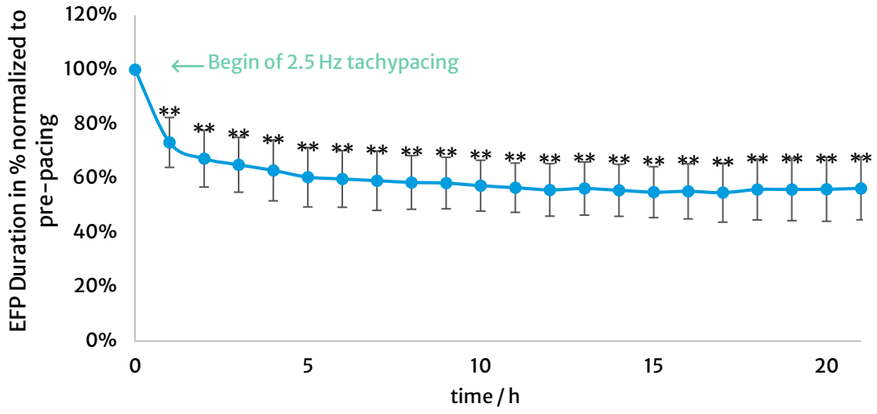
Atrial hiPSC-CMs are precultured in NSP-96 plates for 9 days, followed by 24 hours of tachypacing at 2.5 Hz using the CardioExcyte 96 system (Nanion Technologies) to induce an AFib-like phenotype characterized by significant shortening of the extracellular field potential (EFP) duration. Compounds are added post-induction, allowing for chronic electrophysiological assessment in a human cell-based system that better predicts clinical outcomes.

AFiB In Vitro Methodology



A. Electrode design per well of the NSP-96 plate
B. Raw data demonstrating tachy-pacing stimuli and analysis of EFP duration
C. Timeline including days of culture, media changes (MC), induction of tachypacing and compound testing

Electrical Remodeling Induced by 24-hour Tachypacing



Therapeutic Rescue of Shortened EFP Duration