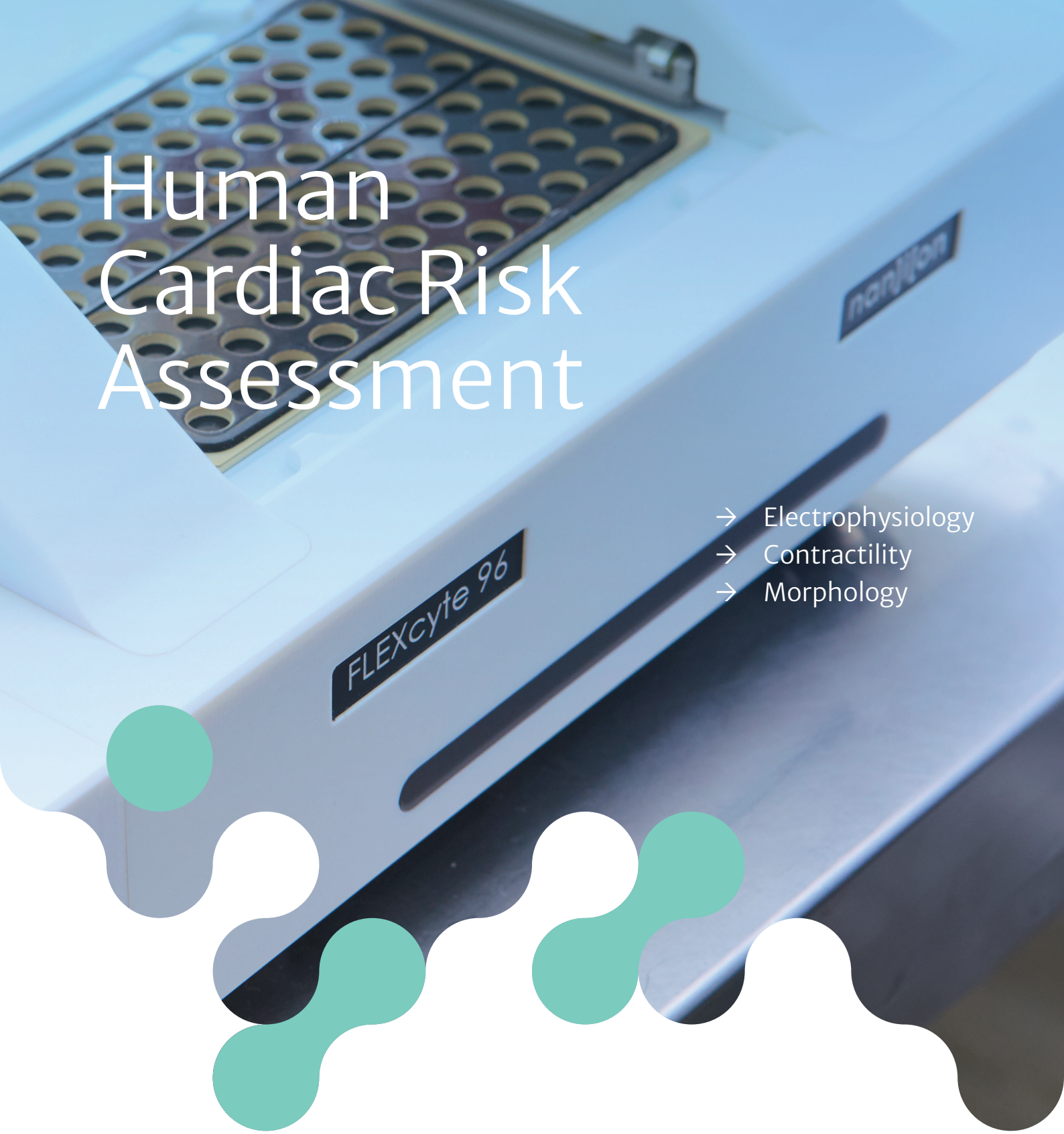
Human Cardiac Risk Assessment



- → Electrophysiology
- → Contractility
- → Morphology

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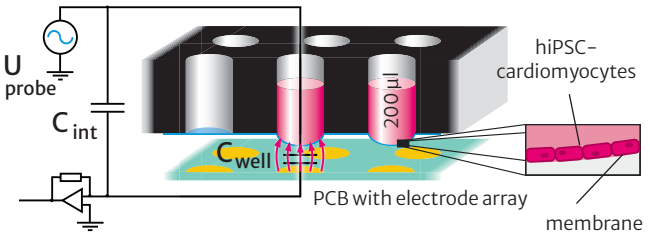
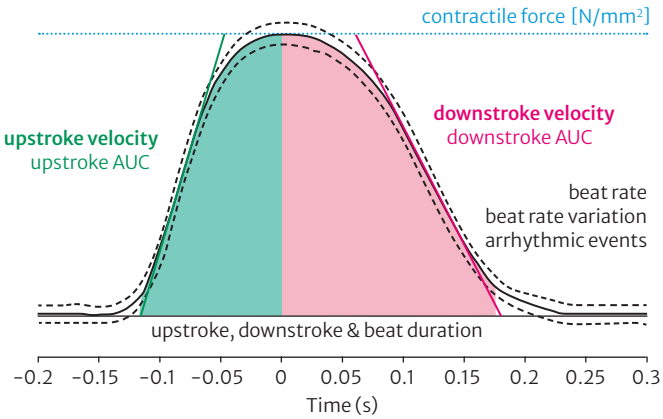
Hybrid Cell Analysis Screening Technologies at a Glance

- → Both modules are CiPA applied instruments
- → HiPS-cardiomyocytes for 100% human relevance
- → Time and cost efficient high throughput 96-well platform
- → Suitable for drug discovery, safety pharmacology, toxicology and efficacy studies
- → Mechanical, electrical and optical pacing modalities
- → Acute and chronic compound testing
- → Real-time and lable-free analysis of all parameters

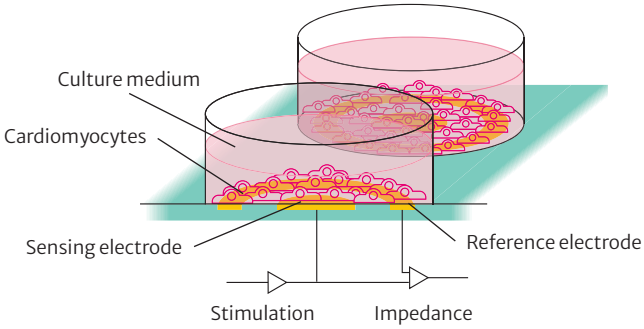
FLEXcyte 96 Technology

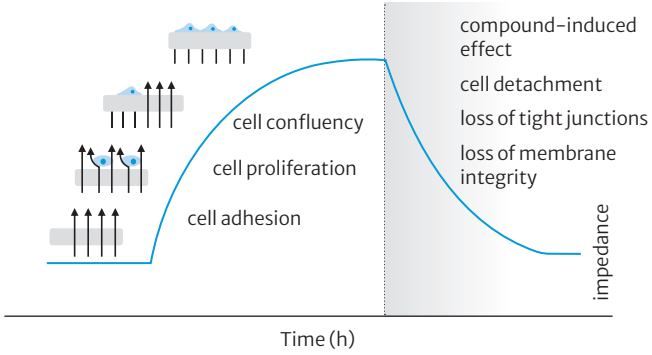




The FLEXcyte 96 module measures cardiomyocyte contractility label-free via capacitive distance sensing. Human iPSC-cardiomyocytes are cultured on flexible membranes in a 96-well format, mimicking in vivo heart conditions for a mature cardiac phenotype. Key parameters include Contractile Force (mN/mm²), Beat Rate, Beat Duration, Upstroke/Downstroke Velocity & AUC and Arrhythmic Events.

CardioExcyte 96 Technology





The CardioExcyte 96 module enables real-time monitoring of compound-induced cellular and electrophysiological changes. Morphology shifts, such as detachment or membrane integrity loss, are tracked via impedance sensing. Electric field potentials can be recorded simultaneously from the same wells for electrophysiological analysis.

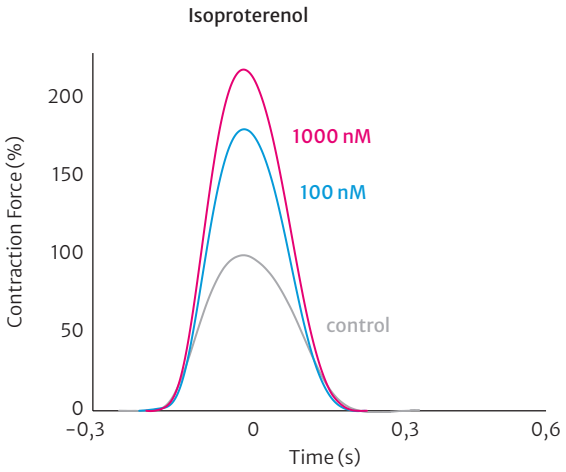
"Outstanding electrophysiology service on all levels. Working with innoVitro was such a streamlined experience. The dedicated team offers a friendly service with professional advice during every stage of the project. Very responsive and delivered as promised."

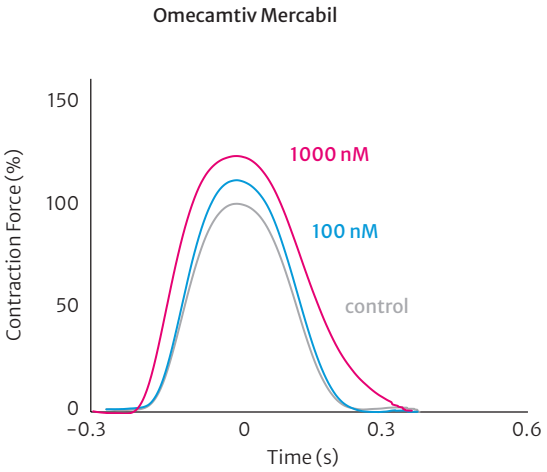
Prof. Dr. med. Jin Li
Head of Autoimmune Channelopathies
University of Zurich

"We were very pleased with our choice to engage innoVitro's contractility service. The studies using human iPSC-derived cardiomyocytes were tailored to our needs to provide results comparable to already existing (in house) data and the fast execution followed by a comprehensive study report completed the service perfectly"

Nina Glaser
Head of Early Safety Electrophysiology
Merck Healthcare KGaA

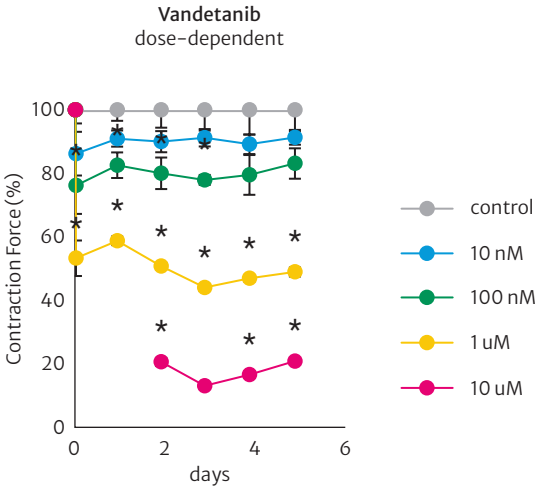
Contractility assessment of human iPSC-cardiomyocytes with mature functional phenotype

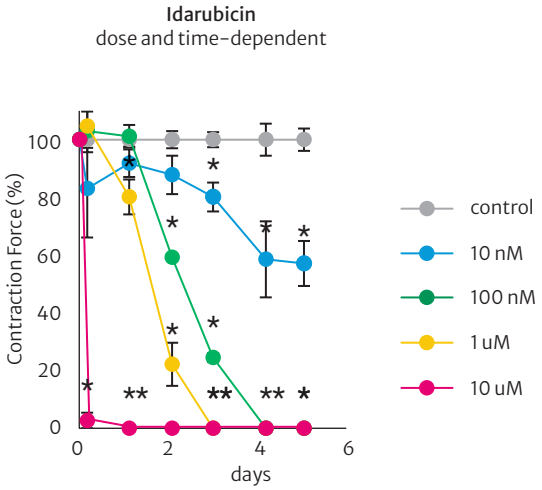




Drug-induced adult-like responses in human iPSC-derived cardiomyocytes often fail due to their juvenile phenotype. The FLEXcyte 96 plates' flexible membranes mimic in vivo human heart conditions, promoting cell maturation. This enables the detection of mature cardiomyocyte responses to positive inotropic compounds, as demonstrated with isoproterenol and omecamtiv mecarbil.

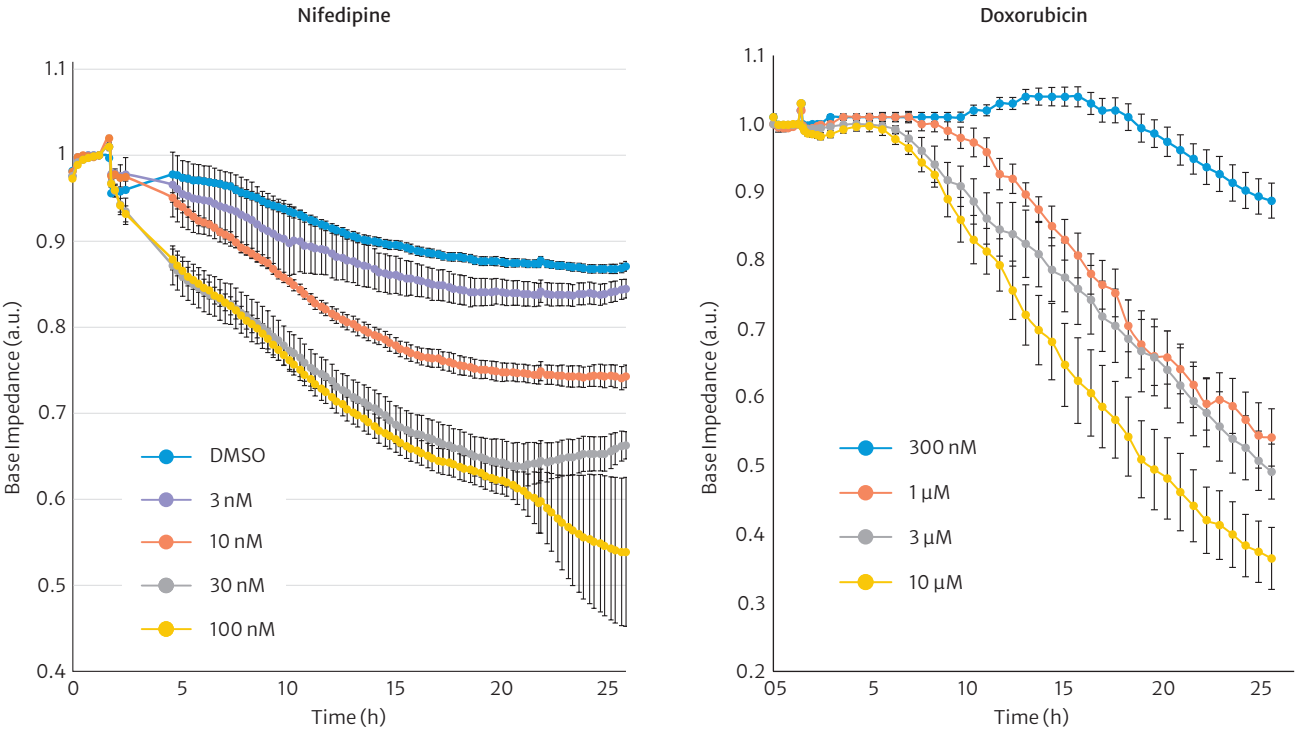
Chronic analysis of contraction force to assess drug-induced dose- and time-dependent effects





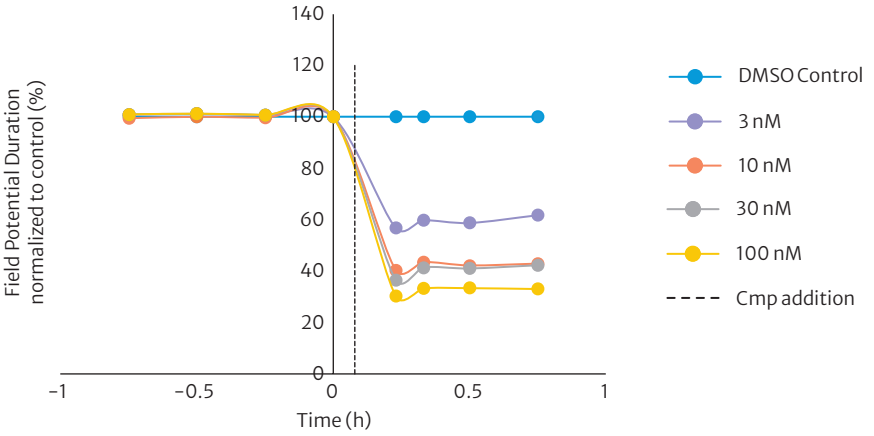
The FLEXcyte 96 module enables acute and chronic drug testing from minutes to five days, capturing dose- and time-dependent effects, as shown with vandetanib and idarubicin. Acute tests provide rapid data, while long-term analysis reveals different drug-induced contractile kinetics.

Real-time assessment of drug-induced human iPSC-cardiomyocyte morphological changes



The CardioExcyte 96 monitors cell integrity in real-time for up to seven days via impedance spectroscopy. Structural toxicity in iPSC-cardiomyocytes is detected by decreasing impedance, as shown with nifedipine and doxorubicin over 24 hours.

Analysis of electrophysiological properties with the extracellular field potential (EFP) parameter



The CardioExcyte 96 EFP recording analyzes human iPSC-derived cardiomyocyte electrophysiology, detecting compound-induced extracellular field potential changes, as shown with nifedipine.

innoVitro GmbH
Artilleriestraße 2
Jülich, Germany

+49 (0)2461 317 05 61
info@innovitro.de

innovitro.de