pluriomics
CLOSE TO THE HEART

Pluricyte®
Cardiomyocytes

Fully validated human iPSC-derived cardiomyocytes

In order to translate an in vitro cardiac cellular model into the correct clinical interpretation of assay read-outs, a fully functional and validated model is needed. This is assured by Pluricyte® Cardiomyocytes which are fully functional human iPSC-derived cardiomyocytes acquired without genetic modifications, produced under a stringent quality manufacturing system and cultured in a well-defined serum-free culture medium. Each batch is subjected to a strict and extensive quality control including pharmacological tests. This guarantees high reproducibility of electrophysiology-, contractility-, and biochemistry-based assays for predictive cardiac safety assessment, toxicology testing, and drug efficacy screenings.

Advantages of Pluricyte® Cardiomyocytes

✦ High reproducibility is guaranteed by strict quality controlled manufacturing and QC release

Each batch of Pluricyte® Cardiomyocytes is subjected to a strict quality control for purity, morphology and functionality. The combination of our proprietary, well standardized differentiation protocol and our quality controlled Pluricyte® Cardiomyocyte Medium guarantee a low batch-to-batch variability.

✦ Physiologically relevant model as displayed by a high level of maturity

Pluricyte® Cardiomyocytes exhibit a high degree of structural sarcomere organization **(A)**, and electrophysiological properties (e.g. a low resting membrane potential (-78 mV), fast upstroke velocity and a well-defined action potential plateau) **(B)** that demonstrate a relatively high level of maturity.

✦ Fully functional model that is suitable for detection of proarrhythmic effect of compounds

Pluricyte® Cardiomyocytes express the relevant cardiac markers (e.g. ion channels, cardiac specific structural markers, and transcription factors) which recapitulate healthy human cardiac biology. This makes Pluricyte® Cardiomyocytes fully functional and exceptionally well-suited for the assessment of drug-induced cardiotoxicity, such as proarrhythmia. Thanks to the robust depolarization peaks and well-pronounced repolarization peaks, an easy and accurate detection of proarrhythmic drug effects on the electrophysiology of Pluricyte® Cardiomyocytes can be assessed **(C)**.

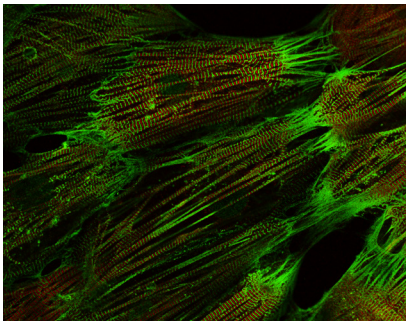

Fig. A
Pluricyte® Cardiomyocytes cultured on non-patterned surfaces show a high degree of structural sarcomere organization (Green: Alpha Actinin, red: Myosin heavy chain 7).

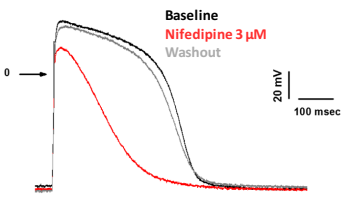

Fig. B
Action potential recordings from Pluricyte® Cardiomyocytes in response to L-type calcium channel blocker, nifedipine using manual patch-clamp in whole cell configuration. (Data courtesy of PhysioStim, Lautrec, France).

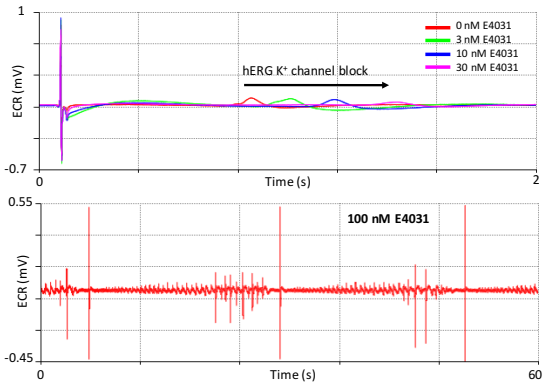

Fig. C
MEA recordings from Pluricyte® Cardiomyocyte monolayers in response to different doses of hERG channel blocker E4031 demonstrate a concentration-dependent increase in the field potential duration (FPD) and flattening of the repolarization peak, as expected (upper panel). At a high concentration of E4031, TdP-like arrhythmia can be detected in Pluricyte® Cardiomyocytes (lower panel). (Data are obtained using the xCelligence® RTCA CardioECR instrument).

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FROM VIAL TO ASSAY

Pluricyte® Cardiomyocytes – Product Specifications	
Cell type	Human iPSC-derived ventricular cardiomyocytes, cultured in well-defined, serum-free medium (Pluricyte® Cardiomyocyte Medium), designed to promote cell maturation and function
Production Technology	Scalable; large lot sizes with minimal batch to batch variation guaranteed by an extensive quality control on identity and functionality
Vial size	1.5M cryopreserved cells, alternative sizes on request
Purity	>70% based on cardiac Troponin T expression. High purity of ventricular cardiomyocytes based on high MLC2v expression and manual patch clamp
Morphology	High degree of structural sarcomere organization
Assay window	Day 8 to 12 post-thaw
Single cell action potential	Low resting membrane potential (~-78 mV), fast upstroke velocity, robust action potential amplitude
Monolayer field potential	Well-pronounced and robust de- and repolarization peaks, enabling easy detection of field potential durations and facilitating MEA assay analysis

Validated assays and protocols

Pluricyte® Cardiomyocytes are integrated into a variety of validated assays on dedicated platforms that can be implemented in drug discovery and development for safety and efficacy evaluation of novel compounds:

- Multielectrode array (MEA) assays
- Impedance/contractility assays
- High-throughput calcium transient assays
- Pacing assays
- Patch clamp assays
- 3D/ co-culture assays

Pluriomics offers easy-to-follow protocols for most of these validated assays and their corresponding platforms. Visit our website www.pluriomics.com for the most current list of application notes and manuals.

Pluriomics' Services and Support

Services

Pluriomics offers services for compound screening using MEA, impedance, high-throughput calcium-flux and structural cardiac toxicity assays utilizing the unique characteristics of Pluricyte® Cardiomyocytes. Custom services include disease modeling and assay development. Our experienced scientists are happy to work with you in order to understand your needs and meet your objectives.

Scientific support

At Pluriomics we work with dedicated and experienced scientists that take pride in sharing their knowledge with you. An on-site training is one of the possibilities to ensure an easy implementation of our Pluricyte® Cardiomyocytes in your assay.

Contact us

Never hesitate to contact us by phone: +31 (0)71 332 2230 or email: support@pluriomics.com

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