FLEXcyte 96

True contractility

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Contractility under physiological conditions

FLEXcyte 96 transforms traditionally limited cardiac contractility approaches of the Langendorff Heart into a cutting-edge modern high-throughput technique.

Unique flexible substrates of the FLEXcyte recording plates, mimic in vivo-like environments. Human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) grown in such physiological conditions display positive inotropic responses without additional stimulation.

CiPA

	Langendorff Heart	FLEXcyte 96
Adult cardiac phenotype	✓	✓
Target species		
Throughput		
Measured parameters		
Genetic disease model	✗	✓

Key features at a glance

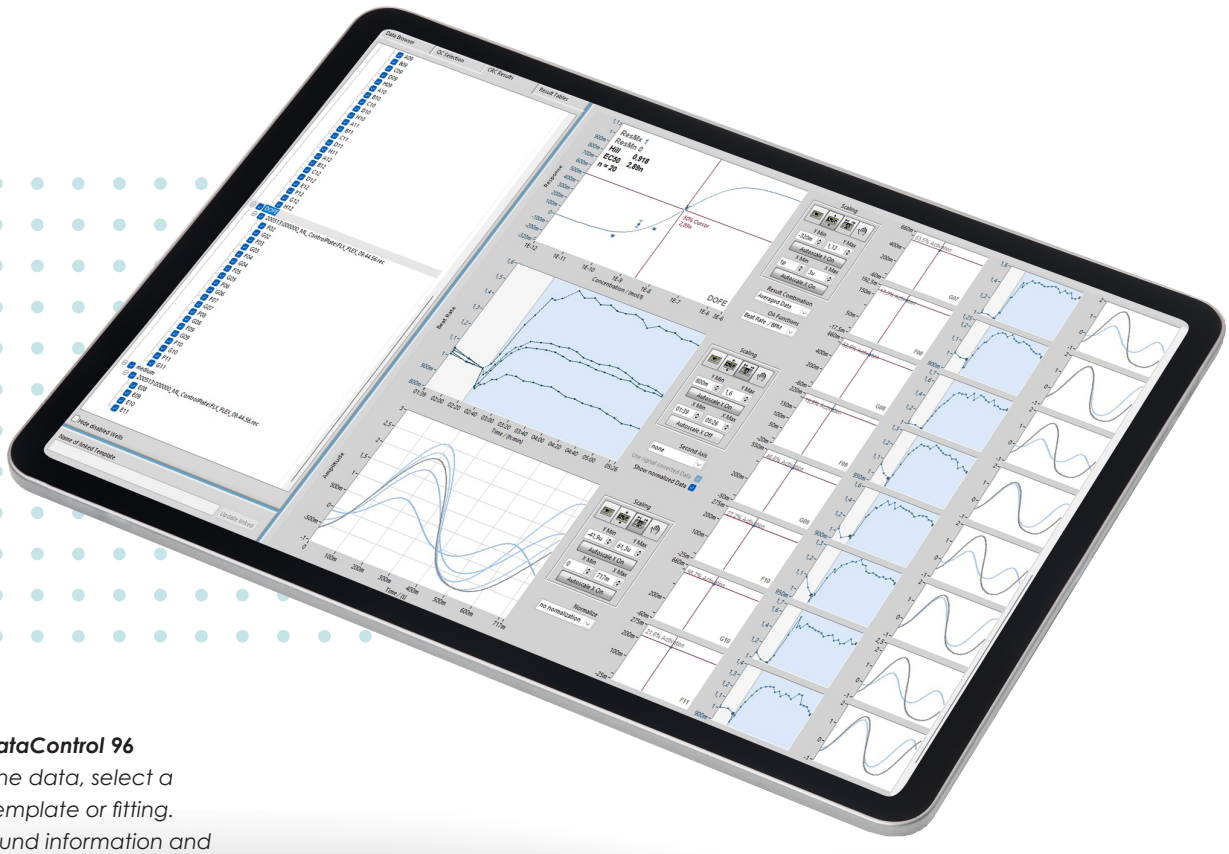
1. Real contractility measurements
2. Non-invasive and label-free
3. 96 recordings in parallel
4. Pro-maturation environment
5. Monitoring of acute and chronic effects
6. Optical pacing
7. Real-time access to beating parameters
8. Ideal for cardiotox and efficacy studies

Efficient data handling and export

Data recording and analysis software package available for FLEXcyte 96 supports online analysis of beating parameters and quantifies contractile force of cardiomyocytes. The unique Mean Beat Function automatically visualizes the average contractility pattern within the recorded well, enveloped by the standard deviation, indicating the synchronicity of the beating cellular network.

Data Control 96, accelerates data analysis by quick and easy loading of recorded files and user defined analysis templates.

- Contractile force (mN/mm^2) detection
- Instant recalculation of data upon parameter changes
- Broad range of QC options
- Templated data analysis allows for results within seconds
- Highly customizable exporting to databases



Analysis with DataControl 96
Scroll through the data, select a data analysis template or fitting. Results, compound information and QC parameters are exported in a user-defined export format, ready for further database integrations.

Flexibility is key to maturation

What is a pro-maturation environment?

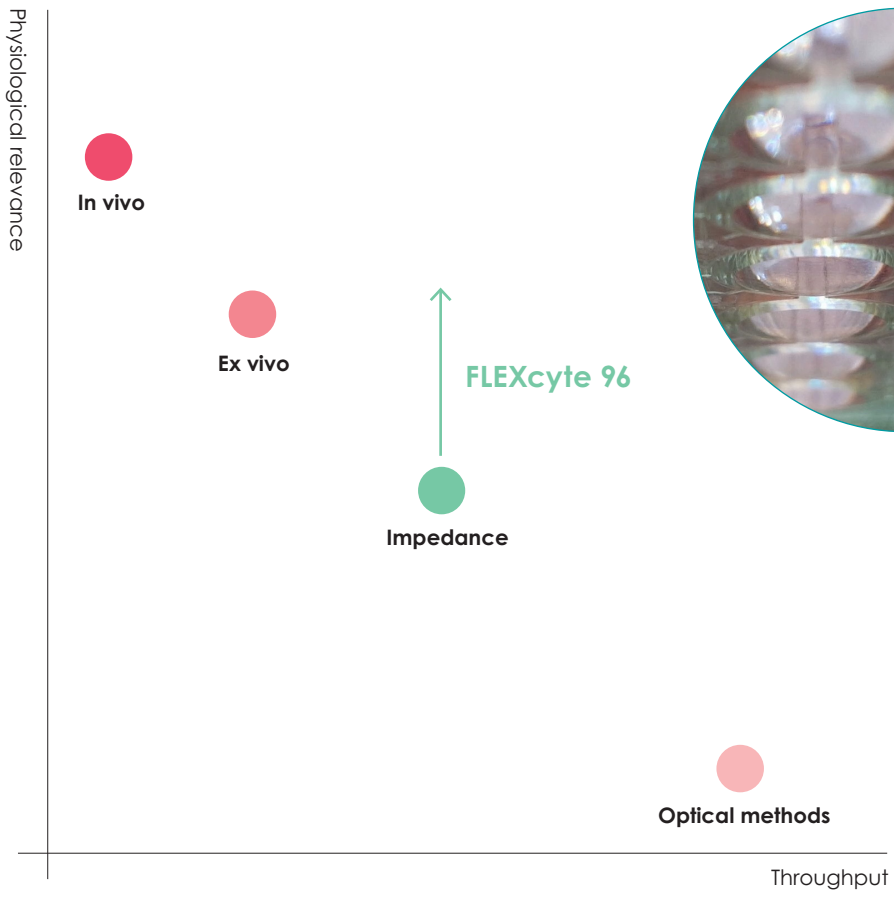
Cardiomyocytes constantly sense their mechanical environment through multiple cellular processes. When cultured on overly stiff substrates like glass or plastic, cardiomyocytes respond with drastic transcriptional and metabolic dysregulation. 10 µm thin PDMS membranes integrated into FLEXcyte plates simultaneously provide physiological elasticity of native human heart tissue and strong mechanical support.

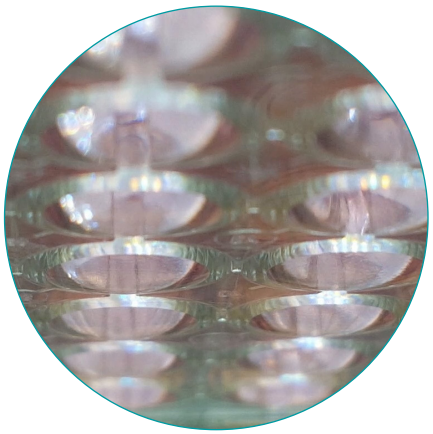
FLEXcyte 96 Sensor Plate

Sophisticated FLEXcyte plate technology simulates native human cardiac environment by using flexible substrates.

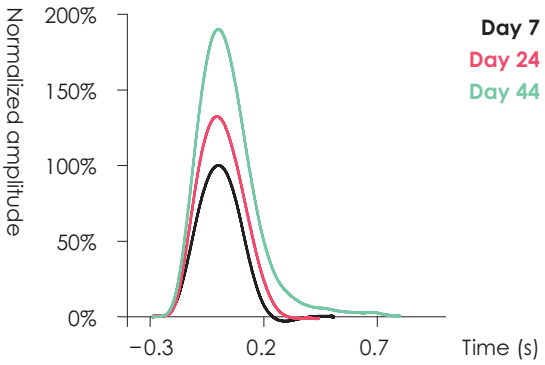
- Standard 96-well format
- Optional black plates for optical stimulation
- Recordings possible in 2D or 3D cell cultures
- Produced and certified by InnoVitro

Leveraging maturity of iPSC-CM cells by FLEXcyte 96 assays



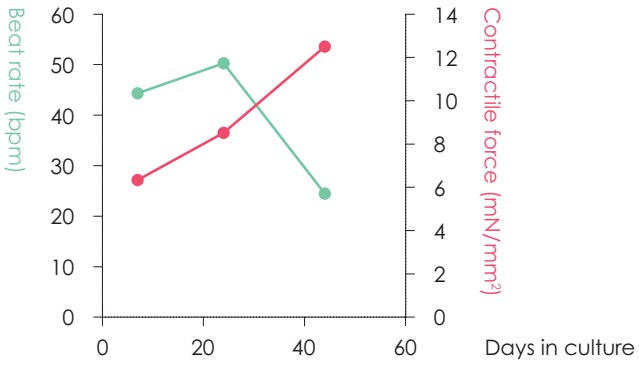


Advance your research with contractile force quantification



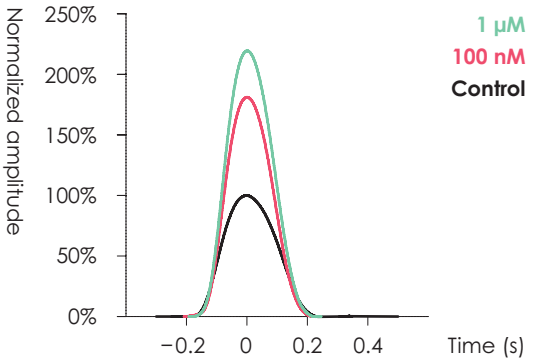
Contractile force measurements

Applications of human induced pluripotent stem cell derived cardiomyocytes (hiPSC-CMs) in disease modeling, safety and in vitro drug screens heavily depend on the contractile force readout. Cells grown on FLEXcyte 96 flexible membranes demonstrate stronger contractility with time, with no additional stimulation.



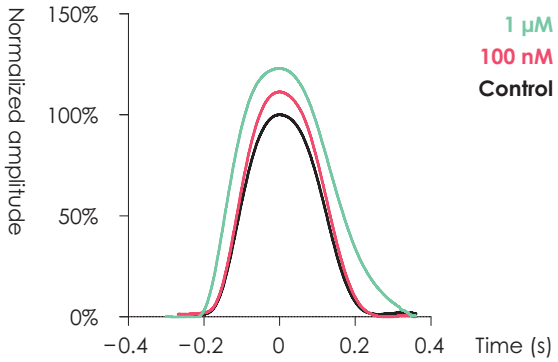
Mature cardiac phenotype

Increase of contractile force and decrease of beat rate mirror the maturity levels of hiPSC-CMs. The FLEXcyte 96 provides the necessary prerequisites to perform sophisticated cardiac research, comparable to the in vivo conditions: physiological mechanical conditions supporting mature cell behavior and contractile force (mN/mm²) quantification.



Positive inotropy: Isoproterenol

Beta-adrenergic agonist isoproterenol displays increased inotropic effects without any previous stimulation, when the iPSC-derived cardiomyocytes grow on flexible substrates.



Positive inotropy: Omecamtiv mecarbil

Positive inotropic effects are present independently on the molecular mechanism used to induce them, as they are also seen when phase III cardiac myosin activator omecamtiv mecarbil is applied.

The FLEXcyte 96 includes

- **Recording unit with environmental control (optional hypoxia feature)**
- **Recording and analysis software package**
- **Contractile force readout**
- **Automated multichannel pipetting—Integra Viaflo Assist (optional)**
- **SOL optical stimulation (optional)**
- **Various FLEXcyte recording plates**
- **1 year warranty with further optional comprehensive service plans available**
- **Unmatched application support**

Specifications

Readout	**Mechanical contraction**
Resolution	**1 ms**
Parallel recording channels	**96**
Temperature sensing	**Multi-sensor temperature control**
Validated human induced pluripotent stem cells	**Yes**
Validated embryonic stems cells	**Yes**
Pro-maturation environment	**Yes**
Stand-alone system	**Integrated Incubation System**
Automated liquid handling	**Integra Viaflow Assist**
Cardiac cell pacing	**Optical (optional)**
Plates available	**Standard transparent, optical stimulation plates**

accelerate your research

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