The NEW automated high-throughput contractility solution for human-relevant insights

organ on a chip
TECHNOLOGY

Ethica M

SOPHION BIOSCIENCE | Discover more

Preclinical research often relies on single-cell assays or animal models, both provide limited predictability of human outcomes.

Organ-on-a-chip technology offers a more **human-relevant** and **personalized** approach to drug development.
However, current systems often require large numbers of expensive cells and offer limited throughput.

Ethica M is a breakthrough contractile muscle-on-a-chip integrated solution that solves these challenges and accelerates drug discovery through automation and high throughput.

M is for Myo - the Greek word for muscle - and it captures the essence of Ethica's technology: the ability to mimic real, contractile muscle tissue in a highly predictive, human-relevant platform

Ethica M is designed to change the future of drug discovery and disease modeling

Our new high-throughput contractility solution brings automation, precision, and human-relevant data together right where it matters most. Designed for today's drug discovery demands, it delivers scalable insights from real tissue function, with fewer cells, faster results, and seamless integration into your existing workflows.

Ethica M delivers what drug discovery needs most: fast, scalable, and human-relevant data. It is a high-throughput solution that gives you earlier, more predictive insights without any trade-offs.

9 x 96-well format accelerates your drug discovery process at the lowest cost per data point

Greater experimental output thanks to being able to run up to 9 plates at once

Seamless workflow integration thanks to the 96-well format

SOPHION | Ethica M

Ethica M mimics how real muscle tissue functions - right down to how it contracts

By combining 3D tissue engineering, automation, and sensing, Ethica M brings human biology into the lab - to test drug effects earlier and more accurately than traditional methods.

SOPHION | Ethica M

By capturing how miniature tissues contract, Ethica M offers detailed insights into how they respond to drugs
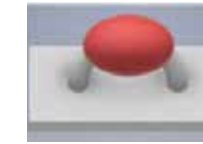
Ethica M captures how well the miniature tissues contract, offering detailed insights into strength, rhythm, and how they respond to drug compounds.
These mechanical signals reflect true biological function, helping predict a drug's effect on the human body before clinical trials begin.

A faster and more predictive way to discover new drugs

Ethica M minimizes the need for animal testing and supports faster, more reliable go/no-go decisions. With human-relevant, high-quality data, you can identify promising candidates earlier and improve research outcomes.

Human-relevant data earlier
Contractility assays mimic real heart/muscle behavior, helping spot toxic effects that traditional models might miss.

Improved safety screening
Detect cardiotoxicity and efficacy issues much earlier, reducing costly late-stage failures.

High-throughput testing
Test more compounds, more efficiently, using fewer cells and less time.

Better decision-making
Gain functional data (how the tissue actually performs), not just molecular readouts.

Develop more accurate models for complex diseases

Ethica M unlocks a deeper understanding of disease mechanisms and provides insights to accelerate therapeutic discovery. It delivers highly predictive data to support the testing and validation of new treatments, bringing clarity to complexity - making it invaluable for research and development.

Patient-relevant models
Use cells from actual patients to recreate disease-affected heart/muscle tissue.

Track functional changes
Measure real tissue contractions to understand how diseases alter function over time.

Test targeted treatments
Evaluate how drugs impact diseased vs. healthy tissues in a controlled, human-relevant environment.

Ethica M
The integrated, automated contractility solution

Ethica MChip

- Standard SLAS dimension 96-well plate consumable
- Integrated pacing electrodes
- Each mini well has a two-pillar structure for casted tissue attachment
- Customizable MChip with adjustable post stiffness to fit your assay needs
- Each mini well has a two-post construct for tissue attachment

Pipetting robot

- Cast cells in the MChip
- Precise dispensing of cell/gel matrix into mini wells
- Integrated temperature unit, HEPA filter and UV lamp
- Preparation of compound plates for pharmacology or media exchange in MChip and other liquid handling purposes

Optical Measurement System

- High throughput solution with 9 x 96-well plate consumable – run different assays in parallel
- Integrated electrical pacing unit to conduct customizable pacing protocols
- 4 high-speed, high-resolution cameras, to assess the contractility of the tissues
- Optical measurement system is placed in a 240 L cell culture incubator

Assay Scheduler & Analyzer

- Schedule and run assays automatically
- Record video, capture images or pacing tissue in defined time window
- The data is automatically sorted and stored in a local database for easy access and traceability
- The scheduler can manage 9 x 96 well plate with different assays running in parallel or starting at different time points
- Automatic data analysis and curve plotting

Join the evolution of drug development with a human-specific solution
The future is heading toward drug screening with a faster, more cost-effective approach. No need for slow, expensive animal studies. It's a more ethical way forward.

Ethica M comes with clear benefits that set it apart from other organ-on-a-chip solutions

Contractility technology has shown promise for years, but existing limitations have made it difficult to adopt at scale. With Ethica, we've applied our deep expertise in automation and high-throughput systems to overcome these challenges. The result is a unique set of benefits that only Ethica M can deliver.

Using up to 90% fewer cells significantly reduces costs

Achieve more with fewer cells, ideal for rare or expensive sources

<50K cells per construct—up to 90% less than standard systems

**Lower cost per datapoint without compromising**
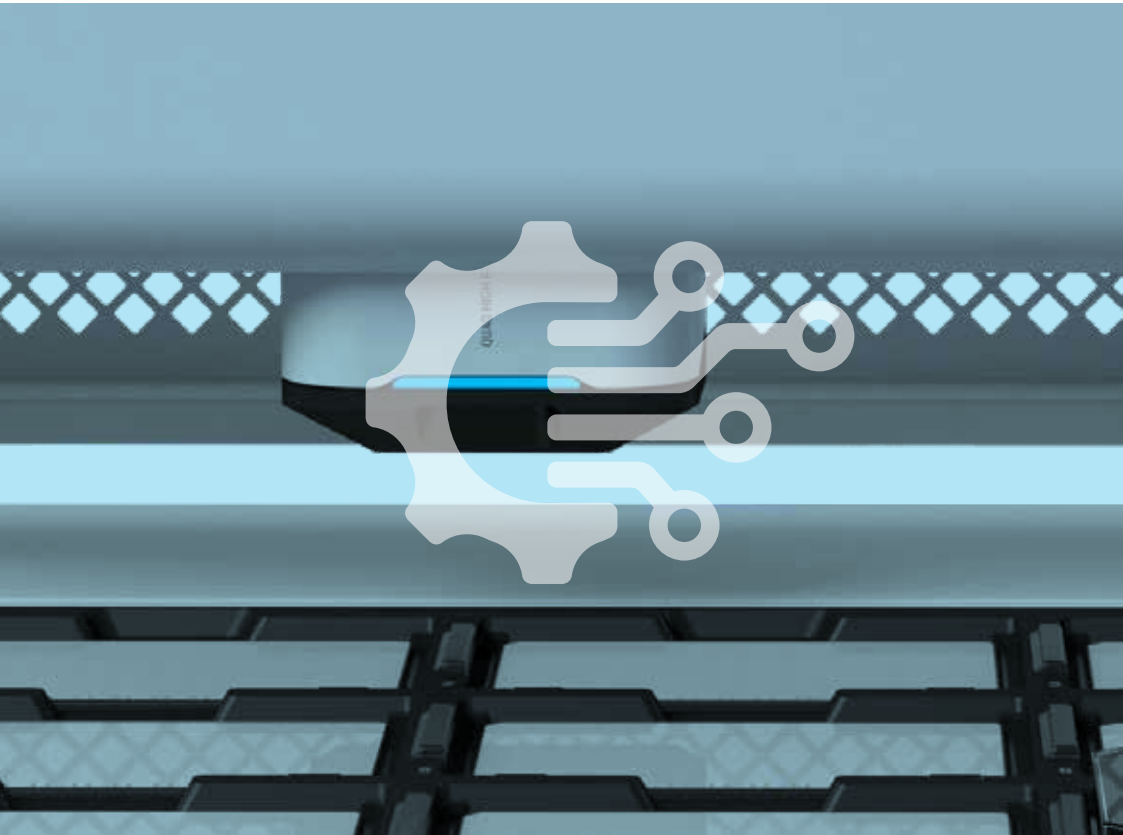
Automated preparation, casting & maturation

Ethica M automates key steps to reduce manual work and ensure consistency

Integrated electrodes simplify setup and lower contamination risk

Automated assay scheduler standardizes processes and saves time

Integrated pacing & multi-assay support enable flexible parallel experiments
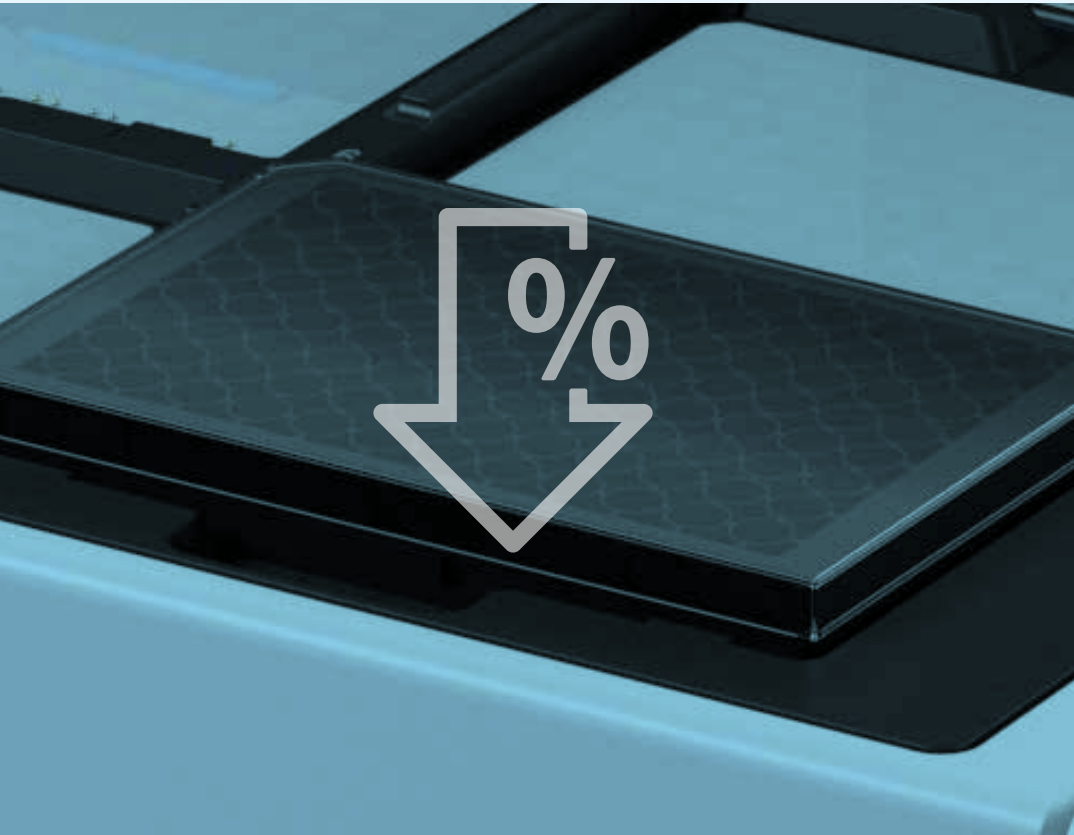
High throughput & flexibility gives you more data, faster

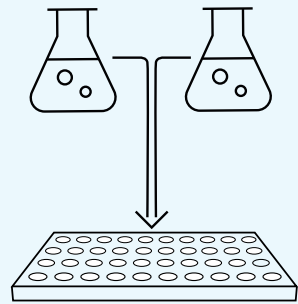**Designed for scale, with features that fit right into standard drug discovery workflows**

Run up to 9 plates at once for greater experimental output

192 tissues per plate with in-well replicates boost data quality

**96-well format ensures seamless workflow integration**

Ethica M workflow overview

Day 1

1. Preparation Made Simple
It starts with easy cell and gel mixing, pipetted automatically into the MChip — our specially designed plate that helps you work cleanly, consistently, and without fuss. Thanks to built-in electrodes, there's less chance of contamination and no extra handling steps.
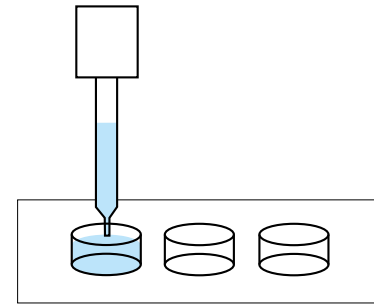
2. Cell/gel Casting with Precision
Next, the mix is dispensed into mini wells within the MChip where tissue begins to form. With only ~50,000 cells per tissue (compared to 300–500k in other systems), you get the lowest cost per data point while still getting top-quality results — and 192 tissues per plate means serious data in a single run.

Day 2-22
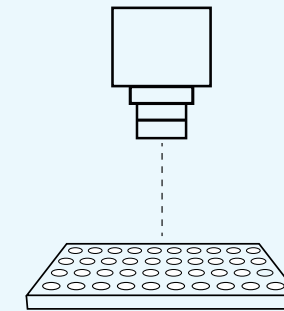
3. Maturation with Eyes On
Over a 21-day period, our system monitors tissue growth in real time using a high-precision optical measurement system. You can customize the assay plan and even run different experiments in parallel — all thanks to built-in pacing and flexible programming. Everything happens in a standard 96-well format, making it plug-and-play for any pharma lab.

Day 23-24

4. Automated Insights at the Finish Line
When it's time to analyze, the system automatically tracks and plots tissue contraction, giving you instant, reliable data. With support for 9 plates at once and an assay scheduler to plan everything ahead, it's our highest-throughput solution ever — designed for easy scale-up without scaling complexity.

Proven Expertise. Now Applied to Organ-on-a-Chip.

With 25+ years of experience in automated patch clamping, we've earned the life science industry's trust. That same expertise powers Ethica M, our next-generation contractility solution. Backed by a global presence, hundreds of supported installations, and expert application support, we're with you every step of the way.

Built with Science. For Science.

Co-developed with leading academic and pharma partners, our platform integrates seamlessly into real-world workflows—offering automated systems and easy-to-use consumables.

Where Biology Meets Technology, we excel

We specialize in bridging biology and materials through precision engineering. After decades mastering this in automated patch clamp systems, we now bring the same confidence to organ-on-a-chip, helping you turn data into decisions, faster.

Discover more at **Sophion.com**
Please email us at **info@sophion.com**

25 YEARS OF PASSION

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