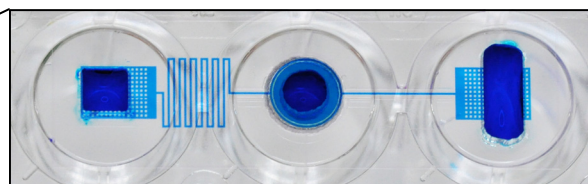
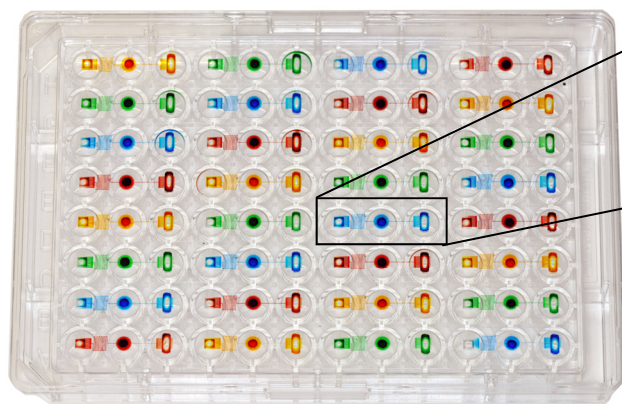




Microfluidic 3D Culture Array

The future of 3D culture. The MiCA is a breakthrough technology enabling 3D perfusion culture in an industry standard 96 well format. Multiplex long term culture in any gel matrix at a fraction of the time and cost of alternative methods. Experience cell biology in 3D.



Inlet

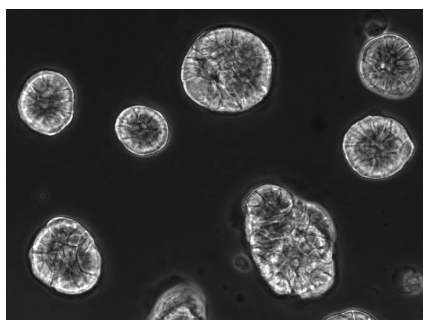
Cell Chamber

Outlet

The MiCA contains 32 independent flow units on a 96 well plate. Each unit consists of 3 well positions: a flow inlet, a cell/gel culture chamber, and a flow outlet.

The MiCA Advantage

- Highest quality long-term 3D culture in any matrix
- Standard 96 well format is compatible with existing assays and instrumentation
- Use only 4 microliters of gel per culture chamber

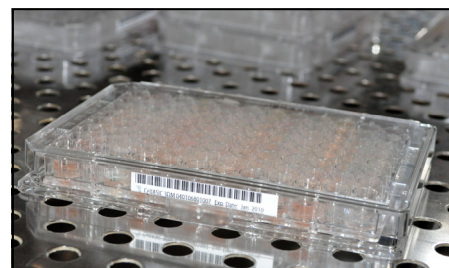


Advanced 3D Culture

The cell chamber is designed to mimic the interstitial tissue environment, with cells embedded or overlaid in extracellular matrix (ECM), and fed via diffusion from a continuously perfused capillary channel. The open-top chamber allows direct loading of cells/gels by pipette, eliminating tedious fluid manipulations. A 170 μm thick glass slide bottom enables high quality cell imaging.

Stand-Alone Microfluidic Array Plates

The standard layout allows the advanced microfluidic units to be operated just like a typical 96-well plate. The gravity driven perfusion design eliminates the need for pump or tubing connections-- simply fill the inlet well with your exposure solution. Compatible with plate readers, liquid handlers, and inverted microscopes.



Learn more at: www.cellasic.com/3D

Features and Benefits

Continuous Perfusion Culture: The advanced microfluidic design enables perfusion culture of cells in 3D gel.

Easy to Use: The open-top chambers and gravity fed perfusion method makes the MiCA accessible to any lab.

Standard Multiplexed Format: The 96 well plate format allows 32 independent experiments to be performed in parallel.

Maximize Value per Data Point: The 4 μl chambers save gel/cell usage, while the optical glass bottom ensures the highest quality cell images.

Technical Specs

Format: SBS standard 96 well plate
Bottom Surface: #1.5 (170 μm) glass coverslide
Channel Material: Silicone (PDMS)
Units per Plate: 32
Cell/Gel Chamber Size: 2mm dia x 1.4mm deep
Chamber Volume: 4 μl
Perfusion Barrier Pores: 4 μm
Inlet Well Volume: 300 μl
Gravity Perfusion Rate: $\sim 100 \mu\text{l/day}$
Chamber Refresh Time: ~ 1 hour

Example Applications

Gels: Matrigel, Geltrex, collagen, fibrin, hydrogels, gelatin, polymer matrices, etc.

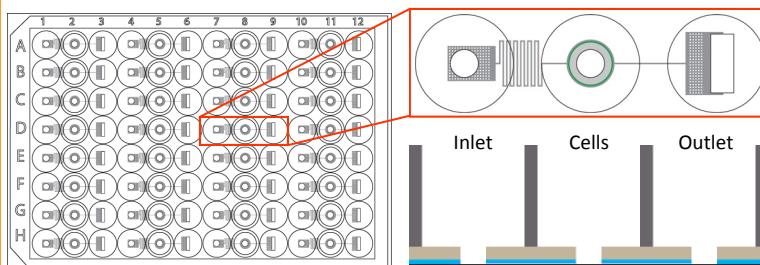
Cells: Primary cells/tissues, stem cells, neurons, HUVEC, cancer cells, co-cultures, etc.

Assays: High content analysis, proliferation/toxicity, immunostaining, live cell imaging, etc.

Plate Operation

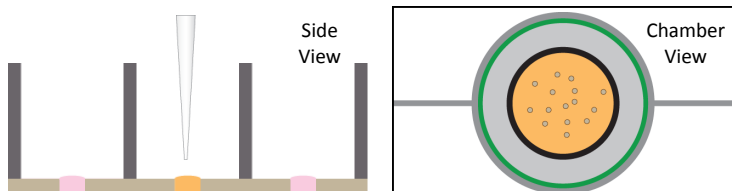
The MiCA plate was designed for easy operation and adaptation to current biological methods. All that is required to use the MiCA is a standard pipette.

1. Plate Layout



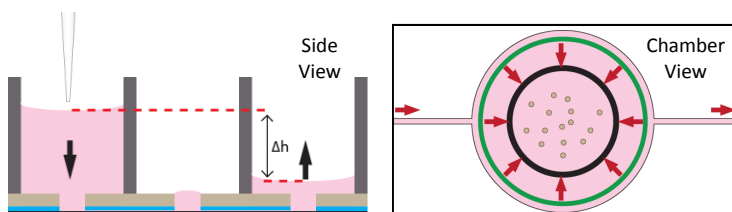
The MiCA has 32 units on a 96 well plate. Each unit consists of 3 well positions: an inlet, a cell chamber, and an outlet. The side view schematic shows the wells, bottom cutouts, and fluidic layer. A 170 μm thick glass slide forms the floor of the chamber.

2. Load Cells/Gels



Dispense cells/gels directly into the open-top culture chamber. The chamber is 2 mm in diameter and 1.4 mm deep. A microfabricated perfusion barrier (green ring) prevents cells/gels from entering the flow channel. Cells can be loaded embedded in gel, with gel overlay, or with no gel.

3. Gravity Driven Perfusion



Add cell culture medium to the inlet well. The liquid height difference between the inlet and outlet wells drives flow through the chamber. The flow rate is set at $\sim 100 \mu\text{l/day}$, providing continuous flow for 2 days before refilling. The medium fills the flow channel around the culture chamber, and diffuses into the cell/gel region, simulating physiologic mass transport.