CytoVu® for live cell imaging
Nanotechnology comes to cell culture

Transparency for live cell imaging
The first transparent membrane enables confocal slicing of cells on both surfaces at all visible wavelengths

Co-Culture as nature intended
The world’s thinnest* membrane physically separates cells by as little as 0.1 microns

Minimize the membrane - Focus on what’s important

SiMPore’s CytoVu® imaging slide

Conventional
Membrane Thickness
10 microns

SiMPore
Membrane Thickness
0.1 microns

*How thin?
1/100* the thickness of a typical PES or PC membrane

SiMPore Inc.
Precision Membrane Technologies
CytoVu®
SiMPore Membrane Support

**Available in three configurations:**
- **With NanoBarrier™** for permeability & physically separate co-culture
- **Without NanoBarrier™** for contacting co-culture or transmigration
- **With Degradable NanoBarrier™** for full length contact and tissue engineering

![Schematic of cell culture wells](image)

**Thin**
SiMPore’s CytoVu® imaging slides provide a permeable platform for cell culture on both apical and basal sides. At just 0.1 µm thin, the membrane in the CytoVu® imaging slides provides superior live cell imaging, and enables confocal slicing of cells on both surfaces and at all visible wavelengths.

**Porous**
NanoBarrier™ technology provides a highly permeable barrier between compartments. It has many small, 50 nm, pores that allow superior diffusion of molecules between co-cultured cells while maintaining physical separation. SiMPore also offers 3 & 8 µm pores without NanoBarrier™ technology to enable invasion and migration assays or co-culture with physical contact.

**Novel**
SiMPore also offers a degradable version of the NanoBarrier™ membrane for tissue engineering experiments. The membrane provides an initial permeable barrier to allow cells to grow to confluence, then degrades to bring the cells into complete physical contact.

**SiMPore Inc.**
SiMPore designs and produces membranes and membrane-enabled products based on its unique patent-pending platform NanoBarrier™ technology – the ultrathin nanoporous silicon membrane. It is the world’s first membrane to offer both tunable nanometer-scale thickness and pore size. SiMPore’s products include filters for separating and concentrating nanomolecules, electron microscopy grids for preparing and imaging samples at the nanoscale, and substrates for cell culture and co-culture.
Advantages and Applications

| Features                          | Benefits                                                        |
|-----------------------------------|-----------------------------------------------------------------
| Optical transparency              | Visualization in brightfield and fluorescence                   |
| Higher permeability rates         | Cross-communication and low dose studies                        |
| Molecular thinness                | Physical separation with physiological co-culture environment   |
| Degradable nanoporous membranes   | Novel tissue engineering platform                                |
| Scaled-down feature size          | Precious reagent reduction                                      |
| Adapts to both inverted and upright microscopes | No new equipment required                               |
| Multiple basal well depths        | Compatible with high magnification objectives                   |
| Stackable ridges on the outside   | Saves incubator space                                           |

**Transparent Co-Culture Imaging**

DIC and wide-field fluorescence images were captured at -4, 0, and +4 µm from the membrane plane. CytoVu® imaging slides allowed for clear resolution of red-tagged human neutrophils plated on the top of the membrane (+4) and of green-tagged human neutrophils plated on the bottom of the membrane (-4).

Never before has this level of transparency been available for co-culture techniques. Just 0.1 µm thin and porous for the highest level of permeability, SiMPore membranes are ideal for cellular co-culture.

CytoVu® lets you co-culture directly on the top and bottom of the membrane bringing cells close enough for physiologically relevant paracrine communication.

**Tissue Engineering**

Endothelial (green) and glial (red) cells were cultured on a CytoVu® imaging slide to create a more physiological blood brain barrier (BBB) model. CytoVu® pores and molecular thinness allow for highly efficient communication between the cells creating a tighter BBB than standard track-etched membranes.

The membrane is thinner and has a lower capacity to trap dye molecules than standard track etched membranes giving you the highest possible resolution of your engineered tissue.

Degradable NanoBarrier™ membranes are designed to degrade after your cells have grown to confluence giving you the opportunity to establish the true physical contact that nature intended.
# Application and Specification Guide

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**Cell-Cell Contact**
- Restricted
- Full
- Allowed

**Thickness (µm)**
- 0.1
- 0.1
- 0.1

**Pore Size (µm)**
- 3 or 8
- 3 or 8
- 3 or 8

**Permeability**
- High
- High
- High

**Active Dimensions (mm)**
- 1.0 x 1.0
- 1.0 x 1.0
- 1.0 x 1.0

**Stability in Culture**
- 2 weeks
- 1-3 days
- 4 weeks

**Basal Well Depth (µm)**
- 300
- 300
- 300
- 1000
- 1000
- 1000

**Apical Well Volume (µl)**
- 10
- 10
- 10
- 10
- 10
- 10

**Basal Well Volume (µl)**
- 10
- 25
- 25
- 10
- 25
- 25

**CytoVu® 3 Micro P/N**
- C300-MP3NP50
- C1000-MP3NP50
- C300-MP3
- C1000-MP3

**CytoVu® 8 Micro P/N**
- C300-MP8NP50
- C1000-MP8NP50
- C300-MP8
- C1000-MP8

**CytoVu® P/N**
- C300-NP50-D
- C1000-NP50-D

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For additional technical or sales information, please visit [www.SiMPoreStore.com](http://www.SiMPoreStore.com) or call us at 585-214-0585 or toll free at 888-323-6266

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**Publications**

