Millipore®
Preparation, Separation,
Filtration & Monitoring Products

Data Sheet

# Millicell® inserts and plates

## For more *in vivo* - like membrane-based cell culture

The research needed to narrow the gap between *in vitro* and *in vivo* or 2D and 3D cell environments has never been greater. Merck's sixty-plus year legacy of precision engineered filtration and cell culture expertise continues to provide the modern tools needed to support cell growth that is more predictive of natural cellular behavior.

## Enables predictive cell culture

**More natural cell growth is the result of biologically thoughtful engineering.**

Cells *in vivo* live in a truly three-dimensional environment, and can access nutrients from every side. In contrast, traditional plastic culture plates force cells to grow on a smooth, two-dimensional surface, leading to flattened nuclei and poor function.

Millicell® inserts and plates feature membranes that allow easy access to both the apical and basolateral sides of cells. This encourages three-dimensional growth and opens up more options for co-culture and extended length studies. All of these enable a more accurate, predictive *in vitro* model than regular plastic plates.

## Flexible formats

Our flexible formats include hanging and standing single-well inserts, multi-well plate assemblies, and tissue culture-treated receiver plates–all of which are available in a full selection of well sizes and membranes. We also have the microfluidic controlled cell culture systems, water purification, sterile filtration, media, kits, and research reagents that you need to develop and interrogate your model system.

## Closer to nature

- Improved cell morphology
- More intracellular organelles
- Better cell differentiation
- Higher cell densities
- More culture stability over time

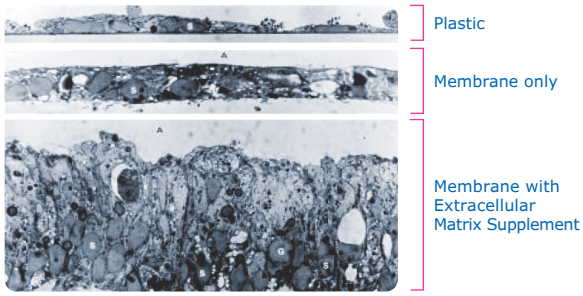



**Figure 1.**

A comparison of Sertoli cells grown on various surfaces. This seminal publication demonstrates that cells grown on Merck membranes impregnated with reconstituted basement membrane (RBM) form tall, columnar monolayers with ovoid or pyramidal nuclei that more closely mimic *in vivo* growth.

Byers SW, Hadley MA, Djakiew D, Dym M. Growth and characterization of polarized monolayers of epididymal epithelial cells and Sertoli cells in dual environment culture chambers. J Androl. 1986 Jan-Feb;7(1):59-68.

The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

MERCK

LABOR SPIRIT, Lda.

### Millicell® Hanging Inserts

- For co-culturing and permeability assays
- Unique design allows easy basolateral access, and means less risk of contamination
- PET membrane available in 3 well sizes and 5 pore sizes, including a 1 µm pore size that is optically transparent

### Millicell® Standing Inserts

- Promotes excellent cell growth and provides an exceptional opportunity for cell studies
- Available with Biopore™ (PTFE) membrane, MF-Millipore™ (mixed cellulose esters) membrane, and polycarbonate membrane-with 5 pore sizes, and 2 well sizes

### Millicell® Organotypic Standing Insert

- For high cell viability and superior study of three dimensional explant structures
- Shorter profile allows inserts to fit inside a standard petri dish
- The optically clear Biopore™ (PTFE) membrane provides high viability—for as long as 40 days —and excellent trans-membrane oxygen transport

## Membrane Types

### Biopore™ PFTE Membrane (polytetrafluoroethylene)

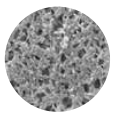
**For low protein binding, live cell viewing, and immunofluorescent applications.**

This optically transparent membrane exhibits little or no background fluorescence compared with other membrane matrices. It can be optimized for low protein-binding and low fluorescence applications, and is suitable for attachment-dependent cells if it is coated with an extracellular matrix.

### Isopore™ PCF Membrane (polycarbonate)

**For growth of attachment-dependent cells without matrix.**

This hydrophilic polycarbonate membrane is tissue culture-treated to allow growth of attachment-dependent cells without the use of extracellular coating matrix (ECM). It is especially recommended for transport/permeability applications.



### MF-Millipore™ MCE Membrane (mixed cellulose esters)

**For exceptional anatomical and functional polarization.**

This Triton®-free membrane can be used for cell surface receptor, *in vitro* toxicology, microbial attachment, and polarized uptake assays. When compared to plastic, cells had two- to three-fold higher densities and a more cuboidal morphology with rounded nuclei.

### PET Membrane (polyethylene terephthalate)

**For growth of attachment-dependent cells without matrix.**

This track-etched, thin film membrane is translucent or microscopically transparent for better cell visualization and monitoring of the cell monolayer. It is tissue culture treated to promote cell attachment and growth.

## Millicell®-24 and Millicell®-96 Plate Assemblies

- Complete system with a multiwell membrane-bottom plate, single-well and/or multiwell receiver tray, and lid
- Apical assist protects the cell monolayer; allows for easier pipetting and basolateral access
- Teardrop-shaped receiver wells eliminate air bubbles
- Raised well edges for improved tape sealing, and large font labeling for easy well identification

## Millicell® ERS-2 Voltohmmeter

**The Millicell® ERS (Electrical Resistance System) reliably measures membrane potential and resistance of epithelial cells in culture. This device qualitatively measures cell monolayer health and quantitatively measures cell confluence.**

**A silver/silver chloride (Ag/AgCl) pellet on each electrode tip measures voltage. Because of the small size of the electrodes, the user can easily measure transepithelial voltage and the resistance of cells grown on microporous membranes.**

## Ordering Information

| Membrane | Pore Size | Device Size | Qty/ Pk | Cat. No. |
|---|---|---|---|---|
| **Millicell® Single-Well Standing Inserts** | | | | |
| Organotypic Biopore™ (PTFE): Height 5 mm | 0.4 µm | 6-well | 50 | **PICMORG50** |
| HA insert MF-Millipore™ (mixed cellulose esters) | 0.45 µm | 6-well<br>24-well | 50<br>50 | **PIHA03050**<br>**PIHA01250** |
| CM insert** Biopore™ (PTFE) | 0.4 µm | 6-well<br>24-well | 50<br>50 | **PICM03050**<br>**PICM01250** |
| PCF insert Isopore (polycarbonate): Height 10.5 mm | 0.4 µm<br>1 µm<br>3 µm<br>8 µm<br>12 µm | 6-well<br>24-well<br>24-well<br>24-well<br>24-well | 50<br>50<br>50<br>50<br>50 | **PIHP03050**<br>**PIHP01250**<br>**PITP01250**<br>**PI8P01250**<br>**PIXP01250** |
| **Millicell® Single-Well Hanging Inserts** | | | | |
| PET | 0.4 µm<br>1.0 µm<br>3.0 µm<br>5.0 µm<br>8.0 µm | 6-well | 48 | **MCHT06H48**<br>**MCRP06H48**<br>**MCSP06H48**<br>**MCMP06H48**<br>**MCEP06H48** |
| PET | 0.4 µm<br>1.0 µm<br>3.0 µm<br>5.0 µm<br>8.0 µm | 12-well | 48 | **MCHT12H48**<br>**MCRP12H48**<br>**MCSP12H48**<br>**MCMP12H48**<br>**MCEP12H48** |
| PET | 0.4 µm<br>1.0 µm<br>3.0 µm<br>5.0 µm<br>8.0 µm | 24-well | 48 | **MCHT24H48**<br>**MCRP24H48**<br>**MCSP24H48**<br>**MCMP24H48**<br>**MCEP24H48** |
| **Millicell®-24 Cell Culture Plate Assemblies** | | | | |
| 24-well cell culture plate, single-well feeder tray, 24-well receiver tray, and lid | PCF<br>PET<br>PCF<br>PCF<br>PCF | 0.4 µm<br>1 µm<br>3 µm<br>5 µm<br>8 µm | 1 | **PSHT010R1**<br>**PSRP010R1**<br>**PSST010R1**<br>**PSMT010R1**<br>**PSET010R1** |
| 24-well cell culture plate, 24-well receiver tray, and lid | PCF<br>PCF<br>PCF | 3 µm<br>5 µm<br>8 µm | 5 | **PSST010R5**<br>**PSMT010R5**<br>**PSET010R5** |
| 24-well cell culture plate, single-well feeder tray, and lid | PCF<br>PET | 0.4 µm<br>1 µm | 5 | **PSHT010R5**<br>**PSRP010R5** |
| **Millicell®-96 Cell Culture Plate Assemblies** | | | | |
| 96-well cell culture plate, single-well feeder tray, 96-well receiver tray, and lid | PCF<br>PET | 0.4 µm<br>1 µm | 1 | **PSHT004R1**<br>**PSRP004R1** |
| 96-well cell culture plate, 96-well receiver tray, and lid | PCF | 0.4 µm | 5 | **PSHT004S5** |
| 96-well cell culture plate, single-well feeder tray, and lid | PCF<br>PET | 0.4 µm<br>1 µm | 5 | **PSHT004R5**<br>**PSRP004R5** |

| Product description | Qty/ Pk | Cat. No. |
|---|---|---|
| **Millicell® Electrical Resistance System** | | |
| Millicell® ERS-2 Voltohmmeter | | **MERS00002** |
| Replacement Electrodes | | **MERSSTX01** |
| Replacement Test Electrodes | | **MERSSTX04** |
| Adjustable Electrodes | | **MERSSTX03** |
| Specialized Electrodes (for Millicell®-96 well plate only) | | **MERSSTX00** |
| Replacement Battery 6V NiMH 2200mAH | | **MERSBAT01** |
| **Media Filtration Products** | | |
| Stericup® Quick Release, 0.22 µm PES membrane, 500 mL | 12 | **S2GPU05RE** |
| Sterile Millex®-GP filter unit, PES membrane | 50 | **SLGP033RS** |
| Steriflip®-GP filter unit, PES membrane | 25 | **SCGP00525** |

© 2020 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved. Merck, the vibrant M, Biopore, MF-Millipore, Isopore, Stericup, Millex, Steriflip, and Millicell are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources.

**Laborspirit Lda**
Distribuidor Merck
217 579 297
vendas@laborspirit.com