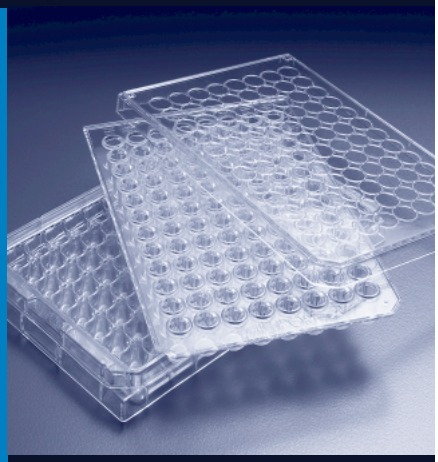
MILLIPORE

DATA SHEET



# MultiScreen®-MIC Plates

## *96-well system for cell-based functional screening assays including migration, invasion and chemotaxis*

- *High throughput*
- *QC released for use with adherent and suspension cells*
- *Consistent, reliable performance*
- *3, 5, and 8 µm polycarbonate membrane pore sizes available for versatile applications use*

Cancer drug discovery efforts are increasingly focused on pre-screening lead compounds in functional cell-based assays. Many drugs under development are directed at altering the migration and invasion properties of cancer cells and studying cell-cell interactions with endothelial cells such as HUVECs (Human Umbilical Vein Endothelial Cells) in co-culture, angiogenesis and transmigration assays. The MultiScreen-MIC family of plates with 3, 5 and 8 µm polycarbonate membranes are validated and QC released to support these assays with adherent and suspension cell lines.

### Reliable Scale-up

MultiScreen-MIC plates are a reliable, versatile platform for a range of cell-based screening assays. The 96-well design increases screening throughput 4-fold over 24-well devices with no compromise to cell growth or assay results. The unique well design in the MultiScreen-MIC plate provides the same membrane surface area per well as 24-well plates but the smaller well volume requires less reagents and results in significant cost savings.

### Versatile Device for Multiple Cell-based Assay Strategies

MultiScreen-MIC plates are compatible with a range of assays and cell lines. The plates are optimized for use with epithelial and endothelial cell lines when performing chemotaxis, invasion and angiogenesis assays demonstrating tube formation. The plates incorporate hydrophilic, PVP-free polycarbonate membrane available in a range of pore sizes for use with different cell lines.

Results show that the plates demonstrate high inter- and intra-lot consistency within an experimental day for both suspension and adherent cells.

### Pore Size Recommendations

| Cell Name | Cell Type | Pore Sizes Typically Used | Assays Typically Performed |
|---|---|---|---|
| MDA-MB-231 | Invasive Breast Cancer cell line (human) | 5 or 8 µm | Chemotaxis or invasion assay |
| MCF7 | Non-invasive breast cancer cell line (human) | 5 or 8 µm | Chemotaxis or invasion assay |
| HT1080 | Invasive fibrosarcoma cell line (human) | 5 or 8 µm | Chemotaxis or invasion assay |
| NIH3T3 | Non-invasive fibroblast cell line (mouse) | 5 or 8 µm | Chemotaxis or invasion assay |
| HUVEC | Endothelial cells | 3, 5 or 8 µm | Chemotaxis, invasion, angiogenesis or transendothelial migration assays |
| HMVEC/HMEC | Endothelial cells | 3, 5 or 8 µm | Chemotaxis, invasion, angiogenesis or transendothelial migration assays |
| PMN | Polymorphonuclear neutrophils | 1 or 3 µm | Chemotaxis assays |

*Pore size determination depends on cell type. The chart illustrates pore size choices for a selection of cell lines used in Millipore laboratories and by customers for the assays indicated. For more information, please contact Millipore technical service.*

## Performance

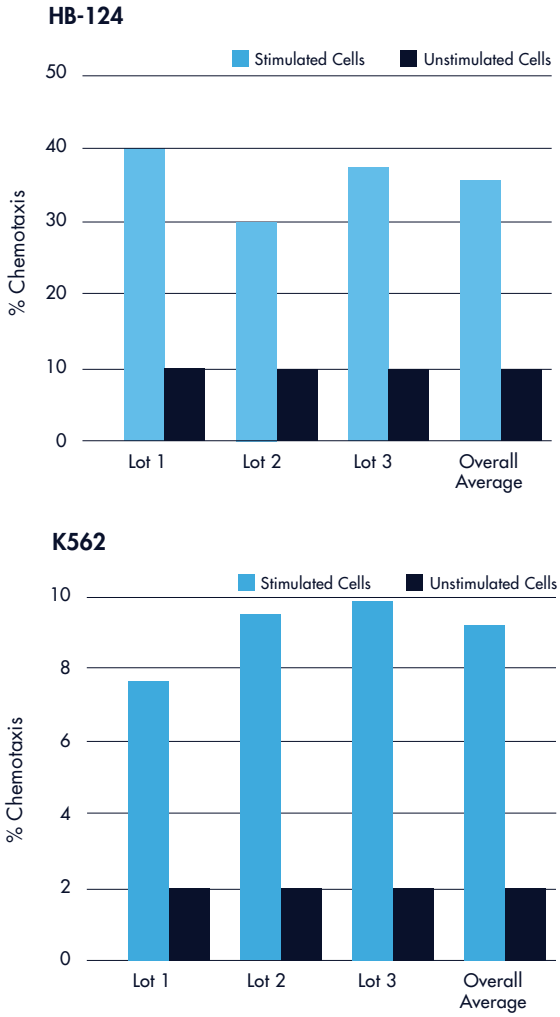
### Consistent Assay Results

Consistent intra-lot and inter-lot values with minimal standard deviation was obtained. For assays with HB-124 cells intra-lot standard deviation was ± 4 – 6 % and for assays with K562 cells intra-lot standard deviation was ± 0.7 – 1% in response to stimulant. Percent chemotaxis with HB-124 and K562 cells was ≥ 3x over unstimulated cells across all lots.

Consistent assay results were also determined for MultiScreen-MIC with 5 µm and 8 µm membrane using highly migratory adherent breast cancer cell line MDA-MB-231. Intralot standard deviation was ±1 – 7% for 3 lots tested (data not shown).

### Chemotaxis Profiles of Two Suspension Cell Lines

MultiScreen-MIC Plates with 3 µm Membrane



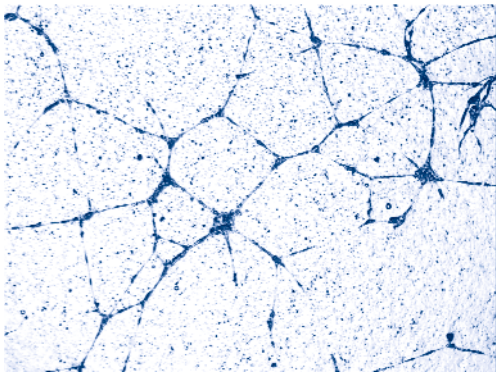

**Figures 1 and 2.** *Chemotaxis in response to 10% serum-containing medium (stimulated cells) or 0.2 % BSA-containing medium (unstimulated cells) as a chemoattractant. Percent chemotaxis (stimulated migration) is calculated relative to the number of cells seeded. Plates were seeded with 50,000 cells/well. Chemotaxis assays were carried out over a period of 4 hours at 37 °C. Migrated cells were evaluated using Calcein AM fluorescent label. Percent chemotaxis was calculated using a Calcein AM standard cell reference curve for each cell line.*

## Proven Tube Formation for Angiogenesis Assays

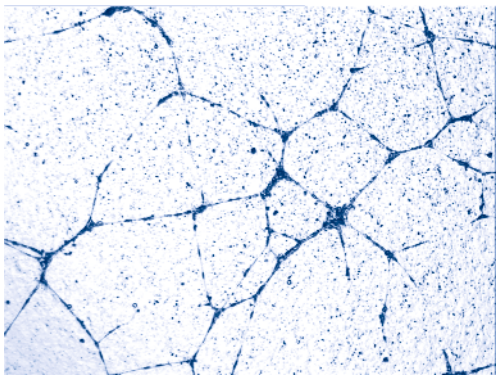
Figures 3a and 3b show tube formation exhibited by HUVEC (Human Umbilical Vein Endothelial Cells) on 5 µm MultiScreen-MIC plates in response to EGM-2 (Endothelial Growth Medium) for 24 hours at 37 ° C. Image demonstrates the ability of MultiScreen-MIC plates to support *in vitro* angiogenesis assays.

### MultiScreen-MIC Plates with 5 µm Membrane

Angiogenesis



3a.



3b.

**Figure 3a and 3b.** *Angiogenesis (tube formation) experiments were performed using HUVEC cells on 5 µm MultiScreen-MIC plates pre-coated with extracellular matrix (400 µg/well). Plates were seeded with 10,000 cells/well. Tube formation was imaged with Zeiss® Axiovision™ software.*

## Superior Percent Invasion

MultiScreen-MIC plates perform consistently across lots. They also exhibit superior percent invasion results in invasion assays with MDA-MB-231 cells in a parallel comparison to Competitor B and Competitor C 24-well inserts.

### Invasion Profile of Highly Invasive Adherent Breast Cancer Cell Line MDA-MB-231

MultiScreen-MIC Plates vs Competitor B and Competitor C on 8 µm Membrane Plates

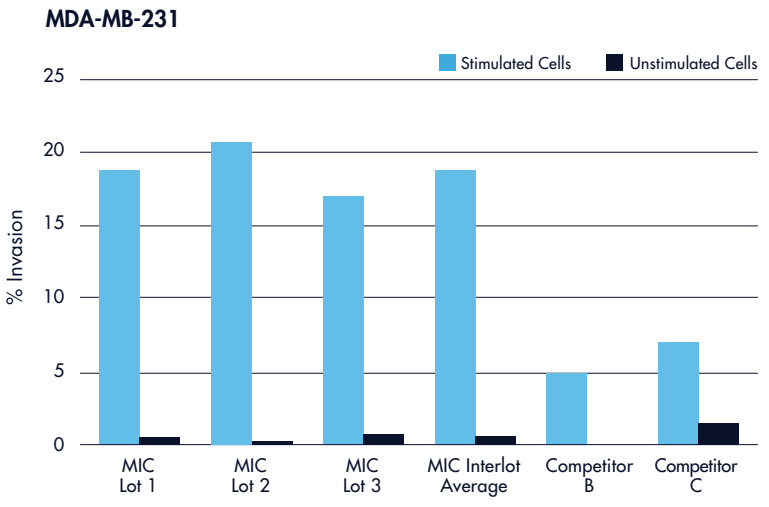



**Figure 4.** *Percent invasion exhibited by MDA-MB-231 cells in response to 10% serum-containing medium (stimulated cells) or 0.2 % BSA-containing medium (unstimulated cells) as a chemoattractant. Plates were seeded with 50,000 cells/well. Invasion assays were carried out over a period of 24 hours at 37 °C. Invaded cells for MultiScreen-MIC plates were quantified using KS300 cell-counting software on a Zeiss Axioplan 2 microscope with an automated stage.*

## Ordering Information

Each complete MultiScreen-MIC plate includes a 96-well filter plate, a 96-well receiver plate housed in a single-well tray, and a lid. All parts are gamma irradiated.

| Description* | Qty/Pk | Catalogue No. |
|---|---|---|
| MultiScreen-MIC 3 µm Plates | 10 | MAMI C3S 10 |
| MultiScreen-MIC 5 µm Plates | 10 | MAMI C5S 10 |
| MultiScreen-MIC 8 µm Plates | 10 | MAMI C8S 10 |

**For additional pore sizes contact your Millipore representative.*

### Accessory products

Single well trays and receiver plates are also available separately.

| Description | Qty/Pk | Catalogue No. |
|---|---|---|
| Single-well culture tray | 10 | MAMC S01 10 |
| 96-well receiver plate | 10 | MAMC S96 10 |

Related Literature

Applications Note AN1060EN00: *Evaluation of Multiscreen-MIC Plates in Chemotaxis Assays*

Applications Note AN1675EN00: *Evaluation of Multiscreen-MIC Plates in Invasion and Angiogenesis Assays*

### To Place an Order or Receive Technical Assistance

For additional information call your nearest Millipore office:
In the U.S. and Canada, call toll-free 1-800-MILLIPORE (1-800-645-5476)
In the U.S., Canada and Puerto Rico, fax orders to 1-800-MILLIFX (1-800-645-5439)
Outside of North America contact your local office.
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