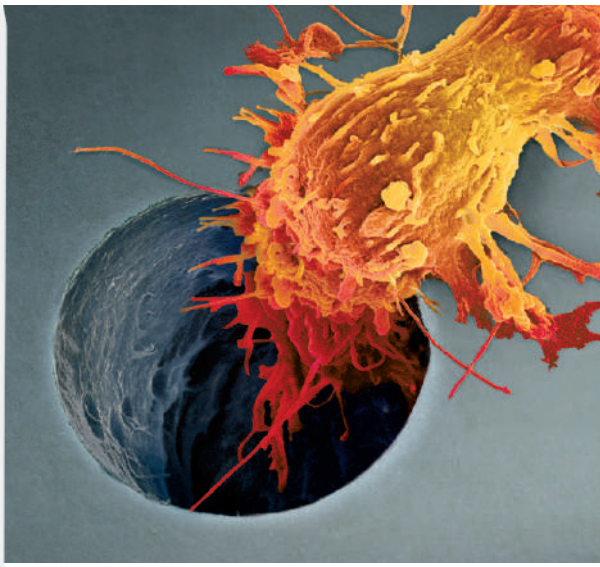
sartorius

IncuCyte® Cell Migration and Invasion Assays

Real-time automated measurements of cell motility inside your incubator.



IncuCyte®
A SARTORIUS BRAND

See what your cells are doing and when they do it—

Real-time visualization and analysis of cell motility inside your incubator

Cell migration and invasion play a role in many normal and pathological processes including immune responses, embryonic development, angiogenesis, regeneration, tumor metastasis, and wound healing. Watch these dynamic biological processes happen in real-time and gain greater insight. IncuCyte® assays can be used either label-free or using dual color fluorescence to study specific cell populations in co-culture.

IncuCyte® Scratch Wound and ClearView Chemotaxis assays allow you to continuously monitor and analyze migration and invasion with or without a chemotactic gradient, right inside your incubator.

Ask new questions

- Investigate migration versus invasion, with or without a chemotactic gradient.
- Explore all types of movement – from tumor cell invasion to immune cell transendothelial migration.

Get new answers

- Never miss a data point with real-time continuous analysis.
- Enjoy robust, reproducible assay formats suitable for screening and profiling.

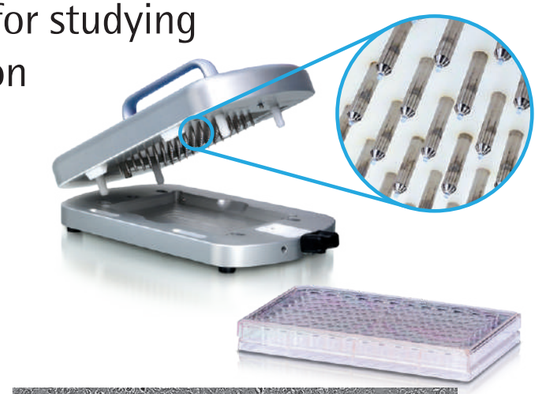
See it more clearly

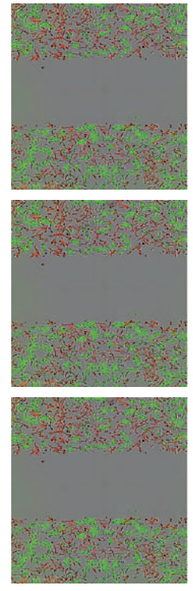
- Visually confirm cell movement, morphology, and cell-cell interactions with images and movies.
- Study adherent or suspension cells, co-cultures, with labels or label-free.

Improve productivity

- Enjoy walk-away convenience as images are automatically acquired and analyzed.
- Run experiments in up to six 96- or 384-well plates simultaneously.

Innovative solutions for studying migration and invasion

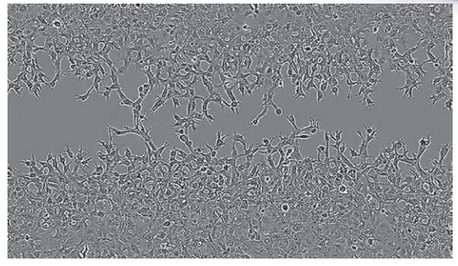




IncuCyte® Scratch Wound Assay

Bring your traditional scratch wound assay to a new level of usability and throughput. Our unique IncuCyte® WoundMaker 96-pin tool creates 96 precise, uniform cell-free zones with the touch of a button in cell monolayers cultured in our IncuCyte® ImageLock plates. Wound closure is visualized and analyzed in real-time inside your incubator with the IncuCyte® live cell analysis system and software.

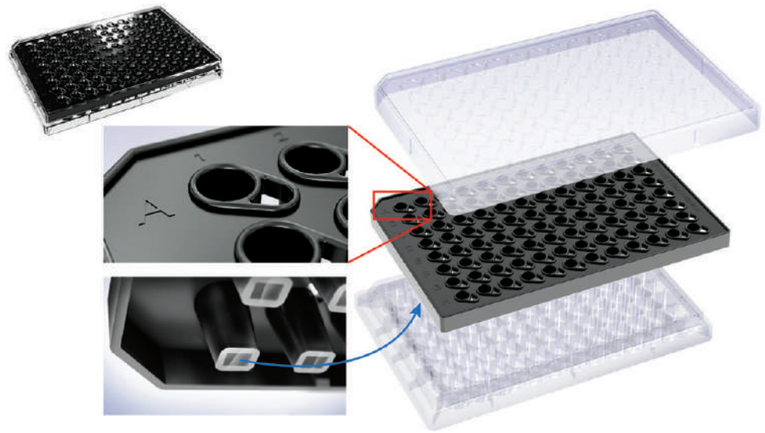
- Measure cell movement into wound region.
- Cell density-dependent migration, no chemotactic gradient.
- Compatible with adherent cell types.
- Requires confluent monolayer.

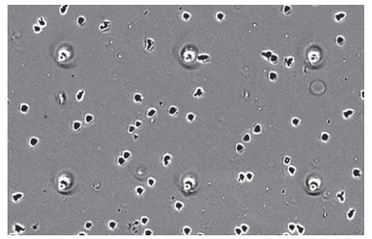


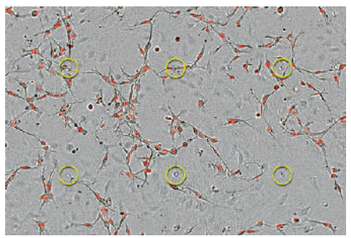
ClearView Chemotaxis Assay

Achieve real-time visualization of chemotaxis in a 96-well format. Our proprietary chemotaxis plates combine the optical clarity of microfluidics devices with the throughput of transmembrane assays. Each plate includes a reservoir and an optically clear membrane insert assembly with precision laser-etched 8-micron pores. Cells migrate across the membrane and through the pores and are automatically quantified.

- Measure cell movement toward chemoattractant.
- Create stable chemotactic gradient.
- Requires fewer cells compared to traditional transwell approaches.
- Ideal for rare, expensive, and primary cells.







Increase throughput and productivity with walk-away assays

IncuCyte® cell migration and invasion assays deliver greater throughput and productivity. Set up assays in 96-well plates at the bench, then simply load up to six plates in the IncuCyte® system for automated live-cell analysis. With the IncuCyte system, we've eliminated the need for scraping, fixing, labeling, and manual counting. And you don't have to remove plates from the incubator for measurement.

How it works

Scratch Wound Migration

1. Coat plate with ECM

Prepare surface (coating may not be necessary for migration).

2. Seed cells

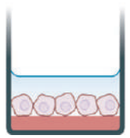
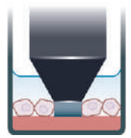


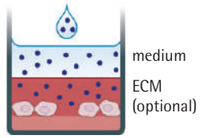
Plate cells and allow to adhere for several hours.

3. Create wound area



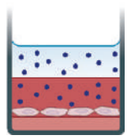
Create 96 precise cell-free regions in just seconds.

4. Add treatment (migration or invasion) and ECM (invasion)



Add modulators of migration or invasion.

5. Place in IncuCyte® and walk away



Automatically collect time-lapse images.

Observe cell morphology.

Quantify migration and invasion.

ClearView Chemotaxis Assay

1. Coat (migration) or prime (invasion) the insert

Prepare membrane surface for cell migration or invasion.

2. Harvest and seed (migration) or embed (invasion) cells

For migration, seed 1000-5000 cells and allow to settle.

For invasion, embed cells within matrix and centrifuge.

3. Treat cells

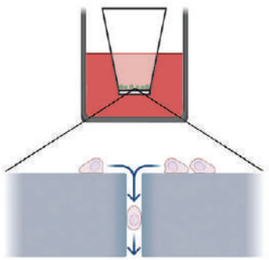
drug compound

Add modulators of cell migration or invasion.

4. Add chemoattractant

Add chemoattractant or controls to reservoir plate wells.

5. Place in IncuCyte® and walk away



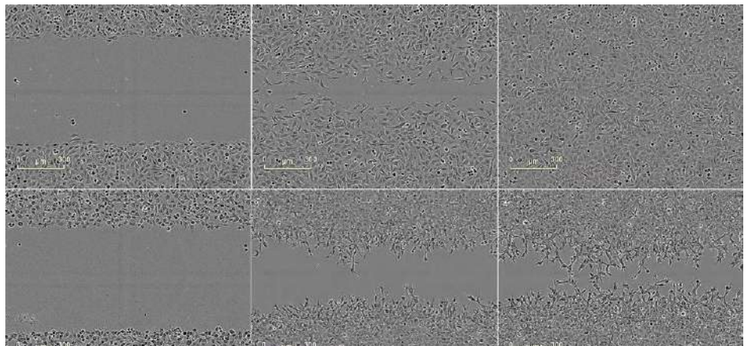
Automatically collect time-lapse images.

Observe cell morphology.

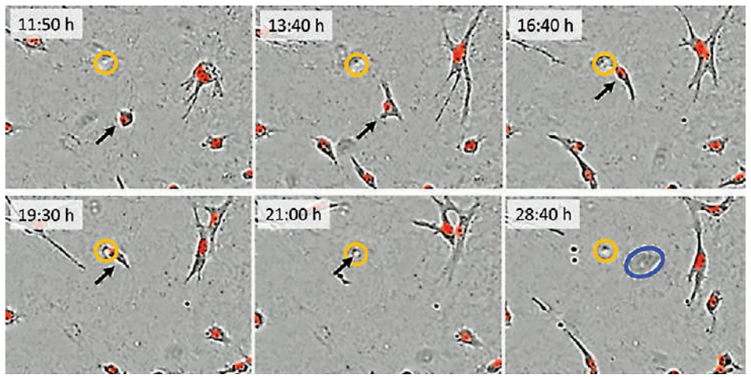
Quantify migration and invasion.

Visualize migration and invasion in real-time with movies and automated analysis

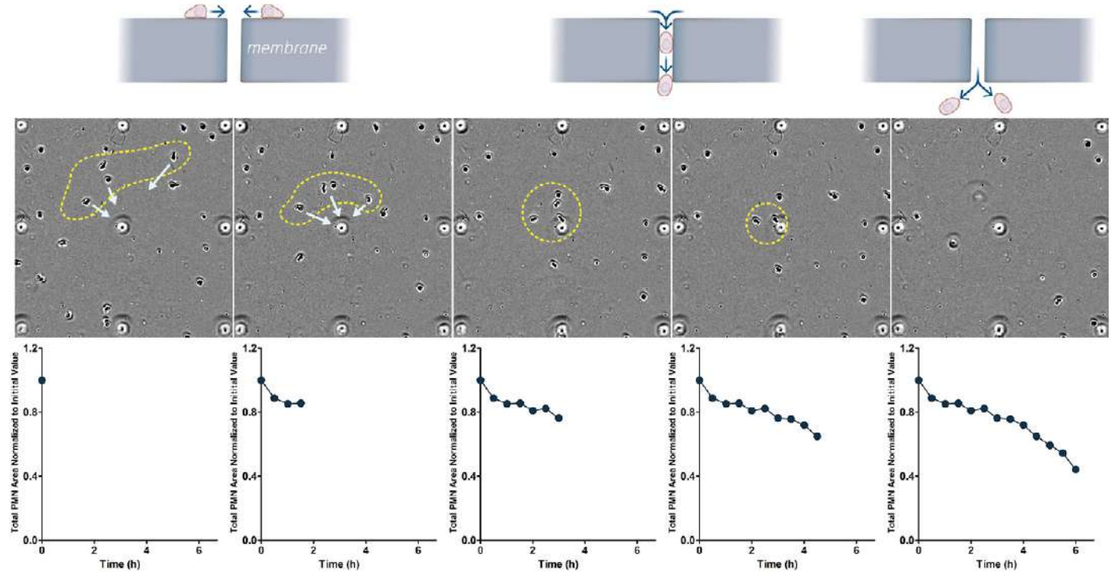
- Visualize and measure cell migration and invasion in 96-well plates using the IncuCyte® Scratch Wound and ClearView chemotaxis assays.
- Monitor chemotactic invasion in real time through your choice of 3D extracellular matrix.



Tumor cell migration and invasion
Differences in HT-1080 morphology and rate of wound closure between migrating and invading cells are observed. Rate of migration is greater than rate of invasion.



Chemotactic invasion
Time-lapse images of a nuclear red-labeled HT-1080 tumor cell (black arrow) invading through basement membrane extract toward a pore leading to serum (orange circle). The cancer cell extends into and penetrates the matrix, moving toward and through the pore. In the final image, the cell has passed through the pore and has adhered to the underside of the membrane (blue circle) where it is quantified.



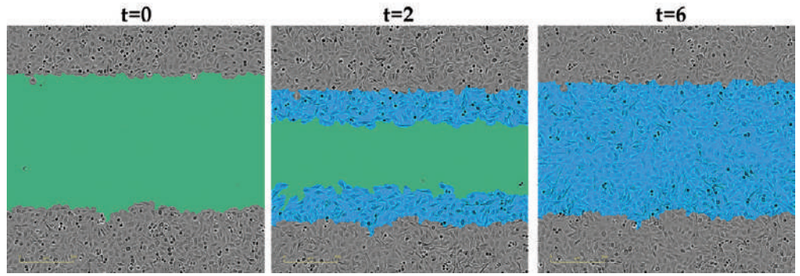
Chemotactic migration of immune cells. Neutrophils migrate toward the chemoattractant IL-8. Cells migrate through the pores and drop into the reservoir. Chemotaxis is quantified as the loss of cells from the upper membrane surface as they move through the pores.

Automated, reproducible analysis suitable for screening applications

- Purpose-built software modules generate metrics in an automatic manner for 96-well plates with minimal user input.
- Precise, robust results are easily achieved using multiple wells measured repeatedly over time.

Scratch Wound Analysis

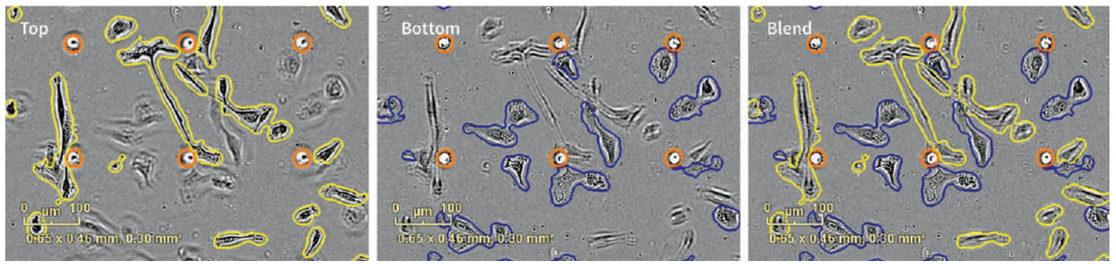
Time lapse images are captured at user-defined intervals. ImageLock plates ensure wounds are located and registered by the software. The IncuCyte® cell migration software module tools are used to automatically process the collected images by generating masks of the wound area and measuring wound width, wound confluence, or relative wound density.



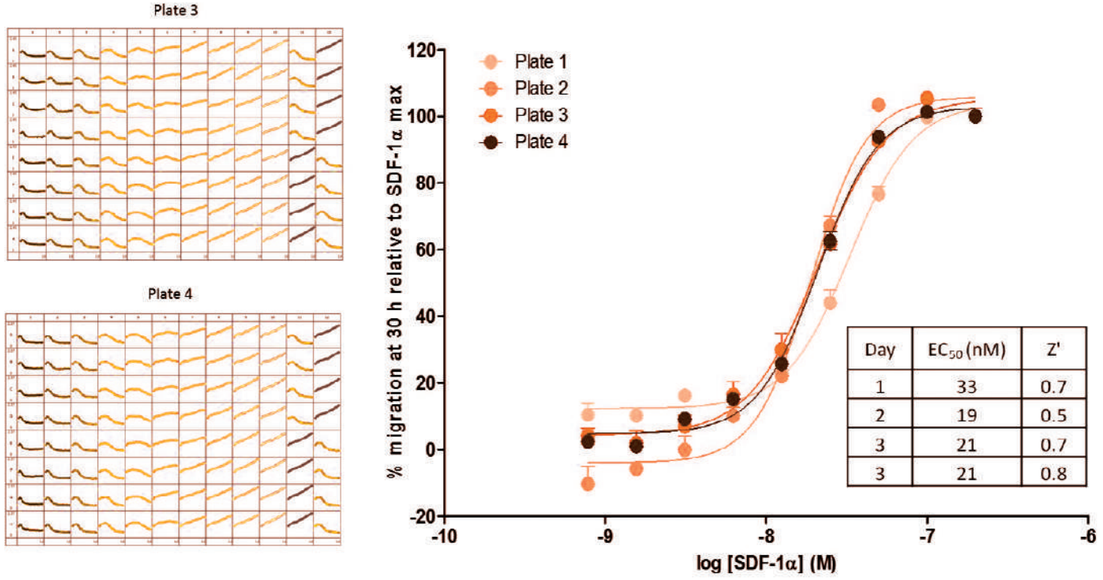
Tumor cell migration. HT-1080 fibrosarcoma cells cultured in ImageLock plates migrate into the wound region created by the WoundMaker 96-pin tool. Complete closure of the wound is observed at six hours.

ClearView Chemotaxis Analysis

Whole-well images of cell on both bottom and top of the ClearView plate membrane are captured at user-defined intervals. Images are processed using automated algorithms to quantify cell area on each side of the membrane. Directed cell migration can be reported as either an increase in area on the bottom of the membrane for adherent cells or a decrease in area on the top side for non-adherent cells that migrate down the pore and fall off the membrane.



Chemotaxis quantitation. HT-1080 fibrosarcoma cells were plated in the top chamber of the IncuCyte® ClearView plate at a density of 500 cells/well, and 10% FBS was added to the bottom chamber as a chemoattractant. Images represent the top and bottom side of the membrane at the 36-hour time point. Automated image processing separates cells located on the top (outlined in yellow) and the bottom (outlined in blue) surface of the membrane. Pores are outlined in orange. Images are processed as they are acquired, and data can be plotted in real time.



Day	EC_{50} (nM)	Z'
1	33	0.7
2	19	0.5
3	21	0.7
3	21	0.8

Inter-plate reproducibility in ClearView chemotaxis plates. Representative 96-well microplate graphs showing Jurkat migration towards the chemoattractant SDF-1α to illustrate inter-plate reproducibility (serial dilutions of chemoattractant across the plate). Z' values ranged from 0.5 to 0.7 for four replicate plates over three days. Corresponding concentration-dependent response curves to SDF-1α provided reproducible measurements of SDF-1α potency (EC50 value range 19 to 33 nM) within and between days.

Ordering information

IncuCyte® Scratch Wound Assay			
	Product	Description	Cat. No.
Consumables	ImageLock 96-well Plates	50 pack	4379
Software	IncuCyte® Cell Migration Software Module	Quantify cell movement into cell-free zones (for use with Woundmaker and ImageLock plates)	9600-0012
	Complete Kit	96-pin WoundMaker, IncuCyte® Cell Migration Software and starter set of ImageLock Plates	4493

IncuCyte® Clearview Chemotaxis Assay			
	Product	Description	Cat. No.
Consumables	IncuCyte® ClearView 96-well Cell Migration Plates	Each 10 pack 50 pack	4582 4648 4599
	IncuCyte® ClearView Reservoir Plates	10 pack 100 pack	4600 4601
Software	IncuCyte® Chemotaxis Software Module	Quantify the dynamics of chemotactic migration (for use with ClearView Chemotaxis plates)	9600-0015

Harness the power of live-cell analysis with a full range of IncuCyte reagents and consumables to revolutionize the way you quantify cell behavior. To view a complete listing of our reagents and consumables visit: **essenbioscience.com/reagents**

We've made ordering reagents much easier! Visit our online store:
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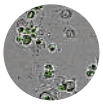
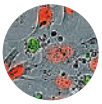
See what else you can do with the IncuCyte® Live-Cell Analysis System

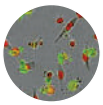
Learn more at **www.essenbioscience.com/applications**



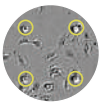
Apoptosis
Detect apoptosis in living cells and in real time using simple mix-and-read protocols.



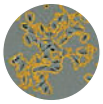
Immune Cell Killing
Detect tumor cell death directly by counting IncuCyte® NucLight nuclear-labeled cells or measuring apoptosis with IncuCyte® Caspase 3/7 reagent.



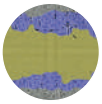
Cytotoxicity
Measure real-time cell viability with simple mix-and-read protocols suitable for screening.



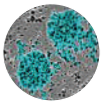
Chemotaxis
Visually confirm the chemotactic migration of immune cells towards chemoattractants with ClearView 96-well plates.



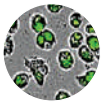
Proliferation
Automatically measure label-free growth or count living cells with NucLight™ nuclear labeling in real time.



Scratch Wound Migration & Invasion
Characterize the metastatic potential of tumor cells and investigate treatment effects on migration across a 2D substrate or invasion through a 3D gel matrix.



Immune Cell Clustering
Visualize and quantify expansion and clustering without removing your cultures from the incubator.



Phagocytosis
Continuously analyze and generate movies of immune cells engulfing pHrodo® labeled target tumor cells.

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To place an order or request additional information

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