VitroGel®-Based Cell Invasion Assay Kits

TheWell BIOSCIENCE

Your gateway for easy-to-use and consistent in-depth cell invasion and migration studies.

- **Full Control of ECM properties** – Unlock the understanding of key ECM factors on cell migration/invasion. Gain new knowledge that was not capable with animal-based ECM.
- **Synthetic hydrogel with batch-to-batch consistency:** Accurate and reproducible results.
- **Easy to use at room temperature operation:** Supports lab automation and high-throughput applications.

Cell invasion, a vital process in various biological contexts, can be pivotal in embryonic development, immunosurveillance, and wound healing, while also playing a concerning role in cancer metastasis. Traditional in vitro invasion assays have relied on animal-based extracellular matrices, which come with challenges like undefined components, batch-to-batch variability, and cumbersome temperature-sensitive protocols.

TheWell Bioscience's VitroGel-Based Cell Invasion Assay Kits are powered by **VitroGel**® – a ground-breaking xeno-free, bio-functional hydrogel that closely mimics the physiological extracellular matrix and the premium quality **VitroPrime™ Cell Culture Inserts**. VitroGel offers tunable biophysical and biochemical properties, allowing researchers to explore how different matrix strengths, ligands, chemokines, growth factors, and more influence cell invasion.

Both the ready-to-use VitroGel Hydrogel Matrix and the tunable high-concentration VitroGel hydrogels can be used for this cell invasion assay, providing versatility for cell mobility studies.

30 Min Protocol Quick & Consistent

Room Temperature Operation

Full Control of ECM

Lab Automation Friendly

Versatile Invasion/ Migration Applications

In-depth Studies

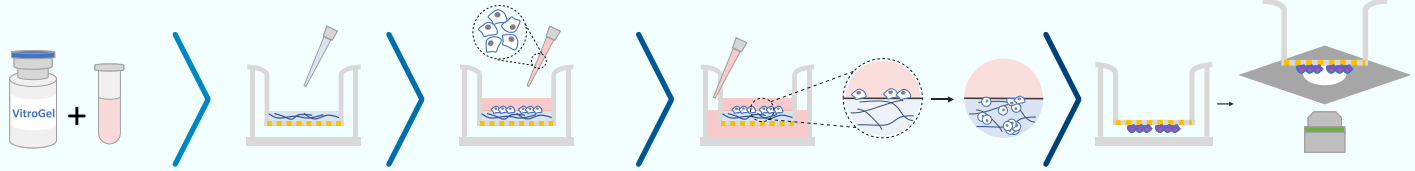
	HC VitroGel-Based Cell Invasion Assay	R2U VitroGel-Based Cell Invasion Assay	Traditional assay with Animal-Based ECM
Operation temperature	Room temperature	Room temperature	2-8 °C
Set up time	30 mins	30 mins	2 hours +
Control compounds of outer well	✓	✓	✓
Consistent results	✓	✓	–
Control key compounds in hydrogel	✓	✓	–
Control mechanical strength of hydrogel	✓	–	–
Study functional ligands of hydrogel	✓	–	–
Control hydrogel degradation	✓	–	–
High-throughput / Lab automation	✓	✓	–

HC=High Concentration, R2U=Ready-To-Use

30 min PROTOCOL

Cell invasion culture process in 30 minutes. "Just add cells"

Work confidently at room temperature. No ice bucket required. VitroGel-Based Cell Invasion Assay Kits are ready to use. There is no cross-linking agent required.



1. Mix hydrogel with culture medium
2. Add mixture to the insert & incubate at RT for 20 mins
3. Add cells on top of the hydrogel
4. Add medium to the outer well

Incubate 24-48 hrs for cell invasion

5. Perform crystal violet staining for invasion measurements

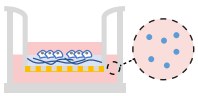
Types of studies capable with VitroGel-Based Cell Invasion Assay Kits

VITROGEL UNIQUE

With VitroGel-Based Cell Invasion Assay Kits, not only you can perform traditional invasion/migration assays but go beyond to study more types of invasion/migration studies with the tunable kits.

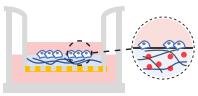
VitroGel® Cell Invasion Assay Kit (Ready-To-Use)

1



Traditional invasion assay with chemoattraction from outer well

2

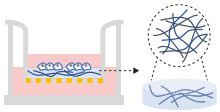


VITROGEL UNIQUE Study effect of cytokine/supplement of hydrogel matrix on cell mobility

VitroGel High-Concentration Cell Invasion Assay Kits (Tunable)

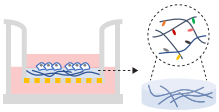
Unique invasion assay applications only possible using VitroGel®

3



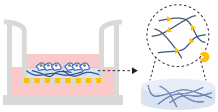
VITROGEL UNIQUE Study the effect of different hydrogel mechanical strengths on cell mobility

4



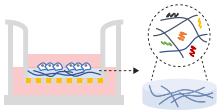
VITROGEL UNIQUE Study the effect of hydrogel functional ligands on cell mobility

5



VITROGEL UNIQUE Study the effect of hydrogel degradability on cell mobility

6



VITROGEL UNIQUE Study the effect of cytokine/ supplement of hydrogel matrix on cell mobility

Data and References

Ready-To-Use VitroGel Cell Invasion Assay

Evaluating chemotaxis by adjusting the growth factors compositions within VitroGel Hydrogel Matrix

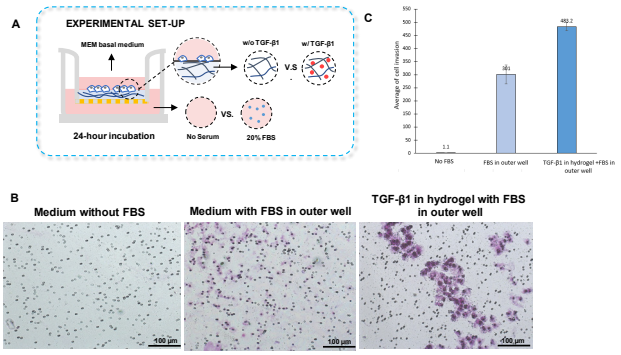


Figure 1. Invasion of U87-MG glioblastoma cells through VitroGel Hydrogel Matrix caused by a serum gradient. A. Schematic representation demonstrating the invasion assay cell culture set-up. B. U-87 MG cell invasion was visualized by performing crystal violet staining followed by light microscopy. The images show the membrane inserts from control group (No FBS) and 20% FBS conditions. Images were obtained with a Zeiss microscope at a 10X magnification. C. Fold change of U87-MG cell invasion between control and 20% FBS groups. The control group was normalized to 1. The asterisk (*) stands for $p<0.05$.

VitroGel High-Concentration Cell Invasion Assay

Study the effect of both cytokine and the functional ligands of hydrogel matrix on cell mobility

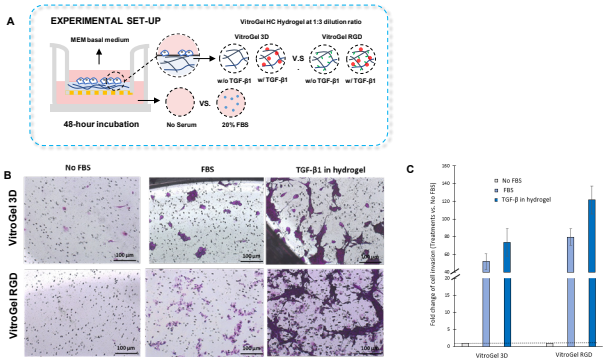


Figure 2. TGF-β1 inside VitroGel 3D and VitroGel RGD facilitates U87-MG glioblastoma cell invasion. A. Visual representation of experimental setup. Cultures were incubated for 48 hours B. Microscopy images demonstrating U87-MG glioblastoma cell invasion through VitroGel 3D and RGD. Each hydrogel was diluted with VitroGel Dilution solution in a 1:3 ratio and then combined with MEM 1X or MEM 1X with TGF-β1 (30 ng/mL) in a 4:1 ratio. Images were obtained with a Zeiss microscope at a 10X magnification. C. Fold change of cell invasion in the TGF-β1 in hydrogel and FBS groups relative to the No FBS group for each hydrogel. The No FBS group was normalized to 1.

Product	Hydrogel	Inserts	Pore Size	Cat. No.
VitroGel® Cell Invasion Assay Kit	4 mL	48	8 µm	IA-VHM01-4P
VitroGel® 3D Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC001-4P
VitroGel® RGD Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC003-4P
VitroGel® IKVAV Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC007-4P
VitroGel® YIGSR Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC008-4P
VitroGel® COL Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC003-4P
VitroGel® MMP Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC010-1P

Explore all our VitroGel-Based Cell Invasion Assay Kits here:
www.thewellbio.com/product/vitrogel-cell-invasion-assay-kit/

TheWell BIOSCIENCE
3D Cell Culture and Beyond

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