

VitroGel®-Based Cell Invasion Assay Kits

Thomas
Scientific

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.



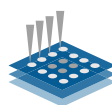
Cell invasion, a vital process in various biological contexts, can be pivotal in embryonic development, immunosurveillance, and wound healing, while also playing a concerning role in cancer metastasis. Traditional in vitro invasion assays have relied on animal-based extracellular matrices, which come 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.



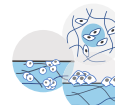
**30 Min Protocol
Quick & Consistent**



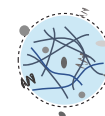
**Lab Automation
Friendly**



**Room Temperature
Operation**



**Versatile Invasion/
Migration Applications**



Full Control of ECM



In-depth Studies

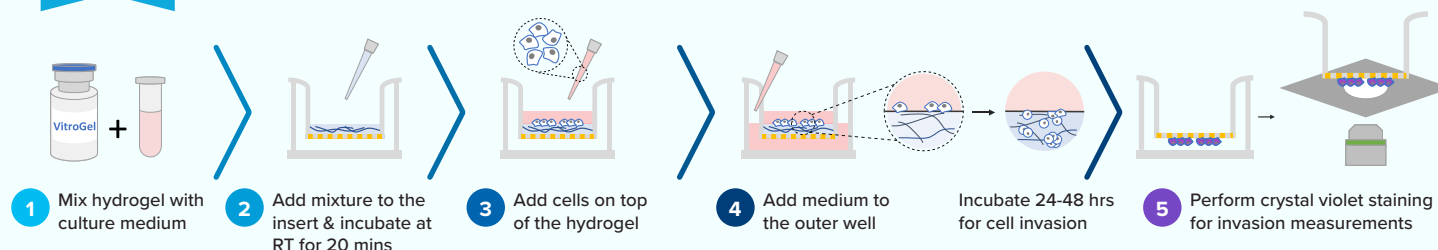
	HC VitroGel-Based Cell Invasion Assay	R2U VitroGel-Based Cell Invasion Assay	Traditional assay with Animal-Based ECM
Operation temperature	Room temperature	Room temperature	2-8 °C
Set up time	30 mins	30 mins	2 hours +
Control compounds of outer well	✓	✓	✓
Consistent results	✓	✓	–
Control key compounds 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



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.



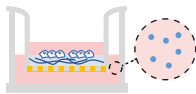
Types of studies capable with VitroGel-Based Cell Invasion Assay Kits

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.

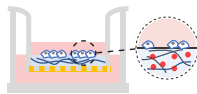
VitroGel® Cell Invasion Assay Kit (Ready-To-Use)

1



Traditional invasion assay with chemoattraction from outer well

2



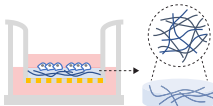
VITROGEL
UNIQUE

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®

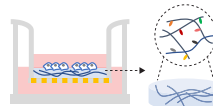
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VITROGEL
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Study the effect of different hydrogel mechanical strengths on cell mobility

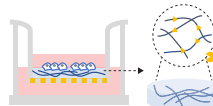
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Study the effect of hydrogel functional ligands on cell mobility

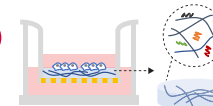
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Study the effect of hydrogel degradability on cell mobility

6



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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

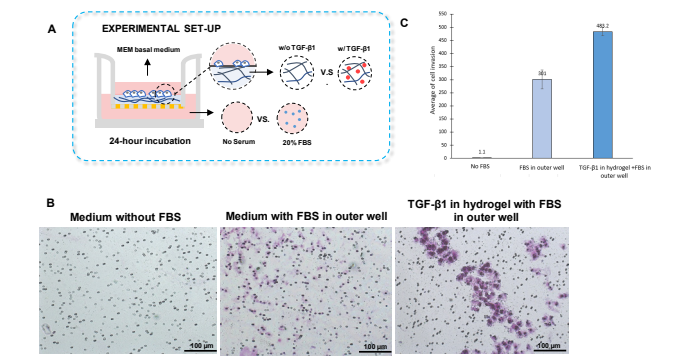


Figure 1. Invasion of U87-MG glioblastoma cells through VitroGel Hydrogel Matrix caused by a serum gradient. A. Schematic representation demonstrating the invasion assay cell culture set-up. B. U-87 MG cell invasion was visualized by performing crystal violet staining followed by light microscopy. The 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

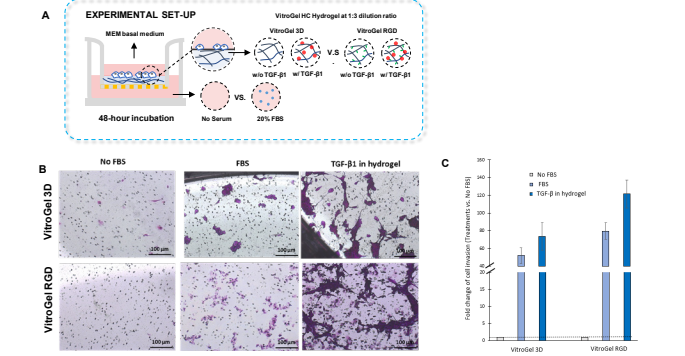


Figure 2. TGF-β1 inside VitroGel 3D and VitroGel RGD facilitates U87-MG glioblastoma cell invasion. A. Visual representation of experimental setup. Cultures were incubated for 48 hours B. Microscopy images demonstrating U87-MG glioblastoma cell invasion through VitroGel 3D and RGD. Each hydrogel was 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.	Thomas No.
VitroGel® Cell Invasion Assay Kit	4 mL	48	8 µm	IA-VHM01-4P	CHM11P008
VitroGel® 3D Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC001-4P	CHM11P010
VitroGel® RGD Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC003-4P	CHM11P012
VitroGel® IKVAV Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC007-4P	CHM11P014
VitroGel® YIGSR Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC008-4P	CHM11P016
VitroGel® COL Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC009-4P	CHM11P018
VitroGel® MMP Cell Invasion Assay Kit	4 mL	48	8 µm	IA-HC010-1P	CHM11P019

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