IMMUNOLOGICAL SCIENCES Product Data Sheet

MATRIXGEL
Product Experimental Manual

Cat.n.	Product Name	Size
MX0314-5	MatrixGel for Angiogenesis, Invasion, Tumorigenesis, **Containing Phenol Red**	5 ml
MX0314-10		10 ml
MX1314-5	MatrixGel For Angiogenesis, Invasion, Tumorigenesis, **Phenol Red-Free**	5 ml
MX1314-10		10 ml
MX2314-5	MatrixGel For Organoids, 3D Culture, **Containing Phenol Red**	5 ml
MX2314-10		10 ml
MX3314-5	MatrixGel For Organoids, 3D Culture, **Phenol Red-Free**	5 ml
MX3314-10		10 ml

1.2Product Description

At room temperature, MatrixGel can quickly polymerize to form a biologically active three-dimensional matrix, mimicking the composition, structure, physical properties, and functions of the basement membrane of cells in vivo. It can promote the proliferation and differentiation of various cells in vitro, such as epithelial cells, endothelial cells, melanoma cells, and stem cells. It plays a crucial role in studying cell morphology, physiological functions, invasion, and promoting tumorigenesis in difficult-to-tumorigenic cells. MatrixGel is a sterile product and is free of viruses that affect experimental animals. With a protein concentration of 8-12 mg/mL, it can be used in experimental studies such as angiogenesis, in vivo tumorigenesis, 3D organoid culture, and tumor cell invasion.

1.3Storage and Transportation

Dry ice transportation: Store in darkness at -20°C with a validity period of 2 years. After initial thawing, please properly aliquot and store in a -20°C freezer. Do not store in a frost-free refrigerator.

1.4Product Characteristics

(1) MatrixGel may undergo color changes during freezing and thawing due to the interaction between the bicarbonate buffer in the product, carbon dioxide, and phenol red. The color may change from pale yellow to deep red, which will disappear under 5% CO2 equilibrium and is a normal phenomenon that does not affect product functionality. The phenol red-free version has a white or pale yellow color and does not exhibit this phenomenon.

(2) MatrixGel is prone to gelation, so it should be placed in ice and stored overnight in a 4°C refrigerator. Once thawed, the vial can be vortexed to ensure product uniformity, and it should not be vigorously pipetted to avoid generating large bubbles, which may affect product performance.

(3) MatrixGel is a gel-like liquid that gradually gelates above 10°C. Therefore, during use, all items directly in contact with it, such as pipette tips, culture dishes, culture plates, and culture medium, should be pre-cooled or frozen.

(4) The protein concentration of this product varies between batches, with the specific concentration indicated in the Certificate of Analysis (COA). The amount of MatrixGel to be used should be determined based on experimental requirements and the specific protein concentration to ensure experimental accuracy, but it is not recommended to dilute the product below 3 mg/mL.

2 Methods for Using MatrixGel

2.1 Thawing and Aliquoting of MatrixGel (Keep the product on ice throughout the process)

(1) Thawing: Place the product in ice and store it overnight in a 4°C refrigerator. Avoid placing it on the refrigerator door or in a frequently opened refrigerator to prevent temperature fluctuations from affecting product performance. After thawing, vortex the vial to ensure product uniformity.

(2) Aliquoting: According to experimental needs, use pre-cooled pipette tips or pipettes to aspirate the product and dispense it into pre-cooled sterile centrifuge tubes. Then store the aliquots at -20°C or below in a stable and light-protected environment. If the pipette tip or pipette becomes clogged during aspiration, replace it promptly with a new pre-cooled one, and ensure sterile operation during aliquoting.

2.2 Common Coating Methods for MatrixGel

MatrixGel can be coated in various methods, such as thin gel method, thick gel method, and thin layer coating method, which are suitable for different experiments. The appropriate coating method can be selected according to the specific experimental purposes.

2.2.1 Thin Layer Gel Method

Forms a gel layer of approximately 0.5 mm thickness, on which cells are plated for culture. This method is mainly suitable for cell adhesion and proliferation, such as in angiogenesis experiments.

(1) Thaw MatrixGel the day before by placing it in ice and storing it overnight in a 4°C refrigerator. After thawing, vortex the vial or use pre-cooled pipette tips/pipettes to gently mix MatrixGel until uniform.

(2) Place the culture plate on ice and add MatrixGel at 50 μL/cm² to the growth surface.

(3) Incubate the culture plate at 37°C for 30 minutes to solidify the MatrixGel.

(4) (Optional) Before use, aspirate unbound material using serum-free medium and gently rinse, ensuring that the pipette tip does not scratch the coated surface.

2.2.2 Thick Layer Gel Method

Forms a gel layer of approximately 1-2 mm thickness, with cells growing inside the gel. This method is mainly suitable for experiments such as 3D organoid culture.

(1)-(4) Follow steps (1)-(4) of the Thin Layer Gel Method, but increase the volume of MatrixGel added to 150-200 μL/cm² and suspend cells in the MatrixGel before adding.

2.2.3 Thin Layer Coating Method

Uses a lower concentration of MatrixGel to form a mixed protein coating layer without gelation, on which cells are plated for culture. This method is mainly suitable for cell adhesion experiments and can also be used for tumor cell TranII invasion assays in vitro.

(1)-(4) Follow steps (1)-(3) of the Thin Layer Gel Method, but dilute MatrixGel with pre-cooled serum-free medium or PBS to the desired concentration before adding. Incubate at room temperature for 1-2 hours (determined based on MatrixGel solidification time) before aspirating unbound material and gently rinsing with serum-free medium for use.

Figure 2 shows that after culturing for 24 hours, HT-1080 cells exhibited significant invasion in MatrixGel (MX0314). Moreover, as the number of seeded cells increased, the number of invading cells also significantly increased.

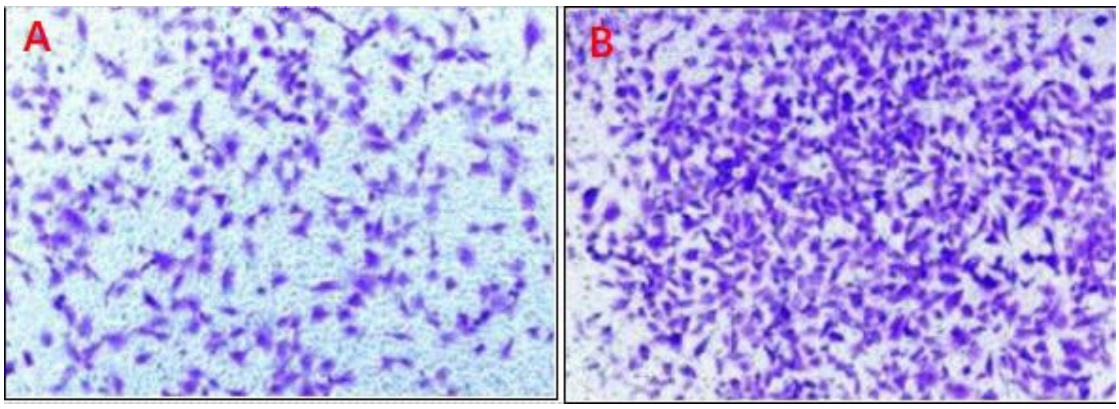

Figure 2. Images of TranII invasion assay using MatrixGel (100X).
HT-1080 cells were seeded at densities of 1×10^5 cells/well (A) and 3×10^5 cells/well (B).