



## 3DCelMatrix™

### Optimized ECM for Consistent 3D Culture

Cat. No. TM076

### Product Description

3DCelMatrix™ is a ready-to-use extracellular matrix designed to support physiologically relevant 3D cell culture, including organoids, spheroids, and tissue-like models. It provides a biologically derived extracellular matrix scaffold - composed of key extracellular matrix (ECM) components such as laminin, collagen IV, entactin, and proteoglycans - that promotes cell attachment, differentiation, and morphogenesis.

### Key Advantages

- Enables robust, reproducible 3D structure formation
- Consistent gelation performance
- Reduced batch-to-batch variability for research and screening applications

Cat. No.	Product	Quantity
TM076	3DCelMatrix™	10 ml

### Storage & Handling

- Store at -20°C upon receipt, thaw slowly at 2–8°C (on ice) before use.
- Keep 3DCelMatrix™ and all materials used with it (*Including pipette tips, tubes, culture plates, etc.*) cold during handling
- Avoid repeated freeze-thaw cycles.
- Gelation initiates above ~10°C and rapidly completes at 22–37°C.
- Refer to the Certificate of Analysis (COA) for the lot-specific protein concentration and expiration date.

### Working Concentration Guidelines

- Coating applications (e.g., iPSC culture): Use at 1-5% (v/v).
  - Do not dilute below ~0.5–1%, as coating efficiency may be reduced.
- 3D organoid culture (embedding): Use at a final protein concentration of >3-4 mg/ml.
  - Lower concentrations may compromise gel integrity and organoid formation.

## Standard Protocols

### 1. Thick Gel Method (Recommended for Organoids)

Used for embedding cells within a 3D matrix.

1. Prepare cells: Prepare a high-viability single-cell suspension (>90%) and adjust to the desired seeding density prior to mixing with 3DCelMatrix™.
  - a. Suggested starting cell number (organoid culture): 10,000–100,000 cells per well (96-well format) or equivalent density depending on culture format.

- b. Optimal cell number is cell type-dependent and should be optimized for consistent organoid formation and morphology.
  - c. Insufficient cell numbers may lead to poor aggregation or failed organoid formation, while excessively high densities may result in irregular structures or necrotic cores.
2. Mix concentrated cell suspension with 3DCelMatrix™ at an appropriate ratio to achieve the desired final matrix concentration. Plate into culture vessel.
3. Incubate at 37°C for 20–30 minutes to allow gelation.
4. Gently add culture medium.
5. Replace medium every 1–2 days.

**Estimated Number of Experiments per 10 ml:**

- 6-well format: ~33–66 wells (150–300 µl per well)
- 24-well format: ~100–200 wells (50–100 µl per well)
- 96-well format: ~500–1000 wells (10–20 µl per well)

*Actual usage may vary depending on cell type and protocol optimization.*

## 2. Surface Gel Layer Method

Used for forming a gel layer on the culture surface.

1. Add ~50 µl/cm<sup>2</sup> of matrix to culture vessel.
2. Incubate at 37°C for 30 minutes.
3. Remove excess if necessary.
4. Proceed with cell seeding.

**Estimated Number of Experiments per 10 ml:**

- 6-well format: ~20 wells
- 24-well format: ~100 wells
- 96-well format: ~600 wells

*Actual usage may vary depending on cell type and protocol optimization.*

## 3. Diluted Coating Method

Used for surface coating applications.

1. Dilute matrix to 1% (v/v) using cold medium.
2. Add coating solution to culture vessel.
3. Incubate at 37°C for 2 hours.
4. Remove supernatant.
5. Add culture medium directly (do not allow surface to dry).

**Estimated Number of Experiments per 10 ml:**

At 1% (v/v), 10 ml of 3DCelMatrix™ can prepare up to 1 L of coating solution.

This is sufficient for:

- ~500 wells (6-well format, 2 ml per well)
- ~250 dishes (100 mm, 4 ml per dish)

*Note: Do not dilute below 0.5–1% to maintain coating efficiency.*

*Actual usage may vary depending on cell type and protocol optimization*

## Troubleshooting

Issue	Possible Cause	Proposed Solution
Cells fail to aggregate or form organoids	Inappropriate ECM concentration or poor cell viability	Optimize matrix concentration (3–5 mg/ml) and ensure cell viability >90%
Poor organoid formation	Low cell density	Increase seeding density
Matrix does not solidify	Temperature too low / over-dilution	Ensure 37°C incubation. Repeat preparation with new batch that is less diluted.
Matrix gels too early	Warm handling	Work on ice, pre-chill all equipment that will come into contact with 3DCelMatrix™* to prevent premature gelation

\* Including pipette tips, tubes, culture plates, etc.

**For research use only. Not for diagnostic or therapeutic use.**