Instructions for Use

SKU0002, SKU0005, SKU0007, SKU0009, SKU0011, SKU0012, SKU0017, SKU0018.

LunaX™ Photocrosslinkable Extracellular Matrices

For Research Use Only. Not for use in human or animal therapeutic or diagnostic applications.

Product Description

LunaX photocrosslinkable extracellular matrices are ready-to-use ECM hydrogel kits designed for advanced 3D cell culture. Composition includes key ECM proteins, including collagen types I, II, IV, and V, along with glycoproteins and proteoglycans that support cell attachment, proliferation, differentiation, migration, and matrix remodelling.

LunaX photocrosslinking technology enables controlled hydrogel formation and tunable matrix stiffness, allowing researchers to model the physicochemical properties of healthy and diseased tissues. LunaX ECMs are optically transparent, have no autofluorescence and are compatible with standard imaging platforms and bioassays. 3D models cultured in LunaX ECMs can also be harvested for downstream analysis using LunaX Cell Recovery.

CoreMatrix, MultiMatrix, TissueMatrix, and PureMatrix are well suited to immortalised cell lines, spheroid cultures, and co-culture models. For complex 3D models such as organoids, iPSC-derived models, and sensitive patient-derived cells, LunaX OrganoMatrix is recommended; refer to the LunaX OrganoMatrix Instructions for Use.

Product Specification

Stiffness Option	Low stiffness (0–6.5 kPa) High stiffness (0–25 kPa)
Kit Volume	7.5 mL **Sample kit size: 1.5 mL*
Kit Contents	5 mL LunaX ECM solution supplied as a sterile 1.5× stock solution in PBS, plus 5 vials of sterile lyophilised photoinitiator **The 1.5 mL sample kits contain 1 mL LunaX ECM solution supplied as a sterile 1.5× stock solution in PBS, plus 1 vial of lyophilised photoinitiator*
Use	3D cell culture, tissue engineering, bioprinting
Formulation	Contains ECM proteins collagen type I, II, IV, and V, as well as connective tissue glycoproteins and proteoglycans. No active growth factors present.
Physical State	Supplied as solution
pH	6.5–8.0
Cell Recovery	Use LunaX Cell Recovery
Storage	Store at 4–8 °C, protected from light
Expiry	24 months. Use reconstituted photoinitiator within 1 day and store at 4–8 °C, protected from light.
Manufacturing Standards	ISO 9001:2015 Quality Management System

3D Cell Culture Protocol

Usage Recommendations

- LunaX ECMs may undergo reversible thermal gelation below 30 °C. Heating to 37 °C liquefies the solution, preparing it for cell encapsulation.
- ECM mechanical properties depend on the hydrogel volume. We recommend optimising crosslinking exposure (e.g. 2, 4, and 8 minutes) and assessing cell growth after 5–7 days to identify optimal conditions.
- For first-time users, we advise preparing acellular hydrogels initially to become familiar with hydrogel consistency before and after crosslinking, prior to setting up cell-based experiments.
- Cell seeding density is cell type specific. As general guidance:
  1. Spheroid-forming cells: 1–5 × 10^5 cells/mL
  2. Endothelial tube formation assays: 6–8 × 10^6 cells/mL

Required materials and devices

- LunaX Crosslinker – Visible Light Photocrosslinking Device (SKU0028).
- Phosphate-buffered saline (PBS), pH 7.4.
- Clear-bottom cell culture polystyrene plates.

Note: *LunaX Crosslinker is validated for use with clear, flat-bottom, plastic plates. Opaque-bottom plates are not compatible and black-walled plates may affect crosslinking efficiency.*

Experimental Procedure

The following procedure outlines how to generate 3D cell cultures using a nominal final gel volume of 1.5 mL. Adjust volumes as required. You can also generate a protocol specific to your experimental setup using the Gelomics Cloud Protocol Tool. Contact info@gelomics.com to get started.

Instructions for Use

SKU0002, SKU0005, SKU0007, SKU0009, SKU0011, SKU0012, SKU0017, SKU0018.

Experimental Procedure

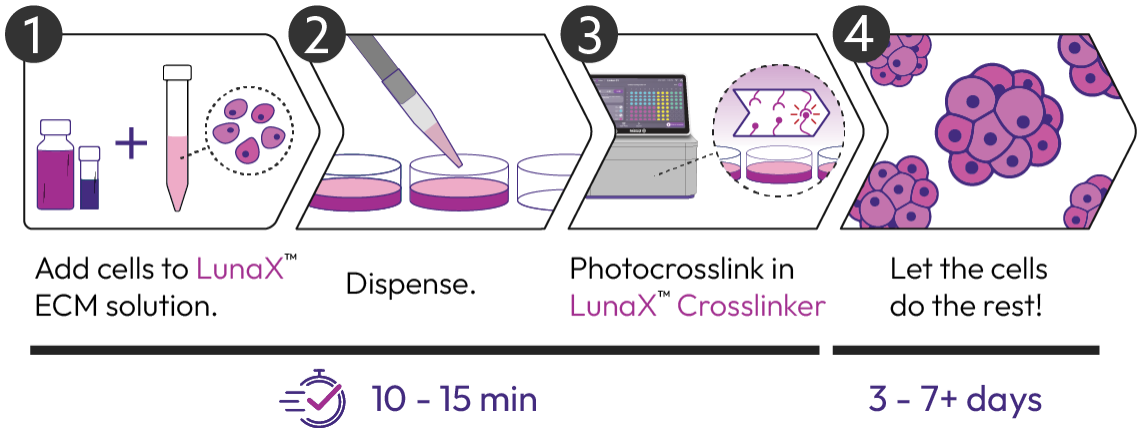
1. Warm 1.5× LunaX ECM solution in a 37 °C water bath for 15 minutes, or until fully liquefied.
2. Reconstitute one vial of LunaX Photoinitiator with 600 μL PBS. Store protected from light. Use reconstituted photoinitiator on the day of preparation; discard any residual reconstituted photoinitiator.
3. Harvest and count cells using standard methods. Quench and remove trypsin/protease to avoid residual activity.
4. Pellet cells by centrifugation. Carefully aspirate all supernatant to avoid diluting the ECM in later steps.
5. Remove LunaX ECM from the water bath and mix thoroughly by pipetting. Avoid introducing bubbles.
6. Add 500 μL photoinitiator solution to 1 mL LunaX ECM. Mix to obtain a homogeneous ECM/photoinitiator solution. Avoid introducing bubbles.
7. Add the ECM/photoinitiator solution to the cell pellet and gently resuspend the cells by pipetting.
8. Dispense cell-laden ECM/photoinitiator solution into culture plates. The recommended hydrogel volume for well plates is listed below.

Pro tip: *Reverse pipetting helps prevent bubble formation.*

Multiwell Plate Type	24-well	48-well	96-well
Volume per well (μL)	300	150	50

Note: *To use other well plate formats, such as 6, 12, and 384-well plates, contact us at info@gelomics.com.*

9. Crosslink the cell-laden ECM/photoinitiator solution by visible light exposure using the LunaX Crosslinker.
10. Overlay hydrogel constructs with sufficient volume of cell culture medium.
11. Replace culture medium as required, taking care not to disrupt the hydrogel.



Troubleshooting Guide

Problem	Solution
LunaX ECM solution solidifies during protocol.	Maintain the solution at 37 °C to prevent thermal gelation. If this is impractical, consider using LunaX CoreMatrix, which remains liquid at room temperature.
Air bubbles in LunaX ECM solution.	Centrifuge at 300 × *g* for 1 min, then gently resuspend cells by pipetting up and down. Avoid vigorous mixing.
LunaX ECM solution does not crosslink when exposed to light.	Confirm that the photoinitiator solution was freshly prepared and stored protected from light. If necessary, increase crosslinking duration.
LunaX ECM samples dissolve following cell encapsulation.	Residual trypsin or proteases can degrade the hydrogel. Ensure complete removal by washing the cell pellet with medium, serum-containing medium, or buffer prior to encapsulation.

Related Products

- LunaX Crosslinker (SKU0028)
- LunaX OrganoMatrix (SKU0027)
- LunaX Cell Recovery (SKU0015)

Available Documents

- Safety Data Sheet
- Certificate of Analysis
- LunaX Crosslinker User Manual

Please contact us at **info@gelomics.com** for questions or more information.