LunaX™ Photocrosslinkable Extracellular Matrix

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

Product Description

The LunaX™ photocrosslinkable extracellular matrices (ECM) are ready-to-use kits, designed for advanced 3D cell culture. Composition includes key ECM proteins (collagen types I, II, IV, and V) along with musculoskeletal glycoproteins and proteoglycans, preserving the intrinsic bioactivity of the native ECM. This supports essential cellular processes such as attachment, proliferation, differentiation, migration, and proteolytic remodelling.

The unique photocrosslinking technology enables precise control over matrix porosity and stiffness, allowing researchers to replicate the physicochemical properties of both healthy and diseased tissues.

LunaX™ ECMs are optically transparent, stable at room temperature, and fully compatible with standard imaging platforms and bioassays. 3D models cultured in LunaX™ ECMs can be harvested efficiently for downstream analysis using LunaX™ Cell Recovery.

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 1.5X stock solution in PBS, plus 5 vials of lyophilized photoinitiator **Sample kits contain 1 mL LunaX™ ECM solution supplied as a sterile 1.5X stock solution in PBS, plus 1 vial of lyophilized 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 7 days 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 and type of tissue culture plastic/glass used. We recommend optimizing crosslinking exposure (e.g. 2, 4, and 8 min) 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 assays.

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
- Phosphate-buffered saline (PBS), pH 7.4
- Clear-bottom cell culture polystyrene plates

Note: LunaX™ ECMs and the LunaX™ Crosslinker are validated for use with clear, flat-bottom, plastic tissue-culture plates only. Opaque-bottom plates are not compatible and black-walled plates may affect crosslinking efficiency. Performance with glass-bottom plates or plates other than standard tissue-culture treated plates has not been validated

Instructions for Use

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

Experimental Procedure (Example procedure for final volume: 1.5 mL Cell-Laden ECM*)

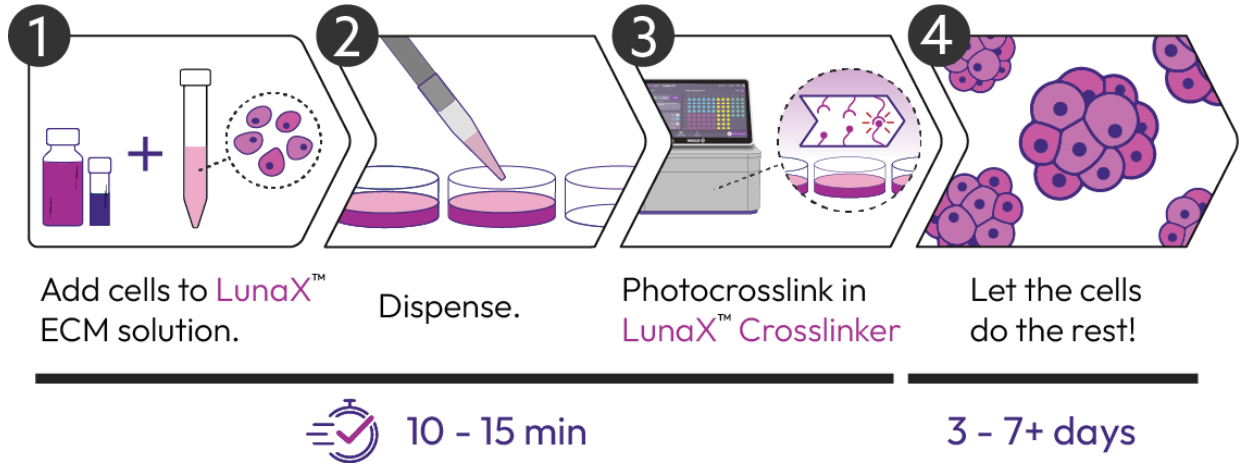
*Adjust volumes as required.

1. Warm 1.5X 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.
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 1 mL LunaX™ ECM to the cell pellet. Gently resuspend cells by pipetting.
7. Add 500 µL photoinitiator solution.
8. Mix gently and thoroughly to obtain a homogeneous suspension. Avoid bubbles.
9. Dispense into culture plates. The recommended hydrogel volume for well plates is listed below.

Pro tip: Reverse pipetting helps prevent bubble formation.

Multiwell Plate Type	6-well	12-well	24-well	48-well	96-well	384-well
Volume per well (µL)	1,200	600	300	150	50	10

10. Crosslink the cell-laden ECM by light exposure using the LunaX™ Crosslinker.
11. Overlay hydrogel constructs with sufficient volume of cell culture medium.
12. 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 exposure time.
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) – Visible Light Photocrosslinking Device
- LunaX™ Cell Recovery (SKU0015)

Available Documents

- Safety Data Sheet
- Certificate of Analysis

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