RASTRUM

Protocol | Cell recovery from hydrogel matrices

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Introduction

RASTRUM Cell Recovery Solution is an enzymatic-based reagent for use in rapid extraction of 3D cell models encapsulated in RASTRUM hydrogel for use in downstream applications.

Materials

Kit storage and Handling

- Store reagents at -20 ℃ upon receipt.
- For best results, do not leave reagents at room temperature (RT) for longer than 1 hr.

Materials required but not provided

- RASTRUM 3D cell models
- 1 x phosphate-buffered saline (PBS) solution

Protocol

1. Thaw reagents, 20-30 min at RT.
2. Aspirate and discard media from printed 3D cell models.
3. Wash with 150 µL 1 x PBS, 5 min at 37 ℃.
4. Aspirate and di scard PBS.
5. Overlay 75 µL Cell Recovery Solution (Support Fluid F175).
6. Incubate 10 min at 37 ℃.

Note: At this stage, dissolution of the biofunctional matrix will be complete, but the inert base will remain intact.

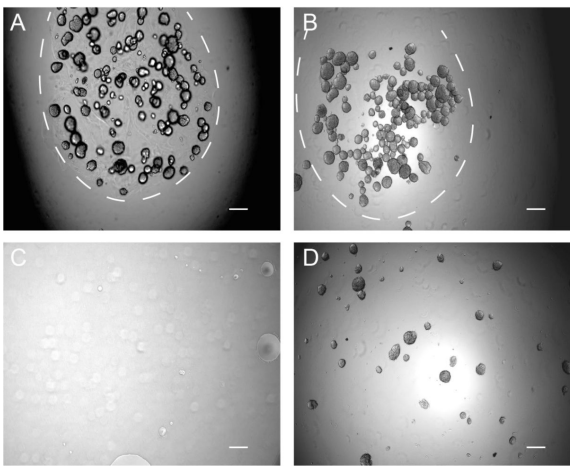

Figure 1. MCF-7 spheroids encapsulated in 3D bioprinted hydrogels. (A) Encapsulated spheroids before dissociation, with the dashed line indicating the hydrogel matrix. (B) Spheroids remain intact after a 10 minute incubation with RASTRUM Cell Retrieval Reagent. The dotted line indicates the location of the former hydrogel matrix. (C) Empty wells post-cell retrieval show efficient hydrogel dissociation and cell retrieval. (D) Previously encapsulated spheroids remained intact after dissociation from the hydrogel matrix. Scale bars = 250 µm.

7. Transfer solution containing dissociated cells into a 1.5 mL eppendorf tube.

Optional: To maximise cell recovery, wash each well with an additional 150 µL PBS and combine with cell suspension from Step 7

8. Pellet cells using cell-specific centrifugation parameters.
9. Remove and discard supernatant.
10. Resuspend cell pellet in appropriate reagent for downstream analysis.

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