TissueSpec® Bone ECM Hydrogel

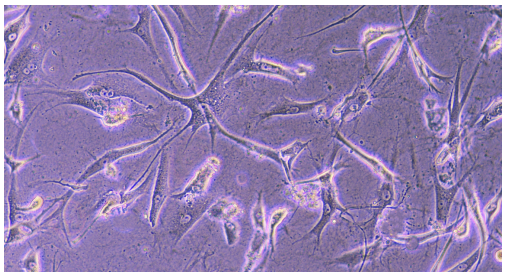
Catalog # MTSBN101

TissueSpec® Bone ECM Hydrogel is a versatile extracellular matrix product comprised of bone-specific collagens and other ECM molecules of porcine origin. TissueSpec® hydrogels provide cells (e.g., osteoblasts, cancer cells, stem cells) a physiologic substrate for 3D cell culture that is easy to use and enhances cell function and cell-cell interactions.

Features

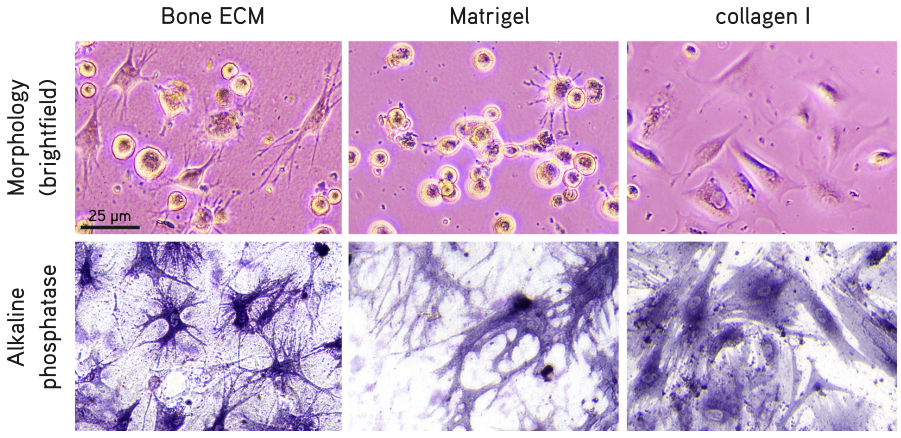
- Derived from porcine bone tissue
- Contains bone-specific ECM components
- Supports primary cell and organoid cultures
- Compatible with standard cell culture protocols
- Consistent across lots
- Easy to use

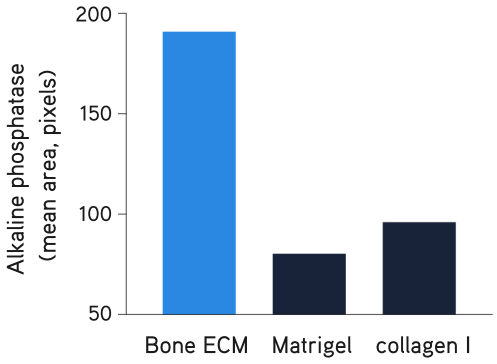
Applications in 3D cell culture



TissueSpec® Bone ECM Hydrogel can be applied as a thin gel to culture cells and study cellular activity. Cells interact with bone ECM and show bone-specific function. To study cell-cell interactions or microtissue structures, encapsulate cells or organoids within 3D TissueSpec® Bone ECM Hydrogel.

TissueSpec® Bone ECM Hydrogel supports osteoblast phenotype

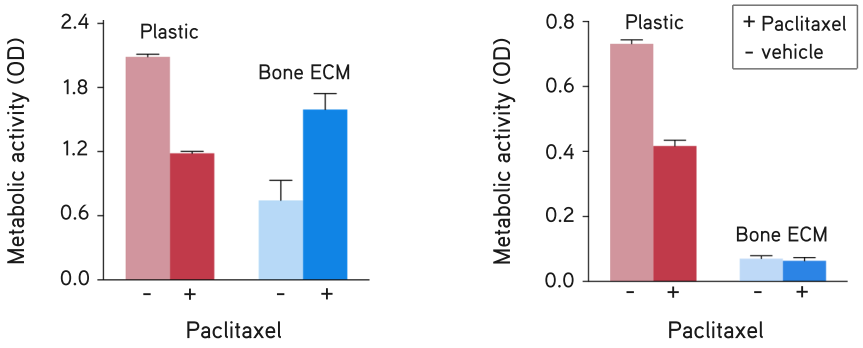




Primary human osteoblasts cultured in TissueSpec® Bone ECM Hydrogel (6 mg/mL) show characteristic dendritic morphology after 1 hour in culture. Osteoblasts have higher alkaline phosphatase activity in TissueSpec® Bone ECM Hydrogel than in Matrigel and collagen I after 7 days in culture.

TissueSpec® Bone ECM Hydrogel enables cancer drug testing

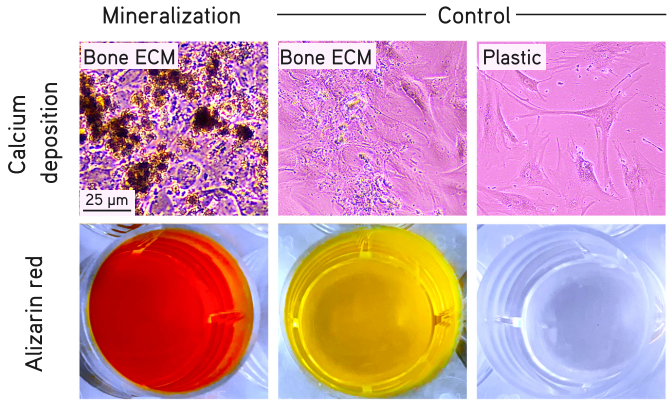
a BT-549 b T47-D



TissueSpec® Bone ECM Hydrogel provides a model of breast cancer metastasis to bone, and shows differential drug responses of breast cancer subtypes compared to plastic (no ECM). Response to drug treatment (Paclitaxel, 5 μM) and vehicle (DMSO) of (a) BT-549 cells and (b) T47-D cells for 48 hours. OD, optical density.

TissueSpec® Bone ECM Hydrogel supports osteogenic differentiation

Primary human osteoblasts cultured in TissueSpec® Bone ECM Hydrogel support significant calcium deposition (mineralization) after 21 days in mineralization medium compared to osteoblasts cultured in standard growth medium and plastic (no ECM). Calcium deposition is confirmed by Alizarin red staining.



TissueSpec® Bone ECM Hydrogel characteristics

a Mass spec profile*

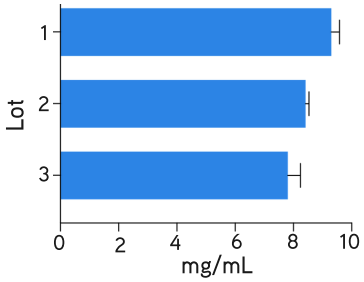
ECM components	Biomolecules
collagens	type I, II, III, V, VI, X, XI, XII, XVI
glycoproteins	biglycan, osteonectin periostin, tenascin C
proteoglycans	asporin, decorin fibromodulin, lumican osteoglycin, osteomodulin
matrix associated	albumin, annexin A2

* partial list of components

b Key components (μg/mL)

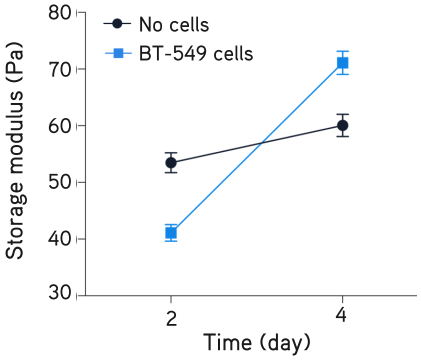
collagens (soluble)	7,500-9,500
elastin	400-500
glycosaminoglycans	100-200

c Collagen



d Mechanical properties

Bone ECM Hydrogel (6 mg/mL)	
Stiffness	55 ± 5 Pa



(a) Proteomic profile by mass spectrometry indicates that TissueSpec® Bone ECM Hydrogel has a unique, bone-specific composition. (b,c) TissueSpec® Bone ECM Hydrogel has a consistent protein profile across multiple lots. (d) Mechanical stiffness of TissueSpec® Bone ECM Hydrogel increases with hydrogel concentration and changes as cells remodel the bone matrix.