

# CULTREX<sup>®</sup> Product Data

*For Research Use Only. Not For Use In Diagnostic Procedures*

## Cultrex<sup>®</sup> Stem Cell Qualified Human Basement Membrane Extract, PathClear<sup>®</sup>

**Catalog #:** 3415-001-03

**Size:** 1 ml

**Description:** Cultrex<sup>®</sup> Stem Cell Qualified Human Basement Membrane Extract (BME) has been shown to provide an effective feeder-free surface for the attachment and maintenance of human embryonic stem cells (hESCs) and induced pluripotent stem cells (iPSCs) in an undifferentiated state.

Basement membranes are continuous sheets of specialized extracellular matrix that form an interface between endothelial, epithelial, muscle, or neuronal cells and their adjacent stroma. Basement membranes are degraded and regenerated during development and wound healing. They not only support cells and cell layers, but they also play an essential role in tissue organization that affects cell adhesion, migration, proliferation, and differentiation. Basement membranes provide major barriers to invasion by metastatic tumor cells. Cultrex<sup>®</sup> Human BME is a soluble form of basement membrane purified from human placenta.

### Specifications:

Concentration: 1 mg/ml.

Source: Human placenta.

Storage buffer: Dulbecco's Modified Eagle's medium without phenol red, with 10 µg/ml gentamicin sulfate.

Storage/Stability: Product is stable for a minimum of 3 months from date of shipment when stored at -20°C in a manual defrost freezer.

**For optimal stability, store at -80°C. Avoid freeze-thaw cycles.**

### Material Qualification:

Functional assay:

- Promotes the attachment of human iPSCs.
- Effectively maintains human iPSCs in a pluripotent state in a feeder-free culture.

Sterility testing:

- **PathClear<sup>®</sup>** - Negative by PCR test for 19 different human pathogenic viruses including EBV, HAdV, Hantaan, HCMV, Hepatitis A, Hepatitis B, Hepatitis C, HHV 6, HHV 8, HIV1, HIV2, HSV 1, HSV 2, HTLV 1, HTLV 2, LCMV, Seoul, Sin Nombre, VZV.
- No mycoplasma contamination detected by PCR.
- No bacterial or fungal growth detected after incubation at 37°C for 14 days following USP sterility testing guidelines.
- Endotoxin concentration ≤ 8 EU/ml by LAL assay.

**Safety Statement:** Cultrex<sup>®</sup> Stem Cell Qualified Human BME, PathClear<sup>®</sup> contains human source material and therefore should be treated as potentially infectious and handled at Biological Safety Level 2 to minimize exposure.

## TREVIGEN<sup>®</sup>

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### Coating procedure for Stem Cell Propagation:

A protein concentration of 100 µg/ml is a recommended starting concentration for the propagation of hESCs and iPSCs. Empirical determination of the optimal coating concentration for your application may be required.

1. Thaw Human BME on ice for several hours.
2. Dilute Human BME to desired concentration in **cold** serum-free medium.
3. Add a sufficient amount of solution to cover the entire area onto growth surface. A volume of 300 µl per cm<sup>2</sup> is recommended.
4. Incubate coated object at room temperature for an hour.
5. Aspirate coating solution and immediately plate cells. **Do not allow coated surface dry out.**

**NOTE:** The coated plates can be prepared in advance:

6. Follow steps 1 to 3; then seal the plates with Parafilm® and store for up to two weeks in a refrigerator at 2-8°C.
7. Incubate coated plates at room temperature for an hour.
8. Continue with step 5.

### Immunostaining of H9 hESCs cultured on Cultrex® Stem Cell Qualified Human BME

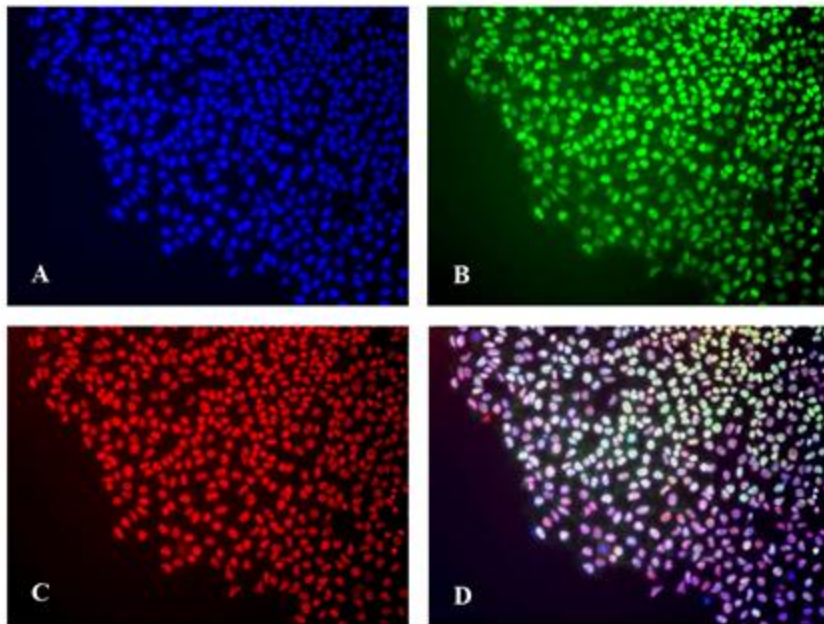


Fig.1. H9 human embryonic stem cells after three passages on Cultrex® Stem Cell Qualified Human BME, PathClear® maintain expression of pluripotency markers Oct-4 (A) and Nanog (B). Nuclear staining by DAPI shown on panel (C) and merged image of Oct-4, Nanog and DAPI shown on panel (D).

Images courtesy of the Yanik lab, MIT <http://www.rle.mit.edu/bbng>

**References:**

1. Bilozur, M.E., and E.D. Hay. 1988. Neural crest cell migration in 3 dimensional matrix utilizes laminin, fibronectin or collagen. *Developments in Biologicals* **125**:19-33.
2. Amit M, Shariki C, Margulets V, Itskovitz-Eldor J. 2004. Feeder layer- and serum-free culture of human embryonic stem cells. *Biol Reprod. Mar*; **70**(3): 837-45.
3. Levenstein ME, Ludwig TE, Xu RH, Llanas RA, VanDenHeuvel-Kramer K, Manning D, Thomson JA. 2005. Basic fibroblast growth factor support of human embryonic stem cell self-renewal. *Stem Cells. Mar*; **24**(3):568-74.
4. Ludwig TE, Bergendahl V, Levenstein ME, Yu J, Probasco MD, Thomson JA. 2006. Feeder-independent culture of human embryonic stem cells. *Nat Methods. Aug*; **3**(8): 637-46.
5. Yu J, Vodyanik MA, Smuga-Otto K, Antosiewicz-Bourget J, Frane JL, Tian S, Nie J, Jonsdottir GA, Ruotti V, Stewart R, Slukvin II, Thomson JA. 2007. Induced pluripotent stem cell lines derived from human somatic cells. *Science. Dec* **21**; **318**(5858): 1917-20.
6. Angel, M., and M.F. Yanik. 2010. Innate immune suppression enables frequent transfection with RNA encoding reprogramming proteins. *PLoS ONE* **5**: e11756.
7. Arnaoutova I, George J, Kleinman HK, Benton G. 2012. Basement membrane matrix (BME) has multiple uses with stem cells. *Stem Cell Rev. Mar*; **8**(1); 163-9.

**Related Products:**

Catalog#	Description	Size
3434-005-02	Cultrex® Stem Cell Qualified BME, PathClear®	5 ml
3400-010-03	Cultrex® Stem Cell Qualified Laminin I, PathClear®	1 mg
3420-001-03	Cultrex® Stem Cell Qualified Human Fibronectin, PathClear®	1 mg
3420-001-03	Cultrex® Stem Cell Qualified Human Vitronectin, PathClear®	200 µg
3432-005-01	Cultrex® Basement Membrane Extract, PathClear®	5 ml
3433-005-01	Cultrex® Reduced Growth Factor BME, PathClear®	5 ml
3532-005-02	Cultrex® Basement Membrane Extract, Type 2, PathClear®	5 ml
3533-005-02	Cultrex® RGF BME, Type 2, PathClear®	5 ml
3632-005-02	Cultrex® Basement Membrane Extract, Type 3, PathClear®	5 ml
3410-010-01	Cultrex® Mouse Collagen IV	1 mg
3440-100-01	Cultrex® Rat Collagen I	100 mg
3442-050-01	Cultrex® Bovine Collagen I	50 mg
3445-005-01	Cultrex® 3-D Culture Matrix™ BME, PathClear®	5 ml
3446-005-01	Cultrex® 3-D Culture Matrix™ Laminin I	5 ml
3447-020-01	Cultrex® 3-D Culture Matrix™ Collagen I	100 mg
3438-100-01	Cultrex® Poly-L-Lysine	100 ml
3439-100-01	Cultrex® Ploy-D-Lysine	100 ml

**Related Assays and Kits:**

Catalog#	Description	Size
3500-096-K	Cultrex® 3D Spheroid Cell Invasion Assay	96 samples
3510-096-K	Cultrex® 3D Spheroid Fluorometric Proliferation/Viability Assay	96 samples
3511-096-K	Cultrex® 3D Spheroid Colorimetric Proliferation/Viability Assay	96 samples
3434-SCQ-K	Cultrex® Stem Cell Qualified Protein Set	1 kit
3445-096-K	Cultrex® 3-D Culture BME Cell Proliferation Kit	96 samples
3448-020-K	Cultrex® 3-D Culture Cell Harvesting Kit	20 samples



**Stem Cell Qualified  
Human BME,  
PathClear®**

Cat#: 3415-001-03

Storage:  $\leq -20^{\circ}\text{C}$   
(Manual Defrost)

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