

# CELL CULTURE MATRICES FOR HUMAN PLURIPOTENT STEM CELLS

## Vitronectin XF™ and CellAdhere™ Laminin-521

Cell culture matrices support the growth and differentiation of human pluripotent stem cells (hPSCs), including human embryonic stem (ES) and induced pluripotent stem (iPS) cells, by mimicking the in vivo extracellular matrix. When used with TeSR™ maintenance media, they provide a robust culture system for cell maintenance under feeder-free conditions.

### Vitronectin XF™

#### For Growth and Differentiation of hPSCs Under Serum-Free, Feeder-Free Conditions

Vitronectin XF™, developed and manufactured by Nucleus Biologics, is a defined, xeno-free cell culture matrix that supports the growth and differentiation of hPSCs. When used with TeSR™2 or TeSR™-E8™ media, Vitronectin XF™ provides a completely xeno-free culture system for maintenance of ES and iPS cells. This system allows complete control over the culture environment, resulting in more consistent cell populations and reproducible results in downstream applications. Human ES and iPS cells cultured on Vitronectin XF™ retain pluripotency and normal colony morphology, without the need for an adaptation step (Figure 2). Pair with Gentle Cell Dissociation Reagent (GCDR) or ReLeSR™ when passaging to maintain high quality cultures.

Product	Size	Catalog #
<a href="#">Vitronectin XF™ with GCDR</a>	1 Kit*	07190
<a href="#">Vitronectin XF™ with ReLeSR™</a>	1 Kit* µg	07191
<a href="#">Vitronectin XF™</a>	2 mL	07180

\*Kit contains Vitronectin XF™, CellAdhere™ Dilution Buffer, Gentle Cell Dissociation Reagent, and Non-Tissue Culture-Treated 6-Well Plates.

\*\*Kit contains Vitronectin XF™, CellAdhere™ Dilution Buffer, ReLeSR™, and Non-Tissue Culture-Treated 6-Well Plates.



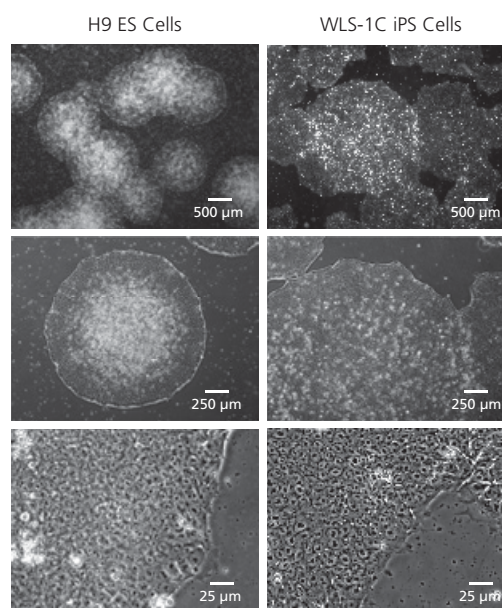
### Why Use Vitronectin XF™?

**DEFINED.** Decrease sources of variability in your experiment with a recombinant human protein matrix.

**EASY-TO-USE.** Handle at room temperature, without the inconvenience of matrix gelling.

**COMPATIBLE.** Use with any TeSR™ family medium to maintain hPSCs.

**XENO-FREE.** Create a completely xeno-free system when used with TeSR™2 or TeSR™-E8™.



**Figure 1.** Morphology of Human ES and iPS Cells Cultured on Vitronectin XF™ Cell Culture Matrix in TeSR™-E8™

Undifferentiated human ES (H9) and iPS (WLS-1C) cell cultures exhibit normal morphology when cultured on Vitronectin XF™. Colonies are round, tightly packed and multilayered, with a high nucleus-to-cytoplasm ratio. Cells were transferred directly from Matrigel® hESC-Qualified Matrix without an adaptation step.

Note: Colonies grown in TeSR™-E8™ have a more condensed and round morphology when grown on Vitronectin XF™ matrix, compared to colonies grown on Matrigel® hESC-Qualified Matrix, which are more diffuse and irregularly shaped.

## CellAdhere™ Laminin-521

### For Long-Term Maintenance in Feeder-Free Conditions

CellAdhere™ Laminin-521 is a defined and xeno-free cell culture matrix that supports the growth and differentiation of ES and iPS cells under feeder-free conditions. Laminins are membrane proteins that bind to cell surface receptors, which results in the activation of signaling cascades and leads to cells that are more physiologically relevant. Laminin-521 is expressed and secreted by hPSCs in the inner cell mass of the embryo and can therefore be used to create a biologically relevant hPSC culture environment in vitro.

For consistent cell populations and reproducible results in downstream applications, use CellAdhere™ Laminin-521 with TeSR™ maintenance media to provide a defined culture substrate for cell maintenance. Compared to other matrices, CellAdhere™ Laminin-521 increases single-cell attachment and survival and does not require the addition of apoptotic inhibitors during plating.

*Note: Single-cell passaging of human ES and iPS cells can result in selective pressure and lead to genetic aberrations. If passaging as single cells, check the karyotype frequently.*

### Why Use CellAdhere™ Laminin-521?

**DEFINED.** Decrease sources of variability with a recombinant human protein matrix.

**EASY-TO-USE.** Easily passage without the need for apoptotic inhibitors.

**COMPATIBLE.** Use with any TeSR™ family medium to maintain hPSCs.

**PHYSIOLOGICALLY RELEVANT.** Mimic the stem cell niche with this biologically relevant matrix.

Product	Size	Catalog #
<a href="#">CellAdhere™ Laminin-521</a>	100 µg	77003
	10 x 100 µg	77004
	500 µg	200-0117

**Table 1.** Comparison of the Different Matrices

Features	Corning® Matrigel®	Vitronectin-XF™	CellAdhere™ Laminin-521
Key Advantage	hESC-Qualified alternative to feeders	Defined matrix that supports the growth and differentiation of hPSCs	Defined matrix found to increase single-cell attachment and survival of hPSCs without apoptotic inhibitors
Grade	Feeder-free	Xeno-free	Xeno-free
Source	Solubilized Engelbreth-Holm-Swarm (mouse) sarcoma extract	Recombinant human protein	Recombinant human protein
Coating Temperature	2 - 8°C	15 - 25°C (Room temperature)	2 - 8°C
Plasticware	Tissue culture-treated	Non-tissue culture-treated	Tissue culture-treated

For a complete list of related products, including specialized cell culture and storage media, matrices, antibodies, cytokines, and small molecules, visit [www.stemcell.com/hPSCworkflow](http://www.stemcell.com/hPSCworkflow) or contact us at [techsupport@stemcell.com](mailto:techsupport@stemcell.com).

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