

## Product Specification Sheet

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### MAPTrix™-V

(vitronectin peptide motif containing mussel adhesive protein)

MAPTrix™-V is a recombinant mussel adhesive protein that can be used as a thin coating to enhance the attachment & growth of cells to plastic and glass surfaces. It can be used to culture a wide variety of cell types including human derived primary and stem cells. MAPTrix™-V contains a peptide, KKQRFHRNRKGYRSQ, derived from vitronectin. The primary function of this peptide is related to cell adhesion to the extracellular matrix. The mussel adhesive protein domain provides a biocompatible cell adhesion layer while the vitronectin-derived peptide acts as a cell spreading factor.

Vitronectin, a monomeric glycoprotein used to promote cell attachment, spreading, proliferation, migration, and differentiation in a variety of cells, is found in the extracellular matrix and in circulating blood, and has an important role in the control of plasminogen activation. It was shown to bind to heparin and collagen, and modulates thrombin-antithrombin III activity<sup>1,2</sup>.

#### CATALOG Number

Peptide	Cat. No	Peptide	Cat. No
KKQRFHRNRKGYRSQ	316411~4	FRHRNRKGY	316421~4

#### Source

- Produced in *E.coli*

#### Quantity & Formula

- (1, 2.5, 5, 10) milligrams per vial, dissolved in pure water

#### Applications

- Cell culture in low serum or serum-free media
- Promotion of attachment and spreading of many normal and stem cells including epithelial, endothelial, hepatocyte and mesenchymal stem cells
- Improved survival of primary cultures
- *In situ* creation of cell growth surface with engineered extracellular matrix of a combination of bioligands for synergistic cell adhesion and spreading by combinations of other MAPTrix™ products<sup>3</sup>

#### Quality Control

- Purity >93% by SDS PAGE
- Animal protein-free & *E.coli*-protein free
- Tested and found negative for the presence of bacteria, fungi and mycoplasma
- Endotoxin concentrations are under 20 EU/mL per LAL assay.
- The biological activity of vitronectin peptide is determined in a cell culture assay under serum free conditions.

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### **Stability & Shelf Life**

- Stable for a minimum of 6 months from the day of shipment when stored at 2-8°C
- The remaining material is recommended to be used within 1 month after the vial has been opened.

### **Physical Properties**

- Molecular weight: ~29,000 Daltons
- Excellent surface wettability on hydrophobic and hydrophilic substrates

### **Solubility**

- Soluble in a variety of buffers, including water, under a wide range of pH conditions (pH=2~9.5)
- Note: Buffers of media containing Ca<sup>2+</sup> or Mg<sup>2+</sup> added to MAPTrix™ may result in the formation of insoluble aggregates. This will not occur if the buffering capacity of the diluent brings the pH to 9.5 or lower.

### **References**

1. Zeev Gechtman et. al., European Journal of Biochemistry, 243, 493-501 (1997)
2. Zeev Gechtman et. al., FEBS Lett., 315, 293-297 (1993)
3. Brian et al., Investigative Ophthalmology & Visual Science, 36, 364-372 (1995)

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## **Coating Protocol**

Use these recommendations only as a guideline in determining the optimal coating conditions for your particular culture application.

### **Procedure**

**1. Preparation.** The MAPTrix™ ECM concentration should be adjusted for each cell line of interest. Routinely, dilute the solution type MAPTrix™ ECM product to a concentration of 0.1mg/mL with distilled water. Filter the distilled water through a 0.2 µm pore filter just prior to use.

**2. Coating.** Add 125 µL/cm<sup>2</sup> MAPTrix™ ECM solution to each well and shake your plate by moving it back and forth, together with an upward and downward motion ~3-4 times to evenly coat the plate surfaces; and, then incubate it for 2 hours at 37°C. The volume to coat should be adjusted for the diameter of the culture plate used.

**3. Washing.** Remove the coating solution by pipetting or Pasteur pipette suction. Wash the coated plate with the same volume distilled water and then remove the solution by pipetting or Pasteur pipette suction. Avoid scraping the bottom surface. Wash the plate one more time with serum-free media in the same manner.

### **Loading Amount**

- Suggested Volumes of MAPTrix™ ECM solution per well  
(This volume is based on a standard concentration of 0.1mg/mL)

Culture ware	Spec.	Culture area (cm <sup>2</sup> /well)	MAPTrix™ Volume (mL/well)
Plates	6-well	9.6	1.20
	12-well	3.5	0.44
	24-well	1.9	0.24
	96-well	0.75	0.10
Dishes	35mm	8.8	1.10
	60mm	21.5	2.69
	100mm	56.7	7.09
Flasks	25	25	3.13
	80	80	10.00
	175	175	21.88

Note: The culture area calculated is based on the NUNC brand of products.

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