

Product Specification Sheet

MAPTrix™-F

(fibronectin peptide motif containing mussel adhesive protein)

MAPTrix™-F 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™-F contains a broad range cell adhesion peptide derived from fibronectin. The primary function of cell adhesion peptide is related to cell adhesion to the extracellular matrix as demonstrated in a cell culture assay under serum free conditions. The mussel adhesive protein domain provides a biocompatible cell adhesion layer while the fibronectin-derived peptide acts as an integrin binder for cell attachment, spreading and growth. MAPTrix™-F coated plates demonstrated excellent cell attachment activity as compared to leading products.¹⁻²

CATALOG Number				
	Peptide	Cat. No	Peptide	Cat. No
	RGD	316111~4	KLDAPT	316161~4
	GRGDSP	316121~4	WQPPRARI	316171~4
	REDV	316131~4	SPPRRARVT	316181~4
	PHSRN	316141~4	KNNQKSEPLIGRKKT	316191~4
	EILDVPST	316151~4	YRVRVTPKEKTGPMKE	316196~9

Source	· Produced in <i>E.coli</i>
Quantity & Formula	· (1, 2.5, 5, 10) milligrams per vial, dissolved in pure water
Applications	<ul style="list-style-type: none"> · 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 · <i>In situ</i> 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
Quality Control	<ul style="list-style-type: none"> · Purity >93% by SDS PAGE · Animal protein-free & <i>E.coli</i>-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 fibronectin peptide is determined in a cell culture assay under serum free conditions (human-derived mesenchymal stem cell).

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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: ~23,000 Daltons
 - Excellent surface wettability on hydrophobic or 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 Ca²⁺ or Mg²⁺ added to MAPTriX™ ECM 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**
- Hwang DS, et al., Promotion of osteoblast proliferation on complex coacervation-based hyaluronic acid - recombinant mussel adhesive protein coatings on titanium. *Biomaterials*. 2010 Feb; 31(6):1080-4
 - Hwang, DS et al., Cell adhesion biomaterial based on mussel adhesive protein fused with RGD peptide. *Biomaterials*, 28, 4039–4046 (2007)
 - Hwang, DS et al., *Biomaterials*, 28, 3560-3568 (2007)

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Standard 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/cm² 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 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 the standard concentration a 0.1mg/mL)

Culture ware	Spec.	Culture area (cm ² /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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