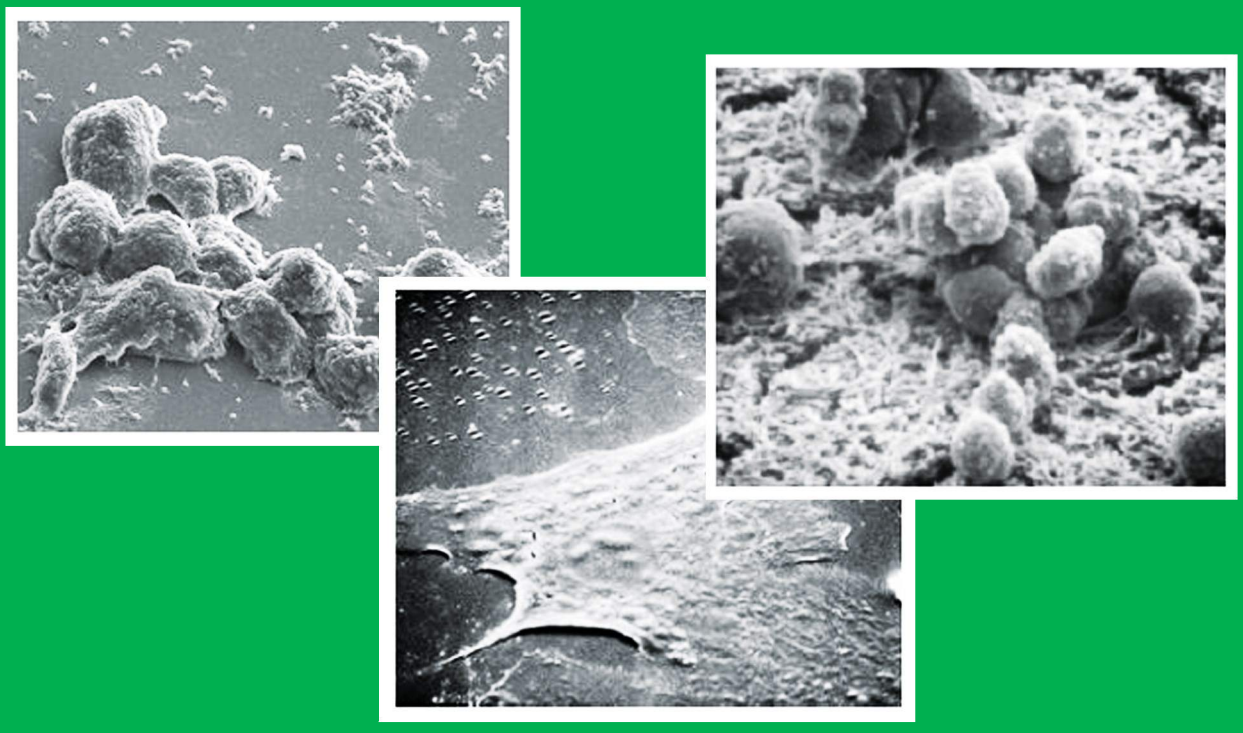
amsbio

MAPTrix™

Bio-Adhesive, Extracellular matrices
mimetics 2D coating & 3D Hydrogels



About AMSBIO

Founded in 1987, AMSBIO (AMS Biotechnology) is recognized today as a leading company contributing to the acceleration of discovery through the provision of cutting-edge life science technology products and services for research and development in the medical, nutrition, cosmetics and energy industries. The AMSBIO range includes specialist antibodies, peptides and recombinant proteins. In addition, the company is able to draw upon in-depth expertise in extracellular matrices to provide elegant solutions for studying cell motility, migration, invasion and proliferation. Widely acknowledged as experts in cell culture, AMSBIO partners with clients in tailoring cell systems to enhance screening outcomes and eventual prognosis. With a range of molecular detection reagents, and a significant Biorepository the company can also provide tissue DNA, RNA, protein and microarray products. Key research areas for these products include: Oncology, Regenerative Medicine, Environmental Analysis, Cytotoxicity Screening, Glycomics and Stem Cell Biology.

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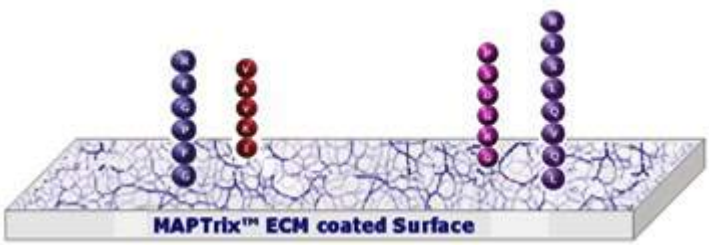
About MAPtrix™

MAPTrix™ - Recombinant Animal Free Extracellular Matrix

MAPTrix™ extracellular matrix (ECM) based coatings or surface modification is simple, convenient and highly reproducible. You can readily engineer a synthetic ECM surface that binds to adhesion receptors such as integrins and promote cell adhesion and spreading.



MAPTrix™ ECM offers flexible prefabricated building blocks as a tool to engineer extracellular microenvironment

AMSBIO supplies **M**ussel **A**dhesive **P**rotein based ma**trix** (**MAPTrix**™) recombinant extracellular matrix (ECM) that act as biomeric mimics for traditional basement membrane extracts. MAPTrix™ replaces traditional ECM with genetically incorporated bioactive peptides (recognition peptides) that provide an environment for the maintenance of cells under serum and feeder-free conditions.

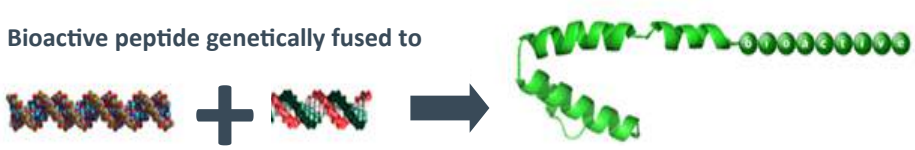
Benefits

- Biochemically-defined & animal-free
- Reproducible & reliable protein coating
- Low cost
- Ready to use
- Improved cell morphology and cell proliferation

MAPTrix (**M**ussel **A**dhesive **P**rotein based ma**trix**) ECM is the first combinatorial synthetic ECM library for engineering integrin specific surfaces that mimic native extracellular microenvironment.

MAPTrix utilises mussel adhesive protein to create the first combinatorial synthetic ECM library for engineering integrin specific surfaces. These surfaces **mimic the native extracellular environment**. Mussel adhesive protein is highly desirable for use in a variety of biological and medical applications due to its **strong wet adhesive, non toxic, biodegradable** and **low immunogenicity properties**.

Bioactive peptide genetically fused to



Mussel adhesive protein | Bioactive Peptide | Adhesive Domain | Bioactive Domain

The MAPTrix™ ECM line of products are provided with a **guaranteed purity of >90%** (SDS-PAGE) with **endotoxin levels below 20 EU/mL** (LAL assay). Each product is tested for the presence of bacteria, fungi and mycoplasma with biological activity of each product determined in a cell culture assay under **serum free conditions**.

- ✓ Adhere to USP guidelines
- ✓ No species specificity
- ✓ Animal-free

USES of MAPTrix ™Technology

- Stem cell technology
- Tissue engineering scaffolds
- Drug delivery
- Cell surface modification
- Coating of medical devices

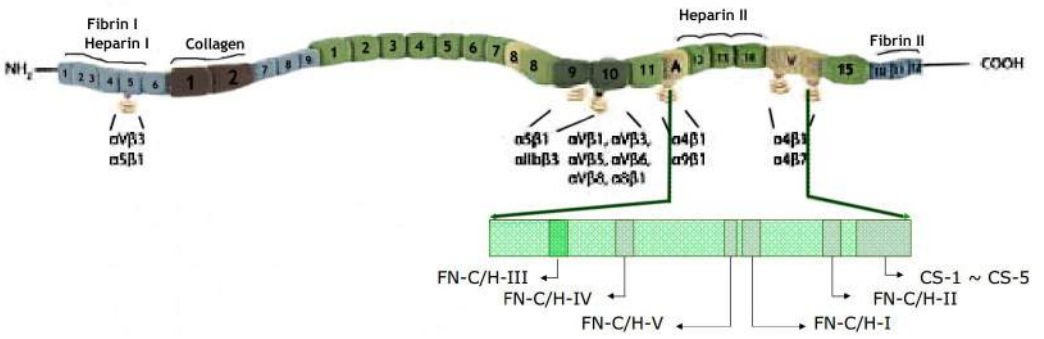
FDA recommendations compliant

Eliminates risk of **animal or viral infectious** agents in cell cultures

Adheres to a wide variety of surfaces including:

- ☑ Plastic
- ☑ **metal**
- ☑ **Glass**
- ☑ **Biological materials**

Fibronectin Derived Peptides

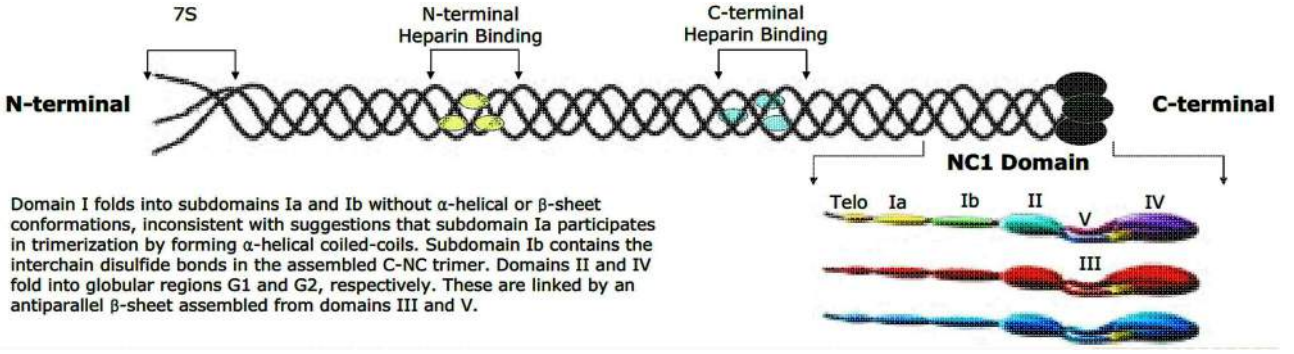


Fibronectin naturally exists as a dimer, consisting of two nearly identical monomers. Two regions in each fibronectin subunit possess cell binding activity: III9-10 and III14-V (refer to the modular structure of fibronectin below). The primary receptor for adhesion to fibronectin commonly involves the RGD motif of repeat III10 through integrins such as α5β1; however, this integrin-ligand interaction is only sufficient for cell attachment and spreading. Additional signaling through the cell surface proteoglycan such as syndecan-4 is required for focal adhesion formation and rearrangement of the actin cytoskeleton into bundled stress fibers. This binding occurs primarily via the HepII domain (containing the FN type III repeats 12-14) in the C-terminal region of fibronectin.

Domain	Peptide Motif	Cat. # *
Type III-5	KLDAPT	16103x
Type III CS-1	PHSRN	16104x
Type III-10	RGD	16105x
Type III-10	GRGDSP	16107x
FN-C/H-III	YRVRVTPKEKTGPMKE	16109x
FN-C/H-1V	SPPRRARVT	16110x

Domain	Peptide Motif	Cat. # *
Type III-13	ATETTITIS	16111x
FN-C/H-V	WQPPRARI	16116x
FN-C/H-II	KNNQKSEPLIGRKKT	16119x
Type III CS-1	EILDVPST	16120x
Type III CS-5	REDV	16124x
	PHSRN-RGDSP	16125x

Collagen Derived Peptides



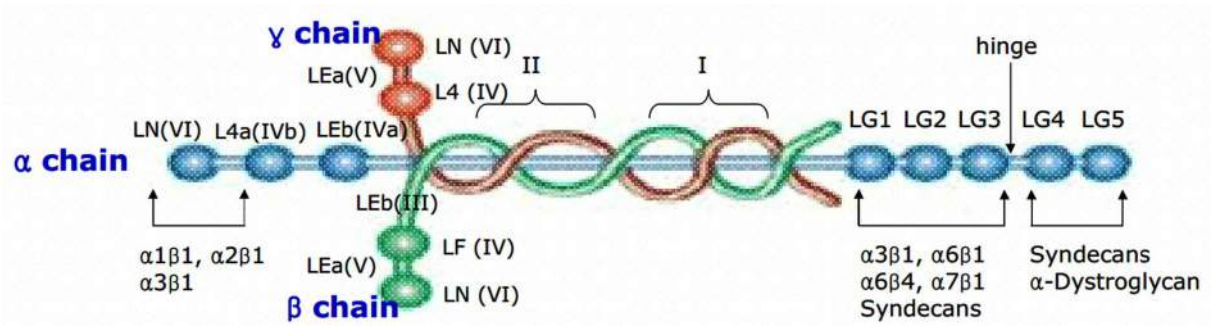
Domain I folds into subdomains Ia and Ib without α-helical or β-sheet conformations, inconsistent with suggestions that subdomain Ia participates in trimerization by forming α-helical coiled-coils. Subdomain Ib contains the interchain disulfide bonds in the assembled C-NC trimer. Domains II and IV fold into globular regions G1 and G2, respectively. These are linked by an antiparallel β-sheet assembled from domains III and V.

Collagens serve as scaffolds for the attachment of cells and matrix proteins; but are also highly biologically active, with many other ligands. For example, collagens provide integrin- and heparin-binding motifs. α2β1 integrin recognizes GXO/SGER such as GFPGER or GFOGER for endothelial cell binding / activation and angiogenesis. Integrin binding sites for αvβ3 have antitumor activity, and may inhibit the activation of human neutrophil or the proliferation of capillary endothelial cells. Integrin binding sites in the NC1 domains have anti-angiogeneic properties mediated by the α1β1 or αvβ3 integrin binding.

Domain	Peptide Motif	Cat. # *
Type I α1	GLPGER	16501x
Type I α1	KGHRGF	16502x
Type I α1	GFPGER	16504x
Type I α1	DGEA	16506x
Type I α1	GPAGKDGEAGAQG	16507x
Type I α1	GTPGPQGIAGQRGVV	16512x

Domain	Peptide Motif	Cat. # *
Type IV α1	TAGSCLRKFSTM	16621x
Type IV α1	GEFYFDLRLKGDK	16623x
Type IV α3	TAIPSCPEGTVPLYS	16631x
Type IV α3	TDIPPCPHGWISLWK	16632x
Type IV α3	ISRCQVCMKKRH	16635x

Laminin Derived Peptides



Laminins (heterotrimers composed of α, β, and γ chains), are multifunctional glycoproteins present in basement membranes. Integrins, dystroglycan, syndecans, and several other cell surface molecules are cellular receptors for laminins. The globular domains located in the N- and C-terminus of the laminin α chains are critical for interactions with the cellular receptors. Integrin α6β1 binds to most of the laminin isoforms. Integrin α3β1 interacts with laminin-5 and -10/11 more specifically than the other isoforms. Integrins α1β1, α2β1, and α7β1 show binding activity to laminin-1 and -2. Interaction of integrin α6β4 with laminin-5 forms hemidesmosomes in the skin. α-dystroglycan strongly binds to the laminin α1 and α2 chains and moderately interacts with the α5 chain.

Domain	Peptide Motif	Cat. # *
α1 chain	RQVFQVAYIIIKA	16204x
α1 chain	IKVAV	16224x
α1 chain	AASIKVAVSADR	16225x
α1 chain	NRWHSIYITRFG	16226x
α1 chain	TWYKIAFQRNRK	16229x
α1 chain	RKRLQVQLSIRT	16232x
α3 chain	PPFLMLLKGSTR	16288x
α3 chain	KNSFMALYLSKGRLVFALG	16293x

Domain	Peptide Motif	Cat. # *
α5 chain	GIIFFL	16369x
β1 chain	RYVVLPR	16411x
β1 chain	YIGSR	16414x
β1 chain	LGTIPG	16421x
γ1 chain	KAFDITYVRLKF	16442x
	SETTVKYIFRLHE	16452x
γ1 chain	RNIAEIIKDI	16460x

Additional adhesion peptides

Cadherins are calcium-dependent cell adhesion proteins which are involved in many morphoregulatory processes including the establishment of tissue boundaries, tissue rearrangement, cell differentiation, and metastasis. The extracellular domain of E-cadherin tends to bind in a homophilic manner; although heterophilic binding does occur under certain conditions. The binding of extracellular cadherin is the basis for cell-cell adhesion, tends to be prevalent at adherin junctions and is structurally associated with actin bundles.

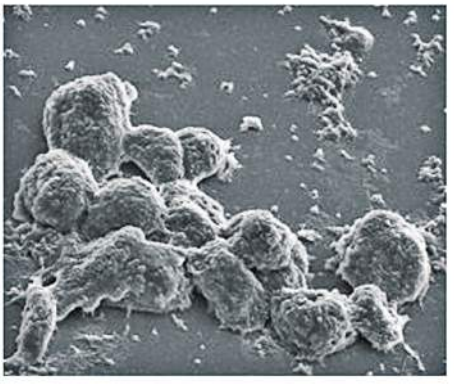
Other sets of extracellular matrix components - for example, **vitronectin**, **nidogen** or **Tenascin**, and **SIBLING**s (small integrin-binding ligand, N-linked glycoprotein) such as **bone sialoprotein (BSP)** or osteonpontin derived ligand - can also influence the cellular behavior by regulating cell signaling (directly or indirectly). Unlike the main extracellular matrix components such as collagen or fibronectin, these other proteins are adhesion-modulatory extracellular matrix proteins which interact with the main ECM components or integrins.

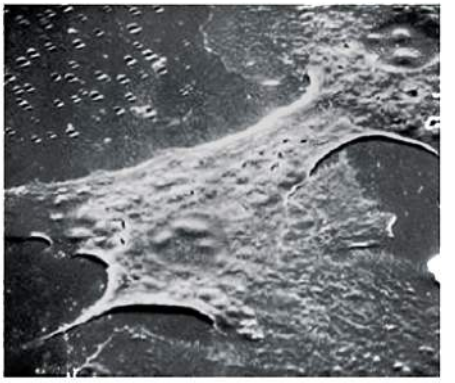
Domain	Peptide Motif	Cat. # *
Cadherin		
E-cadherin ECD1	SHAVSS	16701x
E-cadherin ECD1	LFSHAVSSNG	16702x
E-cadherin ECD1	ADTPPV	16703x
E-cadherin, Ca^{2+} binding	DQNDN	16706x
N-cadherin, ECD1	HAVDI	16707x
N-cadherin ECD1	LRAHAVDING	16708x
N-cadherin ECD1	LRAHAVDVNG	16709x
Vitronectin		
HVP	FRHRNRKGY	16801x
HVP	KKQRFRHRNRKGYRSQ	16802x
Somatomedin B	RGDV	16803x

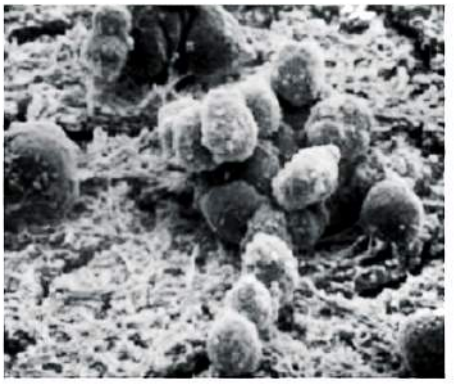
Domain	Peptide Motif	Cat. # *
Nidogen G2	LNRQELFPFG	16811x
Nidogen G2	SIGFRGDGQTC	16812x
Tenascin-C	VAEIDGIEL	16831x
Tenascin-C	VFDNFVLK	16832x
Elastin	VGVAPG	16851x
Bone Sialoprotein (BSP)	KRSR	16901x
Bone Sialoprotein (BSP)	FHRRIKA	16902x
CCN (connective growth factor)	TTSWSQCSKS	16931x
Fibrinogen	HHLGGAKQAGDV	16953x

KEY TO CATALOG NUMBERING

Cat. No. ending with X=	Pack size+	1 mg protein, aqueous solution at 0.2mg/mL
1		
2		2.5 mg protein, aqueous solution at 0.5mg/mL
3		5 mg protein, aqueous solution at 0.5mg/mL
4		10 mg protein, aqueous solution at 1mg/mL







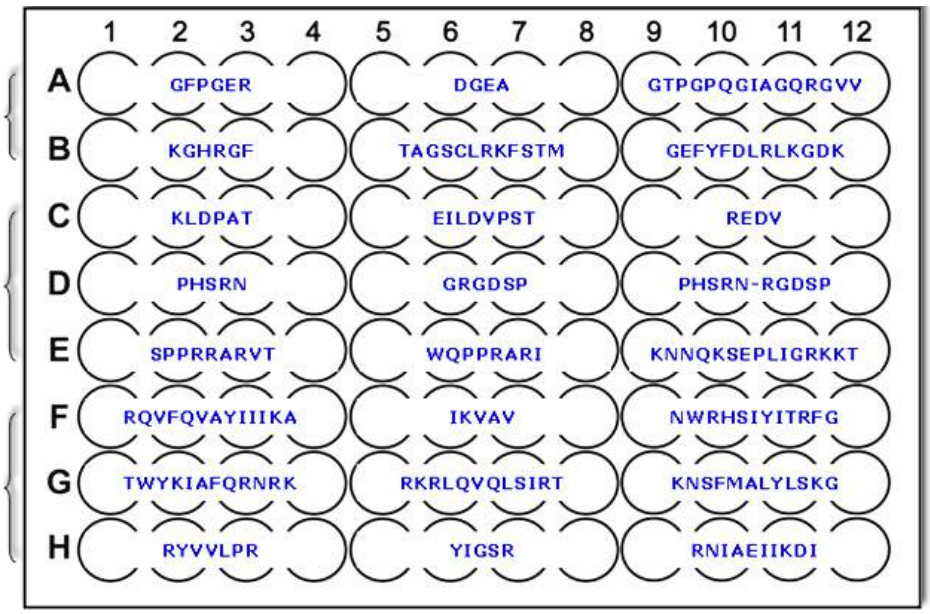
Basic ECM mimetic screens

ANN901

Collagen derived

Fibronectin derived

Laminin derived

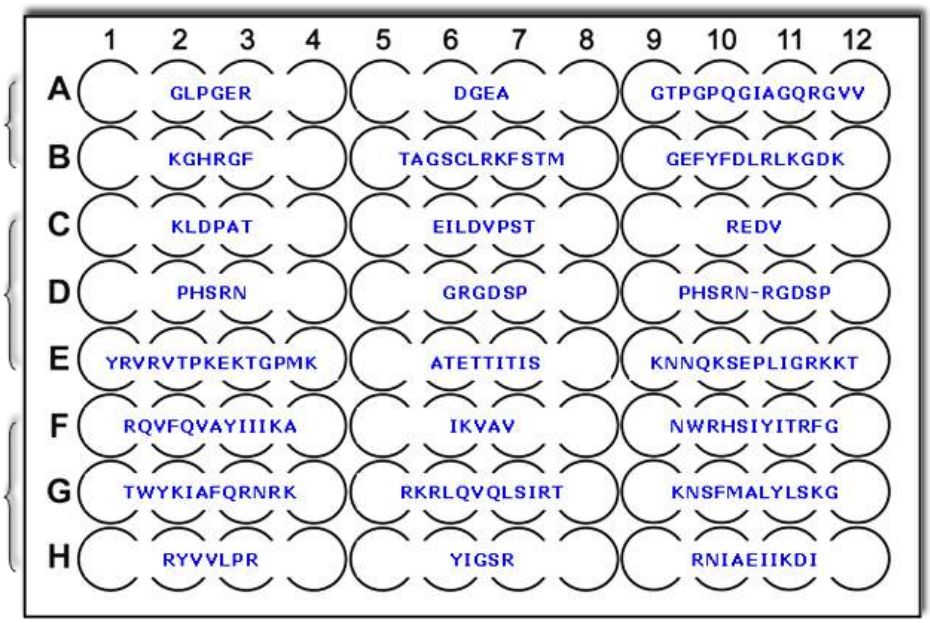


ANN951

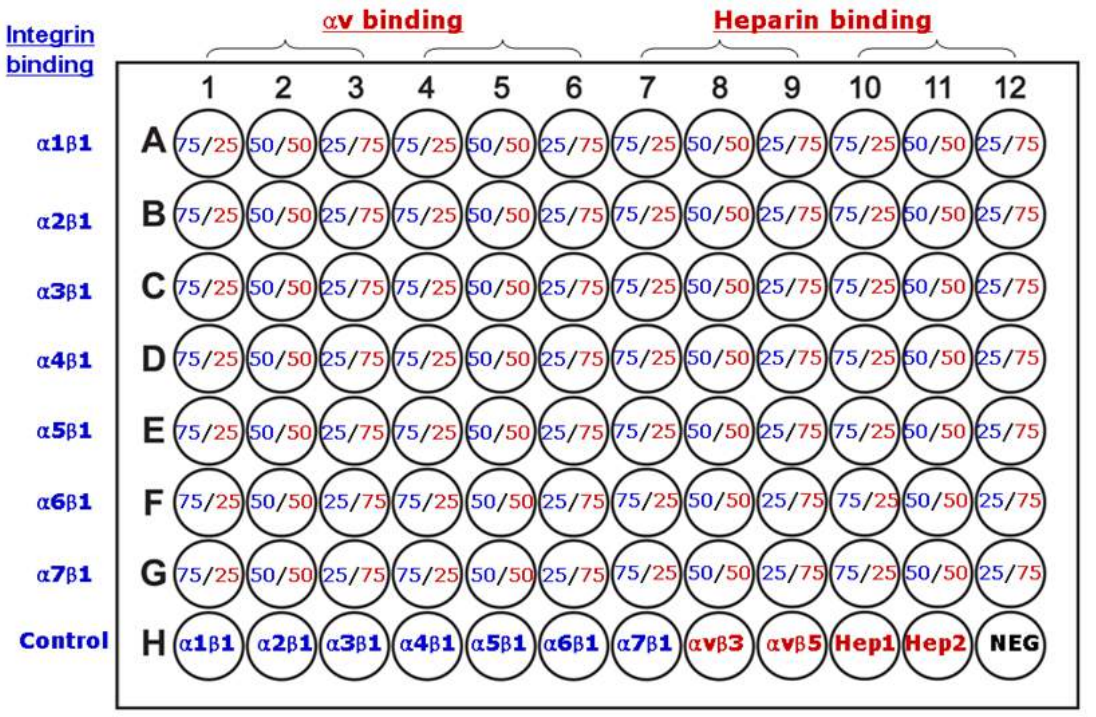
Collagen derived

Fibronectin derived

Laminin derived

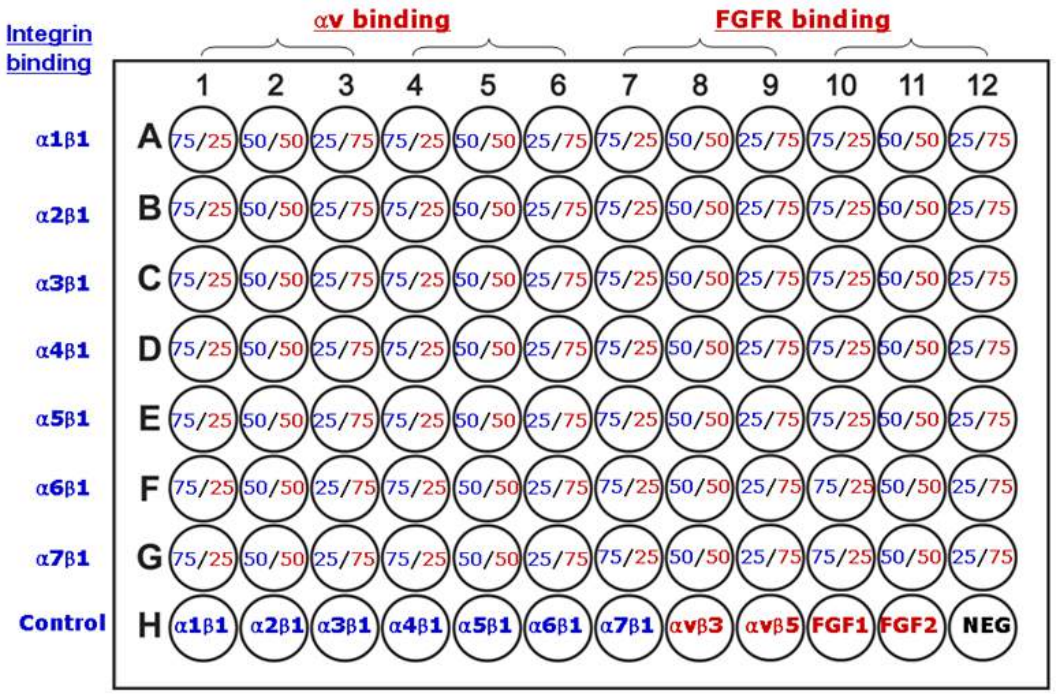


Combinatorial integrin and heparin screens



	Default (AVH901)		Extension I (AVH911)	
	αvβ3 (RGD)	Heparin (IKVAV)	αvβ3 (RGD)	Heparin (IKVAV)
α1β1	GFPGER	GFPGER	GLPGER	GLPGER
α2β1	DGEA	DGEA	GPQGIAGQRGVV	GPQGIAGQRGVV
α3β1	YIGSR	YIGSR	PPFLMLLKGSTR	PPFLMLLKGSTR
α4β1	REDV	REDV	EILDVPST	EILDVPST
α5β1	GRGDSP	GRGDSP	PHSRN-RGDSP	PHSRN-RGDSP
α6β1	NRWHSIYITRFG	NRWHSIYITRFG	TWYKIAFQRNRK	TWYKIAFQRNRK
α7β1	VFDNFVLK	VFDNFVLK	VFDNFVLK	VFDNFVLK

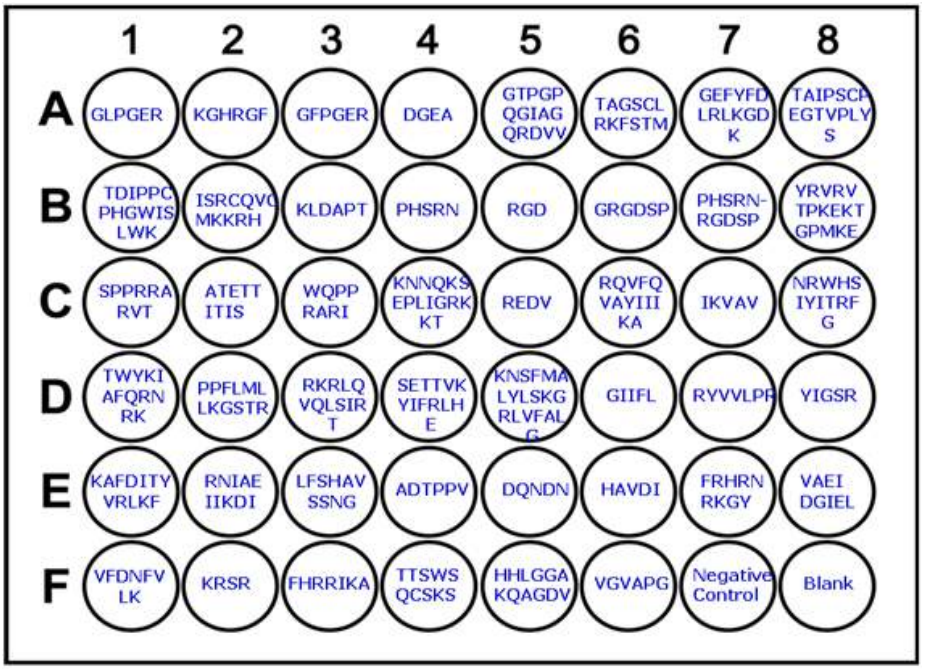
Combinatorial integrin and heparin screens



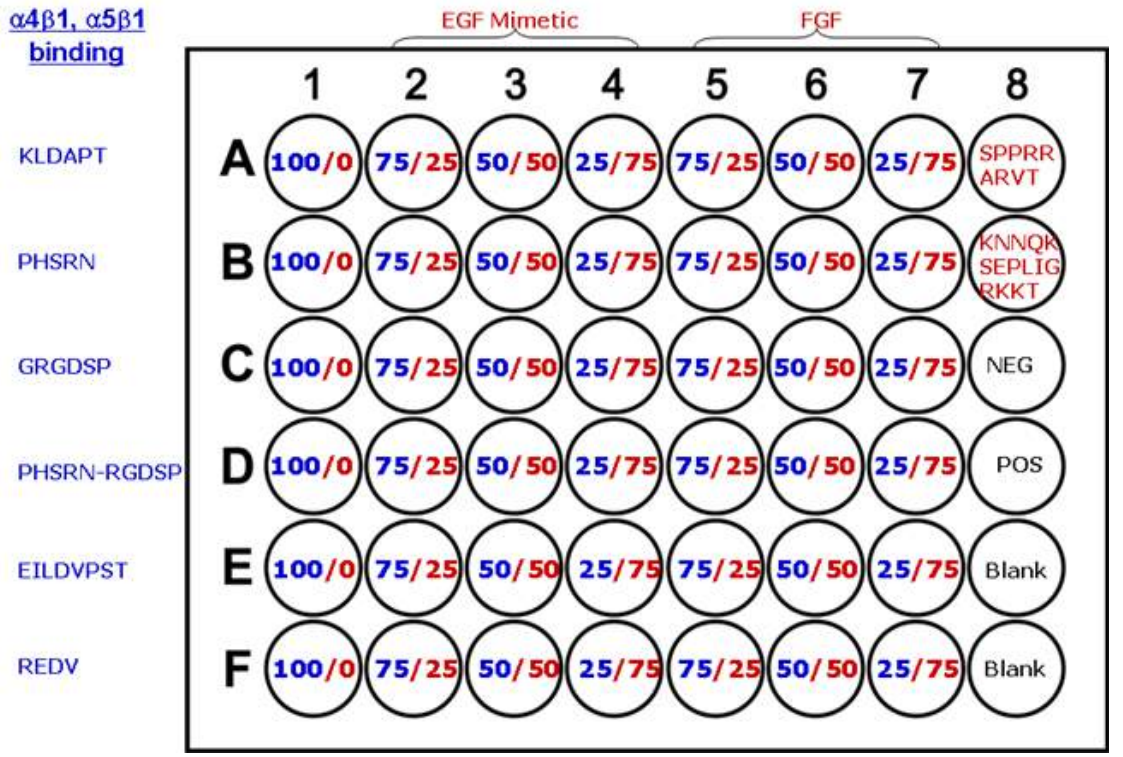
	Default (AVF901)		Extension I (AVF911)	
	avβ3 (RGD)	bFGF (ERGVVSIKGV)	avβ3 (RGD)	bFGF (ERGVVSIKGV)
α1β1	GFPGER	GFPGER	GLPGER	GLPGER
α2β1	DGEA	DGEA	GPQGIAGQRGVV	GPQGIAGQRGVV
α3β1	YIGSR	YIGSR	PPFLMLLKGSTR	PPFLMLLKGSTR
α4β1	REDV	REDV	EILDVPST	EILDVPST
α5β1	GRGDSP	GRGDSP	PHSRN-RGDSP	PHSRN-RGDSP
α6β1	NRWHSIYITRFG	NRWHSIYITRFG	TWYKIAFQRNRK	TWYKIAFQRNRK
α7β1	VFDNFVLK	VFDNFVLK	VFDNFVLK	VFDNFVLK

Mesenchymal stem cell screens

Integrin binding

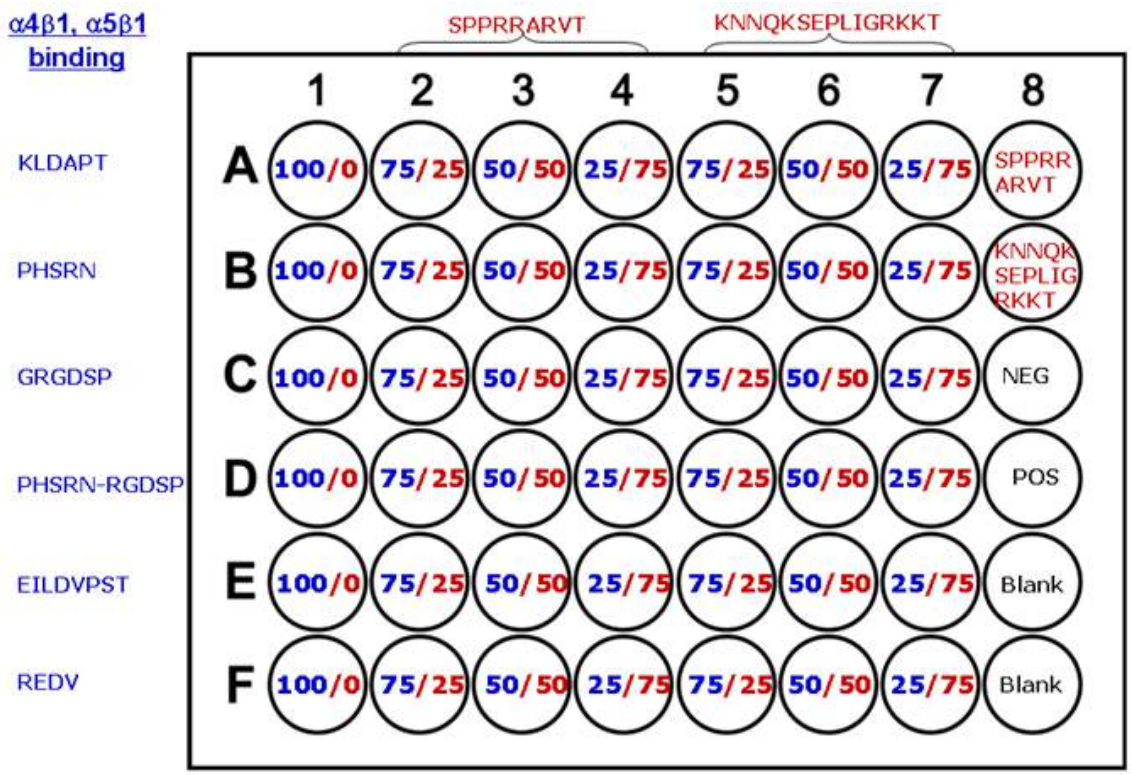


Growth Factor

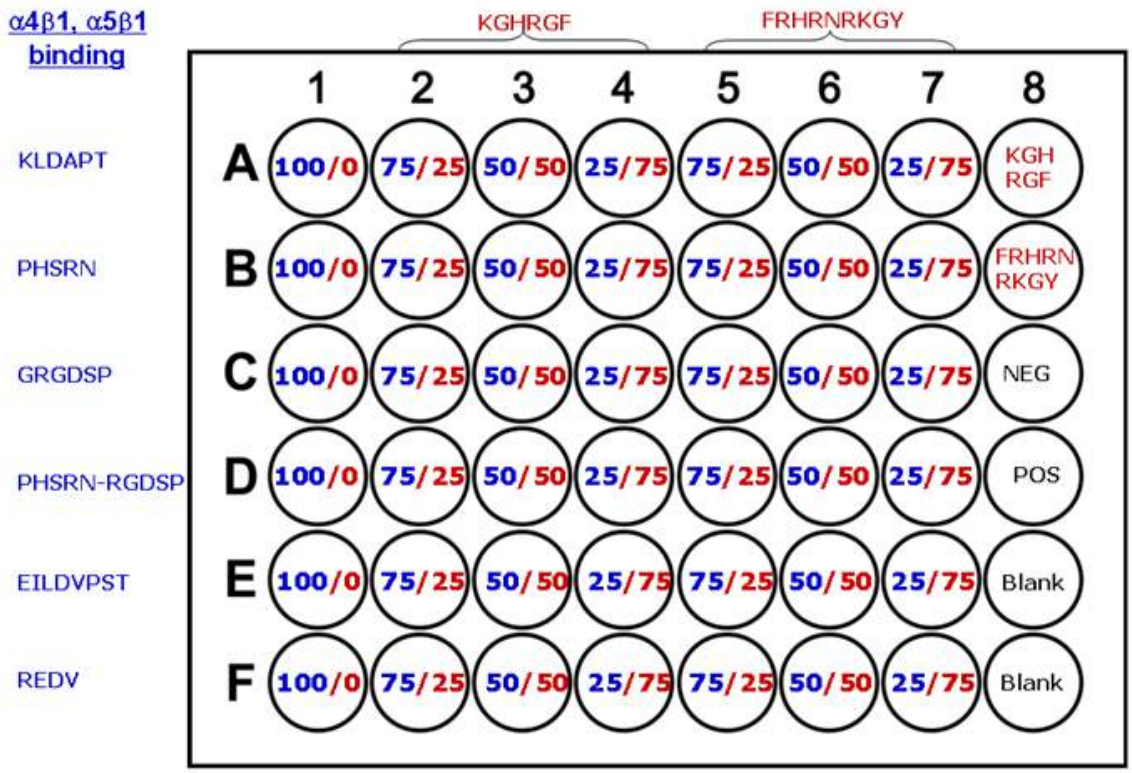


Mesenchymal stem cell screens

Heparin binding



Heparin binding



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