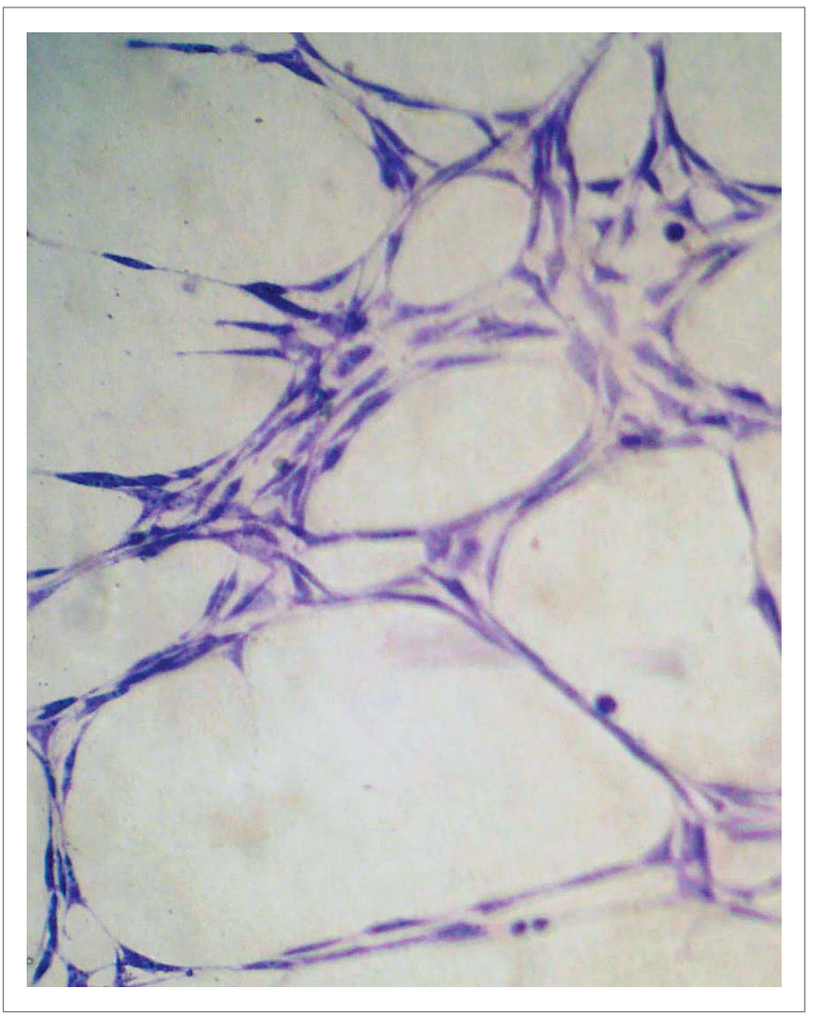
R&D Systems Tools for Cell Biology Research™

Basement Membrane Extracts & Extracellular Matrix Components

Cell Culture Applications & Invasion/Migration Assays



R&D SYSTEMS®

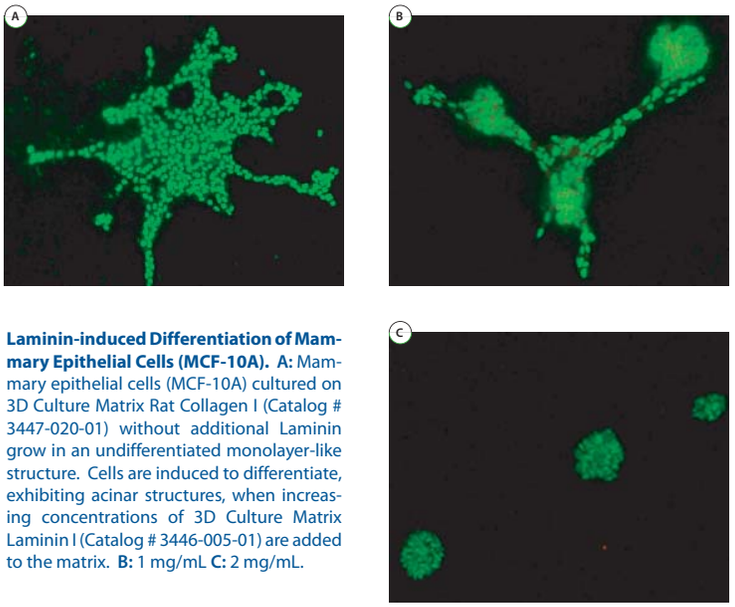
Characteristics of the Extracellular Matrix: Reconstitution *in vitro* & Cell-based Assays

The extracellular matrix (ECM) consists of an organized, complex network of locally secreted macromolecules that provide the structural framework for cell migration, adhesion, proliferation, and differentiation within the tissues of an organism. The ECM is composed primarily of different glycosaminoglycans and fibrous proteins, such as collagen, laminin, and fibronectin. The fibrous proteins of the ECM regulate cell structure, adhesion, and mediate interactions within the ECM, while the glycosaminoglycans (GAGs), such as hyaluronan or protein-linked GAGs, form a porous hydrated gel that is essential for mechanical support and signaling between cells. The properties of isolated ECM components or heterogeneous extracts can be exploited for use as cell culture reagents and tools for cell-based assays.

Cultrex® Basement Membrane Extracts & 3D Culture Matrix™

The basement membrane can act as a selective barrier, affect cell polarity, metabolism, or migration, and induce cellular differentiation. Basement membranes can be reconstituted *in vitro* using basement membrane extracts and components of the ECM. R&D Systems offers the Cultrex Basement Membrane Extract (BME) products and ECM components as cell culture reagents that can be used to promote and maintain a variety of cell types in culture.

R&D Systems now offers Cultrex PathClear™ Basement Membrane Extracts. These products have been tested and are free of 31 potential contaminating organisms and viruses, including mycoplasma, LDEV, 16 other bacterial and viral strains typically included in mouse antibody production (MAP) testing, and 13 additional murine infectious agents. This rigorous testing makes BME PathClear products ideal for *in vivo* research.



Laminin-induced Differentiation of Mammary Epithelial Cells (MCF-10A). A: Mammary epithelial cells (MCF-10A) cultured on 3D Culture Matrix Rat Collagen I (Catalog # 3447-020-01) without additional Laminin grow in an undifferentiated monolayer-like structure. Cells are induced to differentiate, exhibiting acinar structures, when increasing concentrations of 3D Culture Matrix Laminin I (Catalog # 3446-005-01) are added to the matrix. **B:** 1 mg/mL **C:** 2 mg/mL.

BASEMENT MEMBRANE EXTRACTS	CATALOG #
Basement Membrane Extract	3432-005-01
Basement Membrane Extract-Phenol Red	3430-005-01
Basement Membrane Extract-Reduced Growth Factor	3433-005-01
Basement Membrane Extract-Phenol Red, Reduced Growth Factor	3431-005-01
PATHCLEAR BASEMENT MEMBRANE EXTRACT	CATALOG #
PathClear Basement Membrane Extract-Reduced Growth Factor	3433-005-02
PathClear Basement Membrane Extract-Phenol Red, Reduced Growth Factor	3431-005-02

new

3D CULTURE MATRIX	CATALOG #
Basement Membrane Extract	3445-048-01
Laminin I	3446-005-01
Rat Collagen I	3447-020-01

Please see the back page for individual ECM-related products available from R&D Systems.

On the Cover: A: The rat aortic ring assay using Cultrex Basement Membrane Extract (Catalog # 3432-005-01).

Cultrex Cell Invasion Assays

Compounds that affect cellular digestion and migration through basement membranes are of great interest because of their importance during embryonic development, wound healing, immune responses, angiogenesis, and metastasis. The ability to reconstitute basement membranes *in vitro* has allowed for the development of assays that mimic cell invasion. The Cultrex Cell Invasion Assay Kits offered by R&D Systems can be used to rapidly screen for compounds that affect the migration of cells through different extracellular matrix components. The degree of cell invasion in response to chemoattractants or inhibitors can be readily quantified and compared.

Invasion Assay Schematic

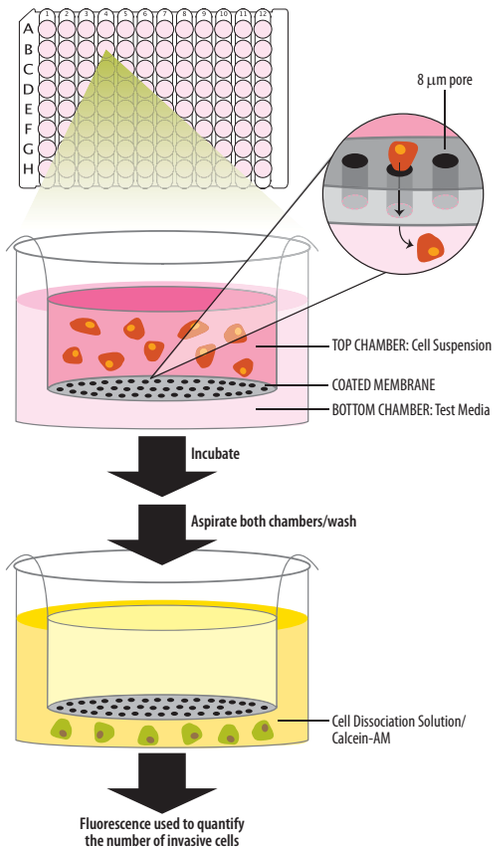
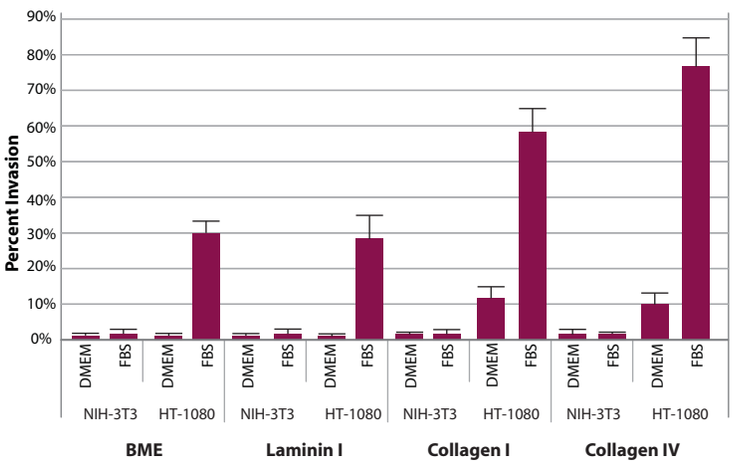


Illustration of a Cell Invasion Assay. The invasion chamber consists of two chambers separated by a filter coated with BME or different ECM components. The cell suspension is placed in the top chamber, and incubated in the presence of test media containing specific chemoattractants in the bottom chamber. Cells migrate from the top chamber through the coated filter pores to the bottom of the filter. Cell dissociation/Calcein-AM solution is placed in the bottom chamber to dissociate the migrating cells from the filter and add a fluorescent label. Fluorescence in the bottom chamber is proportional to the number of migrating cells.



Quantification of Cell Invasion. Cultrex Cell Invasion Assay Kits (Catalog # 3455-096-K, # 3456-096-K, # 3457-096-K, # 3458-096-K) were used to quantify the ability of 10% FBS to stimulate the migration of fibroblastic cell lines on different extracellular matrix components. Data from four experiments was quantified for both non-invasive (NIH-3T3) and invasive (HT-1080) cell types.

CULTREX CELL INVASION ASSAYS	CATALOG #
Basement Membrane Extract	3455-096-K
Collagen I	3457-096-K
Collagen IV	3458-096-K
Laminin I	3456-096-K

For further information on all R&D Systems ECM products, please visit our website at www.RnDSystems.com/go/ECM

R&D SYSTEMS®

Additional Extracellular Matrix-Associated Products Available from R&D Systems

HYALURONAN (HA) & HA-BINDING PROTEINS

	ANTIBODIES	PROTEINS
Aggrecan	H	H
CD44	H	H
HAPLN1	H	H
HAPLN4	H	
Hyaluronan*		
Layilin	H M	H M
LYVE-1	H M	H M
Stabilin-1 & -2	H	
TSG-6	H M	
Versican	H	

** Hyaluronan is available in several molecular weights, high (>9500 kDa), low (15-40 kDa), medium (90-150 kDa), and ultra-low (4-8 kDa).*

PRE-COATED PLATES

	CATALOG #
Bovine & Human Fibronectin Pre-coated Culture Plates	CWP002, CWP001
Bovine & Human Vitronectin Pre-coated Culture Plates	CWP004, CWP003

OTHER CULTURE-RELATED PRODUCTS

	CATALOG #
Cell Staining Kit	3437-100-K
Poly-L-Lysine	3438-100-01

Key: **H** Human, **M** Mouse, **R** Rat, **B** Bovine, **Ch** Chicken

ECM-ASSOCIATED MOLECULES

	ANTIBODIES	PROTEINS
Agrin	R	R
Biglycan	H	
Collagen I		R B
Collagen II	M	
Collagen IV		M
COMP/Thrombospondin-5		H
CRISP-3	H	
CTGF/CCN2	H	
DANCE/Fibulin 5	H	
Decorin	H M	H M
DSPG3	H M	
Endostatin	H M	
Endorepellin/Perlecan	H	
Fibronectin	H	H B
FLRT1,2,3	H	
βIG-H3	M	
Laminin α4	M	
Laminin γ1	H R	
Laminin I		M
Laminin S	H R Ch	
Laminin-1	M	
Laminin-5	H	
Lumican	H M	
Matrilin-2	H M	H M
Matrilin-3	H M	H

	ANTIBODIES	PROTEINS
MEPE	H	H
Mimecan	H M	M
Mindin	H	
Nidogen-1/Entactin	H	H
NOV/CCN3	H M	H M
Opticin	H M	
Osteoadherin	H M	H M
Osteopontin	H M	H M B
R-Spondin 1	M	
R-Spondin 2	H	
R-Spondin 3	H M	
Reelin	M	M
SPARC	H M	M
SPARC-like 1	H M	
F-Spondin/Spondin 1	H	H
Syndecan-1 & -3	H M	
Syndecan-2 & -4	H	H
Tenascin C	H M	
Tenascin R	H M R	
Testican 1 & 2	H	H
Testican 3	M	M
Thrombospondin-1, -2 & -4	H	H
Vitronectin	M	H B
vWF-A2	H	
WISP-1/CCN4	H M	H M

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