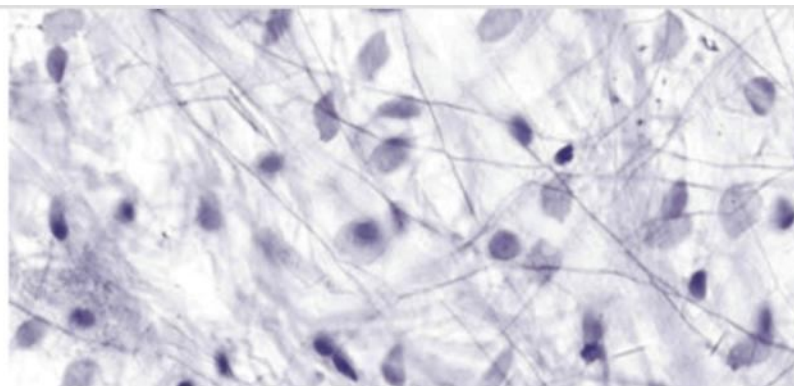


Fibronectin, Collagen, Cell qualified Gelatin

Extra-Cellular Matrix Coated Plasticware

ATTACHMENT FACTORS

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Attachment factors are structural proteins or protein-like substances that have adherent capabilities and increase cell-substrate interactions in a culture dependent attachment milieu. A number of glycoproteins have been identified that promote and/or influence in vitro cell attachment to the surface or substratum of the culture vessel.

Normal attachment, growth and development of many cell types are dependent on attachment factors and extracellular matrix components. While some cells are able to synthesize these components, others require an exogenous source, particularly when grown in serum-free culture.

The growth and differentiation of anchorage-dependent cells are often strongly influenced by either glass or plastic culture flasks utilized as a substrate. In order to facilitate attachment, cell spreading, growth, morphology, differentiation, and motility of your cells, Biological Industries offers an extensive line of attachment and matrix factors. Each lot is cell culture tested to assess its ability to promote cell attachment and spreading.

Collagen is a major structural protein of extracellular matrix and is the principal protein found in connective tissues. It is found not only in the organic portion of bones, skin, teeth and tendons, but also occurs in other parts of the body as fibrous inclusions. Like other fibrous proteins, collagen is not readily available unless it undergoes heat treatment such as boiling which converts collagen into gelatin. It is an unusual protein, rich in amino acids such as glycine, lysine, proline and others but unfortunately not enough of the essential amino acids. Usually the gelatin derived from collagen is a relatively poor-quality protein.

Gelatin solution (0.1%) is intended for coating cell culture flasks or plates utilized in the growth of Mouse ES cells without a feeder layer. Leukemia Inhibitory Factor (LIF), a pleiotropic, polyfunctional glycoprotein (IL-6) cytokine, should be added to the medium. This impacts growth promotion and prevents cell differentiation on a wide array of various tissue types and target cells.



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Bovine Fibronectin Solution

Product Name	Catalogue No.	Unit Size	Storage Temp.
Bovine Fibronectin Solution 1mg/ml	03-090-1-01	1ml	2-8°C
	03-090-1-05	5ml	2-8°C

Fibronectin is an attachment factor that facilitates the attachment and cytoplasmic spreading of all types of anchorage-dependent cells. Fibronectin is particularly useful for the culture of cells that are not capable of synthesizing their own biomatrix or when culturing cells in serum-free medium.

Source

Irradiated citrated bovine plasma.

Description

A clear sterile solution containing Fibronectin, obtained by affinity purification on gelatin-sepharose from bovine plasma. The Fibronectin solution contains buffer salts.

Concentration

1mg/ml, based on E (1%, 280nm) =12.8

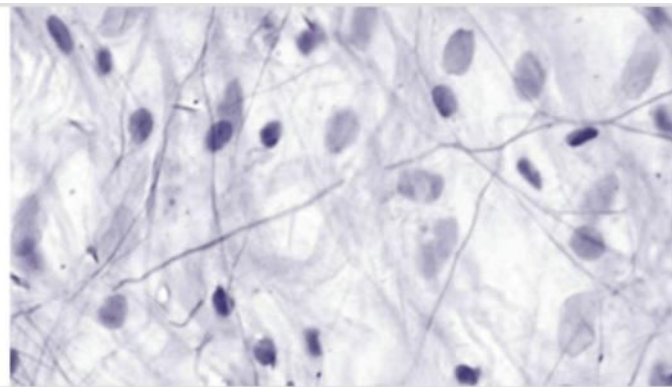
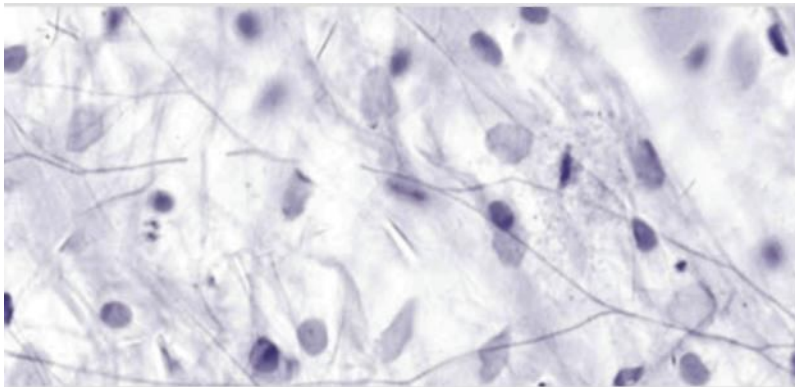
Identification

A major single band of approx. 220,000 Dalton is evident.

Suggested coating procedure

The Fibronectin should be added to the growth medium in the culture vessel which is then placed in an incubator 30-60 minutes before seeding. The recommended concentration of the Fibronectin is 5 micrograms per ml of medium. When the medium is replaced in the days following initial seeding, no further Fibronectin is required.

1. Ruoslahti E.
Int. J. Cancer 20, 1-15 (1977)
2. Miekka S.I Et Al
Thrombosis Research 27, 1-14 (1987)
3. Mosesson M.W
The J. of Biological Chemistry
Vol.245, No.21 5728-5736 (1970)



Collagen Type I, Rat Tail

Product Name	Catalogue No.	Unit Size	Storage Temp.
Collagen Type I, Rat Tail	41-843-25	25mg	2-8°C
	41-843-100	100mg	2-8°C

Collagens are a family of highly characteristic fibrous protein found in all multicellular animals and are critical in cell adhesion. Collagen Type I is found in several tissues including skin, connective tissue cartilage and bone. Collagen Type I is an attachment factor that facilitates the attachment and cytoplasmic spreading of all types of anchorage-dependent cells, when used as a thin layer on a tissue culture surface. As a gel, Collagen I enhances expression of cell-specific morphology and function.

Cell Qualified 0.1% Gelatin Solution

Product Name	Catalogue No.	Unit Size	Storage Temp.
Gelatin Solution (0.1%)	01-944-1A	500ml	2-8°C
	01-944-1B	100ml	2-8°C

Qualified for Mouse Embryonic Stem (ES) Cells

Mouse Embryonic Stem Cells (MESC)s are used to generate mouse mutants by gene targeting and blastocyst-mediated transgenesis. Undifferentiated ES cells may be maintained in vitro for extended periods without loss of differentiation capacity when re-implanted back into a blastocyst. Well-established general culture conditions usually require the undifferentiated ES cells to be grown on inactive feeder cell layers or on gelatin-coated plates with Leukemia Inhibitory Factor (LIF) in the culture medium to influence cell growth and function. Growth and differentiation of anchorage-dependent cells are strongly influenced by glass or plastic cultureware offered as a cell-substrate interactive platform. Cell growth rates may be exponentially improved by specialized surface treatments or coating with attachment factors such as Gelatin Solution with LIF.

Application

Used for the attachment of a variety of cell types.

Properties

Sterile, Endotoxin Tested and Cell Culture Tested.
Product is ready to use for plating.

Nutrimatrix™ - ECM Coated Plastic ware

Coated with extracellular matrix (ECM) simulates in vivo conditions

One of the drawbacks in growing cells In Vitro using conventional tissue culture techniques is that the cells rest on plastic rather than on their natural biological support. This natural support is a complex network of macro molecules known as the extra cellular matrix or ECM. ECM holds cells and tissues together and provides a highly organized lattice within which cells can migrate and interact with each other. The matrix plays an active and complex role in regulating the behavior of cells that are in contact with it, influencing their shape, migration, proliferation and metabolic functions. In contrast, cells grown on plastic lose many of their natural differentiated properties due to the lack of interaction with ECM

ECM is composed of different types of collagen glycosaminoglycans, proteoglycans and glycoproteins⁽¹⁾. It resembles the vascular subendothelia basal lamina in its organization and macromolecular constituents (fibronectin, amin, collagen types III, IV and V, and sulfated proteoglycans)⁽²⁾.

Advantages

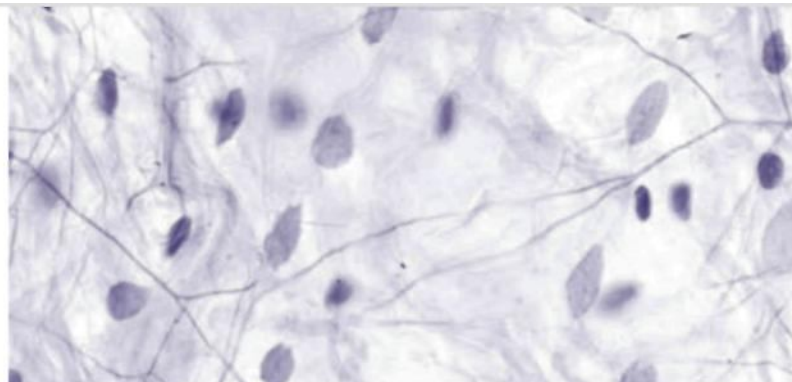
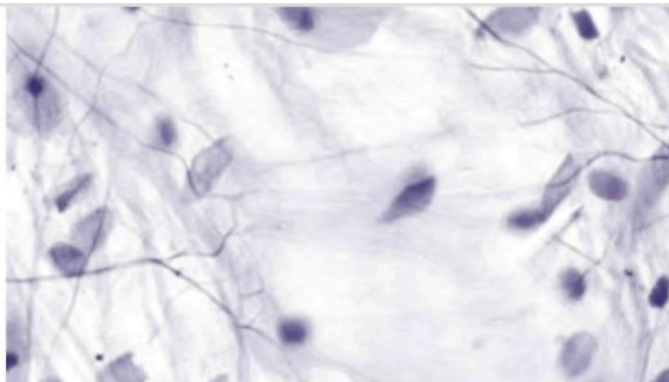
Rapid attachment; high plating and cloning efficiencies; rapid proliferation, high saturation density; lower requirements for serum and added growth factors; better response to physiologically occurring hormones; expression of differentiated functions; longer life span for cells; flattening and morphological changes; and improved plating consistency.

Among the cells types showing a favorable response to ECM are human, bovine and other origin

Research Applications

- **Epithelial Cells:**
Nutrimatrix™ ECM-coated plastic vessels with serum-free medium enable a higher rate of success in growing normal and malignant human epithelial cells from biopsy specimens. ECM induces changes in cell shape not observed in cells grown on plastic or isolated components of the ECM. Cells which for different reasons do not flatten or spread on plastic do so rapidly on ECM.
- **Hormone Secretion Research:**
Nutrimatrix™ ECM-coated plastic vessels with serum-free media support the maintenance and normal function of hormone secreting cells such as pancreatic islet cells, hepatocytes pituitary cells, granulosa cells, etc.





- **Secretion of Cellular Products:**
The ECM/serum-free medium combination promotes research possibilities on various cellular products due to the following multiple effects
- **Hormone Response Research:**
ECM effects cell shape and hormone responsiveness. As expected the cells do not respond when maintained on artificial substrata or isolated components of the ECM

Biotechnology Applications⁽³⁾

- **Yield and Differentiation:**
The maintenance and growth of differentiated cells on ECM is expected to promote a high yield of various hormones and growth factors in tissue culture.
- **Purification:**
Growth of cells in serum-free media will facilitate the purification of various cellular products that are secreted into the medium. Purification will be relatively simple due to the absence of serum proteins.
- **Production:**
Large-scale growth of cells on ECM can be performed in bulk cell culture Nutrimatrix™ vessels coated with ECM, or on Nutrimatrix™ ECM-coated microcarriers. Using these techniques, continuous rather than batch processes can be developed
- **Growth Factor Secretion:**
Growth factors may be produced in better yields by human cells cultured on ECM rather than on plastic and can then be purified and used for research and clinical applications.
- **In Vitro Toxicological Testing And Drug Screening:**
The growth of cells on ECM in serum free medium may reduce the cost and simplify the procedure of studying the effect on cells of single drugs, drug combinations and hormones or where a single component is being tested at a time
- **Neurobiology:**
ECM has been shown to support the attachment and maintenance of neurons from various sources and to promote the outgrowth and directed elongation of neurites

Item	Packaging (unit/Pack)	Catalogue No.
Tissue Culture Dishes 35 mm	5	E-TCP-35
Tissue Culture Dishes 60 mm	5	E-TCP-60
Tissue Culture Dishes 90 mm	5	E-TCP-90
Tissue Culture Flasks 25 cm ²	5	E-TCF-25
Tissue Culture Flasks 80 cm ²	5	E-TCF-80
Microtiter 96-Well Plate	1	E-TCMT-F
4-Well Culture Plate	1	E-TCMW-4
6-Well Culture Plate	1	E-TCMW-6
12-Well Culture Plate	1	E-TCMW-12
24-Well Culture Plate	1	E-TCMW-24
Coverslips (Round, 22 mm)	5	E-TCCS-P22
Four 13mm Coverslips In 4-Well Plate	1	E-TC-IF-13
Eight 12mm Filters in 24- Well Plate	1	E-TC-M-12
Eight Well Lab-Tek Chamber Slide	1	E-LT-8

Storage

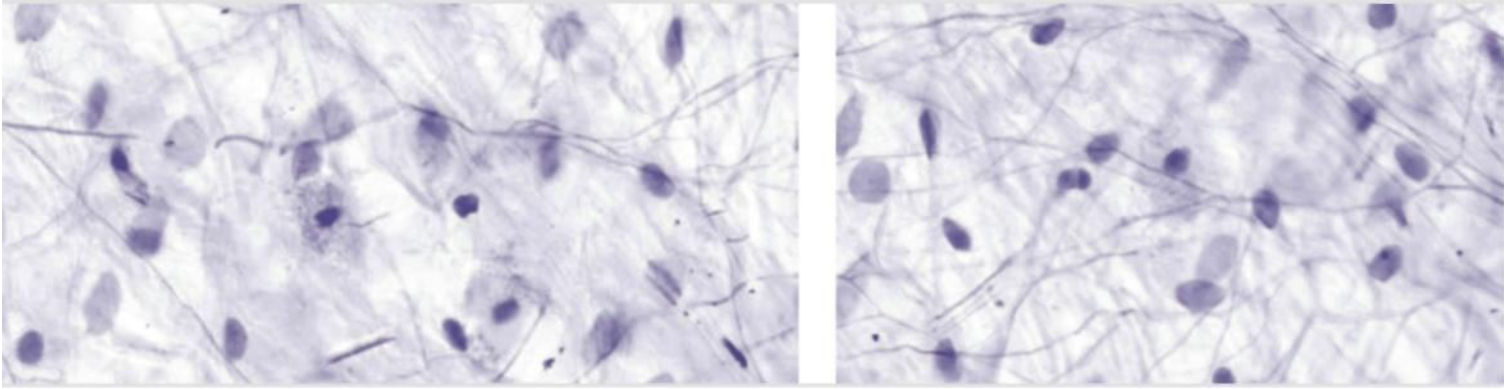
Nutrimatrix™ ECM-coated plastic vessels are shipped at ambient temperature and should be stored at 2-8°C upon arrival.

⁽¹⁾ Cancer research 46: 3653 (1986)

⁽²⁾ Blood 65: 1477 (1985)

⁽³⁾ Metal Ions in Biology and Medicine. Volume 4 by Philippe Collery. Published by John Libbey Eurotext, 1996





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