CELLCOAT® – Protein Coated Cell Culture Vessels

The Greiner Bio-One CELLCOAT® product line comprises cell culture vessels which are coated with proteins of the extracellular matrix (Collagen Type I, Fibronectin, Laminin) or synthetic proteins (Poly-D- and Poly-L-Lysine). Beside an improved adhesion and proliferation of primary cells and various cell lines, CELLCOAT® plates are highly suitable for serum-free and serum-reduced cell cultivation and experiments which include additional washing steps or stressful procedures, e.g. transfection. Moreover, the differentiation of individual cell types can be enhanced through the protein-coating.

Applications:
- Improved adhesion
- Improved cell proliferation
- Cell adhesion assays
- Receptor-ligand binding studies
- Reduced-serum or serum-free cultivation
- Improved growth of primary cells
- Differentiation of individual cell types

Advantages:
- Increase in isolation and cultivation efficiency
- Ready-to-use products: immediate use, time-saving
- Consistent quality
- Poly-Lysine- and Collagen Type I-coated products storable at room temperature

CELLCOAT® products are produced under the highest purity and manufacturing standards according to validated procedures and established protocols. Consistent quality of the raw material and of the biological activity of the coating is ensured by conducting strict controls.

A protein coating of the growth surfaces with, for example, Poly-D-Lysine can improve the adhesion of cells (Fig. 1).

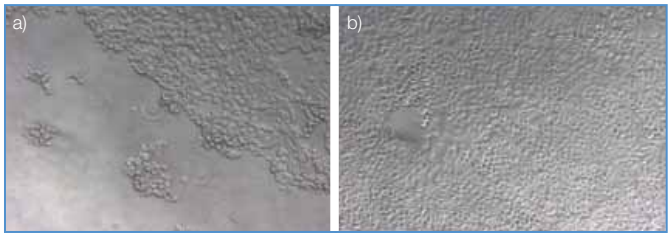

Figure 1:
a) HEK 293 cells 48 h after seeding and single washing with PBS on an uncoated, TC-treated surface
b) HEK 293 cells 48 h after seeding and single washing with PBS on a surface coated with Poly-D-Lysine

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Upon request additional CELLCOAT® cell culture vessels are available with Collagen Type I, Poly-Lysine, Fibronectin and Laminin coating.

For selected CELLCOAT® products, Greiner Bio-One also offers user-friendly bulk packaging (Fig. 2)

Further information on CELLCOAT®

→ **Application Note "Influence of washing steps on cell attachment: Comparison of PDL-coated and cell culture treated microplates"** (F073 022)
→ **Application Note "Enhanced transfection efficiency on protein-coated microplates"** (F073 103)

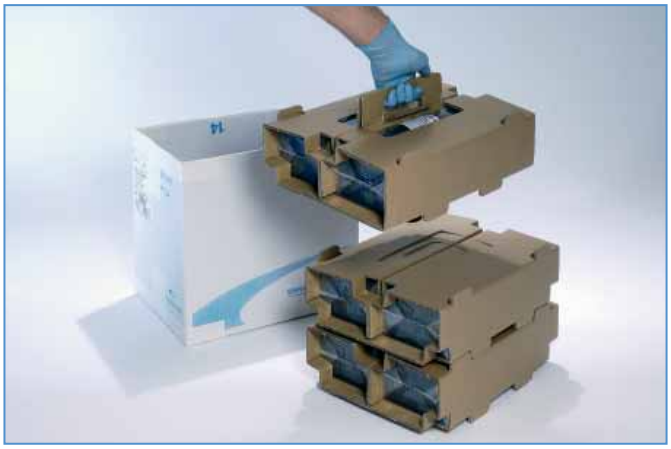


Figure 2: User-friendly bulk packaging

Collagen Type I CELLCOAT®

Collagen Type I is a protein of the extracellular matrix, an intercellular substance which *in vivo* influences adhesion, migration and proliferation among other processes. *In vivo* Collagen Type I is primarily found in the skin, tendon and bone. Collagen Type I represents one of the most important ECM proteins for in-vitro cell cultures. Many otherwise difficult-to-cultivate cells adhere to Collagen Type I and show a positive growth behaviour. For certain cell lines Collagen Type I also has a positive influence on differentiation and morphology.

- Promotion of cell adhesion, proliferation and growth of endothelial cells, hepatocytes, muscle cells, pheochromocytoma cells (PC 12) and other cell types
- Cell cultivation in serum-free or serum-reduced medium
- Quality control: promotion of the adhesion and proliferation of human fibrosarcoma cells

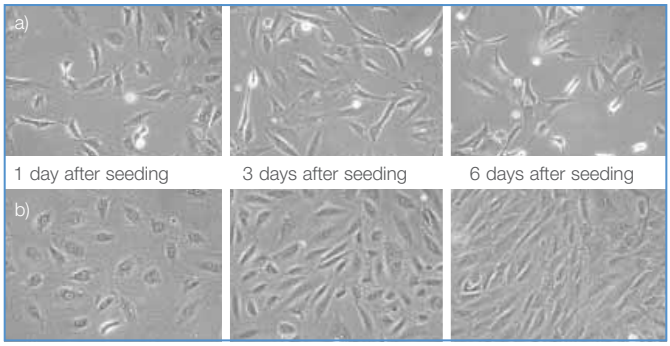


Figure 1: Comparison of the proliferation of human endothelial cells from the umbilical vein (HUVEC) on a) TC-treated surfaces and b) surfaces coated with Collagen Type I

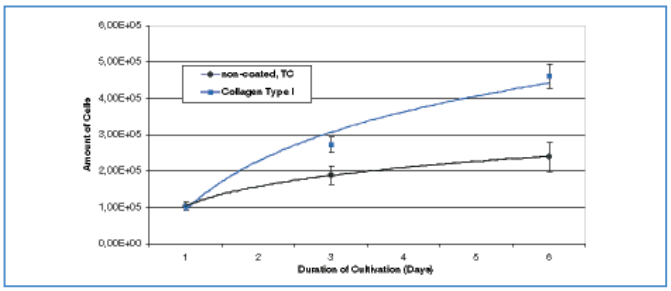
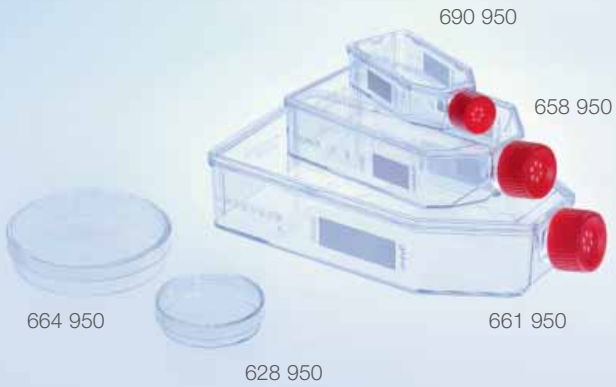


Figure 2: Comparison of the proliferation of human endothelial cells from the umbilical vein (HUVEC) on TC-treated surfaces and surfaces coated with Collagen Type I

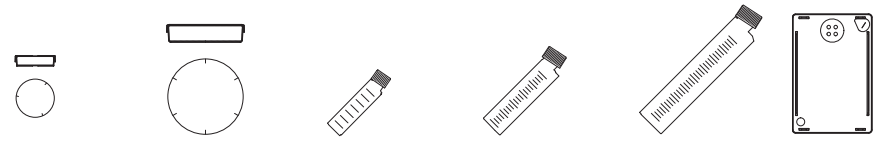


Collagen Type I CELLCOAT®

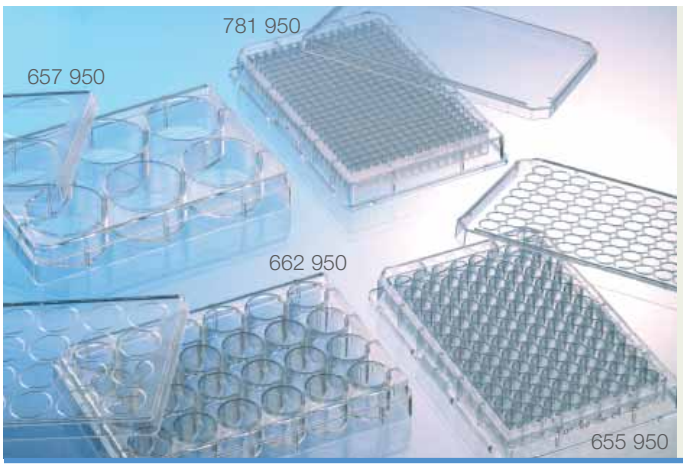
Cell Culture Dishes / Flasks

Cell Culture Vessels p. 1 I 4 ff.

- Further cell culture vessels coated with Collagen Type I are available on request.
- Cell culture flasks with filter caps
- Shelf life: 24 months at room temperature



Cat.-No.	628 950	664 950	690 950	658 950	661 950	779 959
Description	dish	dish	flask	flask	flask	AutoFlask™
ø [mm] x height [mm]	60 x 15	100 x 20	-	-	-	-
Growth area [cm²]	21	58	25	75	175	83.6
Max. volume [ml]	28	100	50	250	650	110
Working volume [ml]	6 – 7	16 – 17	5 – 10	15 – 38	20 – 85	20 – 40
Protein coating	Collagen Type I	Collagen Type I	Collagen Type I	Collagen Type I	Collagen Type I	Collagen Type I
Filter screw cap	-	-	red	red	red	-
Quantity per bag/case	20/100	10/40	10/50	5/50	5/40	10/100



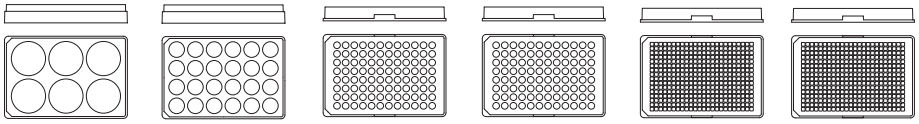
Collagen Type I CELLCOAT®

Cell Culture Multiwell Plates
Cell Culture Microplates

Cell Culture Multiwell Plates p. 1 I 11

Cell Culture Microplates p. 1 I 12 ff.

- Further cell culture vessels coated with Collagen Type I are available on request.
- Shelf life: 24 months at room temperature



Cat.-No.	657 950	662 950	655 950	655 956	781 950	781 956
Well format	6 well	24 well	96 well	96 well	384 well	384 well
Bottom	solid	solid	solid	µClear®	solid	µClear®
Colour	clear	clear	clear	black	clear	black
Growth area per well [cm²]	9.6	1.9	0.34	0.34	0.1	0.1
Max. volume [ml]	16.1	3.3	0.392	0.392	0.131	0.131
Working volume [ml]	2 – 5	0.5 – 1	0.025 – 0.34	0.025 – 0.34	0.015 – 0.11	0.015 – 0.11
Protein coating	Collagen Type I	Collagen Type I	Collagen Type I	Collagen Type I	Collagen Type I	Collagen Type I
Lid	+*)	+*)	+*)	+*)	+	+
Quantity per bag/case	5/50	5/50	5/20	5/20	5/20	5/20

*) with condensation rings

Poly-Lysine CELLCOAT®

Poly-D-Lysine (PDL) and Poly-L-Lysine (PLL) are synthetic molecules that are used to improve adhesion of different cell types to polystyrene surfaces (Fig. 1). Especially when serum-free or serum-reduced medium is used or when experiments such as transfections are performed, the cultivation efficiency of individual cell lines can be improved. As synthetic molecule Poly-D-Lysine is free of impurities carried by other proteins.

- Reduced-serum or serum-free cultivation
- Cell differentiation and neuron growth
- Promotion of cell adhesion, proliferation and growth of transfected cell lines (e.g. HEK 293, PC 12, L929, certain 3T3 cell lines), neuronal cell lines, as well as primary neurons and glia cells
- Synthetic polypeptides
- Molecular weight PDL: 75 – 150 kDa; PLL: 30 – 70 kDa
- Experiments with automated cell culture
- Experiments with washing steps

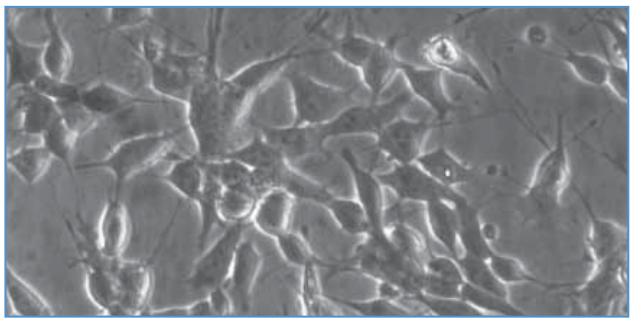
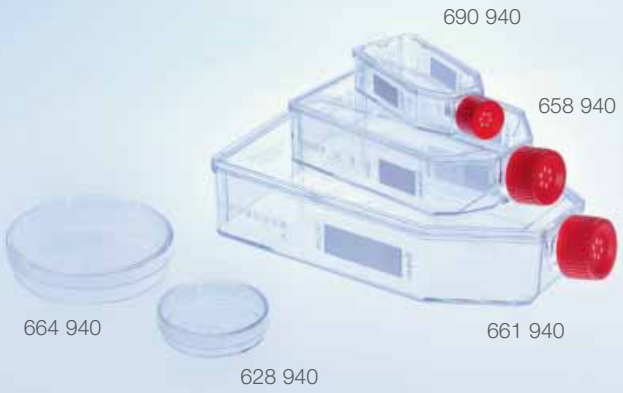


Figure 1: Cells of a neuroblastoma cell line on PDL CELLCOAT®, 24 hours after seeding.

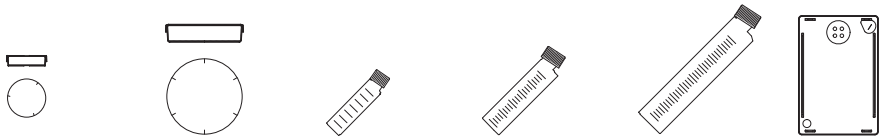


Poly-D-Lysine CELLCOAT®

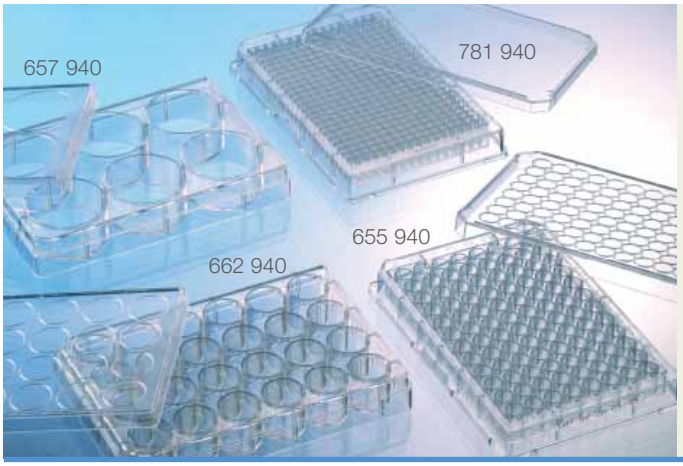
Cell Culture Dishes / Flasks

Cell Culture Vessels p. 1 I 4 ff.

- Further cell culture vessels coated with Poly-D-Lysine are available on request.
- Cell culture flasks with filter caps
- Shelf life: 24 months at room temperature



Cat.-No.	628 940	664 940	690 940	658 940	661 940	779 946
Description	dish	dish	flask	flask	flask	AutoFlask™
ø [mm] x height [mm]	60 x 15	100 x 20	-	-	-	-
Growth area [cm²]	21	58	25	75	175	83.6
Max. volume [ml]	28	100	50	250	650	110
Working volume [ml]	6 – 7	16 – 17	5 – 10	15 – 38	20 – 85	20 – 40
Protein coating	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine
Filter screw cap	-	-	red	red	red	-
Quantity per bag/case	20/100	10/40	10/50	5/50	5/40	10/100



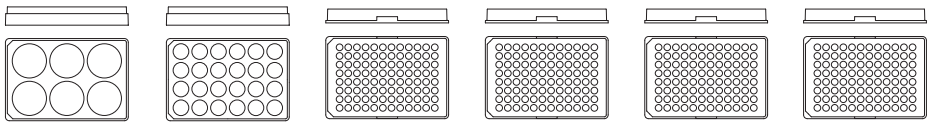
Poly-D-Lysine CELLCOAT®

Cell Culture Multiwell Plates
Cell Culture Microplates

Cell Culture Multiwell Plates p. 1 I 11

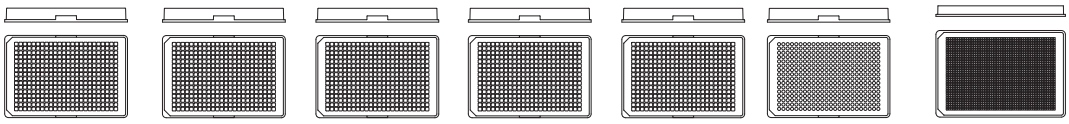
Cell Culture Microplates p. 1 I 12 ff.

- Further cell culture vessels coated with Poly-D-Lysine are available on request
- Cat.-No. 655 948 and 781 948 have a user-friendly bulk package
- Shelf life: 24 months (multiwell plates) / 18 months (microplates) at room temperature



Cat.-No.	657 940	662 940	655 940	655 944	655 946	655 948
Well format	6 well	24 well	96 well	96 well	96 well	96 well
Well profile	F-bottom	F-bottom	F-bottom	F-bottom	F-bottom	F-bottom
Bottom	solid	solid	solid	µClear®	µClear®	µClear®
Colour	clear	clear	clear	white	black	black
Growth area per well [cm²]	9.6	1.9	0.34	0.34	0.34	0.34
Max. volume [ml]	16.1	3.3	0.392	0.392	0.392	0.392
Working volume [ml]	2 – 5	0.5 – 1	0.025 – 0.34	0.025 – 0.34	0.025 – 0.34	0.025 – 0.34
Protein coating	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine
Lid	+*)	+*)	+*)	+*)	+*)	+*)
Quantity per bag/case	5/50	5/50	5/20	5/20	5/20	20/120

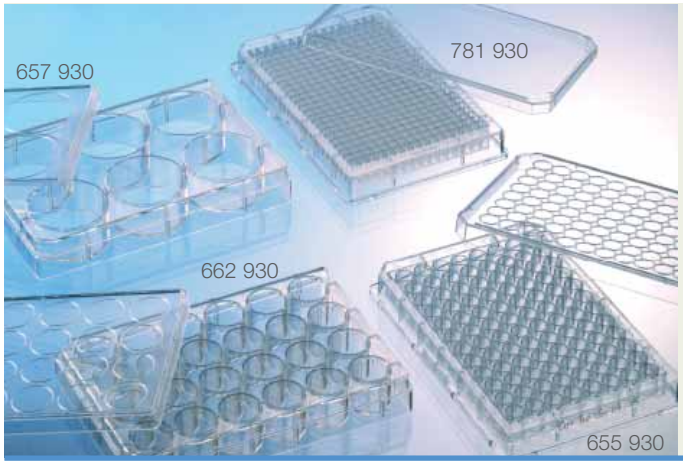
*) with condensation rings



Cat.-No.	781 940	781 945	781 944	781 946	781 948	784 946	782 946
Well format	384 well	384 well	384 well	384 well	384 well	384 well	1536 well
Well profile	F-bottom	F-bottom	F-bottom	F-bottom	F-bottom	Small Volume™	F-bottom
Bottom	solid	solid	µClear®	µClear®	µClear®	solid	µClear®
Colour	clear	white	white	black	black	black	black
Growth area per well [cm²]	0.1	0.1	0.1	0.1	0.1	0.027	0.023
Max. volume [ml]	0.131	0.131	0.131	0.131	0.131	0.028	0.013
Working volume [ml]	0.015 – 0.11	0.015 - 0.11	0.015 – 0.11	0.015 – 0.11	0.015 – 0.11	0.004 - 0.025	0.003 – 0.01
Protein coating	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine	Poly-**D**-Lysine
Lid	+	+	+	+	+	+	+
Quantity per bag/case	5/20	5/20	5/20	5/20	20/120	5/20	5/20
Plate Design						HiBase	HiBase

New

CELLCOAT® Protein Coated Cell Culture Vessels

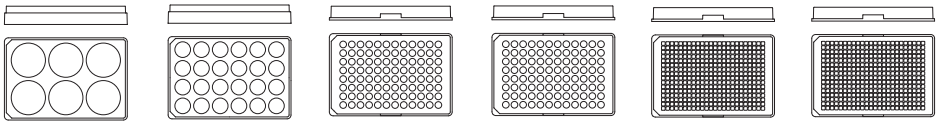


Poly-L-Lysine CELLCOAT®

Cell Culture Dish
Cell Culture Multiwell Plates
Cell Culture Microplates

Cell Culture Multiwell Plates p. 1 I 11
Cell Culture Microplates p. 1 I 12 ff.

- Further cell culture vessels coated with Poly-L-Lysine are available on request.
- Shelf life: 24 months (multiwell plates, dish) / 18 months (microplates) at room temperature



Cat.-No.	657 930	662 930	655 930	655 936	781 930	781 936
Well format	6 well	24 well	96 well	96 well	384 well	384 well
Bottom	solid	solid	solid	µClear®	solid	µClear®
Colour	clear	clear	clear	black	clear	black
Growth area per well [cm²]	9.6	1.9	0.34	0.34	0.1	0.1
Max. volume [ml]	16.1	3.3	0.392	0.392	0.131	0.131
Working volume [ml]	2 – 5	0.5 – 1	0.025 – 0.34	0.025 – 0.34	0.015 – 0.11	0.015 – 0.11
Protein coating	Poly-**L**-Lysine	Poly-**L**-Lysine	Poly-**L**-Lysine	Poly-**L**-Lysine	Poly-**L**-Lysine	Poly-**L**-Lysine
Lid	+*)	+*)	+*)	+*)	+	+
Quantity per bag/case	5/50	5/50	5/20	5/20	5/20	5/20

*) with condensation rings

Cat.-No.	628 930
Description	dish
ø [mm] x height [mm]	60 x 15
Growth area [cm²]	21
Max. volume [ml]	17
Working volume [ml]	6 - 7
Protein coating	Poly-**L**-Lysine
Quantity per bag/case	20/100

Fibronectin CELLCOAT®

Fibronectin is a high molecular weight glycoprotein present in the extracellular matrix (ECM) and plasma. *In vivo* Fibronectin mediates the adhesion of cells to the extracellular matrix via integrin receptors. It is further involved in migration and differentiation of various cells in embryogenesis as well as wound healing.

Coated as a thin layer on the cultivation surface, Fibronectin serves as a substrate to promote adhesion, proliferation and growth of different cell types.

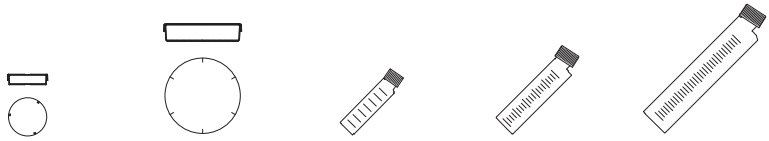
Applications:
- Increase of isolation and cultivation efficiency
- Low-serum or serum-free cultivation
- Cell adhesion studies
- Promotion of cell adhesion, proliferation and growth of endothelial cells, fibroblasts, smooth muscle cells, neurons and epithelial cells

Fibronectin CELLCOAT®

Cell Culture Dishes / Flasks

Cell Culture Vessels p. 1 | 4 ff.

- Cell culture flasks with filter caps
- Shelf life: 6 months at 2 – 8 °C
- Minimum order amount: 60 pieces/cat.-no.
- Further cell culture vessels coated with Fibronectin are available on request



Cat.-No.	628 920	664 920	690 920	658 920	661 920
Description	dish	dish	flask	flask	flask
ø [mm] x height [mm]	60 x 15	100 x 20	-	-	-
Growth area [cm²]	21	58	25	75	175
Max. volume [ml]	28	100	50	250	650
Working volume [ml]	6 – 7	16 – 17	5 – 10	15 – 38	20 – 85
Protein coating	Fibronectin	Fibronectin	Fibronectin	Fibronectin	Fibronectin
Filter screw cap	-	-	red	red	red
Quantity per bag/case	5/20	10	10	10	5

Laminin CELLCOAT®

Laminin is one of the main components of the basement membrane. It consists of three subunits that provide binding sites for the integrin receptor of the cell membrane as well as other extracellular matrix proteins. *In vitro* Laminin is used as a cultivation substrate for improved adhesion and maintenance of the differentiation status of various cells. Further applications are for cell adhesion studies, chemotaxis assays and to increase isolation and cultivation efficiency.

Applications:

- Increase of isolation and cultivation efficiency
- Introduction of cell differentiation and neurite outgrowth
- Cell adhesion studies
- Chemotaxis studies
- Promotion of cell adhesion; proliferation of various cell types such as endothelial, epithelial, muscle and neuronal cells

Laminin CELLCOAT®

Cell Culture Dishes / Flasks

Cell Culture Vessels p. 1 I 4 ff.

- Cell culture flasks with filter caps
- Shelf life: 6 months at 2 – 8 °C
- Minimum order amount: 60 pieces/cat.-no.
- Further cell culture vessels coated with Laminin are available on request

Cat.-No.	628 910	664 910	690 910	658 910	661 910
Description	dish	dish	flask	flask	flask
ø [mm] x height [mm]	60 x 15	100 x 20	-	-	-
Growth area [cm²]	21	58	25	75	175
Max. volume [ml]	28	100	50	250	650
Working volume [ml]	6 – 7	16 – 17	5 – 10	15 - 38	20 – 85
Protein coating	Laminin	Laminin	Laminin	Laminin	Laminin
Filter screw cap	-	-	red	red	red
Quantity per bag/case	5/20	10	10	10	5