Product Information

Laminin/Poly-D-Lysine Coating Solution

LPDL001

Storage Temperature 4 °C

Product Description

Laminin/Poly-D-Lysine Coating Solution is a ready-to-use attachment factors mix solution, prepared in phosphate-buffered saline and is 0.2 µm filtered. It is used to coat cell culture flasks, dishes, and multi-well plates and used to promote the attachment, spreading and proliferation of variety of cell types that require ECM-coated surface for adhesion and 2D cell-culture growth.

The combination of Poly-D-Lysine and Laminin has been used for optimal attachment and promotion of neurite outgrowth in culture. It is suitable for culturing many different types of Peripheral Nervous System (PNS) and Central Nervous System (CNS) networks and is useful for promoting neural cell attachment and differentiation. Certain cells can digest Poly-L-lysine, in which case the Laminin/Poly-D-Lysine should be used (LPDL001).

Laminin is a large basement membrane glycoprotein and is composed of three different polypeptide chains, termed α, β, and γ.[1] The cohesion between these chains is the result of many inter and intrachain disulfide bonds. Together, they cause the molecule to look like a crucifix. Laminin proteins are integral components of structural scaffolding in animal tissues. Laminin has active domains for collagen binding, cell adhesion, heparin binding, and neurite outgrowth fragment. Laminin supports growth and differentiation of many cell types including epithelial, endothelial, neural, muscle and liver cells.[2]

Poly-D-lysine hydrobromide molecular weight is 70,000-150,000 Da, a positively charged amino acid polymer. This product is a nonspecific attachment factor for cells, useful in promoting cell adhesion to solid substrates by enhancing electrostatic interaction between negatively charged ions of the cell membrane and the culture surface. After absorption to the culture surface, Poly-D-lysine increases the number of positively charged cell binding sites.[3-6] Polymers of both D- and L-lysine are used to coat solid surfaces. Since certain cells can digest Poly-L-lysine, Poly-D-lysine is used as the attachment factor so that the cells are not disrupted by excessive uptake of L-lysine.

Source

Laminin was isolated from mouse Engelbreth-Holm-Swarm tumor.

Poly-D-Lysine is a synthetic molecule.

Applications

- Attachment and spreading of a variety of cell types
- Enhancement of neuronal cell attachment to plastic and glass
- Support of neurite outgrowth
- Suitable for use with serum-free or reduced-serum cultures

Procedure

1. Gently mix the **Laminin/Poly-D-Lysine Coating Solution** a few times to form a homogenous solution before use.
2. Coat tissue culture ware to cover the entire culture surface area, approximately 0.2-0.25 mL/cm^2.
3. Incubate at room temperature for 2-3 hours and carefully aspirate the solution.
4. Wash 3 times with sterile PBS before plating cells.
5. The coated tissue culture vessels can be used immediately or stored at 4 °C for up to one week filled with PBS and wrapped in parafilm.
6. Remove PBS only when ready to plate the cells. Do not let the coated plates dry completely.

Endotoxin level: ≤ 0.5 EU/mL

Tested for attachment activity.

Representative Data

Figure 1

A. PC-12 cells cultured in low serum medium on Laminin/Poly-D-Lysine Coating Solution (PDL-laminin mix) show a good attachment and proliferation.
B. PC-12 cells cultured on TC plate without coating in low serum medium do not attach well, more easily detached, grow in layers one on top of others and grow as aggregates.

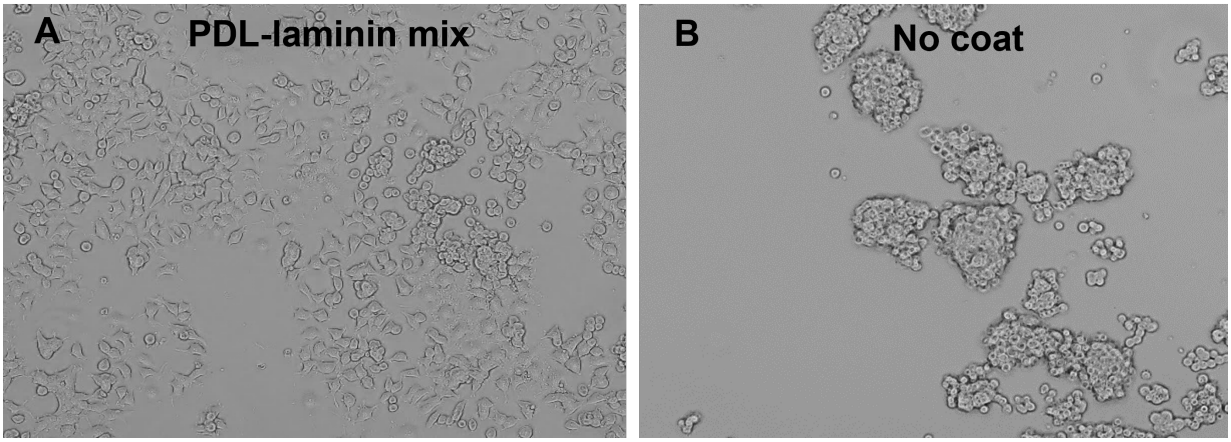
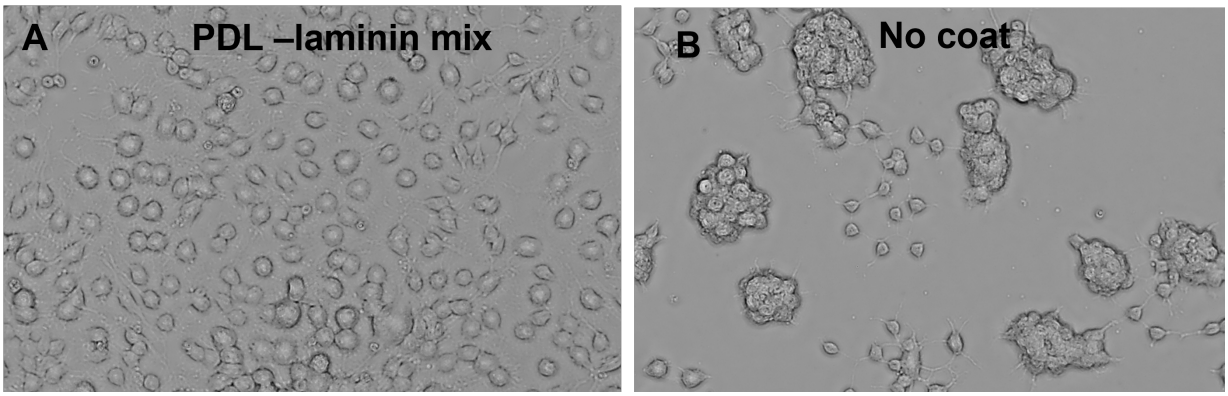


Figure 2

A. Neural stem cells (NSC) cultures on Laminin/Poly-D-Lysine Coating Solution (PDL-laminin mix), show a good attachment and proliferation in serum free Neural Stem cell medium (SCM003), supplemented with fresh 20 ng/mL FGF-2.
B. Neural stem cells (NSC) cultures on TC plate without coating, do not attach well, tend to float in clumps, grow in layers one on top of others and grow as aggregates in serum free Neural Stem cell medium (SCM003), supplemented with fresh 20 ng/mL FGF-2.



Storage/Stability

The product is 0.2 µm filtered solution, and is stable for up to 2 years when stored at 2-8 °C.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

References

1. Theocharis, Achilleas D., et al. "Extracellular matrix structure." *Advanced drug delivery reviews* 97 (2016): 4-27.
2. Kleinman, H. K., et al., Use of extracellular matrix components for cell culture. *Anal. Biochem.,* 166: 1-13 (1987).
3. Jacobson, B.S., and Branton, D. Plasma membrane: rapid isolation and exposure of the cytoplasmic surface by use of positively charged beads. *Science*, 195, 302, (1977).
4. Leifer, D., et al., Monoclonal antibody to Thy-1 enhances regeneration of processes by rat retinal ganglion cells in culture. *Science*, 224, 303 (1984).
5. Cannela, M., and Ross, R. Influence of substratum on the retrograde response of the rat superior cervical ganglion in vitro. *Exp. Neurology*, 95, 652 (1987).
6. Needham, L., et al., Endothelial functional responses and increased vascular permeability induced by polycations. *Lab. Invest*. 59(4), 538-548 (1988).

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