



**LD Biopharma, Inc.**  
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## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human VTN-LAMA $\alpha$ 5 Fusion Protein  
**Catalog Number:** hRP-1858  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Extracellular matrix (EMC) and growth factor signaling environments are part of the nature mechanism for regulating stem cell fate. These micro-environmental stimuli are processed through a veritable network of intracellular signaling pathway. Evidence to date suggests that understanding of interactions between these pathway in defined cell culture condition are critical in controlling cell fate in vitro in the development of cell based therapeutic applications. Laminins are high-molecular weight (>400kD) protein of the extracellular matrix. The laminins are an important and biologically active part of the basal lamina, influencing cell differentiation, migration and adhesion. Currently many active domain (peptide) from various laminins have been identified, which provide a opportunity for protein – engineering for its production.

To develop a specific coating matrix protein for representing human laminin a5, *one active peptide* (GIIEFL) domain from human laminin a5, were joint together with small linker and then fusion with human vitronectin (62-398aa). As human vitronectin provides a excellent polystyrene surface binding capacity, this recombinant VTN-laminin peptide fusion might serve as a unique coating matrix for various stem cell differentiation applications in vitro.

One peptide fusion fragment of human laminin a1 (86aa) was further fused to human vitronectin protein (62- 398aa) to generate a fusion protein, Named as VTN- LAMA $\alpha$ 5. This VTN-LAMA $\alpha$ 5 peptide cDNA was constructed with codon optimization gene synthesis technology. This protein was expressed in E. coli as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

**Gene Symbol:** None (Named as VTN-LAMA $\alpha$ 5 by manufacture)  
**Accession Number:** NP\_000629 + (artificial synthetic protein)  
**Species:** Based on Human protein sequence  
**Size:** 50  $\mu$ g / Vial



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**Composition:** 0.5 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.

**Storage:** In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

## Key References

Guokai Chen, et al. *Chemically defined conditions for human iPSC derivation and culture*. Nature Methods. 8. 424-429 (2011).

Braam, S.R. et al. *Recombinant vitronectin is a functionally defined substrate that supports human embryonic stem cell self-renewal via alphavbeta5 integrin*. Stem Cells 26, 2257–2265 (2008).

Makino M. et al. *Identification of cell binding sites in the laminin alpha5-chain G domain*. Exp Cell Res. Jul 1; 277(1): 95-106 (2002).

## Applications

When coated at 0.5 - 1 ug/ ml per cm<sup>2</sup> and combined with chemically defined culture medium, this recombinant protein may be used as matrix protein to replace native laminin a5 for benefiting different primary human cell culture in vitro.

## Quality Control

Purity: > 90% by SDS-PAGE.

## Recombinant Protein Sequence

MTRGDVFTMPED EYTVYDDGEEKNNATVHEQVGGPSLTSDLQAQSKGNPEQTPVLKPEEEAPAP  
EVGASKPEGIDSRPETLHPGRPQPPAEELCSGKPFDAFTDLKNGSLFAFRGQYCYELDEKAVR  
PGYPKLIIRDVWGIEGPIDAAFTRINCQGKTYLFFKGSQYWRFE~~ED~~GVLDPDYPRNISDGF~~FD~~GIPDN  
VDAALALPAHSYSGRERVYFFK GKQYWEYQFQHQP SQEECEGSSLSAVFEHFAMMQRDSWEDI F  
ELLFWGRTSAGTRQPQFISR~~D~~WHGVPGQVDAAMAGRIYISGMAPRPSLAKKQRF~~R~~HNRNRKGYRS  
QRGHSRGRNQN~~S~~RRPSRGGGGSGGGGSNIEFGIIEFL