GMP Human DLL4 Protein, Fc Tag

Catalog # GMP-DL4H28

Product Overview

ACRO offers two GMP-grade DLL4 proteins, GMP-DL4H27 (Flagship Product) and GMP-DL4H28 (Complementary Product), designed for iPSC cell culture and differentiation applications. While both proteins undergo similar manufacturing processes with minor procedural variations, they are strategically positioned to address distinct user needs.

Primary Recommendation: GMP-DL4H27 (Flagship Product)
As the cornerstone of our DLL4 protein portfolio, GMP Human DLL4 Protein, Fc Tag, Flagship (Cat. No. GMP-DL4H27) is always the optimal choice for new users and standardized workflows. This protein delivers superior activity and consistent performance and is validated across diverse differentiation protocols, making it the first choice for initial testing and implementation.

Complementary Option: GMP-DL4H28
For some specialized applications requiring nuanced optimization, GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) may demonstrate marginally enhanced effects in specific experimental contexts. We recommend evaluating this product:
1. If GMP-DL4H27 does not meet performance expectations in your system.
2. During process development, parallel screening of both variants could identify the optimal fit for your workflow.

Product Details

DLL4 (Delta-like ligand 4) is a Notch ligand primarily expressed in vascular endothelium and thymic epithelial cells. In iPSC differentiation toward T and NK cells, DLL4 plays a pivotal role in directing hematopoietic progenitors toward the lymphoid lineage by activating Notch signaling. Through sustained Notch pathway engagement, DLL4 drives T-lineage commitment, supports thymic progenitor expansion, and promotes functional maturation of both T cells and NK cells, making it essential for generating immune effector cells from pluripotent stem cells.

Product Features and Advantages

- **Unique Clinical-Grade Offering**: The only GMP-grade DLL4 available, validated in multiple clinical trials and cell manufacturing processes.
- **Feeder-Free Culture Support**: Enables feeder cell-independent culture systems, streamlining T/NK cell production workflows.
- **Functional Differentiation Driver**: Specifically supports efficient and directed differentiation toward T and NK cell lineages.
- **Scalable and Reproducible**: Features stringent quality control and high lot-to-lot consistency for seamless transition from research to clinical manufacturing.

GMP Platform Advantages

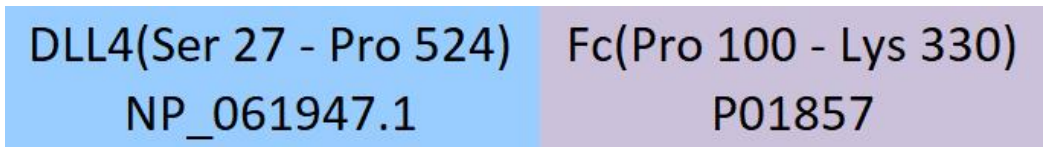
- **Quality Assurance**: Global QMS with comprehensive and stringent QC release criteria.
- **End-to-End GMP Compliance**: Full manufacturing and QC under a cGMP system.
- **Comprehensive Control of Adventitious Agents**: Stringent biosafety from cell banks to final release.
- **Comprehensive Regulatory Support**: Includes RSF and DMF to meet global requirements.
- **Resilient Supply Chain**: Intelligent modular facilities ensure a stable global supply.
- **Professional Support**: Extensive manufacturing and application expertise to accelerate development.

Source

GMP Human DLL4 Protein, Fc Tag (GMP-DL4H28) is expressed from human 293 cells (HEK293). It contains AA Ser 27 - Pro 524 (Accession # NP_061947.1).

Predicted N-terminus: Ser 27

Molecular Characterization



This protein carries a human IgG1 Fc tag at the C-terminus.

The protein has a calculated MW of 80.7 kDa. The protein migrates as 90 kDa±3 kDa under reducing (R) condition (SDS-PAGE) due to glycosylation.

Endotoxin

Less than 10 EU/mg, tested by the LAL method in compliance with USP <85> and Ph. Eur. 2.6.14.

Protein A

<5 ppm of protein tested by ELISA.

Host Cell Protein

<0.5 ng/μg of protein tested by ELISA.

Host Cell DNA

<0.02 ng/μg of protein tested by qPCR.

Sterility

Sterility testing was performed using the membrane filtration method in compliance with USP <71> and Ph. Eur. 2.6.1.

Mycoplasma

Negative

Purity

>95% as determined by SDS-PAGE.

Formulation

Lyophilized from 0.22 μm filtered solution in PBS, pH7.4 with protectants.

Contact us for customized product form or formulation.

Vial Specification

6R (20 mm neck finish)

Shipping

This product is supplied and shipped with blue ice, please inquire the shipping cost.

Storage

Upon receipt, store it immediately at -20°C or lower for long term storage.

Please avoid repeated freeze-thaw cycles.

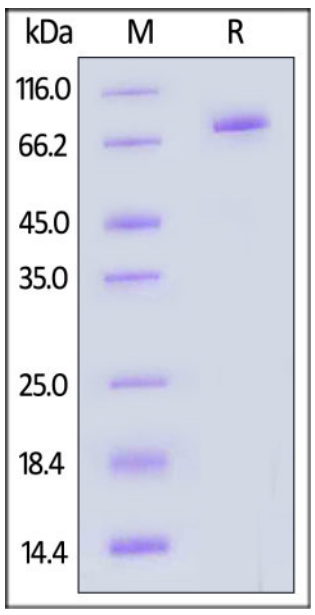
This product is stable after storage at:

- -20°C to -70°C for 5 years in lyophilized state;
- -70°C for 12 months under sterile conditions after reconstitution.

ACRO Quality Management System

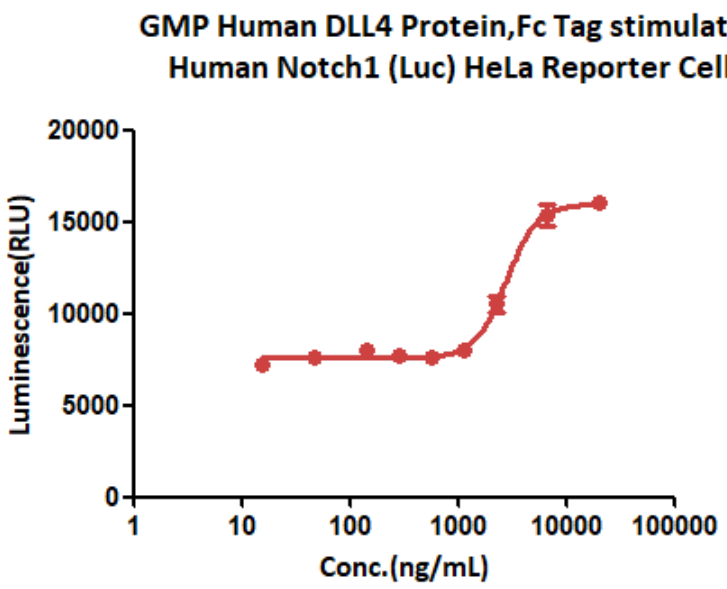
- QMS(ISO, GMP)
- Quality Advantages
- Quality Control Process

SDS-PAGE



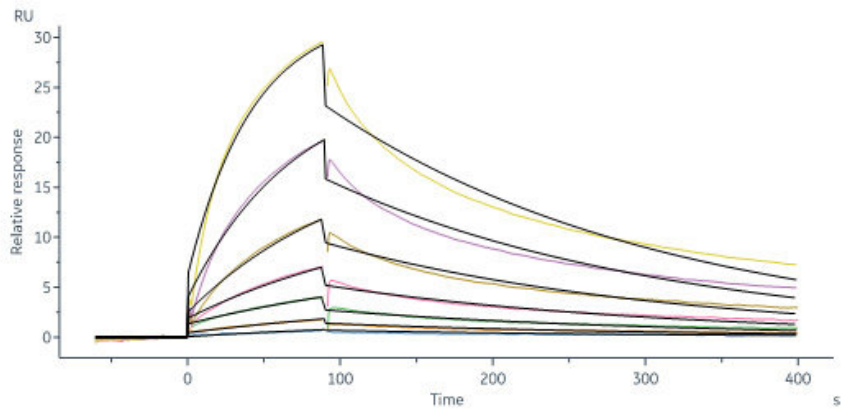
GMP Human DLL4 Protein, Fc Tag on SDS-PAGE under reducing (R) condition. The gel was stained with Coomassie Blue. The purity of the protein is greater than 95%.

Bioactivity-CELL BASE



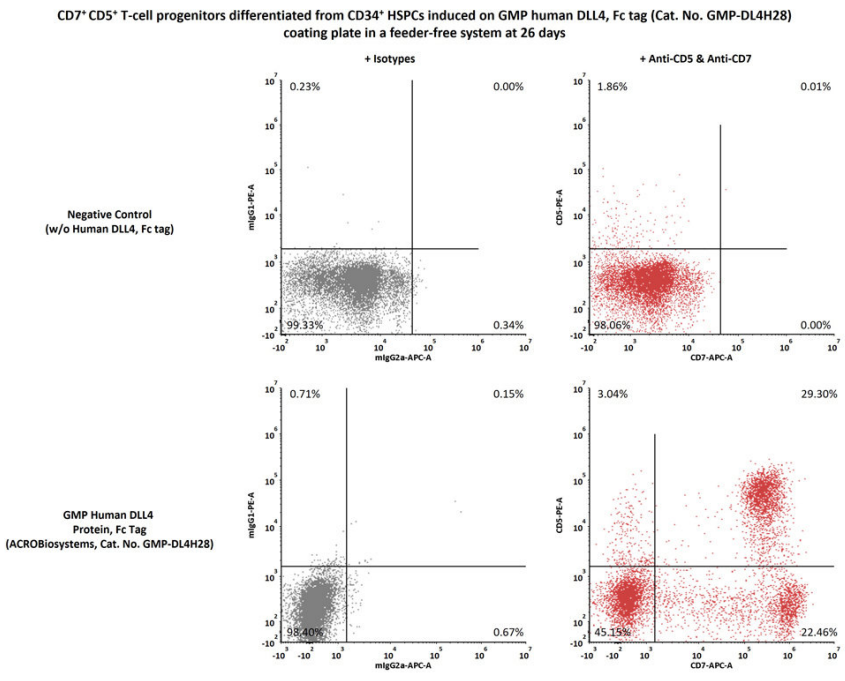
GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) stimulates Human Notch1 (Luc) HeLa Reporter Cell. The typical EC50 for this effect is 2758 ng/ml (QC tested).

Bioactivity-SPR

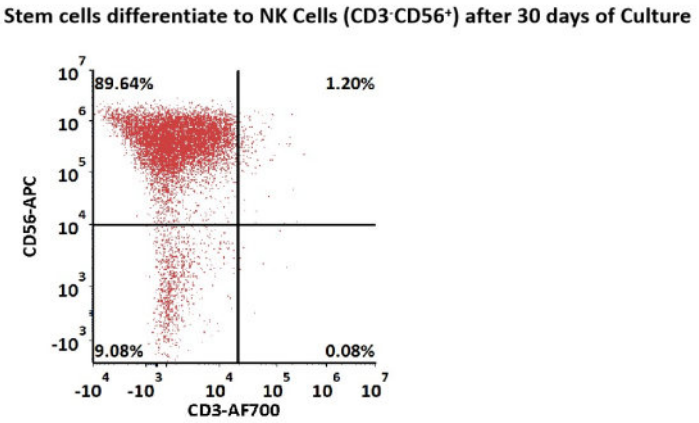


GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) captured on Protein A Chip can bind Human NOTCH1 Protein, His Tag, premium grade (Cat. No. NO1-H52H3) with an affinity constant between 1.00 nM - 150 nM as determined in a SPR assay (Biacore 8K) (QC tested).

Application Data

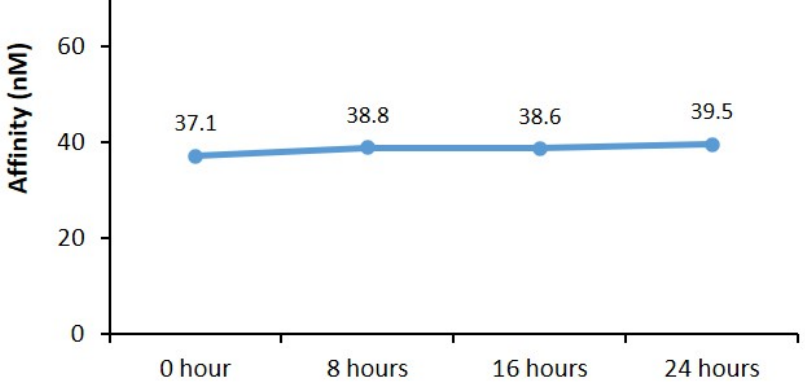


CD34+ CD45+ hematopoietic cells were seeded on GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) - coated plates and differentiated for 26 days, then flow cytometry was used to detect the expression of T-cell progenitor markers, CD7 and CD5. GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) together with other growth factors could induce the formation of CD7+ and CD7+ CD5+ T-cell progenitors. However, the cells cultured without GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) - coated plates expressed neither CD5 nor CD7.

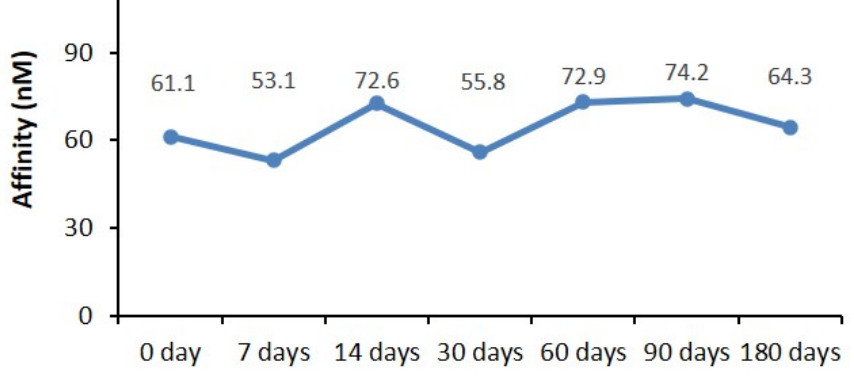


The Recombinant Fibronectin fragment, premium grade (Cat. No. FIN-H5116) combined with GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28), GMP Human VCAM-1 Protein, Fc Tag (Cat. No. GMP-VC1H25) coating on the plate could efficiently induce hematopoietic stem cells differentiation to NK cells, with high expression of CD56+ CD3-.

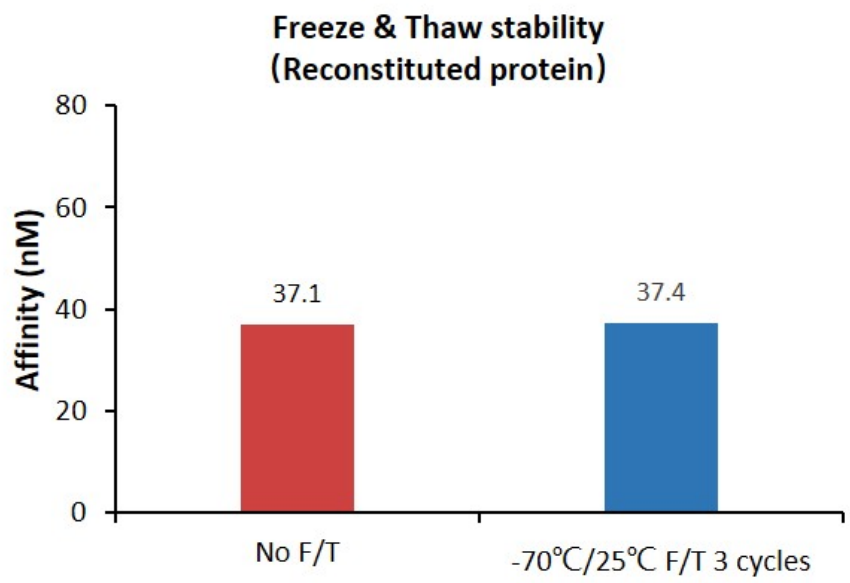
Bioactivity-Stability



SPR assay demonstrates that the reconstituted GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) is stable at 37℃ for 24 hours.



SPR assay demonstrates that the reconstituted GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) is stable at 4℃ for 180 days.



SPR assay demonstrates that the reconstituted GMP Human DLL4 Protein, Fc Tag (Cat. No. GMP-DL4H28) is stable after 3 freeze-thaw cycles.

Background

Delta-like protein 4 (DLL4) is also known as Drosophila Delta homolog 4 (Delta4), which contains one DSL domain and eight EGF-like domains. DLL4 is expressed in vascular endothelium. DLL4 is involved in the Notch signaling pathway as Notch ligand, which can activates NOTCH1 and NOTCH4. DLL4 is involved in angiogenesis and negatively regulates endothelial cell proliferation and migration and angiogenic sprouting. DLL4 can bind to Notch-1 and Notch-4.

MANUFACTURING SPECIFICATIONS

ACROBiosystems GMP grade products are produced under a quality management system and in compliance with relevant guidelines: Ph. Eur General Chapter 5.2.12 Raw materials of biological origin for the production of cell-based and gene therapy medicinal products; USP<92>Growth Factors and Cytokines Used in Cell Therapy Manufacturing; USP<1043>Ancillary Materials for Cell, Gene, and Tissue-Engineered Products; ISO/TS 20399-1:2018, Biotechnology - Ancillary Materials Present During the Production of Cellular Therapeutic Products.

ACROBiosystems Quality Management System Contents：

- GMP-certified facility (compliance with FDA cGMP, EMA GMP, ICH, ISO9001/13485/MDSAP, and certified by third-party SGS, UL, and RX360)
- Animal origin-free materials, equipments, and facilities
- Materials sourced only from approved suppliers
- ISO 5 cleanrooms and automatic filling equipment
- Professional quality personnel and training programs
- Validated analytical testing methods in accordance with the ICH guidelines
- Safety Testing (Sterility, Mycoplasma, etc): compliant with USP, EP, etc
- In-depth stability studies
- Fully batch production and control records
- Equipment maintenance and calibration

ACROBiosystems provide rigorous quality control tests (fully validated equipment, processes and test methods) on our GMP grade products to ensure that they meet stringent standards in terms of purity, safety, activity and inter-batch stability, and each bulk QC lot mainly contains the following specific information:

- SDS-PAGE
- Protein content
- Endotoxin level
- Residual Host Cell DNA content
- Residual Host Cell Protein content
- Biological activity analysis
- Microbial testing
- Mycoplasma testing
- In vitro virus assay
- Residual moisture
- Batch-to-batch consistency

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