

Recombinant Human Fibronectin (FN) Protein

Product Name

Recombinant Human Fibronectin (FN) Protein

Size / Catalog Number

50 μ g / GMP-TL903-0050

250 μ g / GMP-TL903-0250

Product Information

Synonyms: Cold-insoluble globulin

Accession: UniProt P02751-1

Expressed Region: Pro1270-Ser1546 & Ala1721-Thr2016

Tag: His tag at the N-terminus

Expression system: *E. coli*

Predicted Molecular weight: 68.0 kDa

Purity: > 90% as determined by SDS-PAGE

Endotoxin: < 0.1 EU per 1 μ g of protein (LAL method)

Activity: Determined by promoting the adhesion ability of hiPS cells, the ED₅₀ is \leq 3.2 μ g/mL.

Form: Liquid in sterile PBS (pH7.4), typically supplemented with HSA as a protectant.

Background

Fibronectin (FN) is a dimeric glycoprotein with an approximate molecular weight of 230-250 kDa, covalently linked via C-terminal disulfide bonds. Each monomer comprises 12 type I, 2 type II, and 15–17 type III functional domains that orchestrate multidimensional interactions with cell-surface integrins (α 5 β 1/ α v β 3) and extracellular matrix components (collagen/heparin) through specific RGD (Arg-Gly-Asp) and CS1 sequences. Functionally, it participates in coagulation cascades and host defense as a soluble plasma protein, or serves as a cross-linked polymeric core component in tissue engineering scaffolds, regulating cell adhesion, migration, and differentiation via mechanotransduction. In cell therapy applications, its recombinant fragment (containing Cell-Binding Domain/CBD, Heparin-Binding Domain/HBD, and CS1 sites) acts as a viral transduction enhancer substrate, leveraging spatial co-localization principles to improve lentiviral vector anchoring efficiency in CAR-T production-boosting primary T-cell transduction rates by 3- to 5-fold. Within 3D mesenchymal stem cell (MSC) culture systems, it activates the FAK-PI3K-Akt signaling axis to preserve stemness and guide neuro/vascular lineage differentiation, significantly enhancing the *in vivo* survival of tissue-engineered grafts.

Stability & Storage

Liquid: Stable for 12 months at -80°C or 6 months at -20°C when stored in the original sealed container under desiccant.

Reconstitution: N/A

Handling: Aliquot to avoid repeated freeze-thaw cycles.

References

1. Williams CM, Engler AJ, Slone RD, *et al.* Fibronectin expression modulates mammary epithelial cell proliferation during acinar differentiation. *Cancer Res.* 2008 May 1;68(9):3185-92.

2. Mao Y, Schwarzbauer JE. Fibronectin fibrillogenesis, a cell-mediated matrix assembly process. *Matrix Biol.* 2005 Sep;24(6):389-99.
3. Basoli V, Della Bella E, Kubosch EJ, *et al.* Effect of expansion media and fibronectin coating on growth and chondrogenic differentiation of human bone marrow-derived mesenchymal stromal cells. *Sci Rep.* 2021 Jun 22;11(1):13089.
4. Cha BH, Kim JS, Bello A, *et al.* Efficient Isolation and Enrichment of Mesenchymal Stem Cells from Human Embryonic Stem Cells by Utilizing the Interaction between Integrin $\alpha 5\beta 1$ and Fibronectin. *Adv Sci (Weinh).* 2020 Jul 19;7(17):2001365.

Intended Us

For research and manufacturing purposes only.