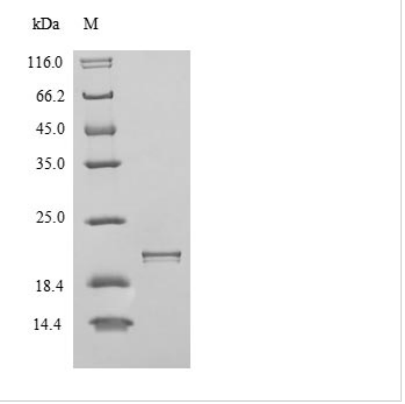
Recombinant Human Integrin alpha-V (ITGAV), partial

Product Code	CSB-YP011877HU
Relevance	The alpha-V (ITGAV) integrins are receptors for vitronectin, cytotactin, fibronectin, fibrinogen, laminin, matrix metalloproteinase-2, osteopontin, osteomodulin, prothrombin, thrombospondin and vWF. They recognize the sequence R-G-D in a wide array of ligands. In case of HIV-1 infection, the interaction with Extracellular domain viral Tat protein ses to enhance angiogenesis in Kaposi's sarcoma lesions.
Abbreviation	Recombinant Human ITGAV protein, partial
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P06756
Alias	Vitronectin receptor subunit alpha; CD51
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	DLALSEGDIHTLGCGVAQCLKIVCQVGRLDRGKSAILYVKSLLWTETFMNKEN QNHSYSLKSSASFNVIEFPYKNLPIEDITNSTLVTTNVTWGIQPAPMPVPVWVII LAVLAGLLLLAVLVFVMYRMGFFKRVRPPQEEQEREQLQPHENGEGNSET
Research Area	Cardiovascular
Source	Yeast
Target Names	ITGAV
Protein Names	Recommended name: Integrin alpha-VAlternative name(s): Vitronectin receptor subunit alpha CD_antigen= CD51Cleaved into the following 2 chains: 1. Integrin alpha-V heavy chain 2. Integrin alpha-V light chain
Expression Region	891-1048aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	19.7kDa
Protein Length	Partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

The gene sequence encoding the human ITGAV antigen from residues 891 to 1048 is linked to an N-terminal 6xHis tag gene to create a target gene. After PCR amplification, this target genes are inserted into expression vectors to form recombinant plasmids. These plasmids are transformed into yeast cells, which are cultured to induce protein expression. The culture supernatant is then collected and purified by affinity chromatography, yielding the recombinant human ITGAV protein with a purity greater than 90%, confirmed by SDS-PAGE.

ITGAV is a crucial member of the integrin family, which plays significant roles in various biological processes, including cell adhesion, migration, and differentiation. ITGAV is known to heterodimerize with various beta subunits, such as β1, β3, and β5, forming integrin complexes that mediate interactions with the extracellular matrix (ECM) [1][2]. These interactions are vital for cellular functions and are implicated in numerous physiological and pathological processes, including cancer progression and tissue regeneration.

In the context of cancer, ITGAV has been shown to influence tumor cell behavior significantly. Elevated expression of ITGAV is associated with increased cell proliferation, migration, and metastasis in various cancers, including breast and liver cancers [3][4]. In breast cancer, suppression of ITGAV led to decreased cell proliferation and migration, indicating its role as a potential therapeutic target [4]. Similarly, in hepatocellular carcinoma, ITGAV transcription is upregulated, promoting cancer cell invasiveness [1]. The expression of ITGAV is also linked to poor prognosis in several epithelial tumors, highlighting its potential as a biomarker for cancer aggressiveness [2].

Moreover, ITGAV is involved in the differentiation of stem cells, particularly in adipose-derived stem cells. Studies have demonstrated that silencing ITGAV enhances adipogenic differentiation, suggesting that it plays a regulatory role in stem cell fate decisions [5][6]. This regulatory function is further supported by findings that ITGAV is essential for the maturation of focal adhesions, which are critical for cell attachment and signaling [6]. The interaction of ITGAV with ECM components, such as fibronectin, also underscores its importance in maintaining cellular architecture and function [7].

ITGAV is also implicated in immune responses and inflammation. ITGAV has been shown to mediate interactions between immune cells and the ECM, influencing processes such as T-cell activation and regulatory T-cell function [8].

The modulation of ITGAV expression can impact inflammatory responses, making it a potential target for therapeutic interventions in inflammatory diseases [9].

References:

[1] C. Kang, B. Qi, Q. Cai, L. Fu, Y. Ying, C. Tang, et al., Lncrna ay promotes hepatocellular carcinoma metastasis by stimulating itgav transcription, Theranostics, vol. 9, no. 15, p. 4421-4436, 2019. https://doi.org/10.7150/thno.32854
[2] H. Löser, M. Scholz, H. Fuchs, A. Essakly, A. Damanakis, T. Zander, et al., Integrin alpha v (itgav) expression in esophageal adenocarcinoma is associated with shortened overall-survival, Scientific Reports, vol. 10, no. 1, 2020. https://doi.org/10.1038/s41598-020-75085-7
[3] Y. Pei, Y. Zhang, K. Zheng, G. Shang, Y. Wang, W. Wang, et al., <p>ilex hainanensis merr targets itgav to suppress the proliferation and metastasis of osteosarcoma cells</p>, Oncotargets and Therapy, vol. Volume 12, p. 4499-4507, 2019. https://doi.org/10.2147/ott.s205688
[4] M. Sarkar, M. Mia, M. Amin, M. Hossain, & M. Islam, Bioinformatics and network biology approach to identifying type 2 diabetes genes and pathways that influence the progression of breast cancer, Heliyon, vol. 9, no. 5, p. e16151, 2023. https://doi.org/10.1016/j.heliyon.2023.e16151
[5] D. Salazar-Tortosa, D. Enard, Y. Itan, & J. Ruiz, Novel brown adipose tissue candidate genes predicted by the human gene connectome, Scientific Reports, vol. 12, no. 1, 2022. https://doi.org/10.1038/s41598-022-11317-2
[6] E. Morandi, R. Verstappen, M. Zwierzina, S. Geley, G. Pierer, & C. Ploner, Itgav and itga5 diversely regulate proliferation and adipogenic differentiation of human adipose derived stem cells, Scientific Reports, vol. 6, no. 1, 2016. https://doi.org/10.1038/srep28889
[7] F. Hu, F. Gao, P. Xu, & S. Zhang, Cell development deficiency and gene expression dysregulation of trisomy 21 retina revealed by single-nucleus rna sequencing, Frontiers in Bioengineering and Biotechnology, vol. 8, 2020. https://doi.org/10.3389/fbioe.2020.564057
[8] J. Worthington, A. Kelly, C. Smedley, D. Bauché, S. Campbell, J. Marie, et al., Integrin αvβ8-mediated tgf-β activation by effector regulatory t cells is essential for suppression of t-cell-mediated inflammation, Immunity, vol. 42, no. 5, p. 903-915, 2015. https://doi.org/10.1016/j.immuni.2015.04.012
[9] Y. Lee, C. Lee, J. Bae, K. Nam, D. Moon, O. Hwang, et al., Inhibition of skin carcinogenesis by suppression of nf-κb dependent itgav and timp-1 expression in il-32γ overexpressed condition, Journal of Experimental & Clinical Cancer Research, vol. 37, no. 1, 2018. https://doi.org/10.1186/s13046-018-0943-8

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself.

Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.