

DESCRIPTION

Source	Human embryonic kidney cell, HEK293-derived human Integrin alpha 4 beta 1 protein		
	Human ITGA4 (Tyr34-Gln970) Accession # P13612.3	IEGR	Human IgG ₁ (Pro99-Lys330) (with modifications)
	Human ITGB1 (Gln21-Asp728) Accession # P05556.2	IEGR	Human IgG ₁ (Pro99-Lys330) (with modifications)
	N-terminus		C-terminus

N-terminal Sequence Analysis Tyr34 (Integrin alpha 4) & Gln21 inferred from enzymatic pyroglutamate treatment revealing Thr22 (Integrin beta 1)

Structure / Form Disulfide linked heterodimer

Predicted Molecular Mass 131 kDa (Integrin alpha 4) & 105 kDa (Integrin beta 1)

SPECIFICATIONS

SDS-PAGE 128-155 kDa, under reducing conditions.

Activity Measured by its binding ability in a functional ELISA. Recombinant Human Integrin alpha 4 beta 1 Fc Chimera (Catalog # 11719-A4) binds to Recombinant Human VCAM-1/CD106 His-tag (Catalog # 10201-VC) with an ED₅₀ of <2.00 µg/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Supplied as a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

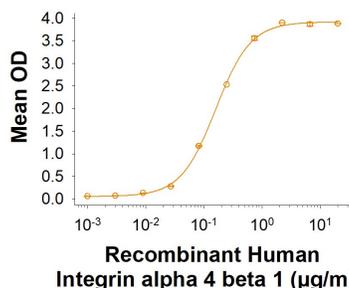
Shipping The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 6 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after opening.
- 3 months, -20 to -70 °C under sterile conditions after opening.

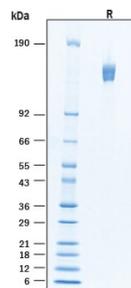
DATA

Binding Activity



Recombinant Human Integrin alpha 4 beta 1 Fc Chimera Protein Binding Activity. Recombinant Human Integrin alpha 4 beta 1 Fc Chimera Protein (Catalog # 11719-A4) binds to Recombinant Human VCAM-1/CD106 His-tag (Catalog # 10201-VC) in a functional ELISA with an ED₅₀ of < 2.00 µg/mL.

SDS-PAGE



Recombinant Human Integrin alpha 4 beta 1 Fc Chimera Protein SDS-PAGE. 2 µg/lane of Recombinant Human Integrin alpha 4 beta 1 Fc Chimera Protein (Catalog # 11719-A4) was resolved with SDS-PAGE under reducing (R) condition and visualized by Coomassie® Blue staining, showing bands at 128-155 kDa.

BACKGROUND

Integrin $\alpha 4\beta 1$, also called VLA4, is an integrin family adhesion receptor that shares the $\beta 1$ subunit with eleven other family members and the $\alpha 4$ subunit with integrin $\alpha 4\beta 7$ (1 - 4). The non-covalent heterodimer of 150 kDa $\alpha 4/CD49d$ and 130 kDa $\beta 1/CD29$ type I transmembrane glycoprotein subunits mediates cell adhesion to VCAM-1/CD106 on other cells and the CS-1 fragment of fibronectin in the extracellular matrix (2 - 4). The $\alpha 4$ extracellular domain (ECD) contains an N-terminal β -propeller structure, followed by domains termed thigh, calf-1 and calf-2 (1). The $\beta 1$ ECD contains a vWFA domain, which interacts with the $\alpha 4$ β -propeller to form a binding domain when the dimer is in active, extended and open conformation. Each subunit has a transmembrane sequence and a short cytoplasmic tail. The 944 aa human $\alpha 4$ extracellular domain (ECD) shares 85% aa identity with mouse, rat and canine $\alpha 4$, while the 708 aa human $\beta 1$ ECD shares 92 - 96% aa identity with rat, bovine, mouse, and feline $\beta 1$. Five alternate splice forms of the human $\beta 1$ cytoplasmic domain, including one antagonistic form, vary by 12 to 48 aa and show differential expression patterns (5). Leukocytes (except for neutrophils), erythroid precursors and some non-hematopoietic cells such as epicardial, endothelial and smooth muscle precursors, Schwann cells, and chorionic cells express $\alpha 4\beta 1$ (6 - 10). Deletion is lethal in the mouse embryo due to faulty placentation and development of the epicardium and coronary vessels (7, 10). In the adult, $\alpha 4\beta 1$ primarily regulates immune cell migration (11 - 13). Circulating leukocyte $\alpha 4\beta 1$ is rapidly activated by inflamed endothelial cells that present VCAM-1 and chemokines such as SDF-1 (11). This activation facilitates rolling, firm adhesion, and extravasation. Interfering with leukocyte migration via the therapeutic $\alpha 4\beta 1$ antibody Natalizumab can reduce the severity of autoimmune disorders such as multiple sclerosis (12). Natalizumab can also mobilize hematopoietic precursors from the bone marrow by impeding their interaction with stromal cell VCAM-1 (8, 12). During immune cell activation, $\alpha 4\beta 1$ can function as a costimulatory molecule (13, 14).

References:

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